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ABSTRACT

Systems Integration in Pharmaceutical Industry Using Object-oriented Expert System Technology

by
Korrapolu Reddy

SPHINX is an object-oriented expert system addressed to solve the burning problems of pharmaceutical industry. SPHINX stands for Systems integration in PHarmaceutical INdustry using object-oriented eXpert system technology.

Various problems that American pharmaceutical industries are facing have been explained. Using the revolutionary object-oriented concepts and the powerful expert systems technology, it has been shown how a prescription can be written to solve all the problems of pharmaceutical industries. A problem "Minimizing the wastage of Interferon" has been taken to demonstrate the power of Object-oriented Expert System technology.

SYSTEMS INTEGRATION IN PHARMACEUTICAL INDUSTRY USING OBJECT-ORIENTED EXPERT SYSTEM TECHNOLOGY

by
Korrapolu Reddy

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This thesis is dedicated to my parents,
Sambasiva Reddy and Samba Sivamma

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CHAPTER 1

INTRODUCTION

1.1 Is American Pharmaceutical Industry Sick ?

The start of the 1990s has been marked by a radical change of outlook on the part of the pharmaceutical industry. For decades, the industry has flourished by following a relatively straight forward strategy : invest in the research and development of new drugs, market them effectively and plough the profits back into research to ensure an ongoing flow of new products for the future.

In the recent times, however, the industry is coming under intense pressure from a number of quarters. Pharmaceutical prices are being closely scrutinized by private purchasing agencies (and even consumers) as well as by governments. The research and development of new drugs is taking longer and costing much more. The duration of patent protection is approximately 17 years, which is still inadequate. Generic competition is essentially limiting product life to the effective life of the patent. the crux of the dilemma facing the industry is that the increasing costs of R & D, manufacturing and marketing are not being met by similar levels of increase in revenues - be it from new products, price increases or volume growth. While a growing number of therapeutic areas are being adequately served by currently marketed products, the task of developing new drug innovations is becoming more difficult. In recent years, the proportion of sales revenue spent on R & D has shown a steady increase, where as the number of NCEs (New Chemical Entity) reaching the market has fallen.

It is well recognized that pharmaceutical research incurs a high element of risk. However, as the number of new research areas to be tapped

declines and pharmacological solutions to these areas become more elusive, this element of risk is bound to escalate. Furthermore, in order for a new drug to be successful in today's climate, it has to be truly innovative - marginal advances are no longer considered worth taking through the expensive development process. The more innovative a product, the higher level of risk attached to its development. At the end of day, no matter how large the R & D spend, how efficient the management and how advanced the technology. Pharmaceutical research does not come with any guarantees of success. Drugs developed along the most rational lines of thinking can sadly fail when the pharmacological theory is put into clinical practice. For an industry whose life-blood is research and innovation, this decline in research productivity is a major cause for concern.

The US pharmaceutical industry has been criticized because its products are perceived to be too expensive, yet prescription medicines remain least expensive form of therapy. At this time, we are experiencing a dramatic increase in the risks and costs of pharmaceutical research and development. The US pharmaceutical industry continues to lead the world in the discovery and development of important new medicines because it assumes greater financial risk and invests more of its sales dollar in R & D than virtually any other industry. Where such a risk is posed, there must set responsible prices, must keep price increases down, and must help improve access to important medicines.

1.2 Increasing Risks and Costs of Pharmaceutical R & D

In the pharmaceutical industry, the odds against success, whether statistical or financial, are daunting. Most research projects fail. On average, according to a new study by investigators at Tufts university , it takes 12 years, from

synthesis to regulatory clearance, to bring a prescription drug to market in America (1).

For every 10,000 substances examined, 20 enter animal studies, and 10 enter clinical (human) trails - but only one gains US FDA (Food and Drug Administration) approval (2). Regardless of the statistical measurement of the odds, which is somewhat artificial and may not reflect more recent approaches to drug discovery, the overall difficulty of the tasks facing biomedical researchers has actually increased over recent years because of the complexity of the diseases that still plague us.

The average cost, which includes discovery and development, for one prescription medicine is $231 million. The reasons for the sharp increase are that the new research technologies are expensive, and the diseases for which treatments are being sought are complex. Approximately one-half of the $231 million is the total cost for work on failed compounds plus all the R & D costs, from researchers salaries to new laboratory equipment, for the one successful compound. The other half is the capitalized expenditures, or the so called opportunity cost of having funds tied up during the 12-year period of development.

1.3 Threat to American Leadership

Despite these obstacles and the financial risks they entail, the American pharmaceutical industry remains the world leader in the discovery and development of new medicines. A survey conducted by the Pharmaceutical Manufacturers Association of the country of origin of new products found that of the 1217 new single chemical entity drugs introduced to the US market between 1940 and 1988, nearly 62 percent were discovered in the United States. Switzerland ranks second with 7 percent. However, there are

two basic threats to that leadership position, as witnessed by the decline in US industry share of the world wide pharmaceutical market from 38 percent in 1985 to 33 percent in 1989. The first threat is American pre-eminence in basic biomedical research, as evidenced by the deterioration of our system of science education, the looming shortage of American scientists, and the Japanese inventors are now often first to arrive at the US patent office with basic research discoveries. The second threat is the possible regulation of pharmaceutical prices, which would reduce the potential for the profits necessary to support the research investments of pharmaceutical firms.

1.4 A prescription to Pharmaceutical Industry

Strategic alliances of different pharmaceutical companies such as renting the R & D, marketing or manufacturing resources of another company, or alternatively to hire out these resources at times of corporate hardship or even corporate merging is another way of bringing down the drug developmental costs.

The author's perspective to address these problems are the latest computer technologies such as Object-orientation, Expert systems and Controls and Systems integration. By implementing the above technologies on a massively parallel super-computer, it is possible to reduce the drug developmental time, which in turn brings down the expenses involved during the developmental process of a new drug. Patents for any new drug is being issued by FDA for approximately 17 years. limiting the average time for marketing a meager 5 years. Reducing the drug developmental time not only saves the expenditure but also increases the time for marketing. With the recent breakthrough advances in computer hardware and software, the strongly believes that the slashing in drug developmental time is possible in

the order of 15 to 20 percent. To reflect the above idea two problems have been taken, from a pharmaceutical manufacturing company, to demonstrate that the advanced computer technologies can be utilized to save time and dollars during the course of a drug manufacturing.

CHAPTER 2

LITERATURE SURVEY

2.1 Object-oriented Concepts

Object-oriented programming is gradually evolving into a popular and standard paradigm for large software application development. The need for this novel programming paradigm is rather simple. Users are demanding more functionality from their computing systems. Increased functionality and easier-to-use computing environments come at a price. They demand more complex systems, which means more lines of code to be organized, managed, and maintained.

Using conventional techniques, the code generated for a real-world problem consists of first encoding the problem and then transforming the problem into terms of a Von Neumann computer language. Object-oriented disciplines and techniques handle the transformation automatically, so the bulk of the code just encodes the problem and the transformation is minimized. In fact, when compared to more conventional (procedural) styles of programming code reductions ranging from 40 percent to an order of magnitude have been reported for a number of problems after adopting an Object-oriented style of programming.

Object-oriented programming is still relatively young field that does not yet have a universally accepted definition that can be called upon. After reviewing good amount of literature, I observed that some of the core elements that have been accepted by most of the pioneers in this area, particularly referring to OOPSLA / ECOOP conference proceedings and some important journal papers. Unfortunately, OOPSLA-92, which has been held in October-92, has also failed to standardize the basic terminology used in

Object-oriented programming. For the purpose of my thesis, I follow the OMT (Object Modeling Technique) approach, which has been developed James Rumbaugh (3).

"Object-oriented" means that the organization of software as a collection of discrete objects that incorporate both data structure and behavior. This is in contrast to conventional programming in which data structure and behavior are only loosely connected. There is some dispute about exactly what characteristics are required by an object-oriented approach, but they generally include four aspects: objects, classification, polymorphism, and inheritance.

The real world composed of entities or 'objects'. For example, NJIT, a paragraph in a document, American President, Clinton's Toyota camry, and the white queen in a chess game. Each object has its own identity. As an example, there might be many persons with the name Bill Clinton, but US president (during 1992-96) Bill Clinton is the only person on this earth. Like the real world objects, each object in a programming language also has a unique reference to deal with. Classification means that objects with the same attributes (data structure in a programming language) and behavior (operations) are grouped into a class. A class is an abstraction that describes properties important to an application and ignores the rest. NJIT, MIT, Stanford, Columbia, Harvard and Cambridge etc., are classified as graduate schools. A class *Graduate school* can have attributes: *name, address, majors offered, student names, faculty names, research departments, etc.,* and operations could be: *how many students are graduating in January-93 graduation, how much is the research funding in the year 1992, and budget for this fiscal year* etc., Any choice of classes is arbitrary and depends on the application.

Each class describes a possibly infinite set of individual objects. Each object is said to be an *instance* of its class. Each instance of the class has its own value for each attribute but shares the attribute names and operations with other instances of the class. An object contains an implicit reference to its own class; it "knows what kind of thing it is."

Encapsulation (also *information hiding*) consists of separating the external aspects of an object, which are accessible to other objects, from the internal implementation details of the object, which are hidden from the other objects. Encapsulation prevents a program from becoming so interdependent that a small change has massive ripple effects. The implementation of an object can be changed without affecting the applications that use it. One may want to change the implementation of an object to improve performance, fix a bug, consolidate code, or for porting. Encapsulation is not unique to object-oriented languages, but the ability to combine the data structure and behavior in a single entity makes encapsulation cleaner and more powerful than in conventional languages that separate data structure and behavior.

Polymorphism means that the same operation may behave differently on different classes. The *Admit a Student* operation, for example, may behave differently on *Full-time Student* and *Part-time Student* classes. A *operation* is an action or transformation that an object performs or is subject to. *Semester fee, Current GPA*, and *Credits Earned are examples of operations.* A specific implementation of an operation be a certain class is called a *method*. Because an object-oriented operator is polymorphic, it may have more than one method implementing it.

In the real world, an operation is simply an abstraction of analogous behavior, across different kinds of objects. Each object "knows how" to

perform its own operations. In an object-oriented programming language, the language automatically selects the correct method to implement an operation based on the name of the operation and the class of the object being operated on. The user of an operation need not be aware of how many methods exist to implement a given polymorphic operation. New classes can be added without changing existing code, provided methods are provided for each applicable operation on the new classes.

Inheritance is the sharing of attributes and operations among classes based on a hierarchical relationship. A class can be defined broadly and then refined into successively finer *subclasses*. Each subclass incorporates, or *inherits*, all of the properties of its *super class* and adds its own unique properties. The properties of the super class need not be repeated in each subclass. For example, *Teaching Assistant, Research Assistant, Work-study student, Full-time Employee,* and *Part-time Employee* are subclasses of *Employee*. All the subclasses inherit the properties of *Employee*, such as pay particulars and working hours. The ability to factor out common properties of several classes into a common super class and to inherit the properties from the super class can greatly reduce repetition within designs and programs and is one of the main advantages of an object-oriented system.

Object-oriented development is a conceptual process independent of a programming language until the final stages. Object-oriented development is fundamentally a new way of thinking and not a programming technique. Its greatest benefits come from helping specifiers, developers, and customers express abstract concepts clearly and communicate them to each other. It can serve as a medium for specification, analysis, documentation, and interfacing, as well as for programming.

The OMT (Object Modeling Technique) methodology uses three kinds of models to describe a system: the *object model*, describing the objects in the system and their relationships; the *dynamic model*, describing the interactions among objects in the system; and the *functional model*, describing the data transformations of the system. Each model is applicable during all stages of development and acquires implementation detail as development progresses. A complete description of a system requires all three models.

The *object model* describes the static structure of the objects in a system and their relationships. The *object model* contains object diagrams. An *object diagram* is a graph whose nodes are object *classes* and whose arcs are *relationships* among classes.

The *dynamic model* describes the aspects of a system that change over time. The dynamic model is used to specify and implement the *control* aspects of a system. The dynamic model contains state diagrams. A *state diagram* is a graph whose nodes are *states* and whose arcs are *transitions* between states caused by *events*.

The *functional model* describes the data value transformations within a system. The functional model contains data flow diagrams. A data flow diagram represents a computation. A *data flow diagram* is a graph whose nodes are *processes* and whose arcs are *data flows*.

The three models are orthogonal parts of the description of a complete system and are cross-linked. The object model is fundamental, however, because it is necessary to describe *what* is changing or transforming before describing *when* or *how* it changes.

Object-oriented approach focuses on identifying objects from the application domain, then fitting procedures around them. Although this may

seem more indirect, object-oriented software holds up better as requirements evolve, because it is based on the underlying framework of the application domain itself, rather than the ad-hoc functional requirements of a single problem.

2.2 Expert Systems

When individuals become highly skilled at making decisions in a particular area or domain, they earn the title 'expert'. An expert usually spends great deal of time solving problems and helping others to solve problems. The expert often uses educated guesses known as heuristics when solving a problem. The knowledge obtained from the expert is captured in the knowledge base. When a computer program can simulate the decision-making ability of an expert, that software exemplifies an expert system. Till late 1980s, development of expert systems have been controlled by more expenses involved over a long period of time and are limited to only research organizations. To site a few, Edward Feigenbaum and Nobel prize chemist Joshua Lederberg have developed an expert system called DENDRAL, which infers the structure of an unknown chemical compound by analyzing mass spectrographic and nuclear magnetic data. The most renowned system implemented was MYCIN developed by Bruce Brehamana and Ted Shortliffe at Stanford. MYCIN contains the knowledge of the foremost experts in the field of infectious blood diseases (4). DENDRAL and MYCIN were pioneers among expert systems and required a development time of approximately 20 man-years. John McDermott of Carnage Melon University has developed R1, (later known as XCON) which has commissioned by Digital Equipment Corporation to assist its technicians in

configuring the complex custom installations of DEC's VAX line of computers (5).

An expert system is a computer program that captures human knowledge and decision making processes. An expert system has two basic components: a knowledge base containing the information specific to the domain of the problem being addresses, and an inference engine or engines that interpret the knowledge base to make decisions and provide answers to problems that would ordinarily require a human expert.

An inference engine controls the strategies that determine how, from where, and in what order a knowledge base draws its conclusions. These inference strategies model the reasoning processes an expert uses when solving a problem. Mainly, three types of inferencing strategies are used. Forward chaining is an inference strategy that starts with known facts or data and infers new facets about the situation based on the information contained in the knowledge base. This process continues until no further conclusions can be deducted from the initial data. It is called known facts and proceeds forward to the conclusions of the session. Because the process is triggered by the initial event set, it is also referred to as data-driven or event-driven reasoning. Forward-chaining inferencing is used in applications where data is already available or when a system needs to react in real time to changing conditions. Examples are, Scheduling, Animation, or process monitoring and robotic control applications. An inferencing strategy that starts with a desired goal or objective and proceeds backwards along a chain of reasoning in an attempt to gather the information needed to verify the goal. The mode of evaluation makes backward chaining useful in applications where the required data to verify the hypothesis is broad or not yet known, as, for example, applications that make recommendations or

diagnose problems. Backward-chaining inferencing mirrors the way a human expert applies a series of tests to prove a hypothesis. The third strategy is that combines both forward and backward chaining reasoning.

2.3 Drug Life Cycle

This section briefly explains the steps involved in the pharmaceutical industry from creation of a new chemical compound in the laboratory until, for some tiny fraction of those compounds, a new drug is available in the market. This gives an idea to those unfamiliar with the process to have a better thinking of the many interrelated steps involved in this long and frequently unsuccessful effort.

Safety, efficacy, and manufacturing are the three main issues in drug development. Safety must first be proven in animals before a drug is permitted to be used in humans. Then the safety must again be proven in humans to justify long-term clinical rather than experimental use of a drug. Finally, after the drug has been approved for marketing, investigators will search for rare side effects of a drug in those patients who have used the drug. Efficacy must be proven in clinical testing of a drug for the medical purpose intended in typical groups of patients. Prior to this time, a chemical has been selected because it has been found to be "active" in some subhuman biologic screen. After success in screening, this chemical has been sufficiently tested in animals that one can infer that the drug is likely to be clinically useful in humans. Finally, a drug must be manufactured. What was once a newly active chemical created by a chemist in a laboratory must be produced in a pilot plant operation and then later manufactured in large batches with careful quality control so that each

individual dose of the medication will exhibit the standards of safety and efficacy expected.

Obviously, these developments are not made independently of each other. A drug which does not dissolve as intended may show restricted efficacy, for example, relief of pain for only 2 hours rather than the intended 8 hours. Reformulating of the medication might serve to improve the efficacy. Drug side effects may disappear if the medication is given at mealtime or at bedtime and as a result enhance efficacy. A drug which has been found to be highly efficacious and easy to manufacture may turn out on lifetime toxicity testing to cause malignant tumors in rats, thus abruptly ending a research program.

Currently one thinks of a typical duration of time from creation of the chemical in the laboratory until a drug is marketed of the order of 7 to 12 years. Safety, efficacy, and marketing are each studied for a majority of that period; however, proving safety requires most of the time. On the time scale, the life time of a drug may be divided into preclinical time, the period from discovery of the chemical to its first use in humans; clinical studies, during which time the drug is being tested in humans; and finally post-approval during which time the drug is being sold commercially.

In the preclinical stage, one must learn about the characteristics of the drug to such an extent that it makes good sense to the sponsor (pharmaceutical company) and to the Federal Food and Drug Administration to try this drug in human beings. In order to reach this stage, the sponsor must be reasonably sure of the drug as shown in short-term animal toxicity testing in at least two species. Also, the sponsor will want to know that there is a reasonable indication that the drug will have the desired positive effect as predicted by tests in animal species. Finally, the sponsor will have

to be able to manufacture test lots of the proposed medication so questions of dosage form and amount and procedure for the preparation must be resolved. Typically these experimental quantities of the drug will be made in a pilot plant operation or in special laboratories which make sufficient quantities of the drug for experimental purposes. As a by-product of this research, the sponsor will have studied the metabolism of the drug in animals to know whether it is the parent compound or some metabolite of it, will have to be tentatively answered. Doses which have been proven effective in animals will be extrapolated to the likely therapeutic human dose and then to a fraction of that dose to provide a margin of safety for initial testing.

All of this material is carefully written up by the sponsor and submitted to the Food Drug Administration (FDA) to ask for an exemption so that the chemical may be tested in humans as an Investigational New Drug (IND). This submission is usually called submission for an IND. Current regulations allow the FDA 30 days in which to deny the IND or to ask additional questions which were not adequately presented in the submission.

The clinical period is divided into Phase I, Phase II, and Phase III research. Although there is general agreement about the meaning of these phases, there are no standard definitions. Phase I studies are the earliest studies in humans, involving perhaps 20 to 40 subjects in total. Usually these persons are healthy volunteers. Questions to be answered concern the short-term toxicity of the drug in clinical pharmacology studies which provide data concerning metabolism, absorption, distribution, and excretion of the drug and which establish the safe dosage range for the drug as well as likely effects; occasionally some inferences regarding effectiveness may

be made. These studies are characterized statistically by few patients but multiple measurements per patient.

Phase II studies involve perhaps 100 to 200 patients with the disease of interest who are studied in carefully supervised controlled clinical trials. These studies show the drug's fundamental effectiveness in restricted circumstances. As a by-product, one usually obtains dose-response curves in humans for effectiveness and for side effects. Common adverse effects are detected during Phase II.

Phase III trials involve proving efficacy in typical patients. During this phase, various levels of the severity of the disease are studied and patients using various concomitant medications provide information on a more clinical and less experimental usage. The total number of persons studied in this phase rarely exceeds 3000 patients and frequently is much smaller.

During this phase, efficacy is proven conclusively, and safety with the exception of rare adverse effects is also demonstrated. A sponsor must notify the FDA of any severe adverse effects, which implies close monitoring of the data as well as statistical tests of various results from clinical tests of safety.

All of the data on the three clinical phases with respect to human research is submitted as part of the new drug application (NDA). This submission includes the original case reports on each of the patients. This case material forms the great bulk of the NDA submission.

The NDA will contain results of the animal pharmacological and toxicological studies as well as the human pharmacology studies and the "adequate and well-controlled" clinical studies demonstrating the drug's efficacy and side effects. Data from long-term animal toxicity testing - for example, lifetime studies in rats lasting about 2 years -- are included in this

submission. All of the manufacturing information must also be contained in the submission indicating all of the ingredients that go into the drug and whether the ingredients are active or inactive, included for the purposes of taste, color, physical characteristics of the tablet, or packaging, as in the case of a capsule.

