



A MOBILE BASED INVENTORY MANAGEMENT WITH QR CODE APPLICATION

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Abstract: This project is aimed at developing a mobile based application named Inventory Management System for managing the inventory system of any organization. The Inventory Management System (IMS) refers to the system and processes to manage the Product with the involvement of Technology system. This system can be used to store the details of the Inventory and based on the details, generate QR code. This project is categorizing individual aspects for the sales and inventory management system.

Keywords: A mobile based inventory management system with QR code application.

I. INTRODUCTION

The project Inventory Management System is a complete mobile based Android application designed on *Kotlin* programming language. using Android Studio Software. The main aim of the project is to develop Inventory Management System Model software in which all the information regarding the stock of the organization will be presented. It is an intranet based android application which has admin component to manage the inventory and maintenance of the inventory system. This android mobile application is based on the management of stock of an organization. The main objective of this project is to manage a stock for a company or organization, and take care of sales and purchase of products. This project includes various modules and features to add, edit, view and delete stock management-related things in the system database. The application contains general organization profile, sales details, Purchase details and the remaining stock that are presented in the organization. There is a provision of updating the inventory also. This application also provides the remaining balance of the stock as well as the details of the balance of transaction.

Each new stock is created and entitled with the named and the entry date of that stock and it can also be update any time when required as per the transaction or the sales is returned in case. Here the login page is created in order to protect the management of the stock of organization in order to prevent it from the threads and misuse of the inventory. Inventory Control Management System is necessary for the businesses ranging from large to small organizations. Inventory is the goods or the material that the businesses have in order to achieve their goals. The process of

maintaining the information of the inventories at one stretch is very difficult. If you want the information once obtained about the inventory large businesses are very important. The inventory control management database system is actually the documenting the details of the inventories present in the industries to reach the goal. Inventory optimization is the process of balancing the capital investments constraints and the constraints on the goals to be achieved. So, this database project can reduce

and maintain optimize inventory and safety stock levels. Inventory costs play a major role in business. Inventory cost measurement itself is a tough problem.

Effective maintenance of the inventory costs is very important. Inventory management is one of the crucial tasks that the industries need to handle at times. Businesses ranging from small to large businesses must manage, control and track the inventory from time to time and from anywhere. The inventory control management database system should be designed in such a way that you should be able to obtain the low raw material prices. This will also result in more profit for the industries. Therefore the inventory control management database should be designed to reduce the storage cost, reduce the insurance cost, reduce taxes, optimize the stock sales etc. main idea is to develop a software interface for go downs for managing total transactions of goods and delivers and money management. Users are provided with graphical GUI for accessing historic data. This application provides graphical graphs to view data for easy understanding and managing daily transactions with intake and outgoing data mentioned clearly. This application works on centralized database. Changes made at client site will be reflected on database. This software works on online platform which support multi user login. Existing system works on manual process where record maintenance is not a easy task. In this method it is hard to retrieve older records and there are chances of losing data. Using this new system can solve all the above problems and provide secure and user-friendly application. Inventory Management system is a software which is widely used by retailers, shopkeepers, manufacturing units and other merchants across different businesses. It is used for managing stock of products in their warehouse or in the shops.

II. LITERATURE SURVEY

Several pieces of researches have been done to develop an inventory management system such as Ayuhmaan Patel[1], Reddy Surya Manoj[2], Varsha Paliwal[3], Kritarth Kumar Jha[4], and Dinesh Kumar[5].

Kritarth Kumar Jha and Dinesh Kumar proposed to manage all data. In this system lot of data needed to store and manage in database. For that we use MySQL as database where all data can be store and when app needed data can be fetched through database.

Ayushmaan Patel and Reddy Surya Manoj proposed to manage all the backend works and maintain the app. Varsha Paliwal proposed to design frontend of the app.

The Inventory Management System (IMS) refers to the system and processes to manage the stock of organization with the involvement of Technology system. This system can be used to store the details of the inventory, stock maintenance, update the inventory based on the sales details, generate sales and inventory report daily or weekly based. This project is categorizing individual aspects for the sales and inventory management system. In this system we are solving different problem affecting to direct sales management and purchase management. Inventory Management Systemize important to ensure quality control in businesses that handle transactions resolving around consumer goods

III. PROBLEM STATEMENT

After analyzing many existing IMS we have now the obvious vision of the project to be developed. Before we started to build the application team had many challenges. We defined our problem statement as:

- A Mobile based Inventory Management System using QR code application
- A mobile application is required that is capable of Having all the details of the equipment like S/N, Date of Installation etc. by scanning a QR code/ barcode.
- Readily accessing the past service record by scanning a QR code/ barcode.
- Entering the details and updating service history on the spot, just after maintenance
- To make android-based application of IMS for small organization.
- To make the system easily managed and can be secured.
- To cover all the areas of IMS like purchase details, sales details and stock management

