A Standalone Inventory Management Information System For Nasara Pharmacy, Jos Plateau State

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Abstract: Inventory management system is important to ensure quality control in businesses that handles transactions revolving around consumer goods. Without proper inventory control, a large retail store may run out of stock on an important item. A good inventory management system will alert the retailer when is time to reorder. This paper examines the inadequacies involved in manual inventory management and proposes a solution by developing a software application to facilitate the automated processing of the inventory. The software was developed using Visual Basic.Net and employed Microsoft Access for designing the database. The developed software was tested and found to help minimize the risk of possible errors. Within it, it is possible to automatically generate the price of any item selected and calculate the total price of goods purchased when the quantity is entered. This new system is flexible and can be modified to suit any kind of inventory management and data processing.

Keywords: Inventory, System, Data, Software, Database, Automated

I. INTRODUCTION

Technological growth across various sectors and keeping track of available goods in any business using an inventory system cannot be overemphasized. In its simplest sense it can be done manually by a count at the end of each day. Inventory management is one of the most important business processes during the operation of a manufacturing company as it relates to purchases, sales and logistic activities. It is concerned with the control of stocks throughout the whole supply chain. Inventory control sits at the data level where the day-to-day business is organized, activities here are data driven and are primarily concerned with short-term planning and recording of events. Inventory control is concerned with maintaining the correct level of stock and recording its movement (Bayo et al, 2007). An increase in inventory lowers the possibility of lost sales from stock-outs and the production slowdowns caused by inadequate inventory. Inventory levels are also affected by short-term interest rates. As short-term interests increase, the optimum level of holding inventory is reduced (Jae and Joel, 2008).

Ozer (2009), Found that effective inventory management was a capability necessary to lead in the global marketplace. He provides four fundamentals of effective inventory management:
- ✓ It requires managers to know how best to use available information
- ✓ Managers need to qualify the value of information
- ✓ They need to co-ordinate decentralized inventory operations
- ✓ Effective inventory management requires decision tools that can be embraced by their users.

Robert (2011) classified the benefits of inventory management as inventory balance, accurate planning, warehouse organisation time saving and repeat warehouse.

An automated inventory management system is essential in today's businesses with respect to accurate record keeping and time management. This has become very essential as organizations find it tedious to keep accurate records of items.

The aim of this project is to design, develop and implement an inventory management system that will handle the monitoring of records regarding the inventory of products in Nasara Pharmacy and the objectives are:
- ✓ To analyse the existing system and identify its flaws with a bid to provide a more efficient system
- ✓ To develop a sales, stock and report generation module
- ✓ To test and validate the system for accuracy

The rest of the article is structured as follows: First, research material and methods is presented, next the result are discussed and summarized then followed by the conclusion.

II. MATERIALS AND METHODS

The system is designed to provide a faster and more efficient way of performing everyday processes in the pharmacy. Some of these modules include;
- ✓ *LOGIN MODULE:* The login module allows employees access to the sales point and allows the admin access to the main window and it also validates the employee or admin's password.
- ✓ *STOCK MODULE:* Unlike the existing system where details of products are recorded on paper, this module on the proposed system will store the details of products in the computer database.
- ✓ *SALES MODULE:* Unlike the manual system where sales are recorded on paper, this module of the new system will enable users to store sales record more quickly and accurately.
- ✓ *REPORT GENERATION MODULE:* The report generation in the manual system involves sorting and searching of sales records that have been piled together and stored in files, which take longer time to generate. This module will help generate a report of the products available in the pharmacy. It also informs the user of any product that is near its expiry date.
- ✓ *EMPLOYEE REGISTRATION MODULE:* This module is used by the admin to register an employee and stores information such as the employee's name, address, mobile number as well as the employee's password.

The front-end of the application was implemented using Visual Basic.NET. Microsoft Visual Studio 2010 an Integrated Development Environment was used to develop the Graphic User Interface while Microsoft Access was used as the back-end for storage and retrieval of data.