The total submission can be easily be 500 volumes, each one upto 2 inches thick. The period of preparing an NDA by the sponsor, reviewing the NDA by the FDA, and then reaching a resolution about points for which there is insufficient information for the FDA reviewer to sign off that part of the submission often involves several years. By law, the FDA must respond to a submission in 180 days. An important part of the submission and of the final NDA approval is the precise labeling to be used with the drug. In the labeling, the many thousands of pages of research are compressed into fewer than 2 dozen paragraphs which summarize the research with the drug.

After the drug has been approved by the FDA, the sponsor is permitted to manufacture and sell it. During this postmarketing period, usually called Phase IV, a number of other questions are usually answered. These questions concern relative efficacy of the new drug compared to others for the same or similar purpose. Also likely to be answered is the question of the effects of prolonged use of the medication and whether any rare side effects can be discovered.

2.3.1 Screening of Compounds

The first step in the evolution of a drug is the testing of a newly created chemical compound in some sort of biological screen designed to separate those chemicals which have desired effects. In designing such a screen, one

must keep in mind that of all chemicals created, far fewer than 1% will ever pass through various stages of showing sufficient efficacy and safety in test animal systems to ever be given to any human. This realization implies that any worthwhile system must rapidly and economically eliminate inert compounds. Then a greater proportion of the test effort can be spent on those few compounds that have been shown to be of interest. Obviously, a drug tested on only three mice or two dogs, even if it could later be shown to be of great therapeutic value, might through random variation not show activity in the small number of test animals. This act of balancing the risks of missing a worthwhile drug versus excessive testing of useless chemicals is one of the most important roles of a statistician in the pharmaceutical industry. The opportunity for saving resources for the research facility are truly prodigious. In many of the other roles of a statistician, the statistician asks for additional expenditure of resources; this particular role is one in which the statistician can demonstrate how statistical thinking creates savings.

We note that a negative activity, for example, a drug which stimulates ovulation when one is trying to suppress it or which raises blood pressure when one is trying to lower it, may be an important lead to the pharmacological goal being sought. We must also note that a biological screen designed to find an antihypertensive drug is quite unlikely to reveal a drug which is a potent stimulator of ovulation, although a careful researcher might serendipitously note that it has potent hypnotic effects if two animals promptly fall asleep.

The statistical problem in screening chemicals for potential new drugs is to determine how many animals in each screen should be tested with each chemical compound. Should the screen be a simple one-stage screen,

or should there be several levels of success that must be passed before the chemical is ready for additional testing ? Should an effect be statistically significant before the chemical is tested in later screens, or is an "indication" good enough ? These and numerous other statistical questions must be resolved before any routine screen is established and used.

The concept of a "screen" is that of a mesh that will hold back most of the useless chemicals and permit through those that are more likely to be useful. The actual screen consists of a chemical measurement, or physiological reaction, or behavioral reaction in some cellular or organ or whole-animal system that has been shown to be a mimic of some desired action in humans. Obviously, screens are specific to the desired outcome. Frequently a number of different screens are being run simultaneously at any given organization. Usually, a particular company specializes in some smaller number of fields rather than covering all potential medical aspects.

Frequently, the effect of drugs can be best tested by using an animal or part of an animal as a test system with the characteristic that increasing doses will produce increasing effects. We call this type of measurement a bioassay. Bioassays are particularly good ways of telling how potent a new drug is relative to standard drugs. Bioassay procedures are particularly important in the preclinical phase of drug development, but also have great importance in further animal and human testing during the clinical phases of research and in quality control.

An area that is growing rapidly in pharmaceutical research is the area of animal pathology and toxicology. Procedures that were in some laboratories less formal are now being formalized in response to rules and regulations about "good laboratory practices." One part of the good laboratory practices refers to the recording and analysis of toxicity data. In

addition, there is activity on optimal experimental designs to be used in the practical world of toxicity testing. In that world, animals die for causes unrelated to the experiment, particular samples are sometimes lost through technical error, and practical matters of cost limit the size of experiments. Thus, what is needed are experimental designs that are at once powerful (in the statistical sense of being able to observe a difference if it is truly there) and robust (in the statistical sense that if assumptions, such as a particular variable being normally distributed, are not met, the analysis is still valid, and in the laboratory sense that loss of a few test animals or samples should not invalidate the experiment).

2.3.2 Toxicity Testing

There are numerous methods for testing toxicity of potential drugs. The first major factor is whether the test is to be of acute exposure or chronic exposure. If of acute exposure, then one can administer a single dose to an animal and find out whether there are any apparent toxic effects. Actually, several different doses are administered. Alternatively, a small number of doses may be given and tested for toxicity. In chronic toxicity test, the drug is given on a continuous basis, perhaps over the lifetime of the test animal. Numerous unsolved problems are involved with this procedure. If one is simply trying to determine the effects on a test animal, the above procedure is reasonable as it stands, though limited by the problems of sampling error, size of experiment, and so forth. If, however, one is interested in using a test animal as a surrogate for humans, then it is implicit, that the test animal handle the drug biochemically and pharmacologically in a manner similar to the human if not identical. Thus, a test animal which metabolizes a drug in a different manner than does the human is not likely to be a valid surrogate.

There are many statistical and practical problems in these tests. Short-term acute experiments can be done during the preclinical testing phase. Lifetime experiments, on the other hand, require at least 2 years of observation in rats, a frequently used test animal, and then perhaps another year for finishing the experiment, preparing the numerous slides, reading and evaluating the slides, and producing a statistical analysis of the resulting data. Thus, a chronic rat study can be thought of as requiring of the order of 3 years in duration. Practically suggests that such studies should be done only after one is reasonably sure that the drug is going to be used in humans. Statistical problems involve mortality and sampling. It would be reasonable to schedule a certain number of animals to begin a study and then to sacrifice a fixed randomly selected proportion at each of several checkpoints in the study. Unfortunately, some animals may die from "natural" causes or there may be laboratory problems assumed to be unrelated to the drug or exposure. Thus, any statistical design must be robust with respect to these anticipated untoward effects.

Questions about optimal number of animals are also of great importance. Since animal experiments for toxicity are extremely expensive, they should be done in the most efficient manner possible. The statistician can save pharmaceutical companies a great deal of resources (employee time, animal space, and money) with an optimally designed experiment; of course, concern for sensitivity always dictates as large an experiment as possible.

More rapid and inexpensive tests for carcinogenicity have been developed based on tests for mutagenicity in bacterial systems and other biological systems. These tests depend on mutagenicity being a predictor for carcinogenicity, which has been amply demonstrated for groups of

chemicals but is not necessarily true in any individual case. More years of experience with these tests are required before their role in the pharmaceutical industry will be well understood.

2.3.3 Clinical Testing

Finally, after drugs have been tested extensively in experimental animals and the FDA has issued an investigational new drug (IND) exemption, the drug can be tested for the first time in Phase I human trials. Choosing the proper doses to use in humans is an interesting statistical problem. One assume that on a fixed number of milligrams of drug per kilogram of body weight, the effects of the drug are constant. For anti-cancer drugs this is frequently amended to use the unit of milligrams of drug per square meter of body-surface area of the animal. In these or other projections (frequently extrapolations, since the experimental animals are much smaller than the humans about to be tested) there is ample room for more statistical work to predict what dose in humans will have the same effect as a dose shown to have been effective in an experimental animal. Differences in metabolic processes, in disease processes, in species - specific modifying factors, in diet and nutrition, and other factors are such that some of the experimental data in animals may be totally inappropriate to use in such a projection. Obviously, portions of this problem are beyond the role of the statistician; however, the statistical problem involves making estimates of the effective dose in humans that are not unduly affected by meaningless data points from a particular animal species.

Finally, the eventful day arrives and the drug is used for the first time in humans in what is known as a Phase I trial. Initial doses are chosen to be especially safe and usually include placebo controls. The experimental

program in humans reproduces that which was done in animals. First, acute single-dose studies, then short-term studies of more than one dose, and finally studies of several different doses on a longer-term basis are done. The goal of the initial studies is to find out about the toxicity of the drug in humans. What side effects if any are found in persons taking what is thought to be a large dose of the drug ? What are the characteristics of these side effects ? In order to be as certain as possible about any adverse effects, each volunteer or patient is given an extensive physical examination before taking the drug and then again after taking the drug, and for longer-term experiments at various intervals while taking the drug. These examinations include liver function tests, kidney tests, blood chemistry, urine chemistry, eye testing, and various other studies designed to tell more about the systems which might be adversely affected by the drug. An extensive battery of laboratory tests is usually included in these initial clinical pharmacology studies. Most of these tests will not be necessary in later studies when more is known about the clinical pharmacology of the drug.

The statistical characteristic of these initial studies is that they include a large number of observations on a small number of persons. Thus, the ability to be precise in characterizing the effect of the drug on the handful of persons who have taken it is quite good, based on repeated measures / correlated observations in the study person. On the other hand, the small number of such subjects in these early trials means that inferences about the next persons to take the drug are subject to large prediction errors.

Patients who are studied in a clinical trial are supposed to be representative of those persons who will later take the drug. Some recent studies at the University of Rochester School of Medicine and Dentistry

have made apparent how much selectivity is involved concerning the patients who actually take part in modern regulated pharmaceutical research.

A fairly common trial design is one in which the patient receives two or more different treatments in a pattern that balances the order of treatment and allows each patient to be compared with himself or herself.

Each different class of drugs involves special problems with respect to doing clinical trials. For example, antibiotics generally involve short-term trials, while drugs for the cardiovascular system involve tests over months and even years. Trials with geriatric patients differ from those with persons in the middle of life.

2.3.4 Placebo effects

In order to know the effects of a drug, one must separate the pharmacological effects from the medical aura effects. The accepted way to do this is to compare the active drug with a pharmacologically inert substance. The substance is designated a *placebo* from the Latin for "I shall please." The placebo is well known to be a good analgesic; it cures or reduces headaches, backaches, postoperative pain, etc. A vast catalog of effects could be cited, but one interesting case might prove the point: about one-tenth of all women who were anovulatory ovulated following administration of a placebo under study conditions.

Side effects from placebo therapy are even more extensive than the list of conditions that are aided by placebo. Headaches, nausea, vomiting, dizziness, and so forth have all been caused by the administration of placebos. One study reported the following conclusion: "Virtually no toxic effects were reported from 'known' control pills containing lactose, but the

exactly similar 'unknown' control pills, which were thought by the subjects to contain iron, produced as many side effects as the pills which did, in fact, contain it."

2.3.5 Documentation

Many potential problems arise because a statistician in the pharmaceutical industry produces data that are to be evaluated by other statisticians, particularly those at the FDA. Anyone who has ever tried to review a major work of another statistical analyst realizes that there are important points to be resolved. The first major point concerns the ability to follow a complex analysis, since most statistical work is only reported in skeletal outline. One needs to be able to follow exactly which patients were included in the analysis. Were all data points used, or were some outliers rejected for valid reasons ? Are the statistical methods used standard methodology, or are they subject to particular artifacts ? Since the pharmaceutical statistician has the company side (proving that the drug is better than the comparison), which is advantageous, the pharmaceutical statistician must frequently be certain that the conclusions drawn would be reported even if one was "antagonistic" to the drug. Thus besides the usual issues of doing the proper statistical analysis, there is also the problem of convincing the reader, especially a skeptical reader, of the correctness of the statistical conclusions.

Academic institutions teach their students how to analyze a study, but rarely provide much instruction in documenting results to put the records in an orderly fashion and to include sufficient details to convince another of the correctness of the analysis. This type of documentation is

becoming more important as other industries find themselves trying to convince potentially skeptical audiences.

Pharmaceutical statisticians are frequently responsible for putting together thousands of different numbers into documents which will be used in analysis and will be reviewed for accuracy. As an example, the investigating physician may have recorded data incorrectly. Avoiding errors and finding the errors committed by others is a distant challenge. Methods of quality control in handling vast quantities of data are essential in the pharmaceutical industry.

2.3.6 Manufacturing

Everyone is familiar with the concept of thousands of tiny capsules or tablets being carefully produced by a pharmaceutical manufacturer. Obviously, with a little reflection we realize that this sort of production requires a tremendous amount of development before it becomes reality. The chemical that has been tested in animals and found to be active must be given to humans. If the chemical is to be given in tablet form, the tablet must dissolve, typically in the stomach of the person taking the medication. The tablet must not break up into chunks in some people and dissolve neatly in other people. Therefore, other ingredients must be added to the tablet to give it proper disintegration and dissolution characteristics to hold the tablet together before it is taken, to be less affected by temperature and humidity, and to yield various other favorable properties. This is a part of the field of drug formulation.

Another part of the formulation process involves the human reaction rather than physical reactions. For example, what does the tablet taste like ? Perhaps a sweetener must be added to avoid a bitter taste and something

must be added to prevent the tablet from feeling chalky. Other ingredients will be added to change the color of the tablet. In the case of capsules, a gelatin will be used with the addition of food coloring to give the capsule a particular identifying color or set of colors.

More than one dosage size will exist for many pharmaceuticals, even in the early stages of testing. Thus a second problem is to create different doses of the same chemical, for example - a 10-mg and a 25-mg tablet, for early studies, especially for testing dose response in humans. If one is going to test dose response in a blind trial, then there must also exist a placebo for the drug. The placebo must look and feel exactly the same as the drug and should also taste the same. Thus one is faced with the formulation of not just one product, but often several sizes as well as comparable placebos.

After the initial formulation work is completed, the drug is tested in humans in the original Phase I and Phase II studies. During these early studies some problem with the formulation may be discovered. Meanwhile, pilot plant preparation of the drug is being worked on. At later stages full-scale manufacture of the drug will be planned and accomplished. Required changes in the drug at any of these stages will require a restart of many of the formulation steps. Checking procedures and other steps preparatory to a formal quality control program must also be worked out.

The statistician works with other employees in the quality control field to be certain that the drug is manufactured to the best standards possible. This field is particularly active because of new FDA regulations entitled "CGMP - Current Good Manufacturing Practices in Manufacturing, Processing, Packing, or Holding the Drugs." This will be a very active area in the pharmaceutical industry for many years to come.

A practically important and interesting question concerns the stability of a drug. For how long after the drug is manufactured can it be considered clinically adequate ? These time periods are typically measured in years. Thus, we have the choice of waiting predict (extrapolate) what will happen.

2.3.7 Other Issues

A classical problem is that of multiple comparisons, which must be considered when there are more than two measurements on each subject simultaneously. If a drug may have 1 of 4 activities and we wish to claim only 1 of them, then we must take account of the fact when setting a "0.05 level" that there are 4 random chances that the drug will be shown to be effective rather than just 1. In a similar manner, if there are 10 chemicals competing to become a drug, the possibility that at least 1 of them will be better than placebo by chance is certainly enhanced by the fact that it is 1 of 10. Again, the probability levels must be properly adjusted.

CHAPTER 3

OBJECTIVE

In recent years the computer science community has shown increasing interest in the Object-oriented design paradigm. The conventional procedural design model utilizes functional decomposition to identify the set of tasks required to solve a problem. In contrast, the object-oriented approach seeks to identify the objects of a domain and their behaviors. Object-orientation is the new way of thinking about problems using models organized around real-world concepts. The fundamental construct is the object, which combines both data structure and behavior in a single entity. The key mechanisms are classes, encapsulation, inheritance and polymorphism . Object-oriented models are useful for understanding problems, communicating with application experts, modeling enterprises, preparing documentation, and designing programs and databases. Objects are entities which have state and behavior. The real world is composed of entities or objects. For example, people, cars, buildings, pharmaceutical industry, and earth etc., Each object has a distinct set of properties (i.e., a state or set of data). Furthermore, there is a set of meaningful operations or actions that can be applied to each object. Thus the object car would contain a description of car's attributes such as its make, color, and license number, plus some associated behaviors such as drive forwards, drive backwards or stop. This form of object recognition is equally apparent in the pharmaceutical domain, and gives rise to objects such as a drug - Tylenol, a

patient - Ms Smith, a problem - Sinus, a side effect - drowsiness, a research group - Dr. Bill's group, locations tested - Japan, Sweden, and USA.

The manner in which an object integrates both state and behavior is termed as encapsulation. The concept of encapsulation restricts access to the internal state of an object, allowing only a pre-specified set of operations to act upon that object. The object is abstracted in the sense that we are concerned only with its external behavior, not the internal details of its structure. This separation enables an objects interface to the mapped to several different implementations. It also permits the internal representation of an object's state to be revised without affecting other objects which communicate with it, provided its interface remain unaltered.

Given the countless number of individual objects within the world, reasoning about single entities becomes complex and cumbersome. Classification is an important human activity which strives to construct abstractions describing sets of objects, rather than just individual objects. This grouping together of objects enables us to assume some basic similarities (of both state and behavior) between individual members of the group. For example, all pharmaceutical industries have a name, a set of drugs, a manufacturing plant, a set of sales groups. In object-oriented terminology, a set of similar objects described by an abstraction, is called class. The definition of a class interface is often referred to as an abstract data type. Its internal state may be termed as private data, whilst its available operations are called methods or functions.

In the real world we often classify objects in a hierarchical fashion. Objects may be grouped into classes, which are then grouped into more general classes. The concept of inheritance describes this hierarchical classification process. It enables the definition, and by implication the

implementation of a class to be based upon that of an existing class. Thus, if we have defined the basic class *Pharmaceutical Company*, we can inherit its attributes into the new class *Manufacturing*, which can be further inherited into the new classes *Inventory, Sterile Products, Liquid Products, Tablets & Capsules and Packaging* extending their specialization as necessary. In object-oriented terminology the base class may also be called the parent or subclass, whilst those that inherit from it are termed the child or subclass. Inheritance supports extendibility within a system, i.e., enables basic class concepts to be extended. It seeks to realize the goal of constructing software systems from reusable components.

A class definition is a template from which representations of individual objects can be created. Such an object which results from the instantiation of this definition is termed an instance.

Objects communicate via messages. A message sent to an object will invoke a particular operation belonging to that object. The distinction between a method or a function and a message is subtle but important. For example, the message "*Find Side Effects*" applied to a *drug* object will give some side effects, for which effects the *drug* object is not formalized. However, each individual drug suffers from a different side effects, and so we would expect the type of modifications applied to each drug vary accordingly. In the object-oriented paradigm, the capability of each member of a set of objects, to respond in a different manner to the same message is termed *polymorphism.*

Let me start first the object modeling of a pharmaceutical industry by identifying different classes in this system. For example, *Pharmaceutical Company, President, CEO, Scientists, Products, Drugs, Employees, Research, FDA Rules, Manufacturing, Packaging, Sales, Profits,*

Accounts, Finances, Human Resources, Company Locations, Company Subsidiaries, and so on. Next step is to identify the class hierarchy by abstracting the commonalty and further to determine what operations each class is responsible for performing and what knowledge it should maintain. For example, *Manufacturing* class can have subclasses *Pharmaceutical Products Manufacturing , Animal Products Manufacturing, Diagnostic Equipment Manufacturing, and Cosmetic Products Manufacturing.* After several years, if another unit *Bio-tech Products Manufacturing* is to be added, by simply adding *Bio-tech Products Manufacturing* class as a child class to the *Manufacturing* class, the entire system can be modified by reusing the *Manufacturing* class. The attributes for *Manufacturing* class could be *current state of inventory, location of plant, product names, employees working, budget allocated for the fiscal year, sales, profit from this unit, sales forecast,* and *return on investment for this manufacturing unit. Pharmaceutical Manufacturing* class can have child classes *Sterile and Liquid Products Manufacturing, Tablets and Capsule Manufacturing,* and *Antibiotic Products Manufacturing.* The attributes in *Sterile and Liquid Products Manufacturing* class are *product code, lot number, batch card, process lines, manufacturing equipment, what are the standard operating procedures to manufacture the current product, what are the FDA guide lines for the current product, show me current month's production scheduling, do we have raw materials to start the manufacturing of tomorrow's product, how many man hours are required to manufacture 1.5 million of 5 ml ampules, show me current state of temperature, humidity, and pressure in room #4432, how many robots are working now,* and *start another robot to handle unforeseen product demand.* Thus, object model describes the static data structure of objects, classes, and their relationships

to one another. The content of an object model is a matter of judgment and is driven by its relevance to an application. An object is a concept, abstraction, or thing with crisp boundaries and meaning for an application. All objects have identity and are distinguishable. An object class describes a group of objects with common attributes, operations, and semantics. Once an object model is available, even simplified one, the model can be compared against knowledge of the real world or the desired application, criticized, and improved.

