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Restaurant Cashier and Inventory Monitoring System

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ABSTRACT: Our paper is a form of cashier system that has a certain degree of simplicity in terms of display. The system was created for our group-mates family restaurant which had quite a few things that needs a bit of help in terms of management as it was hard for them to keep the records for the transactions and inventory as it was done manually without any form of systematic format. The problems that the restaurant had were related to inventory management and order computation, the time consumed when both were done manually had wasted a substantial amount of time that could be used for other matters. The objective of our project is to monitor the transactions and inventory using a system that will allow that objective to come into fruition while also saving much time during computation and inventory management for other matters. The content that our system have are the exact menu and amount provided by our client. Agile model is the methodology we used in making the system since one of our members is near to our pilot area, which helped us to interact and collaborate much accurately based on our client's needs. The evaluation we conducted about the cashier and inventory system meets the standard requirements that the restaurant owner had set for us to do. The overall evaluation of the System based on the evaluation the cashier and inventory system meets the standard requirements of our client and also for the restaurant suitability, security , maintainability got the highest mean score of 5.0 while the efficiency and compatibility got the mean score of 4.0.

KEYWORDS: Management, System, Inventory Record, Database, Calculations.

I.INTRODUCTION

We all know that stress is a terrible matter as it accumulates over time can cause the business owner's mindset to become problematic thereby causing even more problems making it an endless cycle of stress. When it comes to the data that their business, traditionally business owners tend to list all collected data to a notebook or sticky-note which isn't very convenient most of the time because of all the calculations needed in order to find out the profit would take up too much time while taking too much space in the notebook. Managing the inventory of the business would take so much time because of the need to gather all the needed data and hassle of organizing them. With how fast technology is growing, a computerized inventory management can be easily made for use. To ease the time management of the workload and the constantly changing data because of real-time processing system, it suddenly occurred to the owners that they could also keep track of the storage if they had the appropriate program for the their business . Our projects objective is to reduce the time and calculation process of the total cost of the product and the change of the customer ,also the project's objective is to monitor the availability of products on a given day and to provide a transaction history that automatically saves through database. The Benefits and Impact of the system is for the development of the inventory record keeping for the Restaurant's Cashier. Customer, will benefit from the system because the amount of waiting time will be reduced as the system will get rid of the manual computation that was used by the cashier before. Staff, will also benefit for they can easily managed and view what kind or how many supplies they still have in stock as well as updating the inventory system.

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II.REVIEW OF RELATED LITERATURE AND STUDIES

Database Management System is a program collection that allows any record from a database to be stored away, recorded and tweaked. Access stores data based on the access Jet Database engine in its own configuration. It can also directly import or link data stored in other software applications and databases. The database management system is the system's primary objective. Database Access with Visual Basic is a fundamental resource for developing business applications that take advantage of the features of Access with Visual Basic [1]. A method, manufacturing article, and inventory management apparatus for items at a location are disclosed. This encompasses in an embodiment an identity tag associated with a transaction that allows certain items to be removed from the site, such as a purchase [2]. An automated cashier system provides product display, order acceptance, payment and generation change for microprocessor - controlled products. Payments by debit and credit card are acknowledged [3].In one respect, inventory management processes may include determining, reporting and/or providing corrective actions for one or more events associated with at least one depletion of items in the inventory, changes in the design of items in the inventory, defects with one or more items, misplaced items, movement within a short period of time of an unusual number of items [4]. An electronic cash register data processing device usually consists of a keyboard with a plurality of entry keys, a printer, a memory unit, an interface circuit with which a memory pack that stores sales data is mechanically, electrically and removably related and a data processing unit connected to the keyboard, the printer, the memory unit and the interface circuit [5]. Records of inventory items are attached to holders of inventory items. Records of inventory items include two - dimensional bar code labels that contain encoded item identification information and reordering information to order replacement items [6]. A system and method that allows a consumer to make a purchase in a retail area and remove the purchased item from the retail area without causing an alarm through electronic article monitoring If the selected product is a valid selection, the system will post the transaction to the consumer's account, optionally including a convenience fee, and will purchase the EAS to erase the purchased product [7]. A computer - based system is used to stockpile and collect inventory reports on numerous products that are dispensed from partially filled containers in full containers or in quantities. Each container contains a unique code that describes the product in it [8]. An inventory monitoring device is provided in a business or hospital to provide an immediate indication of the number of items in that inventory, the number of items to be reordered at any time to replenish the inventory to its required level. And the critical minimum level of inventory necessitating a stock reorder to avoid stock depletion before new stock items can arrive from the supplier of the retailer [9]. An inventory management method and apparatus is disclosed in a distressed inventory warehouse with the help of a programmable computer. The method and apparatus ensure that the inventory management of a distressed inventory warehouse is fully automated [10].

