

**COMPUTERIZING INVENTORY CONTROL SYSTEM
(A CASE STUDY OF FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA).**

BY

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APPROVAL PAGE

This project work has been read and certified by the undersigned as meeting the requirement of the department of mathematics/ computer science, federal University of technology, Minna

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DEDICATION

This project is dedicated to my beloved mum MRS R ABALAKA and my late father MR J.O ABALAKA and the entire ABALAKA'S family.

ACKNOWLEDGEMENT

Special praises to the almighty God for seeing me through the whole program. It has not been too easy to cope with family matter and studies, but with strong determination and the will to succeed. Things become easier.

First to the individual whose contribution in this work cannot be forgotten is my project supervisor Prince R.O Badmus and my H.O.D Mr Ezeako despite your administrative work and other academics you still found time to read, make corrections and offer solutions. Your efforts are highly commendable.

To my lecturers in department, what else can one say than to thank you for giving us the proper direction required to become computer analysts.

Finally, to others too numerous to mention I thank you for your prayers and courage. May the almighty God bless you all. I am highly indebted to all sundry.

ABSTRACT

In this computer age, no institution or organization can competently compete with similar institution if it operates its system manually. At the same time without inventories no organization could hope to achieve smooth operational flow.

This project highlights the computerization of inventory control system, development, implementation and maintenance through software application of Federal University of Technology Minna.

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CHAPTER ONE

INTRODUCTION

Universities are established to promote learning and in respect of universities of technologies, they are especially to foster and promote science and technology for the development of our country and the world at large.

However, teaching and learning can never be effective without instructional materials. Laboratories and workshops have to be properly equipped and supplied with adequate materials such as audiovisual aids, stationeries and all other requirements for use both by staff and students. This is in order to facilitate teaching and learning.

The university cannot properly function and render the required service without having adequate information as regards its inventories. Their location, description, quantity, cost and position of use (whether active or otherwise) all have to be properly documented and once information about them is required, quick response will definitely assist the management to determine whether there is need for further procurement, repair or replacement.

The Federal University of Technology as other universities has administrative organizations. This administration is made up of the vice-Chancellor, Registry and Bursary departments.

1.1 THE ORGANIZATIONAL STRUCTURE OF THE UNIVERSITY

The administration of Federal university of Technology Minna is made up of the Vice-Chancellor's office, Registry and the Bursary Department.

THE VICE CHANCELLOR;

The Vice-Chancellor is the chief executive and academic head who is also in charge of directing the day to day activities of the University. He is usually assisted and advised by the deputy vice-chancellor, Deen of schools, the Registrar and other principal officers.

Units operating directly under the vice chancellor office are:

1. The information and publication division, which deals with University Publications, public relation and ceremonies.
2. The students affairs division, this body is charged with the responsibility of administration of non-academic affairs of students in the University.
3. The security division. This unit is responsible for security of the university on 24 – Hours basis.
4. Academic planning division
5. Physical planning Division
6. Adult unit division.

THE REGISTRAR

The registrar is the chief administrative officer of the university governing council as well as the senate.

The registrar is responsible to the vice chancellor in providing the necessary administrative services for the smooth operation of university. He is also the head of registry department, which comprises of the following:

1. **THE STAFF TRAINING DIVISION:** it is concerned with arrangement for both junior and senior staff training on courses within and outside the University.

2. THE ACADEMIC DIVISION: Matters of admission of students into the University and organization of entrance and semester examination are undertaken by this unit.
3. ESTABLISHMENT DIVISION: This deals with the recruitment and placement of staff.
4. THE HOUSING AND PASSAGES: Which is responsible for allocation of staff houses and arrangements for tickets, travel permits and passport for senior staff.

THE BURSARY

The conduct of the university financial transaction is closely nominated and supervised by the Bursar who is directly responsible to the vice chancellor. He is the head of the Bursary department and also the chief financial officer of the university. He organizes accounting function and procedure for effective internal control, prompt and efficient provision of services, production and preservation of necessary records of all financial transactions.

The department is divided into certain functional units, they are as follows:

1. Budget and expenditure control
2. Cash officer or treasury
3. Payroll section
4. Accounts payable section
5. Locus and advance section
6. Main accounts section
7. Students account section.
8. Stores and supply section.

1.2 STATEMENT OF THE PROBLEM

Hoffman and Gurders stated that " inventory management function involve the development and administration of policies system and procedures which will minimize total costs relative to inventory decision and related function such as customer service requirements, production scheduling, purchasing," etc.

The central problem of inventory control should now be obvious. It is to reconcile the possible lost to a business through the production or failure to meet orders with the cost of holding stock large enough to give necessity against such loss. The techniques that have been used over the years are sought to quantify this reconciliation.

The problem of financial manager is therefore to determine an optimum size of order, which will minimize cost, the optimum investment in inventory and the choice of time to re-order.

1.3 AIMS AND OBJECTIVES OF THE PROJECT

The various academic programme in the Federal University of Technology, Minna were drawn up so that the creative capacities and capabilities of the people will be raised. So that they would be able to explore and effectively transform the natural resources of their environment in goods and services the noble aim of the university be achieved without adopting effective inventory management system.

INVENTORIES; "Nigerian Accounting Standard Board (NASB) March 1986 page 4, defines inventory as item of value held for use or sale by an enterprise. And usually comprise, raw materials and supplies used in production, work in progress and finished goods"

COMPUTER SYSTEM; The computer system is an electronic device that accepts data as input, process that data, stores the result and makes it visible as required. It was observed that most of the deceptive strikes in institutions of learning are sometimes directly or indirectly connected with the provision of materials that may be required for use by both the staff and/or students.

Quick response to these will defiantly go a long way in minimizing closure of the inventory. And noi only providing the materials, but effective management is a sure way of assisting the system to operate smoothly.

The two dimension of performance in computers are speed and capacity. Hence they are used to improve the efficiency on industrial, commercial or educational situations. But the inventory control system of the school was observed to be a manual system. The system being manual was characterized by slow flow of information and errors. It was then deduced that at this computer age, it is necessary to go computer in order to catch up.

The objectives of this study therefore in computerizing the present manual inventory control system are:

1. To find a technique of controlling or reducing inventory losses due to determination, waste and theft while in storage.
2. To design the most efficient landing technique of large data and provide management with timely information on stock.
3. To define orderly methods of handling inventories using sound organization procedures.
4. Finally, to recommend necessary policy necessary by which to mention good and efficient inventory planning and control by the management of the institution.

1.4 SIGNIFICANCE OF THE STUDY

The fundamental objective of inventory control is to satisfy the customer herein may be the student who pay for what he gets, or a user of the store who may be a staff and is also regarded here as a customer.

Without inventory, no organization could hope to achieve smooth operational flow, and can hardly give a reasonable service to the customer. The task ahead of the institution therefore is to provide enough stock, taking care of every thing conceivable to be required. But the costs of stock may undermine the institution by bringing lost as a result of carrying the stocks.

On the other hand, very low stock can cause the institution to collapse. We may conceive a situation where examination is in progress and there are no enough stationary or some other materials needed for the conduct of such examination, or a situation where chemical or chalk are not in stock.

Therefore balancing service with the cost of providing the service so as to achieve the best return on the money tied up, in stocks and the effort employed in handling and controlling stocks is what scientific inventory is all about.

This research will go a long way in assisting the system provide adequate stock. So that no customer will be asked to wait for any but the shortest time between placing his order and receiving the goods. And that idleness is not experienced because materials are not available.

DEFINITION OF TERMS

INVENTORIES: to use the increasingly popular synonym for stocks may be accumulation of: Raw materials, work in progress and finished goods.

RAW MATERIALS: These are inventories that may be purchased from market for the production process.

WORK IN PROGRESS: They are also referred to as in process inventories, they are semi-finished products usually found on the floor of the factory, in the various stages of production.

FINISHED GOODS: These are the firm's products from which sales are drawn.

CARRYING COST: Carrying costs are referred to as holding costs basically the cost incurred because a firm own or maintain inventory. Example, storage cost, insurance cost, capital of cost tied up in inventory, depreciation and obsolesce.

Carrying cost can be expressed as percentage of average inventory value or as a cost per time period (say) N25 per unit per month to hold inventory.

ORDERING COST: These are basically the cost of getting an item into the firm inventory. They are equal each time an order is placed and are expressed as Naira cost per order.

Ordering cost start requisition sent to the purchase order and of following it up. Continue with such dept to receiving the goods and placing them into inventory and end with the buying from paying the suppliers.

1.6 SCOPE AND LIMITATION

The project will cover the various process involved in the task of inventory management and control. It will be limited to these materials that pass through the central store of the university. Not those that may be procured by the departments kept under their usage.

CHAPTER TWO

LITERATURE REVIEW

There are views as regard to the term inventory, but all ends up at experiencing a common idea.

Nigerian Accounting Standard Board (NASB) defines Inventory as "item of value held for use or sale by an enterprise and usually comprise of raw materials and supplies used in production work in progress and finished goods."

"Kleso Gave a more precise definition of Inventories as cassettes for sale in the ordinary cause of business of will be used or consumed in the production of goods to be sold." Continuing further he said that; in a typical manufacturing firm, inventory might be classified into raw materials, work in progress finished goods and consumable stores.

