

Trace-Mine (Return Product Management) Inventory Management

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Abstract :- I recently came across a problem faced by many companies who has 30+ outlets in Tamil Nadu. They are facing some problem when the goods are returned from the branch to storeroom. So I tend to make a database tool, which tracks the goods present in the onsite and storeroom. To make the tracking process easy a mobile app is created which is installed into manager mobile to keep track of the product being sent back.

My project deals with making a database, which is then interfaced, to the server using web app and which in turn communicate with a manager with App. Another key advantage it helps in data tracking which can help in improving the business prospect for the particular area.

Keywords: Barcode, database, Web Hosting, Android Application, Incoming and Outgoing Items.

Introduction

In this era of modern technology, the industrial companies are becoming more systematic in every term possible but to create a systematic system for data reporting, the cost of this systems are high which causes the company to create an unfriendly report because that is where the stock management system is done manually without the help of any technology or system. The industrial affected areas are mainly in the warehouse department and the manufacturing department, the warehouse department is where the items or materials are arriving for stock purposes and later on to be used by the manufacturing department. In the manufacturing department, the manufactured items are a combination of the materials obtained from the warehouse department to manufacture objects based on user's description. For the smart stock management system which uses an Android Smartphone in the industrial companies are research based on the supply chain management, tracking system. For the barcodes part, it is seen to have more than two types of barcodes which are available on the market. For example, on types of barcodes existing are the 1D barcode, 2D barcode etc. It is said by the use of this barcode can increase the database system productivity but the limitation is that the not all system.

The database section is the main role for the reporting for both the warehouse department and manufacturing department, this is because the outgoing is analyzed and evaluated on what materials have arrived for the warehouse department and what materials are used for manufacturing for the manufacturing department. In order for the database in Android Smartphone and the computer to be kept up to date from time to time, the system is linked via wireless connectivity. The smart stock management system has already been in the market just

recently but there a number of limitations to the system such as the database syncing via wireless connectivity between the Android Smartphone and the computer are not available. But the users can sync information using data transfer via USB. In addition, the systems introduced are costly which makes the company owner's to reconsider whether purchasing the system is worthy. Moreover, the system can be enhanced by making the connectivity of the Android Smartphone and the computer to be connected via wireless which includes auto database syncing and reducing the cost further is considered and introduced. This system allows a user to sync data manually or the system is set to auto sync every minute. By doing this, the database is kept up to date not only on the Android Smartphone but also on the computer, plus these also ensure good reporting will be done on the database for both the warehouse department and manufacturing department.

Relative works

Stocks (reserves) are created to carry out the normal activities of the company. Proper and timely determination of the optimal inventory control strategy allows freeing a significant amount of assets, frozen in the form of stocks, which ultimately increases the efficiency of resource use. Even though there are literally millions of different types of products manufactured in our society, there are only two fundamental decisions that one has to make when controlling inventory:

1. How large should an inventory replenishment order be?
2. When should an inventory replenishment order be placed?

The objectives of inventory management often reduce the problem if it is more profitable to do quickly but more expensive or slower but cheaper. Such a strategy will be optimal inventory control, which minimizes the sum of milestones costs associated with the production, storage and inventory shortage per unit of time or for a specific (including infinite) amount of time. Management models differ in the nature of the available information on the properties of the simulated system. When the value of the model parameters is well-defined, nature of the corresponding mathematical model is deterministic. If the parameters of the system are random values with a known probability, distribution models are stochastic (probabilistic). If all of the model parameters do not change over time, it is called static, otherwise – dynamic. Static models are used when receiving a one-time decision about the level of reserves for a certain period, and dynamic – in the case of sequential decision-making about stock levels or to adjust earlier decisions, taking into account the changes taking place. When static patterns of change in system parameters cannot be installed, it is necessary to solve the problem of inventory management in the face of uncertainty. In models of inventory management, the following characteristics are taken into account: Single versus multiple items. This dimension considers whether a single item can be used in isolation for calculations, or whether multiple interdependent products should be taken into account, as a result of collective budget or space constraints, coordinated control or substitutability between items. Time duration. In some inventory management situations, the selling season for products is short, and excess stock at the end of the season cannot be used to satisfy the demand of the next season. In such cases, a single period model is required. When multiple periods need to be considered, a common approach is to use a rolling horizon implementation approach. Here, decisions consider only a relatively small number of future periods and are made at the start of each period. The decisions are then implemented in the current period, and the problem resolved at the start of the subsequent period. A number of stocking points. Sometimes, it is appropriate to treat a single stocking point in isolation. In many real-world cases, inventories of the same item are kept at more than one location. In multi-echelon situations, the orders generated by one location (e.g., a branch warehouse) become part or all of the demand at another location (e.g., a central warehouse). In addition, one can have horizontal multiplicity, that is, several locations at the same echelon level (e.g., several branch warehouses) with the possibility of transshipments and redistributions. The nature of the product. The product type dimension identifies and considers certain product characteristics. For instance, a product may be perishable, consumable, repairable or recoverable. Deterioration of an item in the storage period is a natural process. Therefore, it cannot be ignored in inventory policy. It may be different in different storage places due to the difference in the environment. Nature

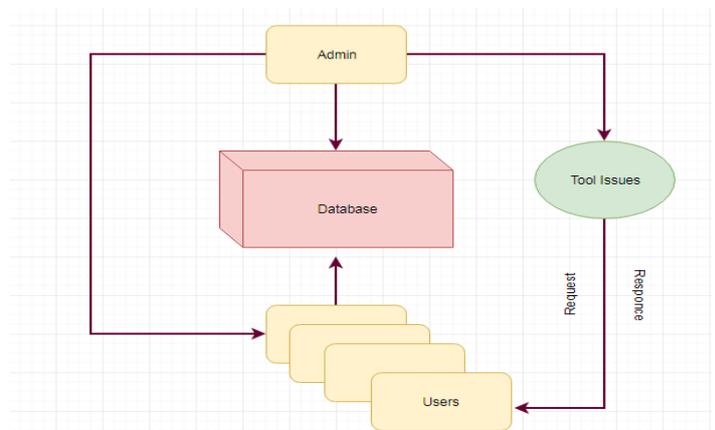
of demand. There are a number of possible choices in modeling the demand process. Types of demand could be classified as it is shown in Figure 1. Deterministic demand is exactly known, unlike the probabilistic demand. It can be of two types. One of them is static, which does not have any variation. The amount of demand known or can be computed with certainty. The second type is dynamic, which may vary. This type of demand varies with time, but the way in which the demand varies is known with certainty.