System design

The system design defines the architecture, components, modules, interface and data required of the system to satisfy specified requirements. In system design the following tools and techniques were used:
- ✓ Architectural design
- ✓ Process modelling
- ✓ Logical database

ARCHITECTURAL DESIGN

Architecture defines the broad structure of the inventory management system to be developed. According to Lunn (2003) architecture involves the software tools that are used to construct the system. Architectural design deals with how the system is organized and the design of the overall structure of the system
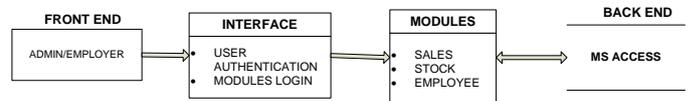

Figure 1: The Architectural design of the Software Application

PROCESS MODELLING

Flowchart and use-case diagrams were used to illustrate the activities and processes that are performed in the inventory management system shown below.
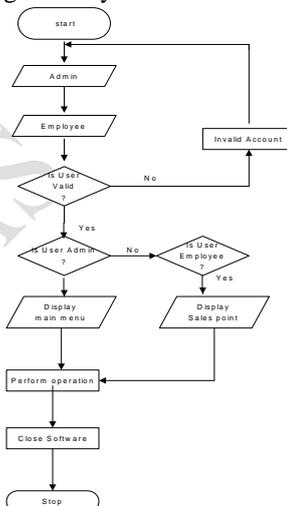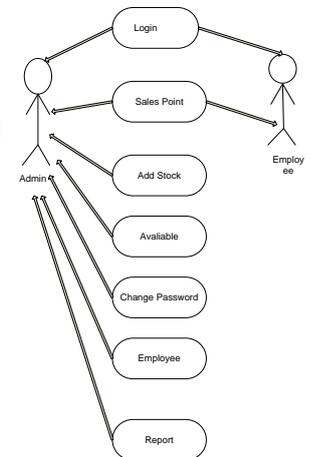

Fig. 2 The program's flow chart

Fig. 3 The program's use-case digram

Figure 2   *Figure 3*

LOGICAL DATABASE DESIGN

The database used was Microsoft Access (MS Access). The following are derived relations from the database design, PK represents primary key while FK represents foreign key:
- ✓ *EMPLOYEE MODULE:* (I.D, Fname, Address, Mobile no, Pass)
  - *PK:* I.D
  - *FK:*
- ✓ *REPORT MODULE:* (Product_I.d, Product_name, Form, Retail_price, Quantity, Discount, Total, Total_amount, Customer_name, Date)
  - *PK:* Product I.d
  - *FK:*
- ✓ *SALES MODULE:* (Product_I.d, Product_name, Form, Price, Quantity, Discount, Total, Total_amount)
  - *PK:* Product I.d
- ✓ *STAFF MODULE:* (Uname, Pword)

- *PK:*
✓ *STOCK MODULE:* (Product_I.d, Product_name, Quantity, Product_number, Batch_number, Form, Retail_price, Cost_price, Total, Expiry_Date, Insert_Date)
- *PK:* Product_I.d

III. RESULTS AND DISCUSSIONS

The implementation of the software was achieved in that the existing system was upgraded by automating the buying and selling of items in Nasara pharmacy and details of the new system is as show below.

Figure 4: Screenshot of start- up form

This page shows the first login part of the software, where the user should select either admin or employee.
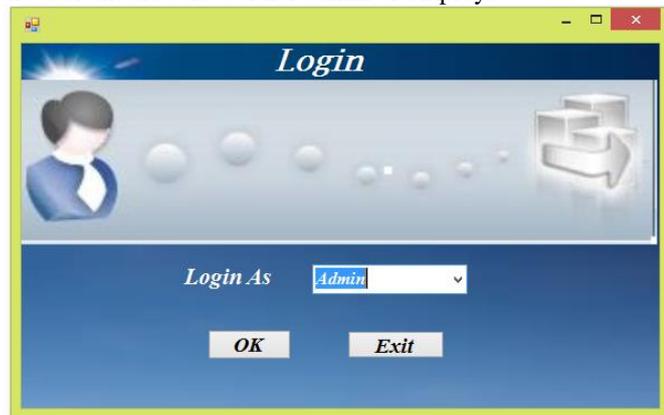

Figure 5: Shows Screenshot of login page

Here, if the user selects "Admin" and then clicks "OK", it directs him/her to the admin Login Page. But if he/she selects employee, he/she will be directed to the employee login page.
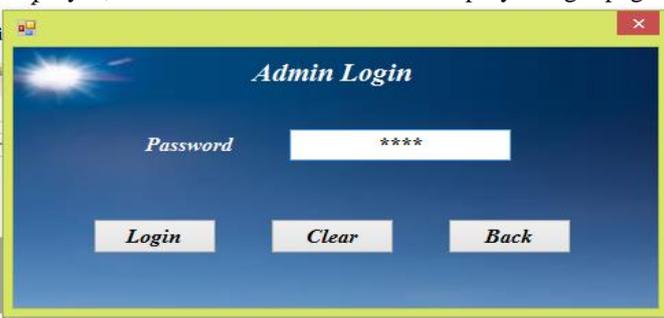