Inventories are: "It the aggregate of these items of tangible seasonal property which are held for sale in the ordinary cause of business in process of production for such sales, or are to be currently consumed in the production of goods or services to be available for sale".

Martins Grass, control of working capital, Gower Press Ltd. has this to say " Inventory" is conveniently med to describe the aggregate value of items and class of physical stocks.

As regards to the management of inventory, Hoffan and Guards started, " Inventory management function involve the development and administration of policies systems, and procedures which will minimize total costs relative to inventory service requirements, production schedule, purchasing, etc."

Homgren, stated that " the major goal of inventory control is to discover and maintain the optimum level of investment in all types of inventory from raw materials and suppliers to finished goods."

Inventories represent a significant part of current assets of most companies. And since inventories must be required ahead of sales, the necessity of forecasting sales before establishing target inventory levels makes inventory management a difficult task.

In each case, the function of the stock are to act as a cushion between uneven flow so that the processes or production and distribution can continue without interruption.

2.1 IMPORTANCE OF INVENTORY CONTROL

Inventory control is essential for store protection and profitable business/organizational organization.

It is important for example for the management of a store to keep proper records of the stores merchandise, an effective control system provides an up to date picture of inventory and helps management make realistic purchasing decisions.

The careful use of inventory control records is important, for errors in record keeping can create losses.

It is an established fact that without inventories no organization could hope to achieve smooth operational flow, and can hardly give a reasonable service to the customer. However, the decision making process with respect to investment in inventory involves a basic trade off between risk and return. The risk is that if the level of inventory is too low, the various function of business is not effectively utilized and delays in production and customer delivery can result. However, reduced inventory investment dares money. As the size of the inventory increases the storage and handling costs

in addition to the required return on capital invested inventory will rise.

Therefore as the inventory of a firm holds is increased, the risk of running out of inventory is lessened but inventory express rise.

Therefore for the survival of a company or any organization/institution it has to control the stock of goods held by it. The inventory control may be referred to as set of policy and procedures by which an organization determines which material it will hold in stock and the quantity of each one of them that it will carry. Inventory control means the same as stock control. Although others distinguish and say inventory includes work-in-progress while stock refer to only the goods in the stocks. The inventory control is important to any organization for projection and economy.

2.2 FACTORS INFLUENCING INVENTORY CONTROLS

The problem with inventory control is that it has several facts and its environment is very complex in nature. There are a lot of factors, which have an impact on inventories. One major factor having an important bearing on inventories is the cost incurred in keeping the goods in stock. The inventory carrying cost is made up of the interest on the money invested on the materials in stock, warehousing cost, including rentals, taxes, insurance, labour costs, overhead cost, like electricity water and maintenance cost of materials. In handling equipment various factors have to be considered such as – shrinkage evaporation, deterioration or spoilage of the goods, obsolescence etc. in universities and institutions of higher learning especially in Nigeria abrupt closure of the institution due to strikes may have to be considered while holding stocks also due to unpredictability of the precise date and time the universities or institutions will resume normal business. In which case factors such as demand, which may be

predictable or unpredictable and the nature of the customer (here in be the student or teacher) may be high or low no order at all. All the above factors play an important role in inventory control management. Not only that, the management itself may be rigid or flexible. Therefore tackling inventory management requires a special skill as the inventory controller must take decision bearing in mind all the factors involved.

2.3 INVENTORY MODELS

An inventory is the physical stock of goods that a business keeps on hand in order to promote the smooth and effective running of its affairs. This stock of goods varies in quantity overtime in response to a demand process which operates to diminish it.

A theoretical model has been developed to determine the optimum size of inventory to order, this model is known as economic order quantity model. The model involves trade off between rising and declining cost. Carrying costs rise with large inventories but large orders placed the number of orders fall, hence the total cost of holding inventories.

THE ECONOMIC ORDER QUANTITY (EOQ) MODEL

Economic order quantity model is the oldest and best known inventory model, the purpose of using the EOQ model is to find that particular quantity to order, which minimizes total inventory cost. This model is generally applicable where the demand for the stock-keeping unit has constant or nearly constant rate.

There are two basic approaches to determine the economic order quantities (EOQ).

1. The tabular approaches
2. Formula approach

Both approaches are based on the following assumptions:

- i) The demand rate is known and uniform
- ii) There are no quantity discounts
- iii) Ordering costs are a known function of the number of orders.
- iv) Carrying costs are a known function of average inventory.
- v) Stocks out are not intentionally permitted.

Though these assumptions are seldom completely valid, the EOQ model is useful because it often produces lower total annual inventory costs than order quantities based on professional judgment.

ILLUSTRATION FOR TABULAR APPROACH;

The university annual demand for inventory item stationeries is 100,000 units, the cost of placing an order is N20, and the cost of carrying one unit in inventory for one year is N1.00

SOLUTION;

**RELEVANT ANNUAL COSTS FOR DETERMINING THE EOQ;
(ECONOMIC ORDER QUANTITY)**

Numbers of order	1	2	3	4	5
Order quantity (unit)	5000	2500	200	1666	1250
Number of order	20	40	50	60	80
Average inventory (50%)	2500	1250	1000	833	625
Relevant annual cost	N	N	N	N	N
Ordering cost	2500	1250	1000	833	625
Carrying cost	400	800	1000	1200	1600
Total	2900	2050	2000	2033	2225

The minimum annual ordering and holding cost is seen to be 2000, this assumes that demand rate is constant and the inventory level is zero when the new order is received.

From the above data we can see that the least expensive ordering pattern is to order 3 times a year.

From the above diagramed, the interception point of various carrying cost curve with the variable ordering cost curve lies directly below the minimum level of total inventory cost. The quantity corresponding to this minimum total cost is the optimum quantity of the inventory for periodic ordering.

Both figures illustrate that the minimum annual cost occurs at the order side where annual ordering costs equal to the annual carrying costs, 2000 units in this illustration.

Using formulary $EOQ = (2 \times \text{ordering cost} \times \text{annual demand} / \text{carrying cost}) \times 1/2$.

Even though the economic order quantity model suggests that an order size of exactly 2000 units is most economical, management might order in other lot sizes because of quantity discount, ware house capacity constraint, limited shelf, life of an inventory item or a variety of other factors. An examination of the graph above reveals that small derivation from the economic order quantity are not costly.

The total cost curve is high at both ends, but relatively low between 2500 units and 1666 units.

The existence of this wide low cost area near the EOQ with high cost at order quantities, far from the EOQ is what makes this model so valuable. Despite its' restrictive assumption, even if the model is not completely Accurate, it helps management get into the low cost area.

The economic order formula appears in various forms. The formula and its' derivation are sometimes used in operational research. It must be used as no more than a guide must, because it has limitation. In this particular situation the following factor will cause the actual order quantity to differ from the statistically economic order quantity.

- i) There may be physical limitations as to the quantity of stock which may be kept, that is insufficient storage space.
- ii) The goods may have a short life and the cost of deteriorated stock may not be included in the formula.
- iii) The organization may be short of funds and may not be able to finance a high level of stock.
- iv) There may be restrictions in the source of supply
- v) Where there is uncertainty in future demand for the organization products, obsolescence risk will preclude maintenance of high stock level.

- vi) The costs in the formula are assumed to be wholly variable. There will be a degree of fixedness in some costs, which will affect the result.

2.4 TECHNIQUES OF INVENTORY CONTROL FOT.

Solely the Bursary department performs the university

Finances and accounting function: From the stores unit the purchasing and supplies officer initiates the processes of competitive quotations obtain from the university registered suppliers whenever there is notification for a need. This is recommended to the bursar for approval, while the bursar in giving approval will now consider all the relevant factors, including sufficiency of budgetary provision to cover the cost of the items to be ordered, and his level of authority to approve such expenditure. All items purchased must be delivered at the stores for appropriate verification procedures to be followed.

The central store notifies the departments when their orders have been supplied and issues a store receipt note (SRN) to the contractor to enable him claim payment. The department for which goods have arrived at the stores draws the goods from the stores by store requisition voucher (SRV).

The stores issue goods by way of a store issued voucher (SIV). With the SRN and SIV the officer update the stores records (bin cards, and the store ledger) periodically, the stores basis of which journal entries are made in the general ledger to update stores control accounts.

The existing university system of inventory control was seen to be an annual system. The system must however determine how much should be held in stock, minimum stock level, maximum level and recorder level.

STOCK CONTROL RECORDS:

- a) Bin Cards: They are attached to or placed by the side of the actual materials and entries are made to record the movement of stocks (receipt and issues).
- b) Stock Record Cards: This enables us to know free stock balance, physical stock and outstanding replenishment order.

Free stock balance is important to know physical stock for issue purposes, stock taking and for controlling minimum and maximum stock levels.

MINIMUM STOCK:

A stock allowance that if usage does unexpectedly increase or supplies take longer than expected to deliver, keeps operation going. It is the lowest level to which inventory should not be allowed to fall below it is the cushion stock, which allows a margin of safety in fixing it, and it is calculated as follows:

DATA:

Normal usage	50 units/week
Minimum usage	25 units/week
Maximum usage	75 units/week
Re order period	2-4 weeks

$$\text{Min stock level} = 300 - 50 \times 3$$

$$300 - 150$$

$$150 \text{ units}$$

MAXIMUM STOCK LEVEL:

This is the level which stock should not be allowed to rise. If maximum stock level is exceeded it may lead to over storing and hence rise of losses.