An object model describes the possible patterns of objects, attributes, and links that can exist in a system. The attribute values and links held by an object are called its *state*. Over time, the objects stimulate each other, resulting in a series of changes to their states. An individual stimulus from one object to another is an *event*. The response to an event depends on the state of the object receiving it, and can include a change of state or the sending of another event to the original sender or to a third object. The pattern of events, states, and state transitions for a given class can be abstracted and represented as a *state diagram*. A state diagram is a network of states and events, just as an object diagram is a network of classes and relationships. The *dynamic model* consists of multiple state diagrams, one state diagram for each class with important dynamic behavior, and shows the pattern of activity for an entire system. Each state machine executes concurrently and can change state independently. The state diagrams for the various classes combine into a single dynamic model via shared events.

Dynamic modeling determines the ways in which objects collaborate with other objects in order to discharge their responsibilities throughout the lifetimes of objects. For example, to find the status of buffer stock, the *manufacturing* class should send a message and get back the answer from

inventory class. During the life time of drug object, the product undergoes innumerable states which are activated by innumerable events. Even an attribute like *stock value* in *Pharmaceutical company* class changes its state everyday with the way the company is functioning. The dynamic model represents control information: the sequences of events, states, and operations that occur within a system of objects. Like the object model, the dynamic model is a pattern that specifies the allowable scenarios that may occur. The realistic dynamic model of pharmaceutical industry example takes several man years to draw the acyclic directed graph for all of the object models with its states and events.

The functional model describes computations within a system. The functional model is the third leg of the modeling tripod, in addition to the object model and the dynamic model. The functional model specifies when it happens, and the dynamic model specifies when it happens, and the object model specifies what it happens to. The functional model shows how output values in a computation are derived from input values, without regard for the order in which the values are computed. The functional model consists of multiple data flow diagrams which show the flow of values from external inputs, through operations and internal data stores, to external outputs. The functional model also includes constraints among values within an object model. Data flow diagrams do not show control or object structure information; these belong to the dynamic and object models.

An example of the functional model from pharmaceutical industry example is life cycle of a drug product. Irrespective of any specific drug object, a compound has been taken and studied on animals, healthy humans, and patients and then based on the statistical results of the success ratio versus cost of the development the price of the drug will be

decided and finally marketed. The generic procedure of manufacturing is also considered as a functional model for the drug manufacturing. There might be some constrains to be followed according to the object model of drug object.

The object model, dynamic model, and functional model have been explained by taking an example of a typical pharmaceutical industry. Though expert systems are so powerful, their limited success can be attributed to the expenses involved in the large scale application development. On the other hand, object-oriented programming is gradually evolving into a popular and standard paradigm for real world application development. By integrating these two techniques, the author strongly believes that it is possible to save millions of dollars in drug research and manufacturing by using an object-oriented expert system for a typical pharmaceutical industry. The objective of this thesis is to apply these concepts to a realistic problem in a typical pharmaceutical manufacturing plant and further to show that "*Object-oriented Expert System Technology*" will solve almost all the problems that pharmaceutical industries are facing.

CHAPTER 4

MINIMIZING THE WASTAGE OF INTERFERON

Interferon is a well known bio-product and has been widely used in almost all the pharmaceutical industries. Interferon is one of the most active ingredients and is derived from white blood cells of a healthy human being. Using DNA synthesis, quantity of Interferon is multiplied and has been actively used in the manufacturing of Cancer and AIDS drugs. One liter of Interferon costs $15,700.00 and is available in small quantities. The interesting property of Interferon is its dynamic degradation of assay values with respect to time. Once the bottle is opened, Interferon gets obsolete after fourteen days. After consuming the required amount from a fresh bottle, if the remaining quantity is not being used within the next fourteen days, it is going to be wasted. Because of this dynamic character of Interferon, It is very difficult to choose the best available combination of bottles from either one lot or two lots according to the recipe formulae given in the batch card. The basic idea is to select the best bottle combination so that the remaining quantity, after the consumption of required amount from the chosen bottles, would be wasted if it is not used within the next fourteen days. In the worst case, even if there is no product to be manufactured within the next fourteen days, the best bet is to identify the combination of bottles, so as to give the least wastage among possible combinations. An attempt has been made to write a computer program not only to achieve the above objective but also to provide a feature to incorporate future products to the product database.

A strategic survey has been made to find out the best computer technology, which is more suitable to this kind of problem. Recently, the computer science community has shown increasing interest in the Object-oriented design paradigm. Expert systems have already proved its power by computerizing the decision making scenarios and using knowledge bases in doing so. Its limited success is due to the expenses and time involved in the complex and large scale application development. On the other hand, Object-oriented programming is becoming popular for its robustness in real world application development. By integrating both these powerful techniques, an attempt has been made to develop an object-oriented expert system to find out a solution to the above mentioned problem.

The following specifications have been taken into consideration in choosing the relevant software to implement this problem.

- Need to have a database to store the products
- Should have the best user interface to
    - select the current manufacturing product among the product database
    - be able to add future products to product database
    - ask the computer to give its recommendation
    - show all the calculations
    - provide on-line help
    - be able to enter quantities of all the bottles and assay values of all the lots
- To change the display screens dynamically
- An inference engine to process the knowledge bases
- To display how the inference engine is checking the combinations

- To represent all the recipe formulae as knowledge bases

Level5 object has been selected as a software development platform with MS windows as an user interface to implement all the above features. Level5 Object is an Object-oriented Expert system development shell. It creates some system classes, when ever an application is started with Level5 Object. To know more about system-defined object classes and system-defined object instances, refer to the Level5 object software reference manual. System-defined objects are a set of predefined objects that Level5 automatically creates in all applications. User-defined objects are those that a programmer creates during application development and are specific to each individual application. In the present problem of "Minimizing the wastage of Interferon", twelve user-defined classes have been designed and two add-on classes (reusability) have been considered. The following are the objects, its attributes, and its operations, which have been explained clearly in appendix.

1. CLASS Beeper (add-on object)

   beep

2. CLASS Calculations

   find first lot volume

   find second lot volume

   do optimize

3. CLASS Database Actions

   insert product

   delete product

4. CLASS dB3 Roferon1 (inherited from system-defiend class dB3)

   prod_code

   form_assay

prod_name

5. CLASS Domain

a,b,c,d,e,i,j,k,l,m,n,o,p,q (counters to increment in loops)

start

record processed

help1

help two

min wastage

current lot bottle

wastage

best lot

best bottle one

best bottle two

best bottle three

best bottle four

best bottle five

recommend

smallest quantity bottle

best bottle

small quantity bottle

current two lots

best first lot

calculation

make beeps

6. CLASS Find Best Bottles

best one lot bottles

best two lot bottles

7. CLASS Get Data

    quantity 1

    assay 1

8. CLASS Lot Bottles

    lot one bottles

    lot two bottles

    lot three bottles

    lot four bottles

    lot five bottles

    lot six bottles

    lot seven bottles

    lot eight bottles

    lot nine bottles

9. CLASS One Lot

    lot 1

    volume 1

10. CLASS Optimize

    first lot

    second lot

    third lot

    fourth lot

    fifth lot

    sixth lot

    seventh lot

    eighth lot

    ninth lot

11. CLASS Pictbtn

location

picture

pressed picture

disabled picture

focus picture

selected

attachment

enabled

12. CLASS Select Product

prod_code

form_assay

prod_name

13. CLASS Sum Bottles

sum lot bottles

14. CLASS two Lots

first lot 1

second lot 1

third lot 1

fourth lot 1

fifth lot 1

sixth lot 1

seventh lot 1

eighth lot 1

ninth lot 1

In the above classes, data types of attributes and purpose of methods have been explained in appendix. In Level5 object, there are two kinds of object instances, user-defined and system-defined. User-defined instances

are required in cases, where certain attributes of classes are to be initialized, or where some attributes expect data from end-user. System-defined instances are the instances required during the run time of the application. The following are the user-defined instances.

1. roferon 1 (CLASS dB3 Roferon 1)
2. the domain (CLASS Domain)
3. get data 1 (CLASS Get Data)
4. lot bottles (CLASS Lot Bottles 1)

The dynamic modeling of this problem has been explained using the figures in the following pages. Figure 5.1 is the first screen appears when the user starts the application. The user is expected to enter the quantities of Interferon available in different bottles of different lots in the corresponding prompt boxes, which are shown with sample values 20, 1, 5, etc., These values are read by the instance *lot bottles 1* of CLASS Lot Bottles 1. Assay values of different lots, obtained from quality control department, are supposed to enter in the boxes with hashing background. Sample values are shown as 162000000, 111000000, etc., Assay values are received by *assay 1* of *get data 1* instance. What ever the product is clicked from product database, it appears in the *PRODUCT NAME* box and its corresponding ASSAY VALUE USED IN FORMULA is pulled from the database and shown in the corresponding box. These values are stored in the attributes of *roferon 1* instance of *dB3 Roferon 1* CLASS. New product can be placed into database by pressing the INSERT push button after filling the PRODUCT NAME and ASSAY VALUE USED IN FORMULA boxes. When START push button is pressed, Figure 5.2 appears showing which combination of bottles and lots it is inferencing and its corresponding wastage. As the minimum wastage decreases, the corresponding bottles

and lots keeps changing. Finally it comes to a halt, with the least wastage using all the possible combinations of lots and bottles. User can then pick-up those bottles confidently and can be used in the manufacturing of that drug product. Figure 5.3 is the result of clicking the HELP push button, which explains to a naive user about the handling of this screen.

Instance *the domain* of *Domain* CLASS has some methods, which are generic and can be applied to any object in order to execute specific functional purpose. Even dB3 CLASS has some methods, which can be applied to any instance of that class. Operations like insert record, delete record, append record, read, write, read shared, and write shared etc., All these functional operations are inherited by the instances of its child classes, without writing code individually.

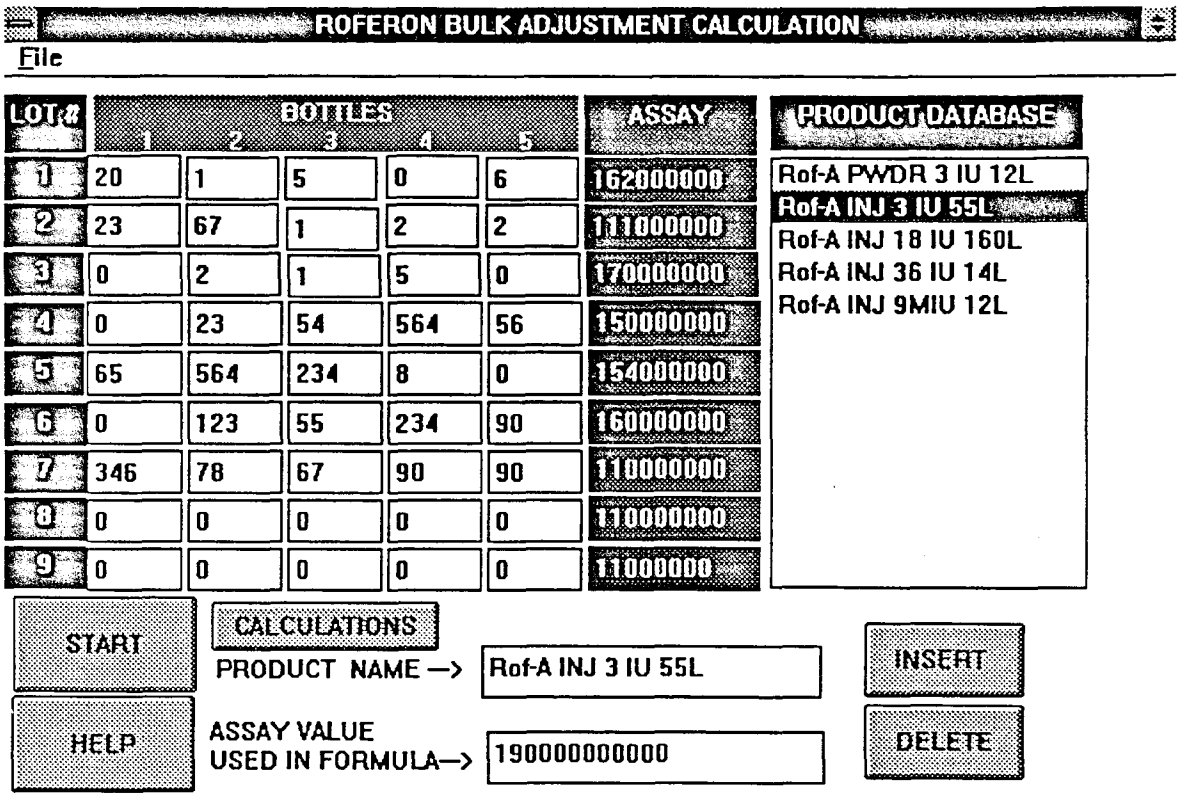

Figure 5.1 User enters the quantities of Interferon, selects the product, and pushes START push button

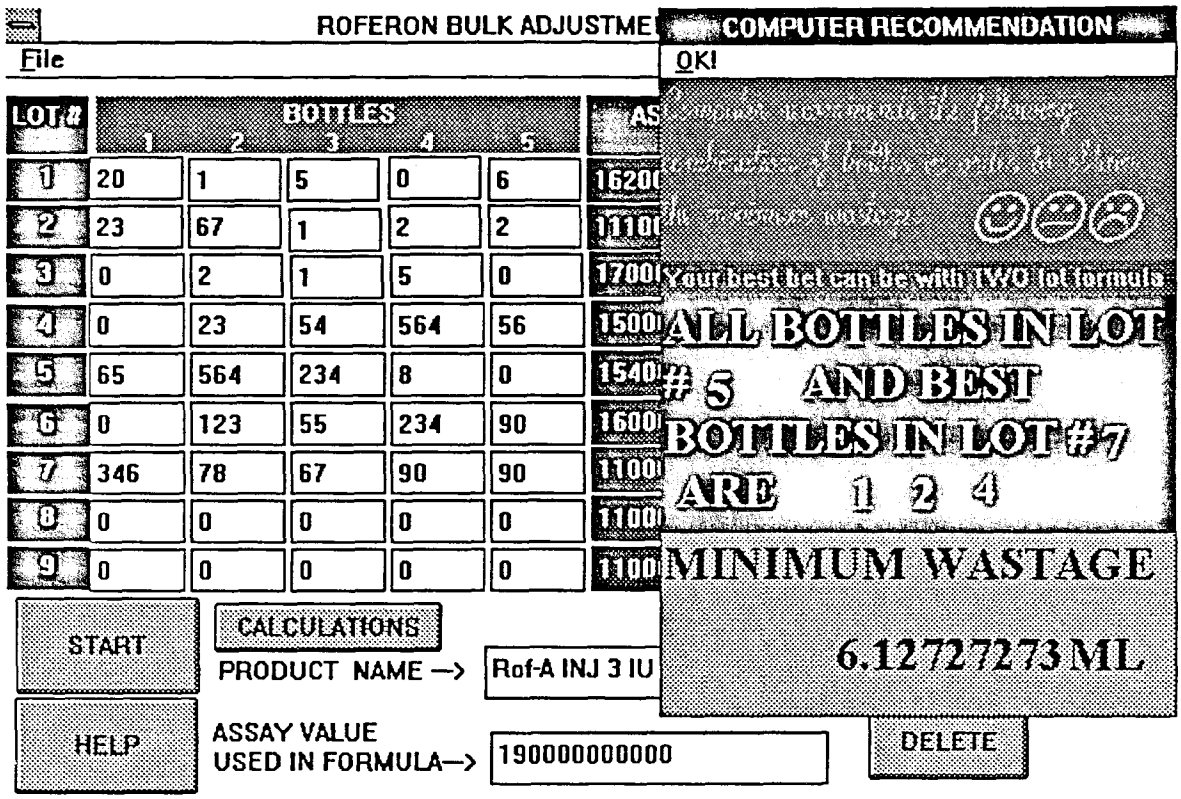

Figure 5.2 Computer inferences the knowledge bases and gives its recommendation

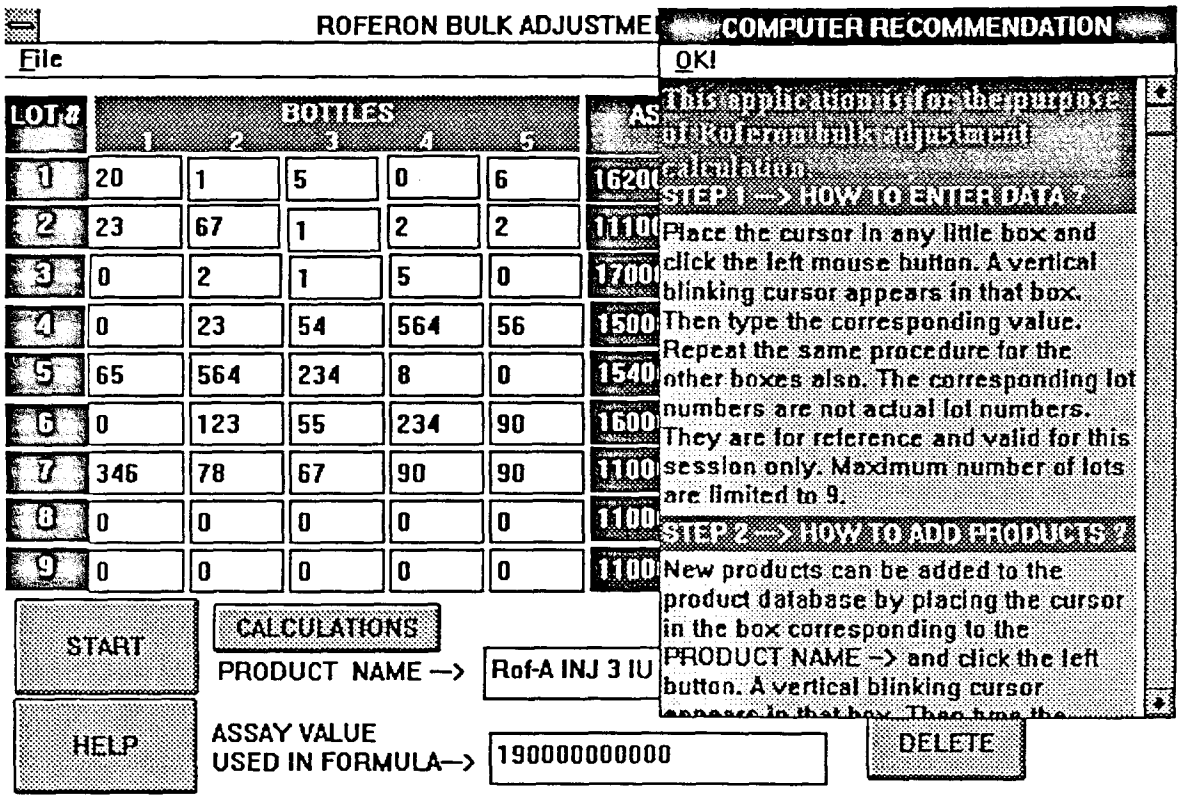

Figure 5.3 On-line help

CHAPTER 5

CONCLUSIONS AND FURTHER RESEARCH

New Jersey is predominant to attract various major pharmaceutical industries. To name a few, Hoffmann-La Roche, Merck, Ciba geigy, Sandoz, Scharing, Wellcome, Bristol-Mayers Squibb, Johnson and Johnson, and Interferon, Inc. etc. are some of the multi-billion dollar industries located in New Jersey. All the pharmaceutical industries are controlled by Food and Drug Administration under stringent guidelines comparing the regulations in other countries. Any pharmaceutical industry is required to manage a tremendous quantity and diversity of documentation, several databases and knowledge bases in order to do research and product development, statistical analysis and to track product information through its entire life cycle, manufacturing, warehousing, sales and distribution. The burden of capturing, compiling and managing this huge information, in many cases, has prohibited companies from utilizing it actively to concentrate on the development of new products and to improve further business.

It is interesting to note that the range of expenses involved in developing a drug, until marketing, is 100 to 400 million dollars during a time span of 7 to 12 years. Patents for any drug is being given by FDA for 17 years only, limiting the time for marketing a meager 10 to 5 years. Reducing the drug development time not only saves developmental costs but also increases the time for marketing. With the recent radical developments in computers science, the author strongly believes that the reduction in drug development time is possible in the order of 20 to 30

percent. Among the potential benefits which can be realized by transferring the latest computer technology into pharmaceutical industries, are:

- Increasing the amount of time for scientists, engineers, technicians and operators to spend more valuable tasks, which are close to their expertise than information administration (some estimates indicate administrative activities account for 50 to 80 % of employee activity),
- Providing easier access to historical records for reference in current work,
- The ability to analyze large volumes of information for diverse business functions, and
- Utilizing computers to process knowledge bases and to control mechanical equipment.

Today, information in the pharmaceutical industry is managed most often in a format designed for regulatory business aspects, rather than those of research, new product development or manufacturing. A typical pharmaceutical company consists the following systems.