III.METHODOLOGY

This section of the study of our group shows about the cashier and inventory monitoring system methodology used in making the whole program successfully running and functioning. Agile model is the methodology we used in making the system since one of our members is near to our pilot area, which helped us to interact and collaborate much accurately based on our client’s needs. First, we built our cashier and inventory monitoring system by using Microsoft Visual Basic 2010 version, including the software window forms, text labels, and buttons with codes for each function. The second program we used is the Microsoft Access for any relation in terms of making and connecting database/s into a program. The content of our database are all based on the menu items and prices on which provided by our client and staffs of the pilot area. The results of our software evaluation are enlisted in the next sections of this paper. The following figure is the architecture of the system.

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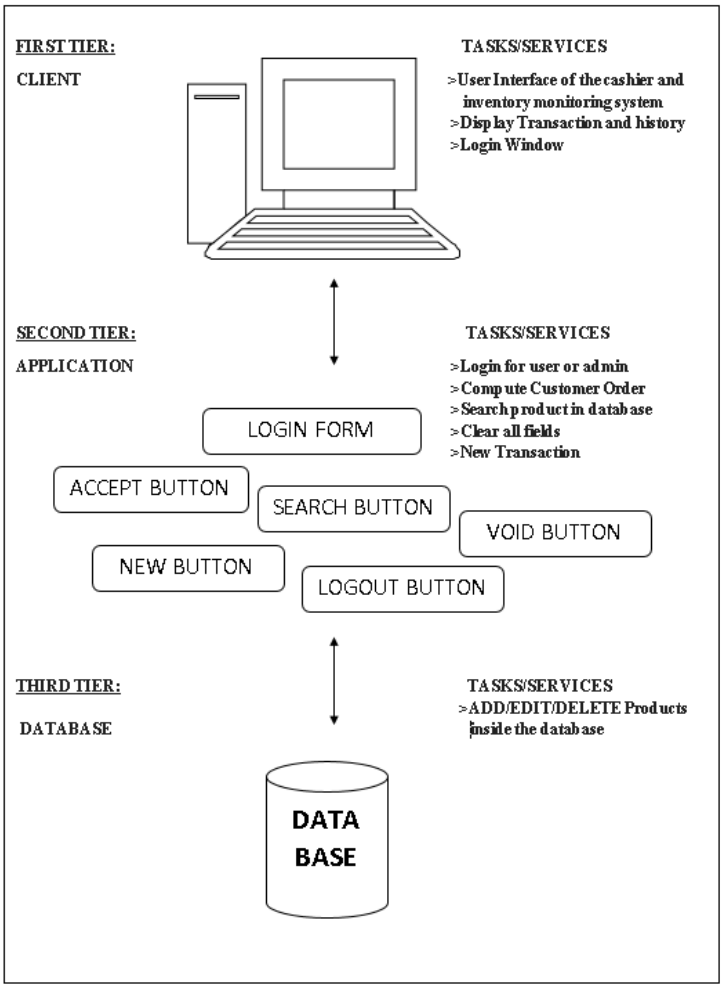

Figure 1.0
Cashier and Inventory Monitoring System, System Architecture

Figure 1.0 illustrates the system architecture of our proposed project, cashier for restaurants and monitoring system for inventories. We built a three - tiered model inside the diagram based on what our program is capable of. The first tier consists of the tasks / services of the client, which is inventory monitoring, display transaction history and user login window. The second tier is the tasks / services of the application which is the login of cashier staff or administrator, viewing products in the database, receiving order input, calculating total price and change, clearing all fields and creating new transaction. The third tier is the tasks / services of the database that allows the administrator to add / edit or delete products within the database. The figure below is the diagram of the use case.