This level is influenced by:

- a) Political and economic influence.
- b) Funds available to pay the suppliers.
- c) Storage space available.
- d) Risk of obsolescence.
- e) Consumption rate.
- f) Period of delivery.

Maximum stock level = re – order quantity and re order level
Minus usage at minimum reorder period.

Using the data above

$$\begin{aligned}\text{Max. stock level} &= 500 + 300 - 25 \times 2 \\ &= 800 - 50 = 750 \text{ units.}\end{aligned}$$

Re-order level: this is the point between the maximum and minimum stock figures at which time it is important to send a purchase requisition to the buyer.

$$\begin{aligned}\text{Rol} &= \text{Max. usage at max. re-order period} \\ &= 75 \times 4 \\ &= 300 \text{ units.}\end{aligned}$$

Another techniques in inventory system is stock valuation on methods when materials and supplier are issued. The material requisition has to be priced and entered in to store ledger card. Though, there is no one method of valuing store issues, but the management and cost accountant must

consider and select method(s) that best suit(s) their organization, such methods must be used consistently.

These methods are commonly referred to as FIFO (first in first out), LIFO (last in first out), and AVCO (average cost).

FIFO: in this method, the price of the oldest stock is used, regardless of the order in which the goods leave the store. The most recent purchases have to be accumulated until they equal the new quantity balance then the previous price or prices can be used to calculate the value of the issue. Consequently, the closing inventory is valued at the most recent purchase price, as the most recent purchases are demand to be still in hand.

LIFO: this method assumes that the most recently acquired goods are first to be issued. It assumes therefore an opposite view point of the flow of inventory to the assumptions by FIFO.

ILLUSTRATION: The following data relates to the university main store purchase and issues of A4 paper p.5

PURCHASE: 3rd January 2000, 500 reams @ N300 cash received into store through SRN 013 8th March 2000, 250 reams @ N350 each received.

Into store through SRN 016

4th May 2000, 400 reams @ N400 each received into store through SRN020

ISSUES ARE MADE AS FOLLOWS:

10th January 2000, 200 reams through SIV 52

15th February 2000, 200 reams through SIV 54

12th March 2000, 200 reams through SIV 57

15th April 2000, 100 reams through SIV 60

6th May 2000, 300 reams through SIV 63

FIFO METHOD

UNIVERSITY LEDGER ACCOUNT

Maximum quantity.....750.....folio.....st.....5
 Minimum quantity.....150.....reorder.....level.....300.....
 Re-order quantity.....500 delivery time.....2-4 weeks

Date	Particulars	Receipt			Issues			Balance		
		Qty	Price	Amt.	Qty.	Price	Amount	Qty	Price	Amt.
3/1/00	SRN123	500	300	150,000	-	-	-	500	300	150,000
10/1/00	SIV052	-	-	-	200	300	60,000	300	300	90,000
15/2/00	SIV054	-	-	-	200	300	60,000	100	300	30,000
8/3/00	SRN016	250	350	87,500	-	-	-	350	100@ 300 250@ 350	117,500
12/3/00	SIV057	-	-	-	200	100@ 350	65,000	150	350	52,500
15/4/00	SIV060	-	-	-	100	350	35,000	50	350	17,500
4/5/00	SRN020	-	400	400	160,000	-	-	450	50@ 350 400@ 450	177,500
6/5/00	SIV063	-	-	-	300	50 @ 350 250@ 400	117,500	150	400	60,000

FIFO METHOD

UNIVERSITY LEDGER ACCOUNT

Maximum quantity.....750.....folio.....st.....5
 Minimum quantity.....150.....reorder.....level.....300.....
 Re-order quantity.....500.....delivery time.....2-4 weeks

Date	Particulars	Receipt			Issues			Balance		
		Qty	Price	Amt.	Qty.	Price	Amount	Qty	Price	Amt.
3/1/00	SRN123	500	300	150,000	-	-	-	500	300	150,000
10/1/00	SIV052	-	-	-	200	300	60,000	300	300	90,000
15/2/00	SIV054	-	-	-	200	300	60,000	100	300	30,000
8/3/00	SRN016	250	350	87,500	-	-	-	350	100@ 300 250@ 350	117,500

12/3/00	SIV057	-	-	-	200	200@ 350	70,000	150	100 @300 50 @350	47,500
15/4/00	SIV060	-	-	-	100	50 @350 50 @ 300	32,500	50	300	15,000
4/5/00	SRN020	400	400	160,000	-	-	-	450	50@300 400@ 400	175,000
6/5/00	SIV063	-	-	-	300	400	120,000	150	50 @300 100@400	55,000

2.5 ROLE OF ELECTRIC DATA PROCESSING

Introduction, data processing can be accomplished manually, mechanically, electronically or by the synthesis of these methods.

Manual methods of data processing are performed without using any machine except may be a desk calculator. While data processing by mechanical or electronic facilities generally indicate the use of punched – card equipment.

And on the other by electronic data processing (EDP) we mean the processing of data by the electronic computer.

COMPUTER SYSTEM: A computer is an electronic device, which accept data as input, process it and produce it as directed. The introduction of computer into data processing in the 1950's made it possible to process a voluminous number of records quickly and efficiently. Computers are used today to prepare bills, issue payroll checks, provide current inventory information, and produce weekly and monthly summarizes of sales and to give management immediate access to up-to-date information – for decision making as well as for such routine activities as record keeping and billing.

Computers are however, used in data processing because of the following reasons;

1. Accuracy: the respective nature of data processing activities make them ideally suited to computer processing because computers can perform the task again and again with complete accuracy. And without complain in the same situation, however human worker be come bored and tired. Constant repetition of same task make the work tedious to human beings and begin to make mistakes they begin to record information inaccurately, write illegibly. In short they no longer function effectively.
2. Economic of scale: The cost of processing records manually can be calculated at a fixed cost per record. After the number of records surpasses a certain volume, the cost per record increases slightly due to two reasons;
 - a) At this point the manual workers begin to make errors and it becomes necessary to maintain a closer check on the processing.
 - b) The sheer volume of data makes the handling and storing of records increasingly difficult.

However, when a computer is employed to process records, the cost per record decreases as the volume of records increases even though the initial costs of establishing a computer data processing system are high. This is usually justified by the problem of processing vast quantities of information manually or with punched card equipment.

4. Ease of Handling: This factor is directly related to the volume of data. This retrieval of information recorded on paper and stored in ordinary files can be time-consuming task. Mix – filing a single item may mean that it is irrevocably lost unless it is accidentally recovered. The problem of adding information and correcting existing data multiply as the file increases in size. This fact is directly related to the next reason for using computers in data processing and that is speed.
5. SPEED: Retrieving a particular item of data from a file is a common occurrence in any organization. A policy manager may wish to know the current inventory status; accurate information must be supplied quickly to avoid problem.

2.6 NECESSITY FOR COMPUTERIZATION

A computer enables organization to base their inventory levels on accurate data. The computer maintains records on all stock on the shelf, on stock in the warehouse and sales. It can protect buying trends based on previous sales, and it can automatically re-order item when stock reaches a low point. The recorder point can be constantly re-evaluated and raised or lowered as appropriate.

2.7 THE EXISTING SYSTEM:

The Federal University of Technology, Minna. Under study has main store and sub-stores such as Clinic stores and department stores. In a nutshell, the University practice and establish a system of central stores through which all university supplies are received and then issued to the department that ordered the goods. Similarly, the relevant officer of the University certifies all services order.

The central stores notifies the department when their order have been supplied and issues a stores receipt note (SRN) to the contractor to enable him claim payment. The department for which goods were received at the store draws the goods from the store by a store requisition voucher (SRV). The stores issue goods by way of a stores issue voucher (SIV) with SRN and SIV the officer update the stores records (i.e Bin cards, and the stock ledger.

Furthermore, for easy location and identification of store items, tags are placed on each shelve with tally cards for reach item showing all the details of the particular materials such as re-order level, re-order quantity, maximum level as well as minimum level.

Store keeper on receipt of store requisition, the store keeper then issue the materials and record the issue on the bin card after which the materials requisition are passed to the costing department to price the issue. This is where store clerk will post all the basic information relating to physical movements of materials.

Finally, in order to give a free and fair view of the store and also to comply with the institution stores provision, the store records are therefore maintained under the system of first in first out (FIFO) basis.

2.8 THE NEED FOR A NEW SYSTEM:

The current existing system was seen to require a lot of human resources being manual. And not only that the system is prone to errors. A lot of inadequacies are always the characteristics of manual system combined with slow flow of information.

Therefore, for more effective and efficient services the present system needs to be changed to a new system. And in this wise a computerized system will be of great help, this is because;

- a) Computer was thought and developed to reduce the complex work into smaller form.
- b) To help in making an easier, accurate and reliable logical comparison between materials.
- c) To ease the cumbersome of inflow and outflow i.e. the receipts and issues of materials and their details.
- d) To further help in efficiency in filling and processing, of data and information.

To this end expert system have been contemplated to be capable of receiving conventional accounting principles and techniques, which can be combined with law requirements towards the preservation of financial statement.