- *Medical Research* : Medical experimentation, Toxicology Experimentation, Stage III trails, and Research records.
- *Drug Research* : Molecular modeling, Patent information and applications, IND (Investigational New Drug) submittals, Specifications, and Research records.
- *Pharmacy Research* : IND submittals, Research records, Specifications, and Formulations.
- *Drug Development* : Phase I, Phase II, Phase III, Phase IV trails, Statistical analysis, Process development records, Demonstration lot operating procedures, Demonstration lot batch records, NDA

(New Drug Application) submittals, Stability test records, and Packaging development.

- *Facility Engineering* : Plant designs, HVAC, Factory layout, Process design information, Facility validation, Safety engineering, and Security systems.
- *Bulk Manufacturing* : SOPs (Standard Operating Procedures), Production batch records, Maintenance records, Quality control, Environmental records, Facility validation records, Facility inspection and certification, Automation, CIM (Computer Integrated Manufacturing), Robotics, and JIT (Just-In-Time).
- *Dosage Form Manufacturing* : SOPs, Production batch records, Packaging documentation, Maintenance records, QC, Automation, CIM, Robotics, and JIT.
- *Sales and Administration* : Policies and procedures, Personal records, Accounts, Employee records, Advertising, and Sales forecasting.
- *Drug Manufacturing Problems* : Product recalls, and Problem lot analysis.
- *Information Systems* : Communications, Networks, Databases, Software and Hardware, and On-line library references.
- *General Issues* : Corporate policies, Employee benefits, General procedures, Publications, Periodicals, FDA regulations, OSHA regulations, Patent records, FDA submissions, Environmental regulations, Computer support, Material specifications, Equipment specifications, Plant design documentation, SOPs, Material safety data sheets, Validation documentation, and Master batch records.

Different departments administrate the above systems with so much complexity involved while doing inter departmental operations. In addition to the above complexity, in order to carry on research, some of the research stations are located in different countries there by making the situation still worse. The author has been experienced couple of problems in the present system of functioning. Examples are, getting approval of a typical purchase order takes 2 to 3 weeks using inter-departmental mail, production planning and scheduling is being done with great difficulties, molecular modeling consumes enormous time of scientists, a change in the process of analyzing a character of a drug modifies the entire software package (this is the usual problem if the package is developed in a modular approach using any procedural language) and a very difficult designing procedure of a protein structure using monoclonal antibodies.

With the experience gained by the author during the development of an object-oriented expert system for minimizing the wastage of Interferon, further research will be continued in the above said areas. Finding quantities of certain bio-products, whose strengths change dynamically during its manufacturing, is being calculated by skilled employees. The program developed for this thesis can be used for all the bio-products, whose properties change dynamically during its course of lifetime. The time taken, to develop the 5000 lines code for this problem, has been 2 months, which would have been 12 months had I followed structured programming. The following benefits have been estimated with the implementation of this project.

- Assuming that 10% of the material can be saved by using this program, for every 100 liters of consumption, 10 liters could be

saved, resulting the savings of $157,000.00 at the rate of $15,700.00 per liter.

- The savings in employee time could be approximately 1000 man hours, there by a savings of $40,000.00 per annum at the rate of $40.00 per hour.
- Any user can use this program in the absence of skilled employee. On-line help screens are provided.
- New products can be added to this program without changing a single line of code.

By doing research many more problems can be found and solved using the Object-oriented Expert system technology. The very advantage of this technology is derived from the benefits of integrating all these systems into one unit, no matter what kind of system it is, whether is it an industrial robot or a document, or FDA or a molecular model or a drug formula or some three dimensional images or a video picture or HVAC or a department or an employee, for that matter any object, any entity one can view or any concept one can think.

Todays pharmaceutical manufacturers are striving to maximize competitiveness by increasing innovation, reducing time to market new products, improving processes and reducing existing operation and product costs, while complying with regulatory requirements. To achieve the above objective, the author is proposing SPHINX (Systems integration in PHarmaceutical INdustry using object-oriented eXpert system Technology), which is aimed at integrating all the systems mentioned earlier, so that every employee in a pharmaceutical company will be given specific user interface required to perform his responsibilities, hiding all the internal complicated details, to interact with the objects seamlessly without

worrying about how the objects perform the specified job. If some more systems are added as a part of company's growth, they can also be integrated with the existing system effortlessly by using the extendibility feature of object-orientation.

Usually, every pharmaceutical industry spends 20% of their sales for the purpose of research and to develop new products. In New Jersey alone, it is estimated that all the pharmaceutical industries are spending 4 billion dollars only for research during the current budget year. Assuming that we can save 10% of the drug developmental time, it is possible to save 400 million dollars in one year. In May-92, "International Conference on Object-oriented Manufacturing Systems" has been held at Calgary University, Canada; which has been demonstrated the possibility of IMS (Intelligent Manufacturing Systems) as the next generation of automation for industries replacing the unmatured existing CIM (Computer Integrated Manufacturing). Further, the same technology can also be used for Food and Chemical industries. Finally, the author concludes that Object-oriented Expert Systems will show enormous impact on the present functioning of pharmaceutical industries.

APPENDIX

```
$VERSION25
$LOCATIONS ARE PIXELS

CLASS beeper INHERITS add on
 WITH beep SIMPLE

CLASS calculations
 WITH find first lot volume SIMPLE
  WHEN CHANGED
   BEGIN
    FOR (i := 1 TO 9)
     BEGIN
      IF assay1[ i] OF get data 1 = 0 OR quantity1[ i] OF get data\
1 = 0 THEN
       CONF(volume1[ i] OF one lot) := -1
      ELSE
       volume1[ i] OF one lot := formula assay OF select product \
/ assay1[ i] OF get data 1
     END
   END
 WITH find second lot volume SIMPLE
  WHEN CHANGED
   BEGIN
    IF (formula assay OF select product - quantity1[ 1] OF get data \
```

```
1 * assay1[ 1] OF get data 1) > 0 THEN
      BEGIN
       FOR (j := 1 TO 9)
        BEGIN
         IF quantity1[ 1] OF get data 1 = 0 THEN
          CONF(first lot1[ j] OF two lots) := -1
         ELSE
          IF quantity1[ j] OF get data 1 = 0 THEN
           CONF(first lot1[ j] OF two lots) := -1
          ELSE
           BEGIN
            IF j = 1 THEN
             first lot1[ j] OF two lots := quantity1[ j] OF g\
et data 1
            ELSE
             first lot1[ j] OF two lots := (formula assay OF \
select product - quantity1[ 1] OF get data 1 * assay1[ 1] OF get data 1)\
 / assay1[ j] OF get data 1
           END
         END
       END
      ELSE
       first lot1[ 1] OF two lots := quantity1[ 1] OF get data 1
      FORGET j
      IF (formula assay OF select product - quantity1[ 2] OF get data \
1 * assay1[ 2] OF get data 1) > 0 THEN
       BEGIN
```

```
        FOR (j := 1 TO 9)
         BEGIN
          IF quantity1[ 2] OF get data 1 = 0 THEN
           CONF(second lot1[ j] OF two lots) := -1
          ELSE
           IF quantity1[ j] OF get data 1 = 0 THEN
            CONF(second lot1[ j] OF two lots) := -1
           ELSE
            BEGIN
             IF j = 2 THEN
              second lot1[ j] OF two lots := quantity1[ j] OF \
get data 1
             ELSE
              second lot1[ j] OF two lots := (formula assay OF\
 select product - quantity1[ 2] OF get data 1 * assay1[ 2] OF get data 1\
) / assay1[ j] OF get data 1
            END
          END
        END
       ELSE
        second lot1[ 2] OF two lots := quantity1[ 2] OF get data 1
       FORGET j
       IF (formula assay OF select product - quantity1[ 3] OF get data \
1 * assay1[ 3] OF get data 1) > 0 THEN
        BEGIN
         FOR (j := 1 TO 9)
          BEGIN
```

```
            IF quantity1[ 3] OF get data 1 = 0 THEN
             CONF(third lot1[ j] OF two lots) := -1
            ELSE
             IF quantity1[ j] OF get data 1 = 0 THEN
              CONF(third lot1[ j] OF two lots) := -1
             ELSE
              BEGIN
               IF j = 3 THEN
                third lot1[ j] OF two lots := quantity1[ j] OF g\
et data 1
               ELSE
                third lot1[ j] OF two lots := (formula assay OF \
select product - quantity1[ 3] OF get data 1 * assay1[ 3] OF get data 1)\
/ assay1[ j] OF get data 1
              END
          END
        END
       ELSE
        third lot1[ 3] OF two lots := quantity1[ 3] OF get data 1
       FORGET j
       IF (formula assay OF select product - quantity1[ 4] OF get data \
1 * assay1[ 4] OF get data 1) > 0 THEN
        BEGIN
         FOR (j := 1 TO 9)
          BEGIN
           IF quantity1[ 4] OF get data 1 = 0 THEN
            CONF(fourth lot1[ j] OF two lots) := -1
```

```
            ELSE
             IF quantity1[ j] OF get data 1 = 0 THEN
              CONF(fourth lot1[ j] OF two lots) := -1
             ELSE
              BEGIN
               IF j = 4 THEN
                fourth lot1[ j] OF two lots := quantity1[ j] OF \
get data 1
               ELSE
                fourth lot1[ j] OF two lots := (formula assay OF\
 select product - quantity1[ 4] OF get data 1 * assay1[ 4] OF get data 1\
) / assay1[ j] OF get data 1
              END
          END
        END
       ELSE
        fourth lot1[ 4] OF two lots := quantity1[ 4] OF get data 1
       FORGET j
       IF (formula assay OF select product - quantity1[ 5] OF get data \
1 * assay1[ 5] OF get data 1) > 0 THEN
        BEGIN
         FOR (j := 1 TO 9)
          BEGIN
           IF quantity1[ 5] OF get data 1 = 0 THEN
            CONF(fifth lot1[ j] OF two lots) := -1
           ELSE
            IF quantity1[ j] OF get data 1 = 0 THEN
```

```
            CONF(fifth lot1[ j] OF two lots) := -1
          ELSE
           BEGIN
            IF j = 5 THEN
             fifth lot1[ j] OF two lots := quantity1[ j] OF g\
et data 1
            ELSE
             fifth lot1[ j] OF two lots := (formula assay OF \
select product - quantity1[ 5] OF get data 1 * assay1[ 5] OF get data 1)\
/ assay1[ j] OF get data 1
            END
         END
       END
      ELSE
       fifth lot1[ 5] OF two lots := quantity1[ 5] OF get data 1
      FORGET j
      IF (formula assay OF select product - quantity1[ 6] OF get data \
1 * assay1[ 6] OF get data 1) > 0 THEN
       BEGIN
        FOR (j := 1 TO 9)
         BEGIN
          IF quantity1[ 6] OF get data 1 = 0 THEN
           CONF(sixth lot1[ j] OF two lots) := -1
          ELSE
           IF quantity1[ j] OF get data 1 = 0 THEN
            CONF(sixth lot1[ j] OF two lots) := -1
           ELSE
```

```
            BEGIN
              IF j = 6 THEN
                sixth lot1[ j] OF two lots := quantity1[ j] OF g\
et data 1
              ELSE
                sixth lot1[ j] OF two lots := (formula assay OF \
select product - quantity1[ 6] OF get data 1 * assay1[ 6] OF get data 1)\
 / assay1[ j] OF get data 1
            END
          END
        END
      ELSE
        sixth lot1[ 6] OF two lots := quantity1[ 6] OF get data 1
      FORGET j
      IF (formula assay OF select product - quantity1[ 7] OF get data \
1 * assay1[ 7] OF get data 1) > 0 THEN
        BEGIN
          FOR (j := 1 TO 9)
            BEGIN
              IF quantity1[ 7] OF get data 1 = 0 THEN
                CONF(seventh lot1[ j] OF two lots) := -1
              ELSE
                IF quantity1[ j] OF get data 1 = 0 THEN
                  CONF(seventh lot1[ j] OF two lots) := -1
                ELSE
                  BEGIN
                    IF j = 7 THEN
```

```
                seventh lot1[ j] OF two lots := quantity1[ j] OF\
 get data 1
              ELSE
                seventh lot1[ j] OF two lots := (formula assay O\
F select product - quantity1[ 7] OF get data 1 * assay1[ 7] OF get data \
1) / assay1[ j] OF get data 1
            END
          END
        END
       ELSE
        seventh lot1[ 7] OF two lots := quantity1[ 7] OF get data 1
       FORGET j
       IF (formula assay OF select product - quantity1[ 8] OF get data \
1 * assay1[ 8] OF get data 1) > 0 THEN
        BEGIN
         FOR (j := 1 TO 9)
          BEGIN
           IF quantity1[ 8] OF get data 1 = 0 THEN
            CONF(eighth lot1[ j] OF two lots) := -1
           ELSE
            IF quantity1[ j] OF get data 1 = 0 THEN
             CONF(eighth lot1[ j] OF two lots) := -1
            ELSE
             BEGIN
              IF j = 8 THEN
               eighth lot1[ j] OF two lots := quantity1[ j] OF \
get data 1
```

```
                ELSE
                  eighth lot1[ j] OF two lots := (formula assay OF\
 select product - quantity1[ 8] OF get data 1 * assay1[ 8] OF get data 1\
) / assay1[ j] OF get data 1
              END
          END
        END
      ELSE
        eighth lot1[ 8] OF two lots := quantity1[ 8] OF get data 1
      FORGET j
      IF (formula assay OF select product - quantity1[ 9] OF get data \
1 * assay1[ 9] OF get data 1) > 0 THEN
        BEGIN
          FOR (j := 1 TO 9)
            BEGIN
              IF quantity1[ 9] OF get data 1 = 0 THEN
                CONF(ninth lot1[ j] OF two lots) := -1
              ELSE
                IF quantity1[ j] OF get data 1 = 0 THEN
                  CONF(ninth lot1[ j] OF two lots) := -1
                ELSE
                  BEGIN
                    IF j = 9 THEN
                      ninth lot1[ j] OF two lots := quantity1[ j] OF g\
et data 1
                    ELSE
                      ninth lot1[ j] OF two lots := (formula assay OF \
```

```
select product - quantity1[ 9] OF get data 1 * assay1[ 9] OF get data 1)\
 / assay1[ j] OF get data 1
              END
          END
        END
       ELSE
        ninth lot1[ 9] OF two lots := quantity1[ 9] OF get data 1
       FORGET j
     END
  WITH do optimize SIMPLE
    WHEN CHANGED
     BEGIN
      IF volume1[ 1] OF one lot > quantity1[ 1] OF get data 1 THEN
       FOR (j := 1 TO 9)
         BEGIN
          IF j = 1 THEN
           first lot[ j] OF optimize := 0
          ELSE
           first lot[ j] OF optimize := quantity1[ j] OF get data 1\
 - first lot1[ j] OF two lots
         END
       ELSE
        first lot[ 1] OF optimize := quantity1[ 1] OF get data 1 - vol\
ume1[ 1] OF one lot
       FORGET j
       IF volume1[ 2] OF one lot > quantity1[ 2] OF get data 1 THEN
        FOR (j := 1 TO 9)
```

```
        BEGIN
         IF j = 2 THEN
          second lot[ j] OF optimize := 0
         ELSE
          second lot[ j] OF optimize := quantity1[ j] OF get data \
1 - second lot1[ j] OF two lots
        END
      ELSE
       second lot[ 2] OF optimize := quantity1[ 2] OF get data 1 - vo\
lume1[ 2] OF one lot
      FORGET j
      IF volume1[ 3] OF one lot > quantity1[ 3] OF get data 1 THEN
       FOR (j := 1 TO 9)
        BEGIN
         IF j = 3 THEN
          third lot[ j] OF optimize := 0
         ELSE
          third lot[ j] OF optimize := quantity1[ j] OF get data 1\
 - third lot1[ j] OF two lots
        END
      ELSE
       third lot[ 3] OF optimize := quantity1[ 3] OF get data 1 - vol\
ume1[ 3] OF one lot
      FORGET j
      IF volume1[ 4] OF one lot > quantity1[ 4] OF get data 1 THEN
       FOR (j := 1 TO 9)
        BEGIN
```

```
          IF j = 4 THEN
            fourth lot[ j] OF optimize := 0
          ELSE
            fourth lot[ j] OF optimize := quantity1[ j] OF get data \
1 - fourth lot1[ j] OF two lots
        END
      ELSE
       fourth lot[ 4] OF optimize := quantity1[ 4] OF get data 1 - vo\
lume1[ 4] OF one lot
      FORGET j
      IF volume1[ 5] OF one lot > quantity1[ 5] OF get data 1 THEN
       FOR (j := 1 TO 9)
        BEGIN
          IF j = 5 THEN
            fifth lot[ j] OF optimize := 0
          ELSE
            fifth lot[ j] OF optimize := quantity1[ j] OF get data 1\
 - fifth lot1[ j] OF two lots
        END
      ELSE
       fifth lot[ 5] OF optimize := quantity1[ 5] OF get data 1 - vol\
ume1[ 5] OF one lot
      FORGET j
      IF volume1[ 6] OF one lot > quantity1[ 6] OF get data 1 THEN
       FOR (j := 1 TO 9)
        BEGIN
          IF j = 6 THEN
```

```
          sixth lot[ j] OF optimize := 0
        ELSE
          sixth lot[ j] OF optimize := quantity1[ j] OF get data 1\
 - sixth lot1[ j] OF two lots
      END
    ELSE
     sixth lot[ 6] OF optimize := quantity1[ 6] OF get data 1 - vol\
ume1[ 6] OF one lot
    FORGET j
    IF volume1[ 7] OF one lot > quantity1[ 7] OF get data 1 THEN
     FOR (j := 1 TO 9)
      BEGIN
       IF j = 7 THEN
         seventh lot[ j] OF optimize := 0
       ELSE
         seventh lot[ j] OF optimize := quantity1[ j] OF get data\
 1 - seventh lot1[ j] OF two lots
      END
    ELSE
     seventh lot[ 7] OF optimize := quantity1[ 7] OF get data 1 - v\
olume1[ 7] OF one lot
    FORGET j
    IF volume1[ 8] OF one lot > quantity1[ 8] OF get data 1 THEN
     FOR (j := 1 TO 9)
      BEGIN
       IF j = 8 THEN
         eighth lot[ j] OF optimize := 0
```

```
          ELSE
            eighth lot[ j] OF optimize := quantity1[ j] OF get data \
1 - eighth lot1[ j] OF two lots
          END
        ELSE
          eighth lot[ 8] OF optimize := quantity1[ 8] OF get data 1 - vo\
lume1[ 8] OF one lot
        FORGET j
        IF volume1[ 9] OF one lot > quantity1[ 9] OF get data 1 THEN
         FOR (j := 1 TO 9)
          BEGIN
           IF j = 9 THEN
            ninth lot[ j] OF optimize := 0
           ELSE
            ninth lot[ j] OF optimize := quantity1[ j] OF get data 1\
 - ninth lot1[ j] OF two lots
          END
        ELSE
          ninth lot[ 9] OF optimize := quantity1[ 9] OF get data 1 - vol\
ume1[ 9] OF one lot
        FORGET j
      END

CLASS database actions
  WITH insert product SIMPLE
    WHEN CHANGED
      BEGIN
```

```
    access OF dB3 roferon1 IS write := TRUE
    prod_name OF dB3 roferon1 := prod_name OF select product
    form_assay OF dB3 roferon1 := formula assay OF select product
    action OF dB3 roferon1 IS append record := TRUE
    record processed := TRUE
   END
 WITH delete product SIMPLE
  WHEN CHANGED
   BEGIN
    action OF dB3 roferon1 IS delete record := TRUE
    action OF dB3 roferon1 IS pack := TRUE
    record processed := TRUE
   END

CLASS dB3 roferon1 SINGLE EXTERNAL "dBASEIII C:\DBASE\roferon1.DBF"
 WITH prod_code NUMERIC
  SEARCH ORDER CONTEXT
 WITH form_assay NUMERIC
  SEARCH ORDER CONTEXT
 WITH prod_name STRING
  SEARCH ORDER CONTEXT

INSTANCE roferon1 ISA dB3 roferon1
 WITH access IS write
 WITH action IS open
 WITH filename := "C:\\DBASE\\roferon1.DBF"
 WITH default error handling := TRUE
```

```
CLASS find best bottles
 WITH best one lot bottles SIMPLE
  WHEN CHANGED
   BEGIN
    FOR (i := 1 TO 9)
     BEGIN
      IF i = 1 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
t one bottles[ j] OF lot bottles 1
      IF i = 2 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
t two bottles[ j] OF lot bottles 1
      IF i = 3 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
t three bottles[ j] OF lot bottles 1
      IF i = 4 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
t four bottles[ j] OF lot bottles 1
      IF i = 5 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
t five bottles[ j] OF lot bottles 1
      IF i = 6 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
t six bottles[ j] OF lot bottles 1
      IF i = 7 THEN
       FOR (j := 1 TO 5)        current lot bottle[ j] := lo\
```

```
t seven bottles[ j] OF lot bottles 1
        IF i = 8 THEN
         FOR  (j :=  1 TO  5)        current lot bottle[ j] := lo\
t eight bottles[ j] OF lot bottles 1
        IF i = 9 THEN
         FOR  (j :=  1 TO  5)        current lot bottle[ j] := lo\
t nine bottles[ j] OF lot bottles 1
        IF volume1[ i] OF one lot < quantity1[ i] OF get data 1 THEN
         BEGIN
          FOR  (j :=  1 TO  4)
           BEGIN
            a := j + 1
            FOR  (k :=  a TO  5)
             BEGIN
               wastage := current lot bottle[ j] + current lot \
bottle[ k] - volume1[ i] OF one lot
               IF wastage > 0 THEN
                BEGIN
                 IF wastage < min wastage THEN
                  BEGIN
                    CONF(best lot) := 100
                    CONF(best bottle one) := 100
                    CONF(best bottle two) := 100
                    min wastage := wastage
                    best lot := i
                    best bottle one := j
                    best bottle two := k
```

```
                CONF(best bottle three) := -1
                CONF(best bottle four) := -1
                CONF(best bottle five) := -1
                CONF(best bottle) := -1
              END
            END
          b := k + 1
          FOR  (l :=  b TO  5)
            BEGIN
              wastage := current lot bottle[ j] + current \
lot bottle[ k] + current lot bottle[ l] - volume1[ i] OF one lot
              IF wastage > 0 THEN
               BEGIN
                IF wastage < min wastage THEN
                 BEGIN
                  CONF(best lot) := 100
                  CONF(best bottle one) := 100
                  CONF(best bottle two) := 100
                  CONF(best bottle three) := 100
                  min wastage := wastage
                  best lot := i
                  best bottle one := j
                  best bottle two := k
                  best bottle three := l
                  CONF(best bottle four) := -1
                  CONF(best bottle five) := -1
                  CONF(best bottle) := -1
```

```
                END
              END
             c := l + 1
             FOR (m := c TO 5)
              BEGIN
                wastage := current lot bottle[ j] + curr\
ent lot bottle[ k] + current lot bottle[ l] + current lot bottle[ m] + v\
olume1[ i] OF one lot
                IF wastage > 0 THEN
                 BEGIN
                  IF wastage < min wastage THEN
                   BEGIN
                    CONF(best lot) := 100
                    CONF(best bottle one) := 100
                    CONF(best bottle two) := 100
                    CONF(best bottle three) := 100
                    CONF(best bottle four) := 100
                    min wastage := wastage
                    best lot := i
                    best bottle one := j
                    best bottle two := k
                    best bottle three := l
                    best bottle four := m
                    CONF(best bottle five) := -1
                    CONF(best bottle) := -1
                   END
                 END
```

```
                    d := m + 1
                    FOR (n := d TO 5)
                     BEGIN
                      FOR (x := 1 TO 5)
                       BEGIN
                        IF (volume1[ i] OF one lot < cur\
rent lot bottle[ x]) THEN
                          BEGIN
                           IF (current lot bottle[ x] <\
> 0) THEN
                            BEGIN
                             wastage := current lot b\
ottle[ x] - volume1[ i] OF one lot
                             IF wastage < min wastage\
 THEN
                              BEGIN
                               CONF(best lot) := 10\
0
                               CONF(best bottle) :=\
 100
                               min wastage := wasta\
ge
                               best lot := i
                               best bottle := x
                               CONF(best bottle one\
) := -1
                               CONF(best bottle two\
```

```
) := -1
                                        CONF(best bottle thr\
ee) := -1
                                        CONF(best bottle fou\
r) := -1
                                        CONF(best bottle fiv\
e) := -1
                                      END
                                    END
                                  END
                                END
                              wastage := current lot bottle[ j] + \
current lot bottle[ k] + current lot bottle[ l] + current lot bottle[ m]\
 + current lot bottle[ n] - volume1[ i] OF one lot
                              IF wastage > 0 THEN
                               BEGIN
                                IF wastage < min wastage THEN
                                 BEGIN
                                  CONF(best lot) := 100
                                  CONF(best bottle one) := 100
                                  CONF(best bottle two) := 100
                                  CONF(best bottle three) := 1\
00
                                  CONF(best bottle four) := 10\
0
                                  CONF(best bottle five) := 10\
0
```

```
                    min wastage := wastage
                    best lot := i
                    best bottle one := j
                    best bottle two := k
                    best bottle three := l
                    best bottle four := m
                    best bottle five := n
                    CONF(best bottle) := -1
                  END
                END
              END
            END
          END
        END
      END
    END
  END
 WITH best two lots bottles SIMPLE

CLASS get data
 WITH quantity1 NUMERIC
  ARRAY SIZE 9
 WITH assay1 NUMERIC
  ARRAY SIZE 9

INSTANCE get data 1 ISA get data
```

```
WITH quantity1 [1 ] := 0
WITH quantity1 [2 ] := 837.52
WITH quantity1 [3 ] := 387.99
WITH quantity1 [4 ] := 725.11
WITH quantity1 [5 ] := 1188.38
WITH quantity1 [6 ] := 1147.52
WITH quantity1 [7 ] := 0
WITH quantity1 [8 ] := 0
WITH quantity1 [9 ] := 0
WITH assay1 [1 ] := 1620000000
WITH assay1 [2 ] := 1110000000
WITH assay1 [3 ] := 1700000000
WITH assay1 [4 ] := 1500000000
WITH assay1 [5 ] := 1540000000
WITH assay1 [6 ] := 1600000000
WITH assay1 [7 ] := 1100000000
WITH assay1 [8 ] := 1100000000
WITH assay1 [9 ] := 1100000000

CLASS lot bottles
 WITH lot one bottles NUMERIC
  ARRAY SIZE 5
 WITH lot two bottles NUMERIC
  ARRAY SIZE 5
 WITH lot three bottles NUMERIC
  ARRAY SIZE 5
 WITH lot four bottles NUMERIC
```

```
  ARRAY SIZE 5
 WITH lot five bottles NUMERIC
  ARRAY SIZE 5
 WITH lot six bottles NUMERIC
  ARRAY SIZE 5
 WITH lot seven bottles NUMERIC
  ARRAY SIZE 5
 WITH lot eight bottles NUMERIC
  ARRAY SIZE 5
 WITH lot nine bottles NUMERIC
  ARRAY SIZE 5

INSTANCE lot bottles 1 ISA lot bottles
 WITH lot one bottles [1 ] := 20
 WITH lot one bottles [2 ] := 1
 WITH lot one bottles [3 ] := 5
 WITH lot one bottles [4 ] := 0
 WITH lot one bottles [5 ] := 6
 WITH lot two bottles [1 ] := 23
 WITH lot two bottles [2 ] := 67
 WITH lot two bottles [3 ] := 1
 WITH lot two bottles [4 ] := 2
 WITH lot two bottles [5 ] := 2
 WITH lot three bottles [1 ] := 0
 WITH lot three bottles [2 ] := 2
 WITH lot three bottles [3 ] := 1
 WITH lot three bottles [4 ] := 5
```