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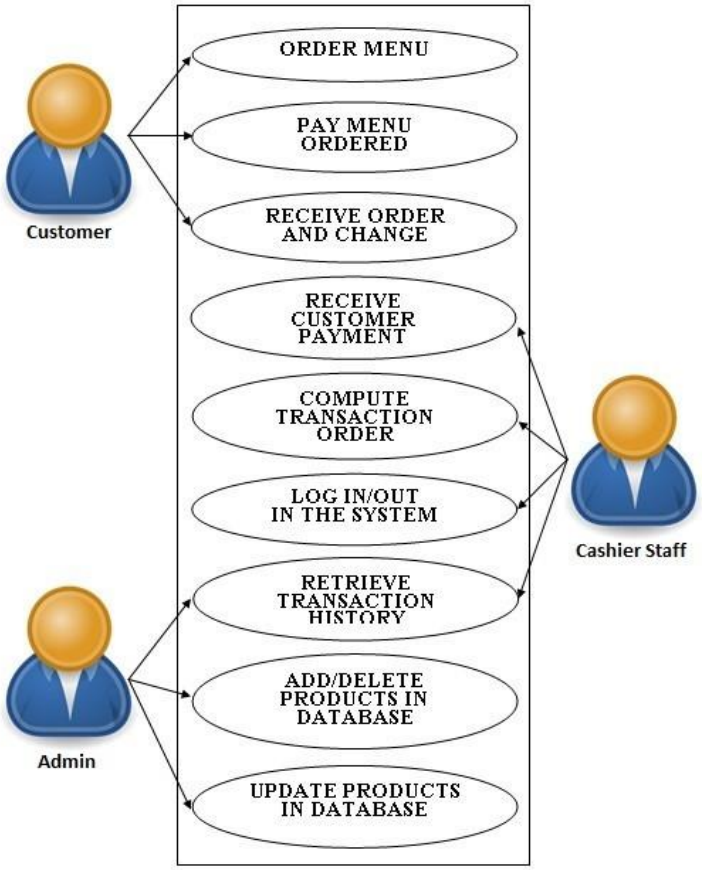

Figure 2.0
Restaurant Cashier and Inventory Monitoring System, Use Case Diagram

Figure 2.0 shows the functionality of each individual involved and the limitation on the type of users who will benefit and use the whole system. The cashier staff has the ability to receive customer payment, compute transaction order, log in/out of the system and retrieve transaction history. While the admin has the ability to add/delete products and update products in database and also retrieve transaction history. Order Menu, Lets the customer/client to choose from what they would like to order. Pay Menu Ordered, shows the total amount of money that the customer will need to pay during the transaction that's taking place. Received order and change, the customer will be able to received their order of their choice after the payment and change are finished during the transaction. Received customer payment, staff will receive the payment that the customer gave during the exchange. Compute transaction order, the staff can compute the complete order given by the customer. Log In/Out function of the system, the restaurant staff can Log in/out of the system during break times or when it's time to change shift to avoid breach of security or unauthorized personnel from having access to the system. Retrieve transaction History, The software that we have created also allows the authorized personnel and the owner of the restaurant to access the system's transaction history to retrieve data for monitoring purposes. The software also features add / delete products in the database which allows the owner to make some adjustments like editing or deleting the data of their products depending on the availability of the said product. Updating products in the database allows the customers to know what is available on menu to avoid customers from trying to order something that isn't available. The figure below is the diagram of the context flow.

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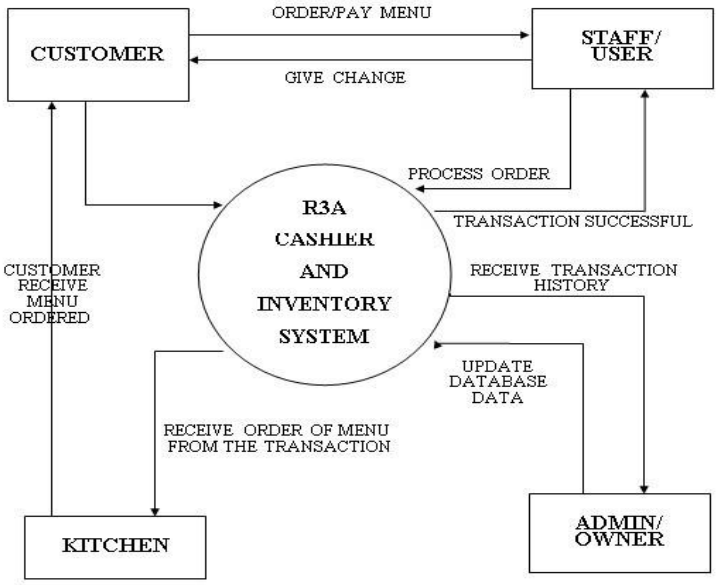

Figure 3.0
Cashier and Inventory Monitoring System, Context Flow Diagram

Figure 3.0 shows the flow of the processes and procedures that the system does while monitoring the inputs and outputs of each transactions done by the whole system. Customer, it shows here that the customer placed his/her order directly to the staff/user to begin their transaction. Staff/user, like the illustration suggests the staff/user would register the order given by the customer then compute the costs of his/her order which gets registered into the inventory system after which concludes the transaction of the order. Kitchen staff, receives the customer's order from the staff/user in order to create and finish the customer's order for the transaction. Admin/owner, the figure shows that the admin/owner is the one who will update the database of the system on the products that the restaurant will sell.