Going by suggestion of expert system advocates, a system should be programmed to accept memories and apply the conventional accounting principles. And techniques of legal requirement should also be fed into the system. It is assumed that such a system once given the required data will be able to prepare the necessary accounts. Therefore, for the present inventory system of Federal university of Technology, Minna to function effectively and with stand the challenges system is inevitable.

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

3.1 FEASIBILITY STUDY:

Feasibility study of the current system was conducted. This was done to analyze the inventory control system in FUT in order to determine whether the proposed computerized system should be developed.

The study was conducted with maximum co-operation and assistance of Mallam Ashafa of the Bursary department of the university together with the store workers.

3.2 FEASIBILITY REPORT

Like any other conventional system, the recent inventory system was manually operated. Officers were assigned to physically take inventory report item on card. At the end of every day transaction, information is updated on the cards.

The store of the university was divided into three sections namely; 1) stationary 2) Lubricants and 3) drugs while the major materials for the store is the stationary.

New order is placed at re-order level of store (ROL). It was also seen that the institution sometimes experience hold-up as a result of inventory shortage. Also due to problem such as leakage and raves, the institution sometimes experience physical deterioration of its inventory.

The store was employing the FIFO method of valuing its inventory which reflect different treatment of the charging cost of acquisition of inventory.

While stored ledger based on these method is manually operated in pricing inventory. Code number, value, quantity and dates are all reflected in the ledger card.

3.3 PROBLEM IDENTIFICATION

The system was having a lot of inadequacies. It requires a lot of human resource to be effective. The system was prone to errors. Information is also not processed on time; since all the processing depends on the officers concerned. Generally the processing of data was tedious and time consuming. Comprising the system however will take care of these problems.

3.4 PROPOSED SYSTEM

Deducing from the feasibility study, the inefficiencies of the inventor control in FUT can be showed through computerization.

Computer systems allow the use of interactive processing people directly interact with the computer system through computer terminals. The computer and user respond to each other in a real time model. This design approval includes menu – driven systems. With menu driven system, the user or operator simply picks what they want to do and the computer then provides them with another menu.

This is the design to be used in the proposed system here the operator simply responds to the question the computer asked and the computer can directly perform the task again and again with accuracy without complain.

3.5 INVENTORY PLANNING AND CONTROL

Companies that produce goods must maintain inventory supply orders from purchasers. Inventory carrying costs are estimated to be 25% of the total value of inventory. Consequently, it is economically desirable to maintain optimum inventory levels.

An inventory must contain sufficient goods to fulfill orders quickly, but at the same time having too many goods ties up financial assets that could be utilized elsewhere. In the past, the complex matter of what and how much item to stock was left in the hands of personnel who relied on their own experience and judgment for sound inventory control. Sales were lost and capital was tied up if their decision were wrong. The computers on the other hand enable firms to base their inventory level on accurate data.

Computerized control reduces excess inventory and maintain warehouse supplies at an optimum level. Thus, both small and large companies have prohibited from computerized inventory control.

3.6 TESTING FEASIBILITY

The proposed system needs to be in order to confirm its work ability. Hence in testing project feasibility, we need to take into consideration the following:

- a) **OPERATIONAL FEASIBILITY:** This relates or is concerned with the work ability of the proposed system when developed and installed. The proposed consolidation of return operational work ability has been tested and would serve the purpose meant for when installed.
- b) **TECHNICAL FEASIBILITY:** This text seeks to clarify if the proposed system can be done with the current equipment, existing software technology and available personnel. With the introduction of the proposed project the existing equipment and software will be used while the unable personnel will be trained as operators.

- c) **ECONOMIC FEASIBILITY:** The test of financial feasibility was undertaken to assess cost of implementing the proposed system, visa – avis the benefit derived in implementing the project.

3.7 THE NEW SYSTEM:

The new system will be an interactive on – line and user – friendly system. It will address purely the inventory system of the university. It will input, process the inputs and produce result to user understandable form. It will be easy to work with simple to operate and provide opportunity for future development, the proposed system user micro computer, the system will be user oriented system rather than computer staff oriented system.

CHAPTER FOUR

IMPLEMENTATION

4.1 CHOICE OF PROGRAMMING LANGUAGE

The proposed system is to be operated on a database environment. A database is a file or a databank; we can store information in this bank and retrieve in a manner we like. A bank manager might interrogate a file of accounts to determine the status of a particular client or a warehouse clerk might interrogate an inventory that is in a stock.

In a warehouse, the main file is a stock inventory given the name and reference number of each item held, the amount held, its price and the level below which it must be recorded.

The database provides the data resource for the organization. The database management system is the software, which manages this resource. The database could therefore be considered as a set of files in a cabinet. While the database management system (DBMS) is a computer program used for maintaining and creating the database to extract information from it. It is ideal software for management information system. For this work, the program has been written in dbase IV.

4.2 FEATURES OF DATABASE MANAGEMENT SYSTEM.

- i) **DATA INTEGRATION:** Information from several files could be coordinated, accessed and operated upon as though it is in a single file.
- ii) **DATA INDEPENDENCE:** Data could be independently achieved by insulation of application program from the physical or logical storage of data.

This objective seeks to allow for change in content and organization of physical data without re-programming of applications and to allow modification to application program without re-organizing the physical data.

4.3 DESIGN ELEMENTS

The design of a new system can be conveniently divided in to the following elements:

- 1) INPUT: Considering of input will be influenced greatly by the needs of outputs e.g. the necessities for quick response from the system will determine the need for an on-line type of out put consideration would be given to:-
 - a) Data collection method and validation
 - b) Types of input media available
 - c) Volumes of input documents
 - d) Design of input layout

- 2) OUTPUT: It is necessary to consider what is required from the system before deciding how to set about producing it. This requirement will have become clear as the project progress. There will be need to consider i) from ii) types iii) volume and frequency of reports and documents choice of output media will also have to be more.

- 3) FILES: This element is very much limited to input and output. Input is processed against the files to produce the necessary output. Consideration involved in designing file are:
 - a) Storage media
 - b) Methods of file organization and access
 - c) File security
 - d) Record layouts.

- 4) PROCEDURES: They are system which unify the whole process which link everything together to produce the desired output. These will involve both computer and chemical procedure. They will start with the origination with the source document and end with the output document being distributed.

4.4.1 **SYSTEM DESIGN:**

The aim here is to transform the information collected into logical and physical design of the proposed system. The design of the proposed computerized inventory control system of FUT is based on the information collected on the manually operated system.

The system is designed in such a way that the main menu is displayed first when the program is run. The user will then select from the given different options which are file maintenance, file updating, file report, economic order quantity and DOS prompt. The system is interactive in the sense that the uses interact with the system in the form of question and answer or input and response, item by item, line by line or record by record.

4.5 **CHANGE OVER PROCEDURE:**

This is the process of changing from the old system to a new system. The change over may be achieved in a number of ways. The most common methods are;

- i) Direct ii) Parallel and iii) Pilot.

For this system however, the parallel method is recommended. This means processing current data by both the old and the new systems to cross check the results. It's main attractive nature is that the old system is kept alive and separational until the new system has been proved for at least one system cycle, using live data in the real

operational environment. It allows the results of the new system to be compared with the old system, before acceptance by the user, thereby promoting user confidence.

- 1) Data are centrally controlled: In database environments, data and operation on data are centrally control and this can lead to better management of data by enforcing standards for all the database users on how information would be released.
- 1) Specifically, it allows for proper security of data since there is only one source of data in the organization. And such standards would easily be enforced for control purposes.

4.6 COST BENEFITS AND ANALYSIS

One of the objectives of this system is to cut operational cost. Development cost, operational cost, including consumable was carefully analyzed.

1. DEVELOPMENT COST:

a.	System analysis and design for four weeks	₦100,000.00
b.	Software developments	₦50,000.00
c.	Laser Jet 1125 C Printer (3)	₦150,000.00
d.	1 line printer	₦50,000.00
e.	2 personal computer (multi-media)	₦240,000.00
f.	Installation	₦60,000.00
g.	Miscellaneous expenses	₦100,000.00

2) OPERATIONAL COST:

a.	Equipment maintenance cost	₦75,000.00
b.	Program maintenance cost	₦50,000.00

c.	Labor cost (2 operator)	₦60,000.00
d.	Utilities	₦80,000.00
3) CONSUMABLES		
a.	50 packets of 1.44MBHD 3.5" Discs	₦45,000.00
b.	Disk Bank (10)	₦30,000.00
c.	100 Carton of 11" x 14" flowing paper	₦250,000.00
d.	100 cartons of 11" x 9.5 flowing paper	₦85,000.00
e.	100 realms of A4 paper	₦50,000.00

BENEFITS OF THE PROPOSED SYSTEM:

There are many benefits to enjoy when computer is employed in inventory control. The benefits include the following:

Accuracy: The frequency errors always committed by clerks due to human factors will be erased. Computers are sure to produce accurate results as long as it is being fed with the correct inputs, hence the computer term garbage in garbage out (GIGO).

- i) There will be reduction in the use of paper. Computer has high capacity particularly united to handle large amount of stock information, which can be kept on a minimum space.
- ii) There will be elimination of many repetitive works and the productivity of the staff will be highly increased. There is automatic updating of records and maintenance.