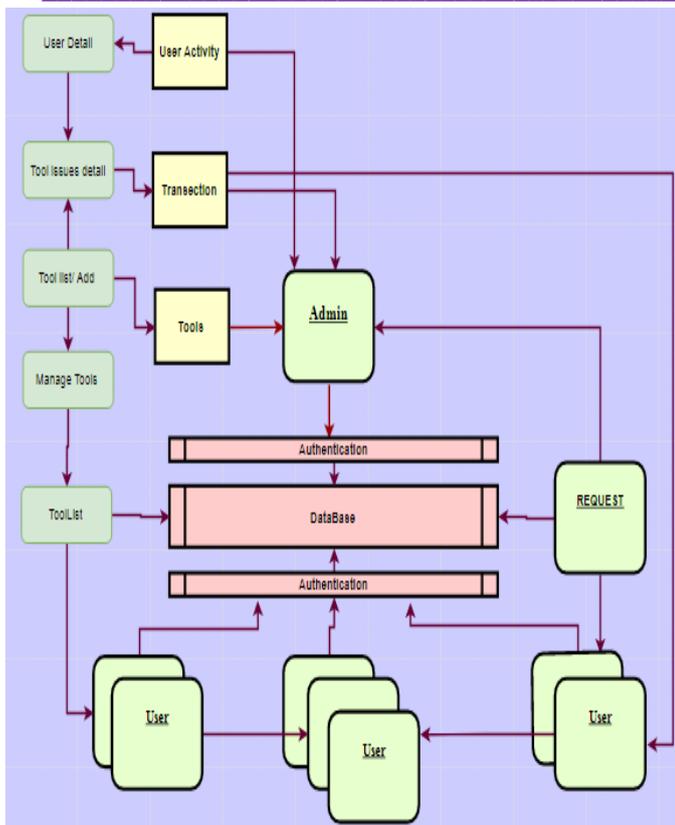
Proposed Work

A manager may have several inventory models available to him, but if he is not sure which is the best one for the situation, obviously, he may not be able to solve the problem effectively. It is clear that when a manager is faced with an inventory problem and he has an expert available for choosing the right model then he can be confident that the efforts put into analysis will be efficient and successful. In recent years, the emergence of expert systems.

This systems idea has to make an automated storeroom that can access from any place with secure manner We are providing secure website and mobile application for employee and manager to view and use the tool in easy way This application help employee to know who having which tool and the need of necessary of tool This application helps user to easily access and reducing the time for taking and returning the tool.

Our tool has calculated the count of tool available in stock inventory and its provide the counts of stack who are having and when they took the item from the stack room and it the record of all the data about the items in inventory. In this, we can add the number of stack count based on unique id number with the types and use of that item in the database..





Above chart show the flow of control and data in the database this each process ensuring security of login and checks the access detail. Based on the access of the database it is provide the permission to modify or read only of database.

In our Tool, each user can have access to view the detail of the user and detail about the issues of is items from the database, which helps to show the everyone, who are all having the items from the inventory. which helps ever ones and its avoid the partiality or polities in the stock inventory, from this less number of items enough to giving to all and make use of its to everyone . Hear we applied the OTP (one time password) for authenticate the user and admin account during the login after its track the session id of both if any illegal activities happen its break session id and throw out the login page.

Sample code of OTP generator

```
<?php
session_start();
$text = rand(10000,99999);
$_SESSION["vercode"] = $text;
$height = 25;
$width = 65;
$image_p = imagecreate($width, $height);
$black = imagecolorallocate($image_p, 0, 0, 0);
$white = imagecolorallocate($image_p, 255, 255, 255);
$font_size = 14;
imagestring($image_p, $font_size, 5, 5, $text, $white);
imagejpeg($image_p, null, 80);
?>
```

This coding has help to make security in the Inventory user and admin.

In our inventory manager we are introducing the function of interchanging of the item with in each user that has to be update with database .In elaborate say mean like a request and response module these modules help to each user have permission to see the details of user record and also each user have permission to see the issues and transection detail of each user this function has help to user to see how are all near to them and which items who are all accessing once the user need that same items then he/she can get that user not to waste time to go central stock room and search that particular items.

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The reasons for choosing software prototype as this research methodology are this warehouse system are new to the user. The user would like to take part in the whole developing process. Furthermore, it is very risky if applying other methods due to the unclear requirements are given by the user. From the research, software prototyping has three key ingredients. They are quick delivery, the preview of system performance, and easier communication needs. Quick delivery means the information specialists try to provide the prototype as soon as possible. Preview of system performance allows the user input data to the software prototype and view the result on the screen just as with an operational system. By using the software prototype, the user can have the better understanding of the developing system. Better support will be given to them as well. The user might enjoy taking part in the developing process by giving more suggestion. Therefore the system can have better improvement

The advantages of using software prototyping are better communication between the user and the information specialists. Easier determining the user needs, because a user can directly interact with the real system. Software prototyping support direct users respond if any things that do not fulfill the user needs. By using this method, opportunities for changes are increasing, but with the number of changes it also helps in reducing error and it's easier to implement the system because the user knows what to expect from the system. Steps involved in the software prototype:

1. Identify known requirement
2. Develop a working software prototype
3. Test and revise software prototype
4. Repeat the steps until it satisfies the user

There are two types of software prototypes. The type I prototype becomes the operational system after repeated changes based on user feedback. The type II model is a throwaway model that serves as the blueprint of the operational system. This research is not going to implement the hold system, but that is only a software prototype. The type I software prototype will be used for this research.