WITH lot three bottles [5] := 0

WITH lot four bottles [1] := 0

WITH lot four bottles [2] := 23

WITH lot four bottles [3] := 54

WITH lot four bottles [4] := 564

WITH lot four bottles [5] := 56

WITH lot five bottles [1] := 65

WITH lot five bottles [2] := 564

WITH lot five bottles [3] := 234

WITH lot five bottles [4] := 8

WITH lot five bottles [5] := 0

WITH lot six bottles [1] := 0

WITH lot six bottles [2] := 123

WITH lot six bottles [3] := 55

WITH lot six bottles [4] := 234

WITH lot six bottles [5] := 90

WITH lot seven bottles [1] := 346

WITH lot seven bottles [2] := 78

WITH lot seven bottles [3] := 67

WITH lot seven bottles [4] := 90

WITH lot seven bottles [5] := 90

WITH lot eight bottles [1] := 0

WITH lot eight bottles [2] := 0

WITH lot eight bottles [3] := 0

WITH lot eight bottles [4] := 0

WITH lot eight bottles [5] := 0

WITH lot nine bottles [1] := 0

```
 WITH lot nine bottles [2 ] := 0
 WITH lot nine bottles [3 ] := 0
 WITH lot nine bottles [4 ] := 0
 WITH lot nine bottles [5 ] := 0

CLASS one lot
 WITH lot1 NUMERIC
  ARRAY SIZE 9
 WITH volume1 NUMERIC
  ARRAY SIZE 9

CLASS optimize
 WITH first lot NUMERIC
  ARRAY SIZE 9
 WITH second lot NUMERIC
  ARRAY SIZE 9
 WITH third lot NUMERIC
  ARRAY SIZE 9
 WITH fourth lot NUMERIC
  ARRAY SIZE 9
 WITH fifth lot NUMERIC
  ARRAY SIZE 9
 WITH sixth lot NUMERIC
  ARRAY SIZE 9
 WITH seventh lot NUMERIC
  ARRAY SIZE 9
 WITH eighth lot NUMERIC
```

```
  ARRAY SIZE 9
 WITH ninth lot NUMERIC
  ARRAY SIZE 9

CLASS pictbtn INHERITS add on
 WITH location RECTANGLE
 WITH picture PICTURE
 WITH pressed picture PICTURE
 WITH disabled picture PICTURE
 WITH focus picture PICTURE
 WITH selected SIMPLE
 WITH attachment ATTRIBUTE_REFERENCE
 WITH enabled SIMPLE

CLASS select product
 WITH prod_code NUMERIC
 WITH formula assay NUMERIC
 WITH prod_name STRING
  WHEN CHANGED
   BEGIN
    formula assay OF select product := form_assay OF dB3 roferon1
   END

CLASS sum bottles
 WITH sum lot bottles SIMPLE
  WHEN CHANGED
   BEGIN
```

```
quantity1[ 1] OF get data 1 := lot one bottles[ 1] OF lot bottle\
s 1 + lot one bottles[ 2] OF lot bottles 1 + lot one bottles[ 3] OF lot \
bottles 1 + lot one bottles[ 4] OF lot bottles 1 + lot one bottles[ 5] O\
F lot bottles 1

quantity1[ 2] OF get data 1 := lot two bottles[ 1] OF lot bottle\
s 1 + lot two bottles[ 2] OF lot bottles 1 + lot two bottles[ 3] OF lot \
bottles 1 + lot two bottles[ 4] OF lot bottles 1 + lot two bottles[ 5] O\
F lot bottles 1

quantity1[ 3] OF get data 1 := lot three bottles[ 1] OF lot bott\
les 1 + lot three bottles[ 2] OF lot bottles 1 + lot three bottles[ 3] O\
F lot bottles 1 + lot three bottles[ 4] OF lot bottles 1 + lot three bot\
tles[ 5] OF lot bottles 1

quantity1[ 4] OF get data 1 := lot four bottles[ 1] OF lot bottl\
es 1 + lot four bottles[ 2] OF lot bottles 1 + lot four bottles[ 3] OF l\
ot bottles 1 + lot four bottles[ 4] OF lot bottles 1 + lot four bottles[\
 5] OF lot bottles 1

quantity1[ 5] OF get data 1 := lot five bottles[ 1] OF lot bottl\
es 1 + lot five bottles[ 2] OF lot bottles 1 + lot five bottles[ 3] OF l\
ot bottles 1 + lot five bottles[ 4] OF lot bottles 1 + lot five bottles[\
 5] OF lot bottles 1

quantity1[ 6] OF get data 1 := lot six bottles[ 1] OF lot bottle\
s 1 + lot six bottles[ 2] OF lot bottles 1 + lot six bottles[ 3] OF lot \
bottles 1 + lot six bottles[ 4] OF lot bottles 1 + lot six bottles[ 5] O\
F lot bottles 1

quantity1[ 7] OF get data 1 := lot seven bottles[ 1] OF lot bott\
les 1 + lot seven bottles[ 2] OF lot bottles 1 + lot seven bottles[ 3] O\
F lot bottles 1 + lot seven bottles[ 4] OF lot bottles 1 + lot seven bot\
```

```
tles[ 5] OF lot bottles 1
      quantity1[ 8] OF get data 1 := lot eight bottles[ 1] OF lot bott\
les 1 + lot eight bottles[ 2] OF lot bottles 1 + lot eight bottles[ 3] O\
F lot bottles 1 + lot eight bottles[ 4] OF lot bottles 1 + lot eight bot\
tles[ 5] OF lot bottles 1
      quantity1[ 9] OF get data 1 := lot nine bottles[ 1] OF lot bottl\
es 1 + lot nine bottles[ 2] OF lot bottles 1 + lot nine bottles[ 3] OF l\
ot bottles 1 + lot nine bottles[ 4] OF lot bottles 1 + lot nine bottles[\
 5] OF lot bottles 1
    END

CLASS two lots
  WITH first lot1 NUMERIC
    ARRAY SIZE 9
  WITH second lot1 NUMERIC
    ARRAY SIZE 9
  WITH third lot1 NUMERIC
    ARRAY SIZE 9
  WITH fourth lot1 NUMERIC
    ARRAY SIZE 9
  WITH fifth lot1 NUMERIC
    ARRAY SIZE 9
  WITH sixth lot1 NUMERIC
    ARRAY SIZE 9
  WITH seventh lot1 NUMERIC
    ARRAY SIZE 9
  WITH eighth lot1 NUMERIC
```

```
  ARRAY SIZE 9
 WITH ninth lot1 NUMERIC
  ARRAY SIZE 9

ATTRIBUTE i NUMERIC
ATTRIBUTE j NUMERIC
ATTRIBUTE start SIMPLE
 WHEN CHANGED
  BEGIN
   min wastage := 1000
   sum lot bottles OF sum bottles := TRUE
   prod_name OF select product := prod_name OF dB3 roferon1
   formula assay OF select product := form_assay OF dB3 roferon1
   recomend := TRUE
   output OF help window := Recommendation
   find first lot volume OF calculations := TRUE
   best one lot bottles OF find best bottles := TRUE
  END
ATTRIBUTE record processed SIMPLE
ATTRIBUTE help1 SIMPLE
 WHEN CHANGED
  BEGIN
   output OF help window := display 11
  END
ATTRIBUTE help two SIMPLE
 WHEN CHANGED
  BEGIN
```

```
    output OF help window := help2
  END
ATTRIBUTE min wastage NUMERIC
 INIT 1000
ATTRIBUTE a NUMERIC
ATTRIBUTE k NUMERIC
ATTRIBUTE current lot bottle NUMERIC
 ARRAY SIZE 5
ATTRIBUTE wastage NUMERIC
ATTRIBUTE best lot NUMERIC
ATTRIBUTE best bottle one NUMERIC
ATTRIBUTE best bottle two NUMERIC
ATTRIBUTE best bottle three NUMERIC
ATTRIBUTE best bottle four NUMERIC
ATTRIBUTE best bottle five NUMERIC
ATTRIBUTE b NUMERIC
ATTRIBUTE l NUMERIC
ATTRIBUTE c NUMERIC
ATTRIBUTE m NUMERIC
ATTRIBUTE d NUMERIC
ATTRIBUTE n NUMERIC
ATTRIBUTE e NUMERIC
ATTRIBUTE recomend SIMPLE
ATTRIBUTE smallest quantity bottle NUMERIC
ATTRIBUTE best bottle NUMERIC
ATTRIBUTE x NUMERIC
ATTRIBUTE small quantity bottle NUMERIC
```

```
INSTANCE the application ISA application
  WITH unknowns fail := TRUE
  WITH threshold := 50
  WITH title display := ROFERON BULK ADJUSTMENT CALCULATION
  WITH conclusion display := ACTIVE VOLUME
  WITH ignore breakpoints := FALSE
  WITH reasoning on := FALSE
  WITH numeric precision := 8
  WITH simple query text := "Is it true that:
  *
is
  *"
  WITH numeric query text := "What is(are):
  *
of
  *"
  WITH string query text := "What is(are):
  *
of
  *"
  WITH time query text := "What is(are):
  *
of
  *"
  WITH interval query text := "What is(are):
  *
```

```
of
 *"
 WITH compound query text := "What is(are):
 *
of
 *"
 WITH multicompound query text := "What is(are):
 *
of
 *"
 WITH demon strategy IS fire first
 WITH visible file menu := TRUE

INSTANCE ROFERON BULK ADJUSTMENT CALCULATION ISA display
 WITH wait := TRUE
 WITH delay changes := FALSE
 WITH items [1 ] := textbox 9
 WITH items [2 ] := UNDETERMINED
 WITH items [3 ] := textbox 11
 WITH items [4 ] := textbox 12
 WITH items [5 ] := textbox 13
 WITH items [6 ] := textbox 14
 WITH items [7 ] := textbox 15
 WITH items [8 ] := textbox 16
 WITH items [9 ] := textbox 17
 WITH items [10 ] := UNDETERMINED
 WITH items [11 ] := UNDETERMINED
```

WITH items [12] := UNDETERMINED

WITH items [13] := UNDETERMINED

WITH items [14] := UNDETERMINED

WITH items [15] := UNDETERMINED

WITH items [16] := promptbox 11

WITH items [17] := promptbox 12

WITH items [18] := promptbox 13

WITH items [19] := promptbox 14

WITH items [20] := promptbox 15

WITH items [21] := promptbox 16

WITH items [22] := textbox 18

WITH items [23] := listbox 1

WITH items [24] := pushbutton 1

WITH items [25] := textbox 35

WITH items [26] := promptbox 18

WITH items [27] := textbox 36

WITH items [28] := promptbox 19

WITH items [29] := pushbutton 4

WITH items [30] := pushbutton 6

WITH items [31] := textbox 37

WITH items [32] := textbox 38

WITH items [33] := textbox 39

WITH items [34] := UNDETERMINED

WITH items [35] := UNDETERMINED

WITH items [36] := UNDETERMINED

WITH items [37] := promptbox 23

WITH items [38] := promptbox 24

WITH items [39] := promptbox 25

WITH items [40] := pushbutton 5

WITH items [41] := promptbox 26

WITH items [42] := promptbox 27

WITH items [43] := promptbox 28

WITH items [44] := promptbox 29

WITH items [45] := promptbox 20

WITH items [46] := UNDETERMINED

WITH items [47] := UNDETERMINED

WITH items [48] := UNDETERMINED

WITH items [49] := UNDETERMINED

WITH items [50] := UNDETERMINED

WITH items [51] := UNDETERMINED

WITH items [52] := UNDETERMINED

WITH items [53] := UNDETERMINED

WITH items [54] := UNDETERMINED

WITH items [55] := UNDETERMINED

WITH items [56] := UNDETERMINED

WITH items [57] := UNDETERMINED

WITH items [58] := UNDETERMINED

WITH items [59] := UNDETERMINED

WITH items [60] := UNDETERMINED

WITH items [61] := UNDETERMINED

WITH items [62] := UNDETERMINED

WITH items [63] := UNDETERMINED

WITH items [64] := UNDETERMINED

WITH items [65] := UNDETERMINED

WITH items [66] := UNDETERMINED

WITH items [67] := UNDETERMINED

WITH items [68] := UNDETERMINED

WITH items [69] := UNDETERMINED

WITH items [70] := UNDETERMINED

WITH items [71] := UNDETERMINED

WITH items [72] := UNDETERMINED

WITH items [73] := UNDETERMINED

WITH items [74] := UNDETERMINED

WITH items [75] := UNDETERMINED

WITH items [76] := UNDETERMINED

WITH items [77] := UNDETERMINED

WITH items [78] := UNDETERMINED

WITH items [79] := UNDETERMINED

WITH items [80] := UNDETERMINED

WITH items [81] := UNDETERMINED

WITH items [82] := UNDETERMINED

WITH items [83] := UNDETERMINED

WITH items [84] := UNDETERMINED

WITH items [85] := UNDETERMINED

WITH items [86] := UNDETERMINED

WITH items [87] := UNDETERMINED

WITH items [88] := UNDETERMINED

WITH items [89] := UNDETERMINED

WITH items [90] := UNDETERMINED

WITH items [91] := textbox 75

WITH items [92] := promptbox 21

```
WITH items [93 ] := promptbox 22
WITH items [94 ] := promptbox 30
WITH items [95 ] := promptbox 31
WITH items [96 ] := promptbox 32
WITH items [97 ] := promptbox 33
WITH items [98 ] := promptbox 34
WITH items [99 ] := promptbox 35
WITH items [100 ] := promptbox 36
WITH items [101 ] := promptbox 37
WITH items [102 ] := promptbox 38
WITH items [103 ] := promptbox 39
WITH items [104 ] := promptbox 40
WITH items [105 ] := promptbox 41
WITH items [106 ] := promptbox 42
WITH items [107 ] := promptbox 43
WITH items [108 ] := promptbox 44
WITH items [109 ] := promptbox 45
WITH items [110 ] := promptbox 46
WITH items [111 ] := promptbox 47
WITH items [112 ] := promptbox 48
WITH items [113 ] := promptbox 49
WITH items [114 ] := promptbox 50
WITH items [115 ] := promptbox 51
WITH items [116 ] := promptbox 52
WITH items [117 ] := promptbox 53
WITH items [118 ] := promptbox 54
WITH items [119 ] := promptbox 55
```

```
WITH items [120 ] := promptbox 56
WITH items [121 ] := promptbox 57
WITH items [122 ] := promptbox 58
WITH items [123 ] := promptbox 59
WITH items [124 ] := promptbox 60
WITH items [125 ] := promptbox 61
WITH items [126 ] := promptbox 62
WITH items [127 ] := promptbox 63
WITH items [128 ] := promptbox 64
WITH items [129 ] := promptbox 65
WITH items [130 ] := promptbox 66
WITH items [131 ] := promptbox 67

INSTANCE ACTIVE VOLUME ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1 ] := textbox 19
WITH items [2 ] := textbox 20
WITH items [3 ] := textbox 21
WITH items [4 ] := textbox 22
WITH items [5 ] := textbox 23
WITH items [6 ] := textbox 24
WITH items [7 ] := textbox 25
WITH items [8 ] := textbox 26
WITH items [9 ] := textbox 27
WITH items [10 ] := valuebox 1
WITH items [11 ] := valuebox 2
```