4.7 **HARDWARE REQUIREMENTS**

- i) Pentium 16645 Base PC66MTT2
- ii) Minimum 14MB main memory
- iii) 2.5 GB Hard disc drive
- vi) 3 ½ floppy disk drive
- iv) 14" SVGA color monitor
- vi) Laser Jet printer 1100A
- vii) APC 600 VA UPS
- viii) Stabilizer 3KVA

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1 SUMMARY:

Education is the bedrock for the development of every society. Universities on the other hand are established to exhibit a high degree of competency and accuracy in their information system. Computerizing the university's inventory control system eliminates or reduces to certain minimum level the application or use of manual method which is full of indecencies.

In summary, the university will benefit immensely from computerization, especially in areas of cost benefits, speed and accuracy of operations to meet the demands of both the management, staff and the students.

5.2 CONCLUSION:

This project was prompted by the desire to improve and enhance the university's record keeping. If well utilized it is hoped that the information system of the university will be greatly improved for better performance.

5.3 RECOMMENDATIONS:

- 1) A constant review of inventory is highly recommended to ensure efficiency.
- 2) It is also highly recommended that data processing staff should be trained for the maintenance of the system efficiently.
- 3) Since the primary aim of having inventory is to meet up the demands of both the staff and the students,

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Reston USA
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*-- Form: form1 (e:\invent\frmcust.scx)

*-- ParentClass: form

*-- BaseClass: form

*

DEFINE CLASS form1 AS form

Top = 66

Left = 105

Height = 224

Width = 537

DoCreate = .T.

Caption = "PARAMETER SETTINGS :"

Closable = .F.

WindowType = 1

Name = "Form1"

ADD OBJECT cmdedit AS commandbutton WITH ,

Top = 183, ;

Left = 228, ;

Height = 25, ;

Width = 85, ;

Caption = "\<Edit", ;

Name = "cmdedit"

ADD OBJECT cmdexit AS commandbutton WITH ;

Top = 183, ;

Left = 360, ;

Height = 25, ;

Width = 85, ;

Caption = "\<Exit", ;

Name = "cmdexit"

ADD OBJECT cmdsave AS commandbutton WITH ;

Top = 183, ;

Left = 96, ;

Height = 25, ;

Width = 85, ;

Caption = "\<Save", ;

Name = "cmdsave"

ADD OBJECT txttitle AS textbox WITH ,

```
ControlSource = "xvalues.title", ;  
Height = 23, ;  
Left = 145, ;  
MaxLength = 50, ;  
TabIndex = 18, ;  
Top = 24, ;  
Width = 384, ;  
Comment = "", ;  
Name = "txtTitle"
```

```
ADD OBJECT lbltitle AS label WITH ;
```

```
AutoSize = .T., ;  
FontBold = .T., ;  
FontSize = 11, ;  
WordWrap = .T., ;  
BackStyle = 0, ;  
Caption = "Window Title :", ;  
Height = 20, ;  
Left = 23, ;  
Top = 29, ;  
Width = 101, ;  
TabIndex = 17, ;  
Name = "lblTitle"
```

```
ADD OBJECT txtthead AS textbox WITH ;
```

```
ControlSource = "xvalues.head", ;  
Height = 23, ;  
Left = 145, ;  
MaxLength = 20, ;  
TabIndex = 20, ;  
Top = 72, ;  
Width = 149, ;  
Comment = "", ;  
Name = "txtHead"
```

```
ADD OBJECT lblhead AS label WITH ;
```

```
AutoSize = .T., ;  
FontBold = .T., ;  
FontSize = 11, ;  
WordWrap = .T., ;  
BackStyle = 0, ;  
Caption = "Report Heading :", ;  
Height = 20, ;  
Left = 23, ;  
Top = 76, ;  
Width = 122, ;  
TabIndex = 19, ;  
Name = "lblHead"
```

```
PROCEDURE Activate
    thisform.setall("ReadOnly",.t.,"Textbox")
    thisform.cmdsave.enabled = .f.
ENDPROC
```

```
PROCEDURE Load
    sele c
ENDPROC
```

```
PROCEDURE cmdedit.Click
    thisform.cmdsave.enabled = .t.
    thisform.cmdedit.enabled = .f.
    thisform.setall("ReadOnly",.f.,"Textbox")
    thisform.refresh()
ENDPROC
```

```
PROCEDURE cmdexit.Click
    thisform.release()
ENDPROC
```

```
PROCEDURE cmdsave.Click

    replace title with      thisform.txttitle.value
    replace head with      thisform.txthead.value
    thisform.cmdsave.enabled = .f.
    thisform.cmdedit.enabled = .t.
    thisform.setall("ReadOnly",.t.,"Textbox")
    store title to xtitle
    store head to xhead
    _screen.caption = xtitle
    thisform.refresh()
ENDPROC
```

```
ENDDEFINE
```

```
*
```

```
*-- EndDefine: form1
```

```
PUBLIC oform1
```

```
oform1=CREATEOBJECT("form1")
oform1.Show
RETURN
```

*-- Form: form1 (e:\invent\frmissue.scx)
*-- ParentClass: form
*-- BaseClass: form
*

DEFINE CLASS form1 AS form

Top = 43
Left = 90
Height = 294
Width = 537
DoCreate = .T.
Caption = "ORDERS MANAGEMENT FORM"
Closable = .F.
WindowType = 1
Name = "Form1"

ADD OBJECT txtitem_no AS textbox WITH ;
ControlSource = "issues.item_no", ;
Height = 23, ;
Left = 156, ;
MaxLength = 11, ;
TabIndex = 1, ;
Top = 24, ;
Width = 86, ;
Comment = "", ;
Name = "txtitem_no"

ADD OBJECT lblpart_no AS label WITH ;
AutoSize = .T., ;
FontBold = .T., ;
FontSize = 11, ;
BackStyle = 0, ;
Caption = "Item No.", ;
Left = 24, ;
Top = 24, ;
TabIndex = 11, ;
Name = "lblPart_no"

ADD OBJECT lbldescription AS label WITH ;
AutoSize = .T., ;
FontBold = .T., ;
FontSize = 11, ;
BackStyle = 0, ;
Caption = "Description", ;
Left = 24, ;

Name = "lblOrder_no"

```
ADD OBJECT txtqty AS textbox WITH ;
    ControlSource = "issues.qty", ;
    Height = 23, ;
    Left = 156, ;
    MaxLength = 10, ;
    TabIndex = 6, ;
    Top = 168, ;
    Width = 79, ;
    Comment = "", ;
    Name = "txtQty"
```

```
ADD OBJECT lblqty AS label WITH ;
    AutoSize = .T., ;
    FontBold = .T., ;
    FontSize = 11, ;
    BackStyle = 0, ;
    Caption = "Quantity", ;
    Left = 24, ;
    Top = 168, ;
    TabIndex = 16, ;
    Name = "lblQty"
```

```
ADD OBJECT cmdgrpeditor AS commandgroup WITH ;
    ButtonCount = 5, ;
    Value = 1, ;
    Height = 36, ;
    Left = 60, ;
    Top = 252, ;
    Width = 415, ;
    TabIndex = 9, ;
    BackColor = RGB(192,192,192), ;
    Name = "cmdgrpeditor", ;
    Command1.Top = 5, ;
    Command1.Left = 5, ;
    Command1.Height = 27, ;
    Command1.Width = 44, ;
    Command1.Caption = "<Add", ;
    Command1.Name = "cmdadd", ;
    Command2.Top = 5, ;
    Command2.Left = 49, ;
    Command2.Height = 27, ;
    Command2.Width = 44, ;
    Command2.Caption = "<Save", ;
    Command2.Name = "cmdsave", ;
    Command3.Top = 5, ;
    Command3.Left = 323, ;
```

```
Command3.Height = 27, ;
Command3.Width = 44, ;
Command3.Caption = "\<Delete", ;
Command3.Name = "cmddelete", ;
Command4.Top = 5, ;
Command4.Left = 367, ;
Command4.Height = 27, ;
Command4.Width = 44, ;
Command4.Caption = "\<Exit", ;
Command4.Name = "cmdexit", ;
Command5.Top = 5, ;
Command5.Left = 93, ;
Command5.Height = 27, ;
Command5.Width = 50, ;
Command5.Caption = "\<Edit", ;
Command5.Name = "cmdedit"
```

```
ADD OBJECT cmdgrnavigator AS commandgroup WITH ;
```

```
ButtonCount = 4, ;
Value = 1, ;
Height = 36, ;
Left = 204, ;
Top = 252, ;
Width = 177, ;
TabIndex = 10, ;
BackColor = RGB(192,192,192), ;
Name = "cmdgrnavigator", ;
Command1.Top = 5, ;
Command1.Left = 4, ;
Command1.Height = 27, ;
Command1.Width = 42, ;
Command1.FontBold = .T., ;
Command1.FontSize = 12, ;
Command1.Caption = "<<", ;
Command1.Name = "cmdtop", ;
Command2.Top = 5, ;
Command2.Left = 46, ;
Command2.Height = 27, ;
Command2.Width = 42, ;
Command2.FontBold = .T., ;
Command2.FontSize = 12, ;
Command2.Caption = "<", ;
Command2.Name = "cmdprevious", ;
Command3.Top = 5, ;
Command3.Left = 89, ;
Command3.Height = 27, ;
Command3.Width = 42, ;
Command3.FontBold = .T., ;
Command3.FontSize = 12, ;
Command3.Caption = ">", ;
```

```
Command3.Name = "cmdnext", ;
Command4.Top = 5, ;
Command4.Left = 131, ;
Command4.Height = 27, ;
Command4.Width = 42, ;
Command4.FontBold = .T., ;
Command4.FontSize = 12, ;
Command4.Caption = ">>", ;
Command4.Name = "cmdbottom"
```

```
ADD OBJECT cmdgo AS commandbutton WITH ;
    Top = 24, ;
    Left = 276, ;
    Height = 25, ;
    Width = 49, ;
    FontBold = .T., ;
    FontSize = 10, ;
    Caption = "GO", ;
    TabIndex = 2, ;
    Name = "cmdgo"
```

```
ADD OBJECT txtdescription AS textbox WITH ;
    ControlSource = "issues.description", ;
    Height = 23, ;
    Left = 156, ;
    MaxLength = 30, ;
    TabIndex = 18, ;
    Top = 72, ;
    Width = 312, ;
    Comment = "", ;
    Name = "txtDescription"
```

```
PROCEDURE Load
    sele a
ENDPROC
```

```
PROCEDURE Activate
    thisform.setall("Readonly",.t.,"Textbox")
    thisform.cmdgo.enabled = .f.
ENDPROC
```

```
PROCEDURE cmdgrpeditor.cmdadd.Click
    thisform.cmdgrpeditor.cmdadd.enabled = .f.
    thisform.cmdgrpeditor.cmdsave.enabled = .f.
    thisform.cmdgrpeditor.cmddelete.enabled = .f.
    thisform.cmdgrpeditor.cmdedit.enabled = .f.
```

```

        thisform.cmdgrpnavigator.cmdtop.enabled = .f.
        thisform.cmdgrpnavigator.cmdprevious.enabled = .f.
        thisform.cmdgrpnavigator.cmdnext.enabled = .f.
        thisform.cmdgrpnavigator.cmdbottom.enabled = .f.
        thisform.cmdgo.enabled = .t.
        *thisform.setall("ReadOnly",.f., "Textbox")
        thisform.txtitem_no.readonly = .f.
        thisform.txtitem_no.value = " "
    thisform.txtitem_no.setfocus
    flag = 1
*   append blank
        thisform.refresh()