Figure 6: Shows Screenshot of admin login page

When an admin logs in successfully, the main window is displayed. The admin officer can then have access to add stock, sales, available stock, change password, employee and report modules.
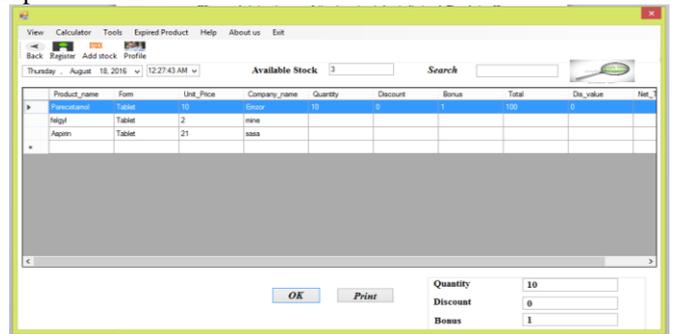

Figure 7: Shows Screenshot of the main window

Figure 8: Shows Screenshot of employee login page

When the employee successfully logs in, the sales point is displayed. This is the point where an employee makes sales and the employee has access to only this module.
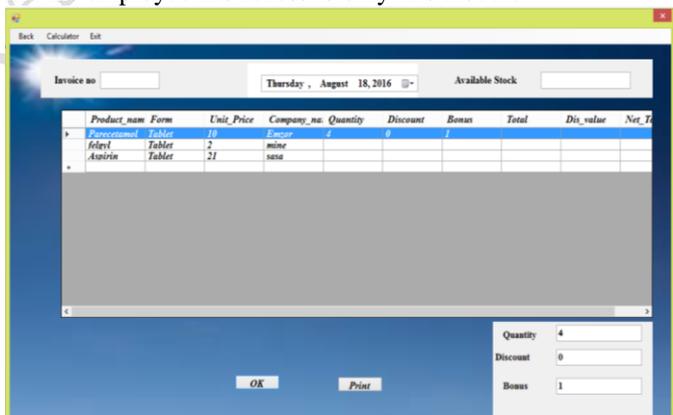

Figure 9: Shows Screenshot of the Sales point

This section shows the registration of the employee by the admin, and the employee's details are saved in the database.
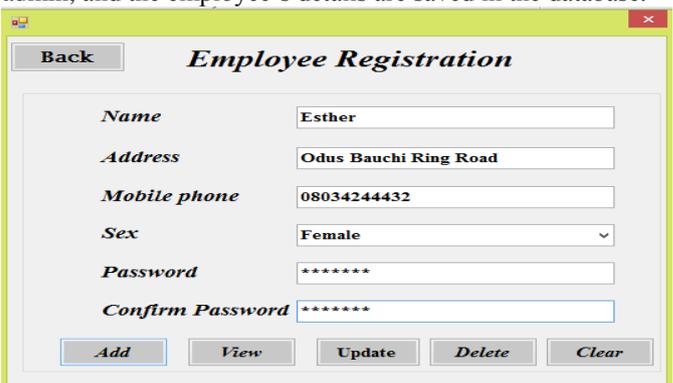

Figure 10: Shows the screenshot of employee's registration page

The admin can change his/her password and username from this form.

Figure 11: Shows Screenshot of change password

This is the section where the admin adds new items bought, the name, quantity, cost price and retail price of the item.

Figure 12: Shows Screenshot of the add stock module

IV. CONCLUSION

In order to introduce the use of computers into the manual processing of data careful investigation and analysis were carried out on the existing method. This work finally presented a software application meant to ease the management of inventory in Nasara Pharmacy, Jos Plateau State. The application was successfully developed, tested and found to be working as expected. After the trend investigation and initial analysis had been made on both the manual system of carrying out inventory management. Based on the objectives of this project, we were unable to create a report generating module which will provide the daily, weekly, monthly, yearly and annual records of all sales and also the report of all the employees and administrators registered in the system.

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