WITH items [12] := valuebox 3

WITH items [13] := valuebox 4

WITH items [14] := valuebox 5

WITH items [15] := valuebox 6

WITH items [16] := textbox 28

WITH items [17] := textbox 29

WITH items [18] := textbox 30

WITH items [19] := textbox 31

WITH items [20] := textbox 32

WITH items [21] := textbox 33

WITH items [22] := textbox 34

WITH items [23] := valuebox 7

WITH items [24] := valuebox 8

WITH items [25] := valuebox 9

WITH items [26] := valuebox 10

WITH items [27] := valuebox 11

WITH items [28] := valuebox 12

WITH items [29] := valuebox 15

WITH items [30] := valuebox 14

WITH items [31] := valuebox 16

WITH items [32] := valuebox 17

WITH items [33] := valuebox 18

WITH items [34] := valuebox 19

WITH items [35] := valuebox 25

WITH items [36] := valuebox 21

WITH items [37] := valuebox 22

WITH items [38] := valuebox 24

WITH items [39] := valuebox 27

WITH items [40] := valuebox 26

WITH items [41] := valuebox 29

WITH items [42] := valuebox 28

WITH items [43] := valuebox 30

WITH items [44] := valuebox 31

WITH items [45] := valuebox 32

WITH items [46] := valuebox 33

WITH items [47] := valuebox 34

WITH items [48] := valuebox 35

WITH items [49] := valuebox 36

WITH items [50] := valuebox 37

WITH items [51] := valuebox 38

WITH items [52] := valuebox 39

WITH items [53] := valuebox 40

WITH items [54] := valuebox 41

WITH items [55] := valuebox 42

WITH items [56] := valuebox 43

WITH items [57] := valuebox 44

WITH items [58] := valuebox 45

WITH items [59] := valuebox 94

WITH items [60] := textbox 40

WITH items [61] := textbox 41

WITH items [62] := valuebox 95

WITH items [63] := textbox 42

WITH items [64] := textbox 43

WITH items [65] := textbox 44

WITH items [66] := textbox 45

WITH items [67] := valuebox 46

WITH items [68] := valuebox 47

WITH items [69] := valuebox 48

WITH items [70] := valuebox 49

WITH items [71] := valuebox 50

WITH items [72] := valuebox 51

WITH items [73] := valuebox 52

WITH items [74] := valuebox 53

WITH items [75] := valuebox 54

WITH items [76] := valuebox 55

WITH items [77] := valuebox 56

WITH items [78] := valuebox 57

WITH items [79] := valuebox 58

WITH items [80] := valuebox 59

WITH items [81] := valuebox 60

WITH items [82] := valuebox 61

WITH items [83] := valuebox 62

WITH items [84] := valuebox 63

WITH items [85] := valuebox 64

WITH items [86] := valuebox 65

WITH items [87] := valuebox 66

WITH items [88] := valuebox 67

WITH items [89] := valuebox 68

WITH items [90] := valuebox 69

WITH items [91] := valuebox 70

WITH items [92] := valuebox 71

WITH items [93] := valuebox 72

WITH items [94] := valuebox 73

WITH items [95] := valuebox 74

WITH items [96] := valuebox 75

WITH items [97] := valuebox 76

WITH items [98] := valuebox 77

WITH items [99] := valuebox 78

WITH items [100] := valuebox 79

WITH items [101] := valuebox 80

WITH items [102] := valuebox 81

WITH items [103] := valuebox 82

WITH items [104] := valuebox 83

WITH items [105] := valuebox 84

WITH items [106] := valuebox 85

WITH items [107] := valuebox 86

WITH items [108] := valuebox 87

WITH items [109] := valuebox 88

WITH items [110] := valuebox 89

WITH items [111] := valuebox 90

WITH items [112] := valuebox 91

WITH items [113] := valuebox 92

WITH items [114] := valuebox 93

WITH items [115] := textbox 47

WITH items [116] := textbox 48

WITH items [117] := textbox 49

WITH items [118] := textbox 50

WITH items [119] := textbox 51

WITH items [120] := textbox 46

WITH items [121] := textbox 52

WITH items [122] := textbox 53

WITH items [123] := textbox 54

WITH items [124] := valuebox 96

WITH items [125] := valuebox 97

WITH items [126] := valuebox 98

WITH items [127] := valuebox 99

WITH items [128] := valuebox 100

WITH items [129] := valuebox 101

WITH items [130] := valuebox 102

WITH items [131] := valuebox 103

WITH items [132] := valuebox 104

WITH items [133] := valuebox 105

WITH items [134] := valuebox 106

WITH items [135] := valuebox 107

WITH items [136] := valuebox 108

WITH items [137] := valuebox 109

WITH items [138] := valuebox 110

WITH items [139] := valuebox 111

WITH items [140] := valuebox 112

WITH items [141] := valuebox 115

WITH items [142] := valuebox 114

WITH items [143] := valuebox 117

WITH items [144] := valuebox 116

WITH items [145] := valuebox 119

WITH items [146] := valuebox 118

```
WITH items [147 ] := valuebox 121
WITH items [148 ] := valuebox 120
WITH items [149 ] := valuebox 123
WITH items [150 ] := valuebox 122
WITH items [151 ] := valuebox 124
WITH items [152 ] := valuebox 125
WITH items [153 ] := valuebox 126
WITH items [154 ] := valuebox 127
WITH items [155 ] := valuebox 128
WITH items [156 ] := valuebox 129
WITH items [157 ] := valuebox 130
WITH items [158 ] := valuebox 131
WITH items [159 ] := valuebox 132
WITH items [160 ] := valuebox 133
WITH items [161 ] := valuebox 134
WITH items [162 ] := valuebox 135
WITH items [163 ] := valuebox 136
WITH items [164 ] := valuebox 137
WITH items [165 ] := valuebox 138
WITH items [166 ] := valuebox 139
WITH items [167 ] := valuebox 140
WITH items [168 ] := valuebox 141
WITH items [169 ] := valuebox 142
WITH items [170 ] := valuebox 143
WITH items [171 ] := valuebox 144
WITH items [172 ] := valuebox 145
WITH items [173 ] := valuebox 146
```