```

ENDPROC

PROCEDURE cmdgrpeditor.cmdsave.Click

```

    mqty = 0
    REPLACE item_no with thisform.txtitem_no.value
    REPLACE description with thisform.txtdescription.value
    REPLACE issue_date with thisform.txtissue_date.value
    REPLACE issue_no with thisform.txtissue_no.value
    REPLACE qty with thisform.txtqty.value
    sele c
    loca for thisform.txtitem_no.value = item_no
    if found()
    mqty = qty-thisform.txtqty.value
    replace qty with mqty
    if reorder > qty
        replace remark with "Re-Order"
    endif
    endif
    sele e
    appe blank
    REPLACE item_no with thisform.txtitem_no.value
    REPLACE description with thisform.txtdescription.value
    REPLACE issue_date with thisform.txtissue_date.value
    REPLACE issue_no with thisform.txtissue_no.value
    REPLACE qty with thisform.txtqty.value
    replace issue_bal with mqty
    replace flagger with 0
    sele a
    thisform.cmdgo.enabled = .f.
    thisform.cmdgrpeditor.cmdadd.enabled = .t.
    thisform.cmdgrpeditor.cmdsave.enabled = .f.
    thisform.cmdgrpeditor.cmddelete.enabled = .t.
    thisform.cmdgrpeditor.cmderlit.enabled = .t.
    thisform.cmdgrpnavigator.cmdtop.enabled = .t.
    thisform.cmdgrpnavigator.cmdprevious.enabled = .t.
    thisform.cmdgrpnavigator.cmdnext.enabled = .t.
    thisform.cmdgrpnavigator.cmdbottom.enabled = .t.

```

```
        thisform.setall("ReadOnly",.t.,"Textbox")
        thisform.refresh()
ENDPROC
```

```
PROCEDURE cmdgrpeditor.cmddelete.Click
    are = messagebox('Are you Really sure',36,'Warning')
    if are = 6
        delete
        pack
    endif
    thisform.refresh()
ENDPROC
```

```
PROCEDURE cmdgrpeditor.cmdexit.Click
    thisform.release()
ENDPROC
```

```
PROCEDURE cmdgrpeditor.cmdedit.Click
    thisform.cmdgrpeditor.cmdadd.enabled = .f.
    thisform.cmdgrpeditor.cmdsave.enabled = .f.
    thisform.cmdgrpeditor.cmddelete.enabled = .f.
    thisform.cmdgrpeditor.cmdedit.enabled = .f.
    thisform.cmdgrpnavigator.cmdtop.enabled = .f.
    thisform.cmdgrpnavigator.cmdprevious.enabled = .f.
    thisform.cmdgrpnavigator.cmdnext.enabled = .f.
    thisform.cmdgrpnavigator.cmdbottom.enabled = .f.
    * thisform.setall("ReadOnly",.f.,"Textbox")
    thisform.txtpart_no.readonly = .f.
    thisform.cmdgo.enabled = .t.
    thisform.refresh()
ENDPROC
```

```
PROCEDURE cmdgrpnavigator.cmdtop.Click
    go top
    thisform.refresh()
ENDPROC
```

```
PROCEDURE cmdgrpnavigator.cmdprevious.Click
    IF !BOF()
        SKIP -1
        IF BOF()
            GO TOP
        ENDIF
    ENDIF
    thisform.refresh()
ENDPROC
```

```

PROCEDURE cmdgrnavigator.cmdnext.Click
    IF !EOF()
        SKIP 1
        IF EOF()
            GO BOTTOM
        ENDIF
    ENDIF
    THISFORM.REFRESH()
ENDPROC

```

```

PROCEDURE cmdgrnavigator.cmdbottom.Click
    GO BOTTOM
    THISFORM.REFRESH()
ENDPROC

```

```

PROCEDURE cmdgo.Click
    sele f
        loca for thisform.txtitem_no.value = item_no
        if .not. found()
            messagebox('Invalid Item Number !!!',48,'Error ')
            thisform.cmdgo.enabled = .f.
            thisform.cmdgrpeditor.cmdadd.enabled = .t.
            thisform.cmdgrpeditor.cmdsave.enabled = .f.
            thisform.cmdgrpeditor.cmddelete.enabled = .t.
            thisform.cmdgrpeditor.cmdedit.enabled = .t.
            thisform.cmdgrnavigator.cmdtop.enabled = .t.
            thisform.cmdgrnavigator.cmdprevious.enabled = .t.
            thisform.cmdgrnavigator.cmdnext.enabled = .t.
            thisform.cmdgrnavigator.cmdbottom.enabled = .t.
            thisform.setall("ReadOnly",.t.,'Textbox')
        else
            store descript to mdescript
            store item_no to mitem_no
            sele a
                if flag = 1
                    append blank
                endif
            thisform.refresh()
            flag = 0
            thisform.setall("ReadOnly",.f.,'Textbox')
            store mdescript to thisform.txtdescription.value
            store mitem_no to thisform.txtitem_no.value
            thisform.txtdescription.readonly = .t.
            thisform.cmdgo.enabled = .f.
            thisform.cmdgrpeditor.cmdsave.enabled = .t.
        endif
    endsele