IV.RESULTS AND DISCUSSION

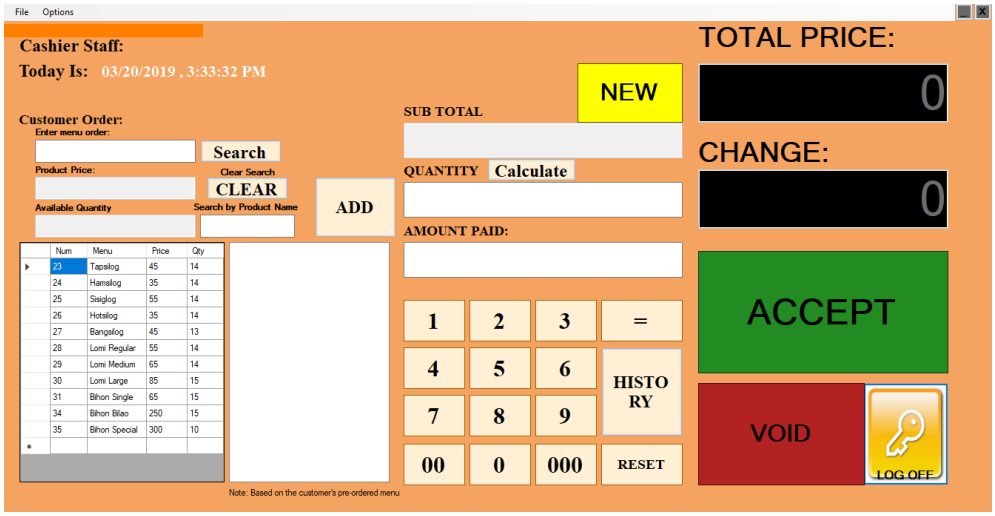

Figure 4.0 Cashier System

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Figure 6.0, the cashier staff can easily see the available products and product quantity, add / remove customer orders and automatically calculate the customer's total price and change when the cashier staff enters the customer's money and clicks the accept button which automatically saves the transaction into history. The purpose of search button is to search the database about the available product and clear button is to clear the search fields. The purpose of the add button is to add the product name,quantity and price of the current order of the customer, whenever you click the void button a new window will pop-out in which you can remove the order of the customer. The purpose of history button is to view the whole transaction history and whenever you click the new button the program will make a new transaction which will clear all the fields. The purpose of Options/Logoff is to switch user into admin/cashier staff while file/x-marked button will exit the program.