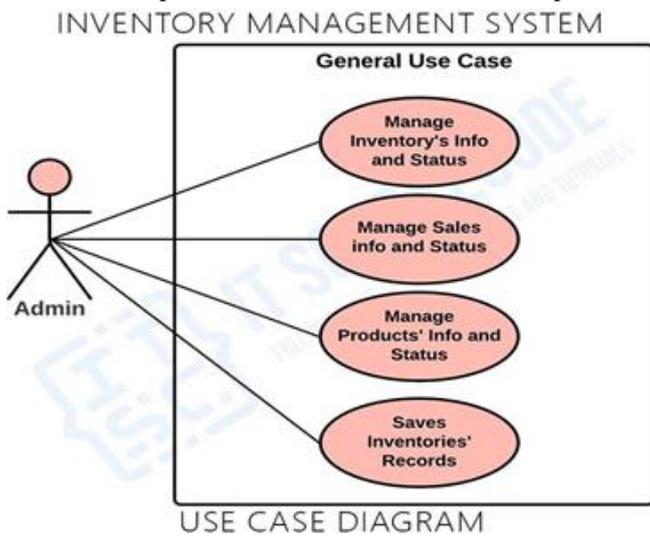
Some of existing system semi-automated and many are manual to keep the transaction record of the inventory in the departmental store. People still prefer to follow the manual method even if there is automated system to keep the record. We have found that employees first of all record all information in their ledger before entering in computer system. They are using both ways to keep the record of stock purchase, inventory, sales monitoring, etc. Following this method is very time consuming and tedious. It has many drawbacks as there may be mistakes while recording large data and this may disrupt the important transaction. So, in this project we are trying to make inventory management system which will help employees to keep record of inventories in systematic way and help them produce report about the inventory or stock currently

available in their store in automatic way to help then sale forecasting, decision making about the stock etc.

IV. OBJECTIVE

The inventory management system is mainly used to keep record of all the product. It is very difficult to keep record of goods maintenance, and purchased dates so by using this we can easily keep all the records of goods. The main benefits of inventory management are :-

- Real-time asset tracking.
- Help speed up the entire process.
- Help identify asset location.
- Printing the QR barcodes too small.
- Keep all the records like maintenance of products.



V. METHODOLOGY

In this inventory management system we are using QR code to scan goods. So for that we use software and hardware both. Software is used to write logic, maintain data and for app maintenance also used software.

And Hardware is used to scan data. In smartphone we install app and scan goods.

A. Login Page:-



This is the first registration page where user can register goods serial number and goods name. This is important because in this app lot of data is present so to identify goods we have to give them a unique serial number.

QR Code



Opening the QR Code Scanner, scans the QR Code which is attached to each item and after the QR Code is scanned the item related information will be shown on the screen which contains the product description, Serial No of the product, Date of installation, previous maintenance record and updated record.



We also have to add data to manage all goods maintenance dates and purchased date easily.

Software Design and Implementation:-

The purpose of inventory management is to manage the ordering, stocking, storing, and using of

Inventory. By effectively managing your inventory, you'll always know what items are in stock, how many of them there are, and where they are located.

Using QR Codes for inventory tracking helps track inventory in real-time based on scanning activity. Inventory can be tracked based on the QR Code's GPS location, time of the last scan, and even the OS used for retrieving granular data about the products.

The system is developed by using the following software:-

B. Technologies:-

Built in:-

- Kotlin

C. Backend Services:-

- MySQL
- ZXing
- MVC architecture

The design of this system is involved various steps:-

- In the first step front-end is designed. We design front-end for a good user experience and can easily identify which type of app it is. For creating front-end we used kotlin as a language.
- In the second step we design back-end of the app. In the back-end all the logic of code take place. And also, app
- maintenance work can be done by back-end. For back-end we also used kotlin as a language.
- In the third step we creating QR code for scanning goods. By this we can keep all record of our products like servicing dates etc. For generating QR code we used ZXing.
- And in last step we work on database. We have to keep big number of data for that we need a database to stored all data in proper manner. So for that we use MySQL database.

D. Kotlin:-

Kotlin is a general purpose, free, open source, statically typed "pragmatic" programming language initially designed for the JVM (Java Virtual Machine) and

Android that combines object-oriented and functional programming features. It is focused on interoperability, safety, clarity, and tooling support.

E. MySQL:-

MySQL is a relational database management system (RDBMS) developed by Oracle that is based on SQL. A database is a structured collection of data.

F. ZXing:-

ZXing is used to generating QR code.

G. QR Code:-

QR Code is used for scanning. A QR code is a type of barcode that can be read easily by a digital device and which stores information as a series of pixels in a square-shaped grid. QR codes are frequently used to track information about products in a supply chain and – because many smartphones have built-in QR readers – they are often used in marketing and advertising campaigns. More recently, they have played a key role in helping to trace coronavirus

VI. CONCLUSION

Inventory Management System Project is developed as a android based mobile application to meet the current stock management demands of an company or organization. The system can be accessed from anywhere with the internet. New features and modules can be incorporated into the system as per the user requirements.

There are several Advantages of using the inventory management in a business setting are:

- Cost savings
- Increased efficiency
- Warehouse organization
- Updated data
- Data security
- Insight into Trends

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