```

```
        sele a
        thisform.refresh()
    ENDPROC
```

```
ENDDEFINE
```

```
*
```

```
*-- EndDefine: form1
```

```
PUBLIC oform1
```

```
oform1=CREATEOBJECT("form1")
```

```
oform1.Show
```

```
RETURN
```

```
*****
```

```
*-- Form:      form1 (e:\invent\frmpass.scx)
```

```
*-- ParentClass: form
```

```
*-- BaseClass: form
```

```
*
```

```
DEFINE CLASS form1 AS form
```

```
    Top = 161
```

```
    Left = 269
```

```
    Height = 145
```

```
    Width = 287
```

```
    DoCreate = .T.
```

```
    Caption = "Password"
```

```
    Closable = .F.
```

```
    MaxButton = .F.
```

```
    MinButton = .F.
```

```
    Icon = ""
```

```
    WindowType = 1
```

```
    Name = "Form1"
```

```
    ADD OBJECT command1 AS commandbutton WITH ;
```

```
        Top = 108, ;
```

```
        Left = 48, ;
```

```
        Height = 25, ;
```

```
        Width = 73, ;
```

```
        Caption = "OK", ;
```

```
        Default = .T., ;
```

```
        TabIndex = 3, ;
```

```
        Name = "Command1"
```

```
ADD OBJECT command2 AS commandbutton WITH ;
    Top = 108, ;
    Left = 180, ;
    Height = 24, ;
    Width = 73, ;
    Caption = "Quit", ;
    TabIndex = 4, ;
    Name = "Command2"
```

```
ADD OBJECT text1 AS textbox WITH ;
    Value = "", ;
    ControlSource = "MYEAR", ;
    Format = "", ;
    Height = 25, ;
    InputMask = "", ;
    Left = 96, ;
    SelectOnEntry = .F., ;
    TabIndex = 1, ;
    Top = 12, ;
    Width = 168, ;
    Name = "Text1"
```

```
ADD OBJECT text2 AS textbox WITH ;
    Height = 25, ;
    Left = 96, ;
    SelectOnEntry = .F., ;
    TabIndex = 2, ;
    Top = 60, ;
    Visible = .T., ;
    Width = 169, ;
    PasswordChar = "*", ;
    SelectedForeColor = RGB(255,255,255), ;
    SelectedBackColor = RGB(255,255,255), ;
    Name = "Text2"
```

```
ADD OBJECT label1 AS label WITH ;
    FontBold = .T., ;
    FontSize = 10, ;
    Caption = "Username", ;
    Height = 17, ;
    Left = 12, ;
    Top = 19, ;
    Width = 84, ;
    TabIndex = 5, ;
    Name = "Label1"
```



```
ADD OBJECT label2 AS label WITH ;
    FontBold = .T., ;
    FontSize = 10, ;
    Caption = "Password", ;
    Height = 17, ;
    Left = 12, ;
    Top = 67, ;
    Width = 84, ;
    TabIndex = 6, ;
    Name = "Label2"
```

```
PROCEDURE Activate
    thisform.text1.value = ""
    thisform.text1.setfocus
ENDPROC
```

```
PROCEDURE Load
    public trial, flag
    trial = 0
    flag = 0
ENDPROC
```

```
PROCEDURE command1.Click

    if upper(alltrim(thisform.text2.value)) = 'INVENT'
        flag = 0
        thisform.release()
    else
        if trial < 3
            trial = trial + 1
            flag = 1
            messagebox('Invalid Password, Try Again','Wrong Password')
            thisform.text2.value = ""
            thisform.refresh()
            thisform.text2.setfocus
        endif
        if trial = 3 .and. flag = 1
            thisform.release()
            messagebox('Unauthorised User !','Wrong Password')
            validck = 2
        endif
    endif
    return
ENDPROC
```

```
PROCEDURE command2.Click
    clear events
```

```
        thisform.release()
        close all
        validck = 3
    ENDPROC
```

```
ENDDEFINE
```

```
*
```

```
*-- EndDefine: form1
```

```
PUBLIC oform1
```

```
oform1=CREATEOBJECT("form1")
oform1.Show
RETURN
```

```
*****
```

```
*-- Form:      form1 (e:\invent\frmrece.scx)
```

```
*-- ParentClass: form
```

```
*-- BaseClass: form
```

```
*
```

```
DEFINE CLASS form1 AS form
```

```
    Top = 43
```

```
    Left = 90
```

```
    Height = 341
```

```
    Width = 537
```

```
    DoCreate = .T.
```

```
    Caption = "RECEIPTS MANAGEMENT FORM"
```

```
    Closable = .F.
```

```
    WindowType = 1
```

```
    Name = "Form1"
```

```
    ADD OBJECT txtitem_no AS textbox WITH ;
```

```
        ControlSource = "receipts.item_no", ;
```

```
        Height = 23, ;
```

```
        Left = 156, ;
```

```
        MaxLength = 11, ;
```

```
        TabIndex = 1, ;
```

```
        Top = 24, ;
```

```
        Width = 86, ;
```

```
        Comment = "", ;
```

Name = "txtitem_no"

ADD OBJECT lblpart_no AS label WITH ;

AutoSize = .T., ;
FontBold = .T., ;
FontSize = 11, ;
BackStyle = 0, ;
Caption = "Item No.", ;
Left = 24, ;
Top = 24, ;
TabIndex = 10, ;
Name = "lblPart_no"

ADD OBJECT lbldescription AS label WITH ;

AutoSize = .T., ;
FontBold = .T., ;
FontSize = 11, ;
BackStyle = 0, ;
Caption = "Description", ;
Left = 24, ;
Top = 72, ;
TabIndex = 11, ;
Name = "lblDescription"

ADD OBJECT txtrece_no AS textbox WITH ;

ControlSource = "receipts.rece_no", ;
Height = 23, ;
Left = 156, ;
MaxLength = 5, ;
TabIndex = 2, ;
Top = 120, ;
Width = 67, ;
Comment = "", ;
Name = "txtrece_no"

ADD OBJECT lblorder_no AS label WITH ;

AutoSize = .T., ;
FontBold = .T., ;
FontSize = 11, ;
BackStyle = 0, ;
Caption = "Receipt No.", ;
Left = 24, ;
Top = 120, ;
TabIndex = 14, ;
Name = "lblOrder_no"

```
ADD OBJECT txtqty AS textbox WITH ;
    ControlSource = "receipts.qty", ;
    Height = 23, ;
    Left = 156, ;
    MaxLength = 10, ;
    TabIndex = 6, ;
    Top = 168, ;
    Width = 79, ;
    Comment = "", ;
    Name = "txtQty"
```

```
ADD OBJECT lblqty AS label WITH ;
    AutoSize = .T., ;
    FontBold = .T., ;
    FontSize = 11, ;
    BackStyle = 0, ;
    Caption = "Quantity", ;
    Left = 24, ;
    Top = 168, ;
    TabIndex = 16, ;
    Name = "lblQty"
```

```
ADD OBJECT cmdgrpeditor AS commandgroup WITH ;
    ButtonCount = 5, ;
    Value = 1, ;
    Height = 36, ;
    Left = 64, ;
    Top = 267, ;
    Width = 415, ;
    TabIndex = 8, ;
    BackColor = RGB(192,192,192), ;
    Name = "cmdgrpeditor", ;
    Command1.Top = 5, ;
    Command1.Left = 5, ;
    Command1.Height = 27, ;
    Command1.Width = 44, ;
    Command1.Caption = "\<Add", ;
    Command1.Name = "cmdadd", ;
    Command2.Top = 5, ;
    Command2.Left = 49, ;
    Command2.Height = 27, ;
    Command2.Width = 44, ;
    Command2.Caption = "\<Save", ;
    Command2.Name = "cmdsave", ;
    Command3.Top = 5, ;
    Command3.Left = 323, ;
    Command3.Height = 27, ;
    Command3.Width = 44, ;
    Command3.Caption = "\<Delete", ;
```

```
Command3.Name = "cmddelete", ;
Command4.Top = 5, ;
Command4.Left = 367, ;
Command4.Height = 27, ;
Command4.Width = 44, ;
Command4.Caption = "\<Exit", ;
Command4.Name = "cmdexit", ;
Command5.Top = 5, ;
Command5.Left = 93, ;
Command5.Height = 27, ;
Command5.Width = 50, ;
Command5.Caption = "\<Edit", ;
Command5.Name = "cmdedit"
```

```
ADD OBJECT cmdgrnavigator AS commandgroup WITH ;
```

```
ButtonCount = 4, ;
Value = 1, ;
Height = 36, ;
Left = 208, ;
Top = 267, ;
Width = 177, ;
TabIndex = 9, ;
BackColor = RGB(192,192,192), ;
Name = "cmdgrnavigator", ;
Command1.Top = 5, ;
Command1.Left = 4, ;
Command1.Height = 27, ;
Command1.Width = 42, ;
Command1.FontBold = .T., ;
Command1.FontSize = 12, ;
Command1.Caption = "<<", ;
Command1.Name = "cmdtop", ;
Command2.Top = 5, ;
Command2.Left = 46, ;
Command2.Height = 27, ;
Command2.Width = 42, ;
Command2.FontBold = .T., ;
Command2.FontSize = 12, ;
Command2.Caption = "<", ;
Command2.Name = "cmdprevious", ;
Command3.Top = 5, ;
Command3.Left = 89, ;
Command3.Height = 27, ;
Command3.Width = 42, ;
Command3.FontBold = .T., ;
Command3.FontSize = 12, ;
Command3.Caption = ">", ;
Command3.Name = "cmdnext", ;
Command4.Top = 5, ;
Command4.Left = 131, ;
```

```
Command4.Height = 27, ;  
Command4.Width = 42, ;  
Command4.FontBold = .T., ;  
Command4.FontSize = 12, ;  
Command4.Caption = ">>", ;  
Command4.Name = "cmdbottom"
```

```
ADD OBJECT txtrece_date AS textbox WITH ;  
ControlSource = "receipts.rece_date", ;  
Height = 23, ;  
Left = 156, ;  
MaxLength = 8, ;  
TabIndex = 7, ;  
Top = 216, ;  
Width = 93, ;  
Comment = "", ;  
Name = "txtRece_date"
```

```
ADD OBJECT label1 AS label WITH ;  
AutoSize = .T., ;  
FontBold = .T., ;  
FontSize = 11, ;  
BackStyle = 0, ;  
Caption = "Receipt Date", ;  
Left = 24, ;  
Top = 216, ;  
TabIndex = 12, ;  
Name = "Label1"
```

```
ADD OBJECT cmdgo AS commandbutton WITH ;  
Top = 24, ;  
Left = 300, ;  
Height = 25, ;  
Width = 49, ;  
FontBold = .T., ;  
FontSize = 10, ;  
Caption = "GO", ;  
TabIndex = 2, ;  
Name = "cmdgo"
```

```
ADD OBJECT txtdescription AS textbox WITH ;  
ControlSource = "receipts.description", ;  
Height = 23, ;  
Left = 156, ;  
MaxLength = 30, ;  
TabIndex = 18, ;  
Top = 72, ;
```

```
Width = 300, ;  
Comment = "", ;  
Name = "txtDescription"
```

```
PROCEDURE Refresh  
ENDPROC
```

```
PROCEDURE Load  
    sele b  
ENDPROC
```

```
PROCEDURE Activate  
    thisform.setall("ReadOnly",.t.,"Textbox")  
    thisform.cmdgo.enabled = .f.  
ENDPROC
```

```
PROCEDURE cmdgrpeditor.cmdadd.Click  
    thisform.cmdgrpeditor.cmdadd.enabled = .f.  
    thisform.cmdgrpeditor.cmdsave.enabled = .f.  
    thisform.cmdgrpeditor.cmddelete.enabled = .f.  
    thisform.cmdgrpeditor.cmdedit.enabled = .f.  
    thisform.cmdgrpnavigator.cmdtop.enabled = .f.  
    thisform.cmdgrpnavigator.cmdprevious.enabled = .f.  
    thisform.cmdgrpnavigator.cmdnext.enabled = .f.  
    thisform.cmdgrpnavigator.cmdbottom.enabled = .f.  
    *    thisform.setall("ReadOnly",.f.,"Textbox")  
    thisform.cmdgo.enabled = .t.  
    thisform.txtitem_no.readonly = .f.  
    thisform.txtitem_no.value = ''  
    thisform.txtitem_no.setfocus  
    flag = 1  
    *    append blank  
        thisform.refresh()  
  
ENDPROC
```

```
PROCEDURE cmdgrpeditor.cmdsave.Click  
    nqty = 0  
    REPLACE item_no with thisform.txtitem_no.value  
    REPLACE description with thisform.txtdescription.value  
    REPLACE rece_no with thisform.txtrece_no.value  
    REPLACE qty with thisform.txtqty.value  
    REPLACE rece_date with thisform.txtrece_date.value  
    sele c  
    REPLACE item_no with thisform.txtitem_no.value  
    REPLACE description with thisform.txtdescription.value
```

```

REPLACE rece_no with thisform.txtrece_no.value
REPLACE qty with thisform.txtqty.value
REPLACE rece_date with thisform.txtrece_date.value
replace flagger with 1
sele c
loca for thisform.txtitem_no.value = item_no
if found()
mqty = qty+thisform.txtqty.value
replace qty with mqty
if reorder > qty
    replace remark with "Re-Order"
endif
endif
sele e
REPLACE item_no with thisform.txtitem_no.value
REPLACE description with thisform.txtdescription.value
REPLACE rece_no with thisform.txtrece_no.value
REPLACE qty with thisform.txtqty.value
REPLACE rece_date with thisform.txtrece_date.value
replace rece_bal with mqty
replace flagger with 1
sele b
thisform.cmdgo.enabled = .f.
thisform.cmdgrpeditor.cmdaddl.enabled = .t.
thisform.cmdgrpeditor.cmdsave.enabled = .f.
thisform.cmdgrpeditor.cmddelete.enabled = .t.
thisform.cmdgrpeditor.cmdedit.enabled = .t.
thisform.cmdgrpnavigator.cmdtop.enabled = .t.
thisform.cmdgrpnavigator.cmdprevious.enabled = .t.
thisform.cmdgrpnavigator.cmdnext.enabled = .t.
thisform.cmdgrpnavigator.cmdbottom.enabled = .t.
thisform.setall("Readonly",.t.,"Textbox")

    thisform.refresh()
ENDPROC