WITH items [174] := valuebox 147

WITH items [175] := valuebox 148

WITH items [176] := valuebox 149

WITH items [177] := valuebox 150

WITH items [178] := valuebox 151

WITH items [179] := valuebox 152

WITH items [180] := valuebox 153

WITH items [181] := valuebox 154

WITH items [182] := valuebox 155

WITH items [183] := valuebox 156

WITH items [184] := valuebox 157

WITH items [185] := valuebox 158

WITH items [186] := valuebox 159

WITH items [187] := valuebox 160

WITH items [188] := valuebox 161

WITH items [189] := valuebox 162

WITH items [190] := valuebox 163

WITH items [191] := valuebox 173

WITH items [192] := valuebox 165

WITH items [193] := valuebox 166

WITH items [194] := valuebox 167

WITH items [195] := valuebox 168

WITH items [196] := valuebox 169

WITH items [197] := valuebox 170

WITH items [198] := valuebox 171

WITH items [199] := valuebox 172

WITH items [200] := valuebox 175

```
  WITH items [201 ] := valuebox 174
  WITH items [202 ] := valuebox 176
  WITH items [203 ] := pushbutton 7

INSTANCE display 11 ISA display
  WITH wait := TRUE
  WITH delay changes := TRUE
  WITH items [1 ] := textbox 55
  WITH items [2 ] := textbox 56
  WITH items [3 ] := textbox 57
  WITH items [4 ] := textbox 58
  WITH items [5 ] := textbox 59
  WITH items [6 ] := textbox 60
  WITH items [7 ] := textbox 61
  WITH items [8 ] := textbox 62
  WITH items [9 ] := textbox 63
  WITH items [10 ] := textbox 64
  WITH items [11 ] := textbox 65

INSTANCE help2 ISA display
  WITH wait := TRUE
  WITH delay changes := TRUE
  WITH items [1 ] := textbox 66
  WITH items [2 ] := textbox 67
  WITH items [3 ] := textbox 68
  WITH items [4 ] := textbox 69
  WITH items [5 ] := textbox 70
```

```
 WITH items [6 ] := textbox 71
 WITH items [7 ] := textbox 72
 WITH items [8 ] := textbox 73
 WITH items [9 ] := textbox 74

INSTANCE roche ISA display
 WITH wait := TRUE
 WITH delay changes := TRUE
 WITH items [1 ] := picturebox 1

INSTANCE Recommendation ISA display
 WITH wait := TRUE
 WITH delay changes := FALSE
 WITH items [1 ] := valuebox 177
 WITH items [2 ] := valuebox 178
 WITH items [3 ] := valuebox 179
 WITH items [4 ] := valuebox 180
 WITH items [5 ] := valuebox 181
 WITH items [6 ] := UNDETERMINED
 WITH items [7 ] := valuebox 182
 WITH items [8 ] := valuebox 183
 WITH items [9 ] := valuebox 184
 WITH items [10 ] := valuebox 185
 WITH items [11 ] := valuebox 186

INSTANCE listbox 1 ISA listbox
 WITH location := 419,43,594,282
```

```
 WITH source := prod_name OF dB3 roferon1
 WITH destination := prod_name OF select product

INSTANCE picturebox 1 ISA picturebox
 WITH location := 0,30,640,330
 WITH clipped := TRUE
 WITH picture := "L5G00065.bmp"

INSTANCE promptbox 11 ISA promptbox
 WITH location := 318,44,413,69
 WITH pen color := 0,0,0
 WITH fill color := 255,0,255
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := assay1 [1 ] OF get data 1

INSTANCE promptbox 12 ISA promptbox
 WITH location := 318,70,413,95
 WITH pen color := 0,0,0
 WITH fill color := 255,0,255
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := assay1 [2 ] OF get data 1

INSTANCE promptbox 13 ISA promptbox
```

```
  WITH location := 319,96,414,121
  WITH pen color := 0,0,0
  WITH fill color := 255,0,255
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := assay1 [3 ] OF get data 1

INSTANCE promptbox 14 ISA promptbox
  WITH location := 320,123,415,148
  WITH pen color := 0,0,0
  WITH fill color := 255,0,255
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := assay1 [4 ] OF get data 1

INSTANCE promptbox 15 ISA promptbox
  WITH location := 318,150,413,175
  WITH pen color := 0,0,0
  WITH fill color := 255,0,255
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := assay1 [5 ] OF get data 1

INSTANCE promptbox 16 ISA promptbox
```

```
 WITH location := 320,177,415,202
 WITH pen color := 0,0,0
 WITH fill color := 255,0,255
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := assay1 [6 ] OF get data 1

INSTANCE promptbox 18 ISA promptbox
 WITH location := 262,313,448,342
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := prod_name OF select product

INSTANCE promptbox 19 ISA promptbox
 WITH location := 265,360,450,389
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := formula assay OF select product

INSTANCE promptbox 23 ISA promptbox
 WITH location := 320,203,415,228
 WITH pen color := 0,0,0
 WITH fill color := 255,0,255
 WITH justify IS left
```

```
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := assay1 [7 ] OF get data 1

INSTANCE promptbox 24 ISA promptbox
  WITH location := 320,230,415,255
  WITH pen color := 0,0,0
  WITH fill color := 255,0,255
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := assay1 [8 ] OF get data 1

INSTANCE promptbox 25 ISA promptbox
  WITH location := 320,258,415,283
  WITH pen color := 0,0,0
  WITH fill color := 255,0,255
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := assay1 [9 ] OF get data 1

INSTANCE promptbox 26 ISA promptbox
  WITH location := 45,43,96,67
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
```

```
 WITH attachment := lot one bottles [1 ] OF lot bottles 1

INSTANCE promptbox 27 ISA promptbox
 WITH location := 99,44,150,68
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot one bottles [2 ] OF lot bottles 1

INSTANCE promptbox 28 ISA promptbox
 WITH location := 153,44,204,68
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot one bottles [3 ] OF lot bottles 1

INSTANCE promptbox 29 ISA promptbox
 WITH location := 209,43,260,67
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot one bottles [4 ] OF lot bottles 1

INSTANCE promptbox 20 ISA promptbox
 WITH location := 264,44,315,68
 WITH justify IS left
 WITH frame := TRUE
```

```
  WITH show current := TRUE
  WITH attachment := lot one bottles [5 ] OF lot bottles 1

INSTANCE promptbox 21 ISA promptbox
  WITH location := 45,70,96,94
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot two bottles [1 ] OF lot bottles 1

INSTANCE promptbox 22 ISA promptbox
  WITH location := 99,70,150,94
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot two bottles [2 ] OF lot bottles 1

INSTANCE promptbox 30 ISA promptbox
  WITH location := 153,72,204,96
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot two bottles [3 ] OF lot bottles 1

INSTANCE promptbox 31 ISA promptbox
  WITH location := 209,70,260,94
  WITH justify IS left
```

```
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot two bottles [4 ] OF lot bottles 1

INSTANCE promptbox 32 ISA promptbox
 WITH location := 263,70,314,94
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot two bottles [5 ] OF lot bottles 1

INSTANCE promptbox 33 ISA promptbox
 WITH location := 46,97,97,121
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot three bottles [1 ] OF lot bottles 1

INSTANCE promptbox 34 ISA promptbox
 WITH location := 100,97,151,121
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot three bottles [2 ] OF lot bottles 1

INSTANCE promptbox 35 ISA promptbox
 WITH location := 155,98,206,122
```

```
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot three bottles [3 ] OF lot bottles 1

INSTANCE promptbox 36 ISA promptbox
  WITH location := 210,97,261,121
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot three bottles [4 ] OF lot bottles 1

INSTANCE promptbox 37 ISA promptbox
  WITH location := 265,97,316,121
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot three bottles [5 ] OF lot bottles 1

INSTANCE promptbox 38 ISA promptbox
  WITH location := 45,124,97,148
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot four bottles [1 ] OF lot bottles 1

INSTANCE promptbox 39 ISA promptbox
```

```
 WITH location := 100,124,152,148
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot four bottles [2 ] OF lot bottles 1

INSTANCE promptbox 40 ISA promptbox
 WITH location := 155,124,207,148
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot four bottles [3 ] OF lot bottles 1

INSTANCE promptbox 41 ISA promptbox
 WITH location := 210,124,262,148
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot four bottles [4 ] OF lot bottles 1

INSTANCE promptbox 42 ISA promptbox
 WITH location := 265,124,317,148
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot four bottles [5 ] OF lot bottles 1
```

```
INSTANCE promptbox 43 ISA promptbox
  WITH location := 45,151,97,175
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot five bottles [1 ] OF lot bottles 1

INSTANCE promptbox 44 ISA promptbox
  WITH location := 100,151,152,175
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot five bottles [2 ] OF lot bottles 1

INSTANCE promptbox 45 ISA promptbox
  WITH location := 155,151,207,175
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot five bottles [3 ] OF lot bottles 1

INSTANCE promptbox 46 ISA promptbox
  WITH location := 210,151,262,175
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot five bottles [4 ] OF lot bottles 1
```

```
INSTANCE promptbox 47 ISA promptbox
  WITH location := 265,151,317,175
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot five bottles [5 ] OF lot bottles 1

INSTANCE promptbox 48 ISA promptbox
  WITH location := 45,178,97,202
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot six bottles [1 ] OF lot bottles 1

INSTANCE promptbox 49 ISA promptbox
  WITH location := 100,178,152,202
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot six bottles [2 ] OF lot bottles 1

INSTANCE promptbox 50 ISA promptbox
  WITH location := 155,178,207,202
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
```

```
 WITH attachment := lot six bottles [3 ] OF lot bottles 1

INSTANCE promptbox 51 ISA promptbox
 WITH location := 210,178,262,202
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot six bottles [4 ] OF lot bottles 1

INSTANCE promptbox 52 ISA promptbox
 WITH location := 265,178,317,202
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot six bottles [5 ] OF lot bottles 1

INSTANCE promptbox 53 ISA promptbox
 WITH location := 45,205,97,229
 WITH justify IS left
 WITH frame := TRUE
 WITH show current := TRUE
 WITH attachment := lot seven bottles [1 ] OF lot bottles 1

INSTANCE promptbox 54 ISA promptbox
 WITH location := 100,205,152,229
 WITH justify IS left
 WITH frame := TRUE
```

```
  WITH show current := TRUE
  WITH attachment := lot seven bottles [2 ] OF lot bottles 1

INSTANCE promptbox 55 ISA promptbox
  WITH location := 155,205,207,229
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot seven bottles [3 ] OF lot bottles 1

INSTANCE promptbox 56 ISA promptbox
  WITH location := 210,205,262,229
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot seven bottles [4 ] OF lot bottles 1

INSTANCE promptbox 57 ISA promptbox
  WITH location := 265,205,317,229
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot seven bottles [5 ] OF lot bottles 1

INSTANCE promptbox 58 ISA promptbox
  WITH location := 45,232,97,256
  WITH justify IS left
```

```
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot eight bottles [1 ] OF lot bottles 1

INSTANCE promptbox 59 ISA promptbox
  WITH location := 100,232,152,256
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot eight bottles [2 ] OF lot bottles 1

INSTANCE promptbox 60 ISA promptbox
  WITH location := 155,232,207,256
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot eight bottles [3 ] OF lot bottles 1

INSTANCE promptbox 61 ISA promptbox
  WITH location := 210,232,262,256
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot eight bottles [4 ] OF lot bottles 1

INSTANCE promptbox 62 ISA promptbox
  WITH location := 265,232,317,256
```

```
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot eight bottles [5 ] OF lot bottles 1

INSTANCE promptbox 63 ISA promptbox
  WITH location := 45,259,97,283
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot nine bottles [1 ] OF lot bottles 1

INSTANCE promptbox 64 ISA promptbox
  WITH location := 100,259,152,283
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot nine bottles [2 ] OF lot bottles 1

INSTANCE promptbox 65 ISA promptbox
  WITH location := 155,259,207,283
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot nine bottles [3 ] OF lot bottles 1

INSTANCE promptbox 66 ISA promptbox
```

```
  WITH location := 210,259,262,283
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot nine bottles [4 ] OF lot bottles 1

INSTANCE promptbox 67 ISA promptbox
  WITH location := 265,259,317,283
  WITH justify IS left
  WITH frame := TRUE
  WITH show current := TRUE
  WITH attachment := lot nine bottles [5 ] OF lot bottles 1

INSTANCE pushbutton 1 ISA pushbutton
  WITH location := 5,286,105,339
  WITH label := "START"
  WITH attribute attachment := start

INSTANCE pushbutton 4 ISA pushbutton
  WITH location := 472,300,559,341
  WITH label := "INSERT "
  WITH attribute attachment := insert product OF database actions

INSTANCE pushbutton 6 ISA pushbutton
  WITH location := 472,345,559,386
  WITH label := "DELETE"
  WITH attribute attachment := delete product OF database actions
```

```
INSTANCE pushbutton 5 ISA pushbutton
  WITH location := 4,341,104,394
  WITH label := "HELP"
  WITH attribute attachment := help1

INSTANCE pushbutton 7 ISA pushbutton
  WITH location := 2,271,102,424
  WITH label := "HELP"
  WITH attribute attachment := help two

INSTANCE compound query textbox ISA textbox
  WITH location := 10,10,512,80
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH scroll := TRUE
  WITH text := "What is(are):
  *
of
  *"

INSTANCE interval query textbox ISA textbox
  WITH location := 10,10,512,80
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
```

```
 WITH scroll := TRUE
 WITH text := "What is(are):
 *
of
 *"

INSTANCE multicompound query textbox ISA textbox
 WITH location := 10,10,512,80
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH scroll := TRUE
 WITH text := "What is(are):
 *
of
 *"

INSTANCE numeric query textbox ISA textbox
 WITH location := 10,10,512,80
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH scroll := TRUE
 WITH text := "What is(are):
 *
of
 *"
```

```
INSTANCE simple query textbox ISA textbox
  WITH location := 10,10,512,80
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH scroll := TRUE
  WITH text := "Is it true that:
  *
is
  *"

INSTANCE string query textbox ISA textbox
  WITH location := 10,10,512,80
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH scroll := TRUE
  WITH text := "What is(are):
  *
of
  *"

INSTANCE time query textbox ISA textbox
  WITH location := 10,10,512,80
  WITH justify IS left
  WITH font := "System"
```

```
 WITH font size := 10
 WITH scroll := TRUE
 WITH text := "What is(are):
 *
of
 *"

INSTANCE agenda query textbox ISA textbox
 WITH location := 10,10,320,30
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "Can you identify the area of interest?"

INSTANCE textbox 9 ISA textbox
 WITH location := 0,10,45,42
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font style IS bold, italic CF FALSE
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "LOT #"

INSTANCE textbox 11 ISA textbox
 WITH location := 316,19,411,43
```

```
 WITH pen color := 0,0,0
 WITH fill color := 255,0,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "ASSAY"

INSTANCE textbox 12 ISA textbox
 WITH location := 0,44,45,68
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "1"

INSTANCE textbox 13 ISA textbox
 WITH location := 0,70,45,94
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "2"
```

```
INSTANCE textbox 14 ISA textbox
  WITH location := -1,97,44,121
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "3"

INSTANCE textbox 15 ISA textbox
  WITH location := -1,125,44,149
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "4"

INSTANCE textbox 16 ISA textbox
  WITH location := -1,151,44,175
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
```

```
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "5"

INSTANCE textbox 17 ISA textbox
  WITH location := 0,179,45,203
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "6"

INSTANCE textbox 18 ISA textbox
  WITH location := 414,16,599,40
  WITH pen color := 255,255,255
  WITH fill color := 0,0,0
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "PRODUCT DATABASE"

INSTANCE textbox 19 ISA textbox
  WITH location := 2,3,146,37
  WITH pen color := 255,255,0
```

```
 WITH fill color := 255,0,0
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "ONE LOT FORMULA
USED"

INSTANCE textbox 20 ISA textbox
 WITH location := 2,40,44,61
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "LOT #"

INSTANCE textbox 21 ISA textbox
 WITH location := 47,40,146,61
 WITH pen color := 255,255,0
 WITH fill color := 0,0,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := " ACTIVE VOL"
```

```
INSTANCE textbox 22 ISA textbox
  WITH location := 2,64,44,84
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "1"

INSTANCE textbox 23 ISA textbox
  WITH location := 2,87,44,107
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "2"

INSTANCE textbox 24 ISA textbox
  WITH location := 2,110,44,130
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "3"

INSTANCE textbox 25 ISA textbox
 WITH location := 2,133,44,153
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "4"

INSTANCE textbox 26 ISA textbox
 WITH location := 2,156,44,176
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "5"

INSTANCE textbox 27 ISA textbox
 WITH location := 2,179,44,199
 WITH pen color := 0,0,0
```

```
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "6"

INSTANCE textbox 28 ISA textbox
 WITH location := 149,3,631,37
 WITH pen color := 255,255,255
 WITH fill color := 0,0,0
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "TWO LOTS FORMULA
USED
"

INSTANCE textbox 29 ISA textbox
 WITH location := 149,40,200,60
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
  WITH text := "1"

INSTANCE textbox 30 ISA textbox
  WITH location := 203,40,254,60
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "2"

INSTANCE textbox 31 ISA textbox
  WITH location := 257,40,308,60
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "3"

INSTANCE textbox 32 ISA textbox
  WITH location := 311,40,362,60
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "4"

INSTANCE textbox 33 ISA textbox
 WITH location := 365,40,416,60
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "5"

INSTANCE textbox 34 ISA textbox
 WITH location := 419,40,470,60
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "6"

INSTANCE textbox 35 ISA textbox
 WITH location := 110,317,253,342
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := " PRODUCT  NAME --->"

INSTANCE textbox 36 ISA textbox
 WITH location := 111,351,259,388
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "ASSAY VALUE
USED IN FORMULA--->"

INSTANCE textbox 37 ISA textbox
 WITH location := 0,205,45,229
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "7"

INSTANCE textbox 38 ISA textbox
 WITH location := 0,231,45,255
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
```

```
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "8"

INSTANCE textbox 39 ISA textbox
 WITH location := 0,258,45,282
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "9"

INSTANCE textbox 40 ISA textbox
 WITH location := 2,202,44,222
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "7"

INSTANCE textbox 41 ISA textbox
```

```
 WITH location := 472,40,523,60
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "7"

INSTANCE textbox 42 ISA textbox
 WITH location := 526,40,577,60
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "8"

INSTANCE textbox 43 ISA textbox
 WITH location := 580,39,631,59
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
  WITH text := "9"

INSTANCE textbox 44 ISA textbox
  WITH location := 2,225,44,245
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "8"

INSTANCE textbox 45 ISA textbox
  WITH location := 2,248,44,268
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "9"

INSTANCE textbox 46 ISA textbox
  WITH location := 104,272,146,292
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "1"

INSTANCE textbox 47 ISA textbox
 WITH location := 104,295,146,315
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "2"

INSTANCE textbox 48 ISA textbox
 WITH location := 104,318,146,338
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "3"

INSTANCE textbox 49 ISA textbox
 WITH location := 104,341,146,361
```

```
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "4"

INSTANCE textbox 50 ISA textbox
 WITH location := 104,364,146,384
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "5"

INSTANCE textbox 51 ISA textbox
 WITH location := 104,387,146,407
 WITH pen color := 0,0,0
 WITH fill color := 0,255,255
 WITH justify IS center
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH text := "6"
```

```
INSTANCE textbox 52 ISA textbox
  WITH location := 104,410,146,430
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "7"

INSTANCE textbox 53 ISA textbox
  WITH location := 104,433,146,453
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "8"

INSTANCE textbox 54 ISA textbox
  WITH location := 104,456,146,476
  WITH pen color := 0,0,0
  WITH fill color := 0,255,255
  WITH justify IS center
  WITH font := "System"
```

```
  WITH font size := 10
  WITH frame := TRUE
  WITH text := "9"

INSTANCE textbox 55 ISA textbox
  WITH location := 0,75,260,240
  WITH pen color := 0,0,255
  WITH fill color := 255,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := FALSE
  WITH text := "Place the cursor in any little box and click the left mo\
use button. A vertical blinking cursor appears in that box. Then type th\
e corresponding value. Repeat the same procedure for the other boxes als\
o. The corresponding lot numbers a
re not actual lot numbers. They are for reference and valid for this ses\
sion only. Maximum number of lots are limited to 9.
"

INSTANCE textbox 56 ISA textbox
  WITH location := 0,0,260,55
  WITH pen color := 0,255,0
  WITH fill color := 0,0,255
  WITH justify IS left
  WITH font := "Tms Rmn"
  WITH font style IS bold, italic CF FALSE, underline CF FALSE, strikeou\
```

```
t CF FALSE
  WITH font size := 12
  WITH text := "This application is for the purpose of Roferon bulk adju\
stment calculation."

INSTANCE textbox 57 ISA textbox
  WITH location := 0,55,260,75
  WITH pen color := 255,255,255
  WITH fill color := 255,0,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "STEP 1 ---> HOW TO ENTER DATA ?"

INSTANCE textbox 58 ISA textbox
  WITH location := 0,240,260,260
  WITH pen color := 255,255,255
  WITH fill color := 255,0,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "STEP 2 ---> HOW TO ADD PRODUCTS ?"

INSTANCE textbox 59 ISA textbox
  WITH location := 0,260,260,540
  WITH pen color := 0,0,255
  WITH fill color := 255,255,0
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "New products can be added to the product database by pla\
cing the cursor in the box corresponding to the PRODUCT NAME --> and cli\
ck the left button. A vertical blinking cursor appears in that box. Then\
 type the name representing the ne
w product like the names shown in the PRODUCT DATABASE box. Then place t\
he cursor in the ASSAY VALUE USED IN FORMULA box and click the left
mouse button. Type the corresponding assay value used in the formula. Th\
en place the cursor on INSERT button and press the left mouse button. Th\
e new product appears in the PRODUCT DATABASE box.  "

INSTANCE textbox 60 ISA textbox
  WITH location := 0,540,260,560
  WITH pen color := 255,255,255
  WITH fill color := 255,0,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "STEP 3 ---> THEN HOW TO DELETE ? "

INSTANCE textbox 61 ISA textbox
  WITH location := 0,560,260,755
  WITH pen color := 0,0,255
  WITH fill color := 255,255,0
  WITH justify IS left
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := FALSE
 WITH text := "Take the cursor into the box of PRODUCT DATABASE. Place \
the cursor over the product and click left mouse button twice, so that t\
he product and its formula assay values appear in the PRODUCT NAME box a\
nd ASSAY VALUE USED IN THE FORMULA
 box respectively. Then place the cursor over the DELETE button and clic\
k left mouse button. Then that product disappears from PRODUCT DATABASE \
box. "

INSTANCE textbox 62 ISA textbox
  WITH location := 0,755,260,775
  WITH pen color := 255,255,255
  WITH fill color := 255,0,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "STEP 4 ---> HOW TO SELECT PRODUCT ?"

INSTANCE textbox 63 ISA textbox
  WITH location := 0,775,260,860
  WITH pen color := 0,0,255
  WITH fill color := 255,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
```

```
 WITH frame := FALSE
 WITH text := "Just like deletion of product, select a product from the\
PRODUCT DATABASE box. Instead of pressing DELETE button, press the STAR\
T button to see the results in the next screen."

INSTANCE textbox 64 ISA textbox
 WITH location := 0,860,260,895
 WITH pen color := 255,255,255
 WITH fill color := 255,0,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "STEP 5 ---> HOW TO RESTORE THE
              SAVED SESSION ?"

INSTANCE textbox 65 ISA textbox
 WITH location := 0,895,260,1060
 WITH pen color := 0,0,255
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := FALSE
 WITH text := "Place the cursor over the FILE and click the mouse butto\
n. A menu appears. Chose RESTORE and click it. In the new window chose t\
he file to be restored and click on OPEN. Then select the same product f\
rom PRODUCT DATABSE box , that had
```

```
been chosen when this session was saved. Then click on START without ty\
ping any values in QUANTITY and ASSAY boxes."

INSTANCE textbox 66 ISA textbox
 WITH location := 0,0,260,115
 WITH pen color := 0,255,0
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "Helv"
 WITH font style IS bold
 WITH font size := 10
 WITH text := "This screen shows all the information regarding differen\
t permutations and combinations of how much quantity can be taken from d\
ifferent lots and if so, how much is left over in the corresponding lots\
."

INSTANCE textbox 67 ISA textbox
 WITH location := 0,115,260,135
 WITH pen color := 0,255,0
 WITH fill color := 255,0,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "using ONE LOT FORMULA boxes"

INSTANCE textbox 68 ISA textbox
 WITH location := 0,135,260,200
```

```
 WITH pen color := 0,0,255
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "When only one lot to be used, the values in these boxes \
show how much quantity should be consumed from the referenced lot number\
s."

INSTANCE textbox 69 ISA textbox
 WITH location := 0,200,260,220
 WITH pen color := 0,255,0
 WITH fill color := 255,0,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "using TWO LOTS FORMULA boxes"

INSTANCE textbox 70 ISA textbox
 WITH location := 0,220,260,500
 WITH pen color := 0,0,255
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH text := "These boxes show the values in a row when the required q\
uantity is more than the available quantity of a lot. Yellow  color diag\
```

```
onal boxes show the respective quantities available right now. (These va\
lues are nothing but the values en
tered under the QUANTITY in the first screen.) Consider any row. The yel\
low color box shows the available quantity in a lot referenced by the LO\
T # box in that row. Other values in that row indicates, the quantity yo\
u have to consume from any other l
ot as the partner to the yellow box. You should chose the second lot fro\
m the same row referenced by LOT # color box in the respective column. "

INSTANCE textbox 71 ISA textbox
  WITH location := 0,500,260,520
  WITH pen color := 0,255,0
  WITH fill color := 255,0,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "How to read The Beneath 9*9 table ?"

INSTANCE textbox 72 ISA textbox
  WITH location := 0,520,260,605
  WITH pen color := 0,0,255
  WITH fill color := 255,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "The above logic applies here except the values shown are\
 remaining quantities in the referenced lots after being consumed the re\
```

```
spective quantities from the above table. "

INSTANCE textbox 73 ISA textbox
  WITH location := 0,605,260,625
  WITH pen color := 0,255,0
  WITH fill color := 255,0,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "HOW TO SAVE THIS SESSION ?"

INSTANCE textbox 74 ISA textbox
  WITH location := 0,625,260,725
  WITH pen color := 0,0,255
  WITH fill color := 255,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH text := "Click over FILE. Chose SAVE SESSION AS and click. It ask\
s you to enter the file name. Type C:\\L5RO\\.....
In the previous dots place enter file name to reflect the session so as \
to restore when ever you want it."

INSTANCE textbox 75 ISA textbox
  WITH location := 47,10,313,41
  WITH pen color := 0,0,0
  WITH fill color := 255,255,0
```

```
  WITH justify IS center
  WITH font := "System"
  WITH frame := FALSE
  WITH text := "BOTTLES
1       2       3       4       5"

INSTANCE valuebox 1 ISA valuebox
  WITH location := 47,64,146,84
  WITH pen color := 255,255,0
  WITH fill color := 0,0,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := volume1 [1 ] OF one lot

INSTANCE valuebox 2 ISA valuebox
  WITH location := 47,87,146,107
  WITH pen color := 255,255,0
  WITH fill color := 0,0,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := volume1 [2 ] OF one lot
```

```
INSTANCE valuebox 3 ISA valuebox
  WITH location := 47,110,146,130
  WITH pen color := 255,255,0
  WITH fill color := 0,0,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := volume1 [3 ] OF one lot

INSTANCE valuebox 4 ISA valuebox
  WITH location := 47,133,146,153
  WITH pen color := 0,0,255
  WITH fill color := 0,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := volume1 [4 ] OF one lot