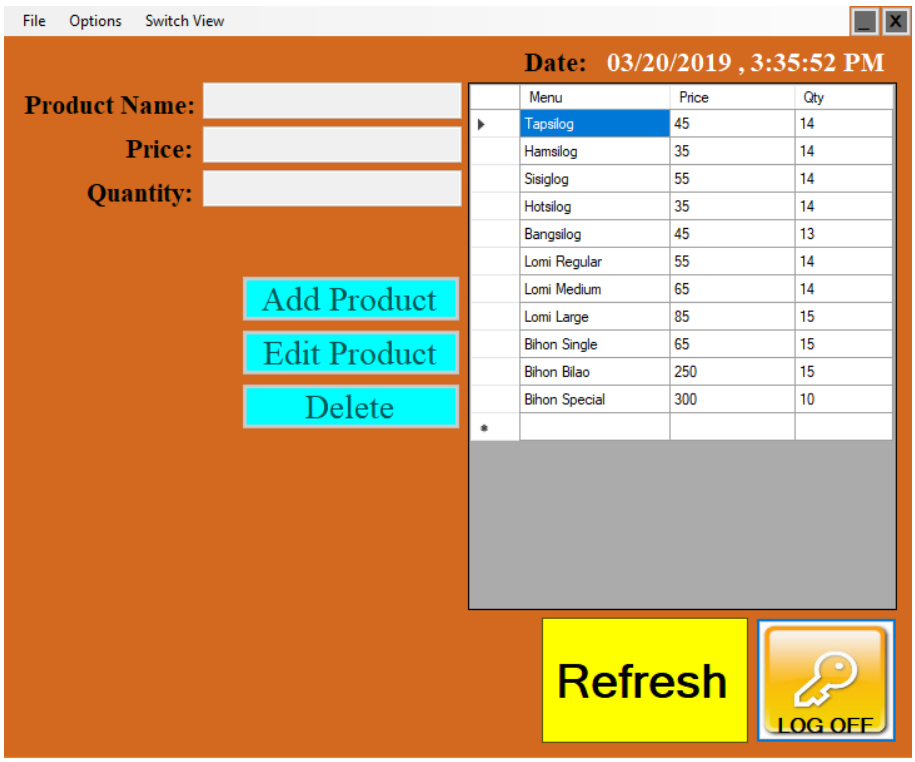

Figure 5.0 Inventory System

Figure 5.0, the system allows the administration staff to add, update and remove an existing product so that the staff knows what food is available. It is the responsibility of the admin staff to manage all existing products while the cashier staff is not allowed to add, update and delete existing products. Options button, is used for the admin/staff can access the Add, Edit and delete button while switch view button is used to switch the user. The purpose of add product button, it allows the admin to add a certain kind of products. Edit product button, is use for editing such as the prices and menu. Delete button, it's purposed is for deleting other kinds of menu because of its availability. Refresh button, its purpose is to refresh the product table. Log off button, is to switch user into admin/cashier staff.

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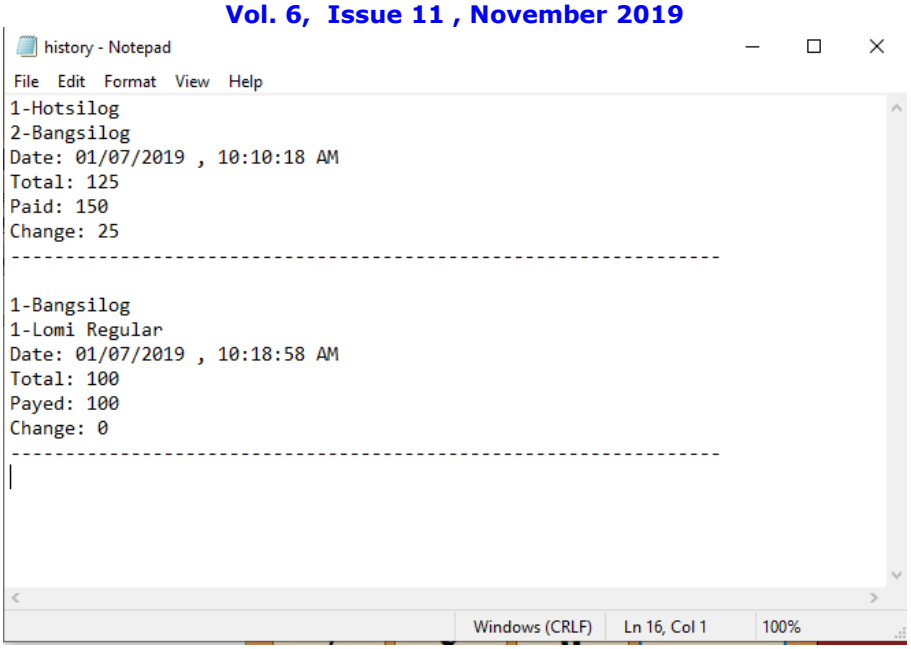

Figure 6.0 Transaction History

Figure 6.0, the system allows the cashier staff to view the transaction history to calculate the day's total gross, the administrator is the only one that can edit the history to remove a mistaken transaction history. The transaction history shows the total number of customers ordered, date & time of transaction, total transaction order, total amount paid and the change.

Table1.0 Evaluation Result

Criteria	Mean	Interpretation
Functional Suitability	5.0	Strongly Agree
Performance efficiency	4.0	Agree
Compatibility	4.0	Agree
Security	5.0	Strongly Agree
Maintainability	5.0	Strongly Agree

Table 1.0 presents the overall evaluation of the System. Based on the evaluation the cashier and inventory system meets the standard requirements of our client and also for the restaurant. Functional suitability, shows that all of the buttons inside the system works accordingly to their purposes. Performance efficiency, the whole system performs properly according to the clients needs. Compatibility, the program runs only in any windows desktop platform. Security, shows that the system is secured due to its login credentials. Maintainability, its easy to conduct system updates and repair if any error occurs.

V.SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

SUMMARY

Restaurant Cashier and Inventory System was fully developed and satisfied the owner with its functions. Based on the results of the evaluation conducted, the summary of the findings are Functional Suitability, it is rated as Strongly Agree because it enable the staffs to run the program according to what task to be done. Performance Efficiency, rated as

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Strongly Agree because the system runs smoothly even the user is using or not using the program. Compatibility, rated as Strongly Agree because the system can run in any kind of Windows desktop in any running operating system. Security, rated as Strongly Agree because the whole system can only be accessed by the permission of the client which provides the access only to his/her staffs. Maintainability, rated as Strongly Agree due to easy maintenance of the user/client.

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