The system design was created using the UML modeling, the use case diagram of the application prototype. A use case serves to help validate the system architecture and to verify the system as it evolves during development. Besides that, a use case diagram describes a set sequence, in which each sequence represents the interactions of the things outside the system (its actors) with the system itself. These behaviors are in effect system-level functions that the developer uses to visualize, specify, construct and document the intended behavior of the Smart Stock Management Control system during requirements capture and analysis. In short, a use case represents a functional

requirement of the proposed system as a whole from a stakeholder or actor view.

The construction details talks regarding what the system structure is consist of; therefore it is divided into three parts which are the tag, android application, and database.

the process of the data being saved into the database. There will be three activities which are being created in the application the Incoming Activity handles another 4 sub activities and the Outgoing Activity handles another three sub-activities where all these activities are connected to an SQLite database within the android studio, so the Incoming Activity and Outgoing will interact with the DB Adapter which is written and provided to the system.

This DB Adapter will know how to set up and query the database where it has an internal class called the DB Helper. Then, the Android DB is where the information based on data input into the system is being stored accordingly. Moreover, through the Android DB, the Database Activity can be clicked to check the current working tracks and its item availability.

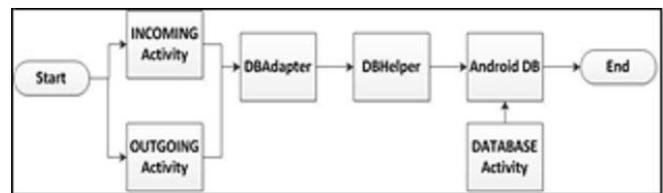


Diagram shows Process of the Database

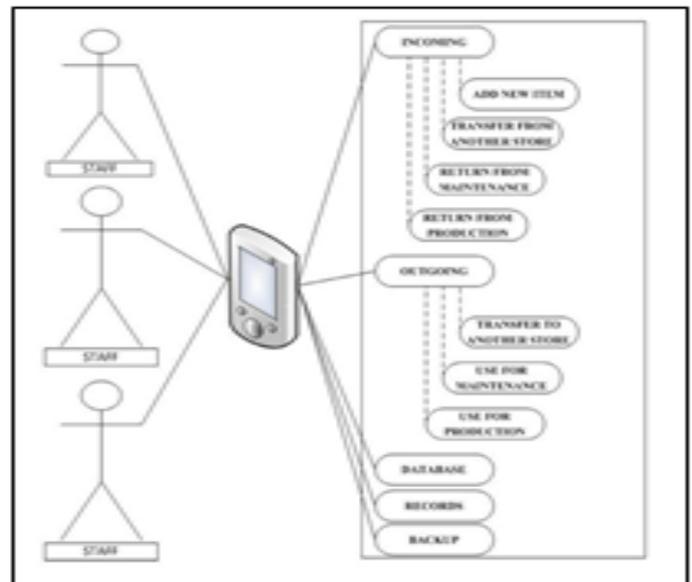


Diagram Shows Use Case Diagram of the Application Prototype

CONCLUSION

As shown in the paper the Database Explorer tool is sufficient for the most database-related work and can be used not only for direct database management but as a powerful

development tool as well. It is able to visualize or modify existing databases, to create new databases and to generate common production-ready source code for common basic database operations

FUTURE WORK

The proposed future works, which should be done on this system, is to migrate from barcode technology to radio frequency identification technology, integrate bulk SMS technology, automate the entire procurement processes and incorporate a module for inventory management of uniforms as well.

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