```

```

PROCEDURE cmdgrpeditor.cmddelete.Click
    are = messagebox('Are you Really sure',36,'Warning')
    if are = 6
        delete
        pack
    endif
    thisform.refresh()
ENDPROC

```

```

PROCEDURE cmdgrpeditor.cmdexit.Click
    thisform.release()
ENDPROC

```



```

PROCEDURE cmdgrpeditor.cmdedit.Click
    thisform.cmdgo.enabled = .t.
        thisform.cmdgrpeditor.cmdadd.enabled = .f.
        thisform.cmdgrpeditor.cmdsave.enabled = .t.
        thisform.cmdgrpeditor.cmddelete.enabled = .f.
        thisform.cmdgrpeditor.cmdedit.enabled = .f.
        thisform.cmdgrpnavigator.cmdtop.enabled = .f.
        (thisform.cmdgrpnavigator.cmdprevious.enabled = .f.
        thisform.cmdgrpnavigator.cmdnext.enabled = .f.
        thisform.cmdgrpnavigator.cmdbottom.enabled = .f.
        *   thisform.setall("ReadOnly",.f.,"Textbox")
        thisform.txtitem_no.readonly = .f.
        thisform.txtitem_no.setfocus
        thisform.txtitem_no.value = ''
    thisform.refresh()
ENDPROC

```

```

PROCEDURE cmdgrpnavigator.cmdtop.Click
    go top
    thisform.refresh()
ENDPROC

```

```

PROCEDURE cmdgrpnavigator.cmdprevious.Click
    IF !BOF()
        SKIP -1
        IF BOF()
            GO TOP
        ENDIF
    ENDIF
    thisform.refresh()
ENDPROC

```

```

PROCEDURE cmdgrpnavigator.cmdnext.Click
    IF !EOF()
        SKIP 1
        IF EOF()
            GO BOTTOM
        ENDIF
    ENDIF
    THISFORM.REFRESH()
ENDPROC

```

```

PROCEDURE cmdgrpnavigator.cmdbottom.Click
    GO BOTTOM
    THISFORM.REFRESH()
ENDPROC

```

```

PROCEDURE cmdgo.Click
  sele f
  loca for thisform.txtitem_no.value = item_no
  if .not. found()
    messagebox('Invalid Item Number !!!',48,'Error ')
    thisform.cmdgo.enabled = .f.
    thisform.cmdgrpeditor.cmdadd.enabled = .t.
    thisform.cmdgrpeditor.cmdsave.enabled = .f.
    thisform.cmdgrpeditor.cmddelete.enabled = .t.
    thisform.cmdgrpeditor.cmdedit.enabled = .t.
    thisform.cmdgrpnavigator.cmdtop.enabled = .t.
    thisform.cmdgrpnavigator.cmdprevious.enabled = .t.
    thisform.cmdgrpnavigator.cmdnext.enabled = .t.
    thisform.cmdgrpnavigator.cmdbottom.enabled = .t.
    thisform.setall("ReadOnly",.t.,'Textbox')

  else
    store descript to mdescript
    store item_no to mitem_no
    sele b
    if flag = 1
      append blank
    endif
    thisform.refresh()
    flag = 0
    thisform.setall("ReadOnly",.f.,'Textbox')
    store mdescript to thisform.txtdescription.value
    store mitem_no to thisform.txtitem_no.value
    thisform.txtdescription.readonly = .t.
    thisform.cmdgo.enabled = .f.
    thisform.cmdgrpeditor.cmdsave.enabled = .t.
  endif
  sele b
  thisform.refresh()
ENDPROC

```

ENDDEFINE

*

*-- EndDefine: form1

Stock Reports Customize Quit

ORDERS MANAGEMENT FORM

Item No. 20111000

Description Light Barrier

Order No. 100107

Quantity 1000 Order Date 10001

Add Save Edit << < > >> Delete Exit

Issues (Smart) Issues

Record 1/12

Exclusive



Microsoft Word

Computerized Invento...

10001



RECEIPTS MANAGEMENT FORM

Item No.

Description

Receipt No.

Quantity

Receipt Date



STOCK MANAGEMENT FORM

Item No.

Description

Minimum Stock

Quantity Unit Price

PARAMETER SETTINGS :

Window Title : Computerized Inventory Control System

Report Heading : INVENTORY CONTROL

Edit

Exit

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

STOCK SUMMARY

	Description	Reorder	Quantity	Remark
00	Laboratory Bunsen Burners	20	100	
00	Laboratory Chairs	30	250	
00	Classroom Chairs	50	340	
00	Classroom Tables	40	300	
00	Flourescent Tubes	50	400	
01	HP Toner Catridge	5	20	
02	Epson Printer Ribbon	10	40	
01	Serial Mouse	10	45	
05	White Chalk	200	175	Re-Order

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

STOCK SUMMARY

	Description	Reorder	Quantity	Remark
000	Laboratory Bunsen Burners	20	100	
000	Laboratory Chairs	30	250	
000	Classroom Chairs	50	320	
000	Classroom Tables	40	300	
000	Flourescent Tubes	50	400	
001	HP Toner Cartridge	5	20	
002	Epson Printer Ribbon	10	40	
001	Serial Mouse	10	45	
005	White Chalk	200	800	

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

LIST OF ISSUES

Item No.	Description	Issue Date	Issue No	Quantity
110 134 005	White Chalk	02/15/02	1001	400
110 134 005	White Chalk	02/18/02	1002	300
110 134 005	White Chalk	02/24/02	1004	200

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

LIST OF RECEIPTS

Item No.	Description	Receipt Date	Receipt No.	Quantity
106 078 000	White Chalk	01/10/02	2001	100
110 134 005	Classroom Chairs	02/01/02	2001	20
110 134 005	White Chalk	02/12/02	2002	150
110 134 005	White Chalk	02/20/02	2004	25