INSTANCE valuebox 5 ISA valuebox
  WITH location := 47,156,146,176
  WITH pen color := 0,0,255
  WITH fill color := 0,255,0
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := volume1 [5 ] OF one lot

INSTANCE valuebox 6 ISA valuebox
 WITH location := 47,179,146,199
 WITH pen color := 0,0,255
 WITH fill color := 0,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := volume1 [6 ] OF one lot

INSTANCE valuebox 7 ISA valuebox
 WITH location := 149,63,200,83
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := first lot1 [1 ] OF two lots

INSTANCE valuebox 8 ISA valuebox
 WITH location := 203,63,254,83
 WITH pen color := 255,255,255
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [2 ] OF two lots

INSTANCE valuebox 9 ISA valuebox
 WITH location := 257,62,308,82
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [3 ] OF two lots

INSTANCE valuebox 10 ISA valuebox
 WITH location := 311,63,362,83
 WITH pen color := 0,0,0
```

```
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [4 ] OF two lots

INSTANCE valuebox 11 ISA valuebox
 WITH location := 365,63,416,83
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [5 ] OF two lots

INSTANCE valuebox 12 ISA valuebox
 WITH location := 419,63,470,83
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
 WITH clipped := TRUE
 WITH attachment := first lot1 [6 ] OF two lots

INSTANCE valuebox 14 ISA valuebox
 WITH location := 203,85,254,105
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [2 ] OF two lots

INSTANCE valuebox 15 ISA valuebox
 WITH location := 258,85,309,105
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [3 ] OF two lots

INSTANCE valuebox 16 ISA valuebox
 WITH location := 312,85,363,105
```

```
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [4 ] OF two lots

INSTANCE valuebox 17 ISA valuebox
 WITH location := 365,86,416,106
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [5 ] OF two lots

INSTANCE valuebox 18 ISA valuebox
 WITH location := 420,86,471,106
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
```

```
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [6 ] OF two lots

INSTANCE valuebox 21 ISA valuebox
 WITH location := 148,110,199,130
 WITH pen color := 255,255,255
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot1 [1 ] OF two lots

INSTANCE valuebox 19 ISA valuebox
 WITH location := 148,86,199,106
 WITH pen color := 255,255,255
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [1 ] OF two lots

INSTANCE valuebox 22 ISA valuebox
```

```
 WITH location := 256,109,307,129
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot1 [3 ] OF two lots

INSTANCE valuebox 24 ISA valuebox
 WITH location := 311,132,362,152
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot1 [4 ] OF two lots

INSTANCE valuebox 26 ISA valuebox
 WITH location := 367,154,418,174
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [5 ] OF two lots

INSTANCE valuebox 28 ISA valuebox
 WITH location := 420,178,471,198
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [6 ] OF two lots

INSTANCE valuebox 25 ISA valuebox
 WITH location := 202,109,253,129
 WITH pen color := 255,255,255
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot1 [2 ] OF two lots
```

```
INSTANCE valuebox 27 ISA valuebox
  WITH location := 311,109,362,129
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := third lot1 [4 ] OF two lots

INSTANCE valuebox 29 ISA valuebox
  WITH location := 365,108,416,128
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := third lot1 [5 ] OF two lots

INSTANCE valuebox 30 ISA valuebox
  WITH location := 419,109,470,129
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot1 [6 ] OF two lots

INSTANCE valuebox 31 ISA valuebox
 WITH location := 149,133,200,153
 WITH pen color := 255,255,255
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot1 [1 ] OF two lots

INSTANCE valuebox 32 ISA valuebox
 WITH location := 202,132,253,152
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot1 [2 ] OF two lots
```

```
INSTANCE valuebox 33 ISA valuebox
  WITH location := 257,133,308,153
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := fourth lot1 [3 ] OF two lots

INSTANCE valuebox 34 ISA valuebox
  WITH location := 366,132,417,152
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := fourth lot1 [5 ] OF two lots

INSTANCE valuebox 35 ISA valuebox
  WITH location := 419,132,470,152
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot1 [6 ] OF two lots

INSTANCE valuebox 36 ISA valuebox
 WITH location := 420,154,471,174
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [6 ] OF two lots

INSTANCE valuebox 37 ISA valuebox
 WITH location := 148,156,199,176
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := fifth lot1 [1 ] OF two lots

INSTANCE valuebox 38 ISA valuebox
 WITH location := 148,179,199,199
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [1 ] OF two lots

INSTANCE valuebox 39 ISA valuebox
 WITH location := 202,155,253,175
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [2 ] OF two lots

INSTANCE valuebox 40 ISA valuebox
 WITH location := 257,155,308,175
 WITH pen color := 0,0,0
```

```
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [3 ] OF two lots

INSTANCE valuebox 41 ISA valuebox
 WITH location := 312,155,363,175
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [4 ] OF two lots

INSTANCE valuebox 42 ISA valuebox
 WITH location := 202,178,253,198
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [2 ] OF two lots

INSTANCE valuebox 43 ISA valuebox
 WITH location := 257,178,308,198
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [3 ] OF two lots

INSTANCE valuebox 44 ISA valuebox
 WITH location := 312,178,363,198
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [4 ] OF two lots

INSTANCE valuebox 45 ISA valuebox
 WITH location := 367,177,418,197
```

```
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := sixth lot1 [5 ] OF two lots

INSTANCE valuebox 46 ISA valuebox
  WITH location := 47,202,146,222
  WITH pen color := 0,0,255
  WITH fill color := 0,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := volume1 [7 ] OF one lot

INSTANCE valuebox 47 ISA valuebox
  WITH location := 47,225,146,245
  WITH pen color := 0,0,255
  WITH fill color := 0,255,0
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
```

```
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := volume1 [8 ] OF one lot

INSTANCE valuebox 48 ISA valuebox
 WITH location := 47,248,146,268
 WITH pen color := 0,0,255
 WITH fill color := 0,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := volume1 [9 ] OF one lot

INSTANCE valuebox 49 ISA valuebox
 WITH location := 148,202,199,222
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [1 ] OF two lots

INSTANCE valuebox 50 ISA valuebox
```

```
 WITH location := 201,202,252,222
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [2 ] OF two lots

INSTANCE valuebox 51 ISA valuebox
 WITH location := 256,202,307,222
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [3 ] OF two lots

INSTANCE valuebox 52 ISA valuebox
 WITH location := 311,201,362,221
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [4 ] OF two lots

INSTANCE valuebox 53 ISA valuebox
 WITH location := 366,200,417,220
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [5 ] OF two lots

INSTANCE valuebox 55 ISA valuebox
 WITH location := 472,201,523,221
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [7 ] OF two lots
```

```
INSTANCE valuebox 54 ISA valuebox
 WITH location := 420,201,471,221
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot1 [6 ] OF two lots

INSTANCE valuebox 56 ISA valuebox
 WITH location := 148,225,199,245
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot1 [1 ] OF two lots

INSTANCE valuebox 57 ISA valuebox
 WITH location := 201,224,252,244
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
```

```
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := eighth lot1 [2 ] OF two lots

INSTANCE valuebox 58 ISA valuebox
  WITH location := 527,202,578,222
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := seventh lot1 [8 ] OF two lots

INSTANCE valuebox 59 ISA valuebox
  WITH location := 581,202,632,222
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := seventh lot1 [9 ] OF two lots
```

```
INSTANCE valuebox 60 ISA valuebox
  WITH location := 256,225,307,245
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := eighth lot1 [3 ] OF two lots

INSTANCE valuebox 61 ISA valuebox
  WITH location := 311,225,362,245
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := eighth lot1 [4 ] OF two lots

INSTANCE valuebox 62 ISA valuebox
  WITH location := 366,224,417,244
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot1 [5 ] OF two lots

INSTANCE valuebox 63 ISA valuebox
 WITH location := 420,224,471,244
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot1 [6 ] OF two lots

INSTANCE valuebox 64 ISA valuebox
 WITH location := 526,225,577,245
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := eighth lot1 [8 ] OF two lots

INSTANCE valuebox 65 ISA valuebox
 WITH location := 473,224,524,244
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot1 [7 ] OF two lots

INSTANCE valuebox 66 ISA valuebox
 WITH location := 580,225,631,245
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot1 [9 ] OF two lots

INSTANCE valuebox 67 ISA valuebox
 WITH location := 149,248,200,268
 WITH pen color := 0,0,0
```

```
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [1 ] OF two lots

INSTANCE valuebox 68 ISA valuebox
 WITH location := 202,247,253,267
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [2 ] OF two lots

INSTANCE valuebox 69 ISA valuebox
 WITH location := 256,247,307,267
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [3 ] OF two lots

INSTANCE valuebox 70 ISA valuebox
 WITH location := 311,248,362,268
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [4 ] OF two lots

INSTANCE valuebox 71 ISA valuebox
 WITH location := 366,247,417,267
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [5 ] OF two lots

INSTANCE valuebox 72 ISA valuebox
 WITH location := 421,247,472,267
```

```
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [6 ] OF two lots

INSTANCE valuebox 73 ISA valuebox
 WITH location := 474,246,525,266
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [7 ] OF two lots

INSTANCE valuebox 74 ISA valuebox
 WITH location := 528,247,579,267
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
```

```
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [8 ] OF two lots

INSTANCE valuebox 75 ISA valuebox
 WITH location := 580,246,631,266
 WITH pen color := 0,0,0
 WITH fill color := 255,255,0
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot1 [9 ] OF two lots

INSTANCE valuebox 76 ISA valuebox
 WITH location := 473,63,524,83
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [7 ] OF two lots

INSTANCE valuebox 77 ISA valuebox
```

```
 WITH location := 527,62,578,82
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [8 ] OF two lots

INSTANCE valuebox 78 ISA valuebox
 WITH location := 580,61,631,81
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot1 [9 ] OF two lots

INSTANCE valuebox 79 ISA valuebox
 WITH location := 474,86,525,106
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [7 ] OF two lots

INSTANCE valuebox 80 ISA valuebox
 WITH location := 528,86,579,106
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [8 ] OF two lots

INSTANCE valuebox 81 ISA valuebox
 WITH location := 582,84,633,104
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot1 [9 ] OF two lots
```

```
INSTANCE valuebox 82 ISA valuebox
  WITH location := 473,109,524,129
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := third lot1 [7 ] OF two lots

INSTANCE valuebox 83 ISA valuebox
  WITH location := 527,109,578,129
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := third lot1 [7 ] OF two lots

INSTANCE valuebox 84 ISA valuebox
  WITH location := 581,108,632,128
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot1 [9 ] OF two lots

INSTANCE valuebox 85 ISA valuebox
 WITH location := 473,132,524,152
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot1 [7 ] OF two lots

INSTANCE valuebox 86 ISA valuebox
 WITH location := 527,132,578,152
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot1 [8 ] OF two lots
```

```
INSTANCE valuebox 87 ISA valuebox
  WITH location := 581,131,632,151
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := fourth lot1 [9 ] OF two lots

INSTANCE valuebox 88 ISA valuebox
  WITH location := 474,154,525,174
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := fifth lot1 [7 ] OF two lots

INSTANCE valuebox 89 ISA valuebox
  WITH location := 528,154,579,174
  WITH pen color := 0,0,0
  WITH fill color := 21,142,183
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [8 ] OF two lots

INSTANCE valuebox 90 ISA valuebox
 WITH location := 582,154,633,174
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot1 [9 ] OF two lots

INSTANCE valuebox 91 ISA valuebox
 WITH location := 528,178,579,198
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := sixth lot1 [8 ] OF two lots

INSTANCE valuebox 92 ISA valuebox
 WITH location := 473,178,524,198
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [7 ] OF two lots

INSTANCE valuebox 93 ISA valuebox
 WITH location := 581,178,632,198
 WITH pen color := 0,0,0
 WITH fill color := 21,142,183
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot1 [9 ] OF two lots

INSTANCE valuebox 94 ISA valuebox
 WITH location := 203,272,254,292
 WITH pen color := 255,255,255
```

```
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [2 ] OF optimize

INSTANCE valuebox 95 ISA valuebox
 WITH location := 149,272,200,292
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [1 ] OF optimize

INSTANCE valuebox 96 ISA valuebox
 WITH location := 257,272,308,292
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
 WITH clipped := TRUE
 WITH attachment := first lot [3 ] OF optimize

INSTANCE valuebox 97 ISA valuebox
 WITH location := 311,272,362,292
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [4 ] OF optimize

INSTANCE valuebox 98 ISA valuebox
 WITH location := 365,272,416,292
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [5 ] OF optimize

INSTANCE valuebox 99 ISA valuebox
 WITH location := 419,272,470,292
```

```
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [6 ] OF optimize

INSTANCE valuebox 100 ISA valuebox
 WITH location := 473,272,524,292
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [7 ] OF optimize

INSTANCE valuebox 101 ISA valuebox
 WITH location := 527,272,578,292
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
```

```
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [8 ] OF optimize

INSTANCE valuebox 102 ISA valuebox
 WITH location := 581,272,632,292
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := first lot [9 ] OF optimize

INSTANCE valuebox 104 ISA valuebox
 WITH location := 203,295,254,315
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [2 ] OF optimize

INSTANCE valuebox 103 ISA valuebox
```

```
 WITH location := 257,295,308,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [3 ] OF optimize

INSTANCE valuebox 107 ISA valuebox
 WITH location := 149,318,200,338
 WITH pen color := 0,0,0
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [1 ] OF optimize

INSTANCE valuebox 108 ISA valuebox
 WITH location := 149,295,200,315
 WITH pen color := 0,0,0
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [1 ] OF optimize

INSTANCE valuebox 105 ISA valuebox
 WITH location := 311,295,362,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [4 ] OF optimize

INSTANCE valuebox 106 ISA valuebox
 WITH location := 365,295,416,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [5 ] OF optimize
```

```
INSTANCE valuebox 109 ISA valuebox
 WITH location := 419,295,470,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [6 ] OF optimize

INSTANCE valuebox 110 ISA valuebox
 WITH location := 473,295,524,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [7 ] OF optimize

INSTANCE valuebox 111 ISA valuebox
 WITH location := 527,295,578,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [8 ] OF optimize

INSTANCE valuebox 112 ISA valuebox
 WITH location := 581,295,632,315
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := second lot [9 ] OF optimize

INSTANCE valuebox 114 ISA valuebox
 WITH location := 257,318,308,338
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [3 ] OF optimize
```

```
INSTANCE valuebox 116 ISA valuebox
 WITH location := 311,341,362,361
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [4 ] OF optimize

INSTANCE valuebox 118 ISA valuebox
 WITH location := 365,364,416,384
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [5 ] OF optimize

INSTANCE valuebox 120 ISA valuebox
 WITH location := 419,387,470,407
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
```

```
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [6 ] OF optimize

INSTANCE valuebox 122 ISA valuebox
 WITH location := 473,410,524,430
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [7 ] OF optimize

INSTANCE valuebox 115 ISA valuebox
 WITH location := 203,318,254,338
 WITH pen color := 0,0,0
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := third lot [2 ] OF optimize

INSTANCE valuebox 117 ISA valuebox
 WITH location := 311,318,362,338
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [4 ] OF optimize

INSTANCE valuebox 119 ISA valuebox
 WITH location := 365,318,416,338
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [5 ] OF optimize

INSTANCE valuebox 121 ISA valuebox
 WITH location := 419,318,470,338
 WITH pen color := 255,255,255
```

```
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [6 ] OF optimize

INSTANCE valuebox 123 ISA valuebox
 WITH location := 473,318,524,338
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [7 ] OF optimize

INSTANCE valuebox 124 ISA valuebox
 WITH location := 527,318,578,338
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
 WITH clipped := TRUE
 WITH attachment := third lot [8 ] OF optimize

INSTANCE valuebox 125 ISA valuebox
 WITH location := 581,318,632,338
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := third lot [9 ] OF optimize

INSTANCE valuebox 126 ISA valuebox
 WITH location := 149,341,200,361
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [1 ] OF optimize

INSTANCE valuebox 127 ISA valuebox
 WITH location := 203,341,254,361
```

```
WITH pen color := 255,255,255
WITH fill color := 255,88,255
WITH justify IS left
WITH font := "System"
WITH font size := 10
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := fourth lot [2 ] OF optimize

INSTANCE valuebox 128 ISA valuebox
 WITH location := 257,341,308,361
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [3 ] OF optimize

INSTANCE valuebox 129 ISA valuebox
 WITH location := 365,341,416,361
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
```

```
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [5 ] OF optimize

INSTANCE valuebox 130 ISA valuebox
 WITH location := 419,341,470,361
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [6 ] OF optimize

INSTANCE valuebox 131 ISA valuebox
 WITH location := 473,341,524,361
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [7 ] OF optimize

INSTANCE valuebox 132 ISA valuebox
```

```
WITH location := 527,341,578,361
WITH pen color := 255,255,255
WITH fill color := 255,88,255
WITH justify IS left
WITH font := "System"
WITH font size := 10
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := fourth lot [8 ] OF optimize

INSTANCE valuebox 133 ISA valuebox
 WITH location := 581,341,632,361
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fourth lot [9 ] OF optimize

INSTANCE valuebox 134 ISA valuebox
 WITH location := 149,364,200,384
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [1 ] OF optimize

INSTANCE valuebox 135 ISA valuebox
 WITH location := 203,364,254,384
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [2 ] OF optimize

INSTANCE valuebox 136 ISA valuebox
 WITH location := 257,364,308,384
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [3 ] OF optimize
```

```
INSTANCE valuebox 137 ISA valuebox
  WITH location := 311,364,362,384
  WITH pen color := 255,255,255
  WITH fill color := 255,88,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := fifth lot [4 ] OF optimize

INSTANCE valuebox 138 ISA valuebox
  WITH location := 419,364,470,384
  WITH pen color := 255,255,255
  WITH fill color := 255,88,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := fifth lot [6 ] OF optimize

INSTANCE valuebox 139 ISA valuebox
  WITH location := 473,364,524,384
  WITH pen color := 255,255,255
  WITH fill color := 255,88,255
  WITH justify IS left
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [7 ] OF optimize

INSTANCE valuebox 140 ISA valuebox
 WITH location := 527,364,578,384
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [8 ] OF optimize

INSTANCE valuebox 141 ISA valuebox
 WITH location := 581,364,632,384
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := fifth lot [9 ] OF optimize
```

```
INSTANCE valuebox 142 ISA valuebox
 WITH location := 149,387,200,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [1 ] OF optimize

INSTANCE valuebox 143 ISA valuebox
 WITH location := 203,387,254,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [2 ] OF optimize

INSTANCE valuebox 144 ISA valuebox
 WITH location := 257,387,308,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
```

```
WITH justify IS left
WITH font := "System"
WITH font size := 10
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := sixth lot [3 ] OF optimize

INSTANCE valuebox 145 ISA valuebox
 WITH location := 311,387,362,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [4 ] OF optimize

INSTANCE valuebox 146 ISA valuebox
 WITH location := 365,387,416,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := sixth lot [5 ] OF optimize

INSTANCE valuebox 147 ISA valuebox
 WITH location := 473,387,524,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [7 ] OF optimize

INSTANCE valuebox 148 ISA valuebox
 WITH location := 527,387,578,407
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [8 ] OF optimize

INSTANCE valuebox 149 ISA valuebox
 WITH location := 581,387,632,407
 WITH pen color := 255,255,255
```

```
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := sixth lot [9 ] OF optimize

INSTANCE valuebox 150 ISA valuebox
 WITH location := 149,410,200,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [1 ] OF optimize

INSTANCE valuebox 151 ISA valuebox
 WITH location := 203,410,254,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
```

```
 WITH clipped := TRUE
 WITH attachment := seventh lot [2 ] OF optimize

INSTANCE valuebox 152 ISA valuebox
 WITH location := 257,410,308,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [3 ] OF optimize

INSTANCE valuebox 153 ISA valuebox
 WITH location := 311,410,362,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [4 ] OF optimize

INSTANCE valuebox 154 ISA valuebox
 WITH location := 365,410,416,430
```

```
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [5 ] OF optimize

INSTANCE valuebox 155 ISA valuebox
 WITH location := 419,410,470,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [6 ] OF optimize

INSTANCE valuebox 156 ISA valuebox
 WITH location := 527,410,578,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
```

```
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [8 ] OF optimize

INSTANCE valuebox 157 ISA valuebox
 WITH location := 581,410,632,430
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := seventh lot [9 ] OF optimize

INSTANCE valuebox 158 ISA valuebox
 WITH location := 149,433,200,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [1 ] OF optimize

INSTANCE valuebox 159 ISA valuebox
```

```
WITH location := 203,433,254,453
WITH pen color := 255,255,255
WITH fill color := 255,88,255
WITH justify IS left
WITH font := "System"
WITH font size := 10
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := eighth lot [2 ] OF optimize

INSTANCE valuebox 160 ISA valuebox
 WITH location := 257,433,308,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [3 ] OF optimize

INSTANCE valuebox 161 ISA valuebox
 WITH location := 311,433,362,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
```

```
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [4 ] OF optimize

INSTANCE valuebox 162 ISA valuebox
 WITH location := 365,433,416,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [5 ] OF optimize

INSTANCE valuebox 163 ISA valuebox
 WITH location := 419,433,470,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [6 ] OF optimize
```

```
INSTANCE valuebox 165 ISA valuebox
  WITH location := 473,456,524,476
  WITH pen color := 255,255,255
  WITH fill color := 255,88,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := ninth lot [7 ] OF optimize

INSTANCE valuebox 166 ISA valuebox
  WITH location := 419,456,470,476
  WITH pen color := 255,255,255
  WITH fill color := 255,88,255
  WITH justify IS left
  WITH font := "System"
  WITH font size := 10
  WITH frame := TRUE
  WITH clipped := TRUE
  WITH attachment := ninth lot [6 ] OF optimize

INSTANCE valuebox 167 ISA valuebox
  WITH location := 365,456,416,476
  WITH pen color := 255,255,255
  WITH fill color := 255,88,255
  WITH justify IS left
```

```
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot [5 ] OF optimize

INSTANCE valuebox 168 ISA valuebox
 WITH location := 311,456,362,476
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot [4 ] OF optimize

INSTANCE valuebox 169 ISA valuebox
 WITH location := 257,456,308,476
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot [3 ] OF optimize
```

```
INSTANCE valuebox 170 ISA valuebox
 WITH location := 203,456,254,476
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot [2 ] OF optimize

INSTANCE valuebox 171 ISA valuebox
 WITH location := 149,456,200,476
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot [1 ] OF optimize

INSTANCE valuebox 172 ISA valuebox
 WITH location := 527,456,578,476
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
```

```
WITH justify IS left
WITH font := "System"
WITH font size := 10
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := ninth lot [8 ] OF optimize

INSTANCE valuebox 174 ISA valuebox
 WITH location := 527,433,578,453
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [8 ] OF optimize

INSTANCE valuebox 173 ISA valuebox
 WITH location := 473,433,524,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := eighth lot [7 ] OF optimize

INSTANCE valuebox 176 ISA valuebox
 WITH location := 581,456,632,476
 WITH pen color := 255,255,255
 WITH fill color := 0,0,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := ninth lot [9 ] OF optimize

INSTANCE valuebox 175 ISA valuebox
 WITH location := 581,433,632,453
 WITH pen color := 255,255,255
 WITH fill color := 255,88,255
 WITH justify IS left
 WITH font := "System"
 WITH font size := 10
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := eighth lot [9 ] OF optimize

INSTANCE valuebox 177 ISA valuebox
 WITH location := 33,15,113,46
 WITH justify IS left
```

```
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := best lot

INSTANCE valuebox 178 ISA valuebox
 WITH location := 36,57,113,81
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := best bottle one

INSTANCE valuebox 179 ISA valuebox
 WITH location := 37,92,114,120
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := best bottle two

INSTANCE valuebox 180 ISA valuebox
 WITH location := 37,131,113,162
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
```

```
 WITH attachment := best bottle three

INSTANCE valuebox 181 ISA valuebox
 WITH location := 38,174,111,205
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := best bottle four

INSTANCE valuebox 182 ISA valuebox
 WITH location := 39,219,112,249
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := best bottle five OF the domain

INSTANCE valuebox 183 ISA valuebox
 WITH location := 131,59,191,85
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := best bottle

INSTANCE valuebox 184 ISA valuebox
```

```
WITH location := 131,97,199,123
WITH justify IS left
WITH font := "System"
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := wastage OF the domain

INSTANCE valuebox 185 ISA valuebox
 WITH location := 131,138,205,162
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := min wastage OF the domain

INSTANCE valuebox 186 ISA valuebox
 WITH location := 130,18,193,43
 WITH justify IS left
 WITH font := "System"
 WITH frame := TRUE
 WITH clipped := TRUE
 WITH attachment := i OF the domain

INSTANCE main window ISA window
 WITH location := -1,-1,-1,-1
 WITH full screen := TRUE
 WITH style IS moveable, sizeable, closeable
```

```
WITH title := "ROFERON BULK ADJUSTMENT CALCULATION"
WITH visible := TRUE
WITH visible OK button := FALSE

INSTANCE expand window ISA window
 WITH location := 419,0,643,336
 WITH style IS moveable, sizeable, closeable
 WITH title := "HELP "
 WITH visible := FALSE
 WITH visible OK button := TRUE

INSTANCE help window ISA window
 WITH location := 362,0,640,352
 WITH style IS moveable, sizeable CF FALSE, closeable CF FALSE
 WITH title := "HELP "
 WITH visible := FALSE
 WITH visible OK button := TRUE

DEMON 2
IF record processed
THEN items[ 23] OF ROFERON BULK ADJUSTMENT CALCULATION := listbox 1
AND formula assay OF select product := form_assay OF dB3 roferon1
AND prod_name OF select product := prod_name OF dB3 roferon1

DEMON 1
IF  CONF(output OF help window) = -1
THEN visible OF help window := FALSE
```

```
ELSE visible OF help window := TRUE


END
```

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