



INVENTORY MANAGEMENT SYSTEM USING QR-CODE APPLICATION

A Report for the Evaluation 3 of Project 2

Submitted by

ASHISH YADAV

(1713104018 / 17SCSE104018)

In partial fulfilment for the award of the degree

Of

Bachelor of Computer Applications

IN

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

Under the Supervision of

Mrs. SUMAN DEVI

Assistant Professor

APRIL / MAY -2020



**GALGOTIAS
UNIVERSITY**

**SCHOOL OF COMPUTING AND SCIENCE AND
ENGINEERING**

BONAFIDE CERTIFICATE

**Certified that this project report “ INVENTORY MANAGEMENT SYSTEM
USING QR-CODE APPLICATION ” is the bonafide work of “ASHISH YADAV
(1713104018)” who carried out the project work under my supervision**

SIGNATURE OF HEAD

Dr. MUNISH SHABARWAL,
PhD (Management), PhD (CS)
**Professor & Dean,
School of Computing Science &
Engineering**

SIGNATURE OF SUPERVISOR

Mrs. SUMAN DEVI
Assistant Professor
**School of Computing Science &
Engineering**

TABLES OF CONTENTS

Chapter no.	Title	page no.
•	ABSTRACT	6
•	INTRODUCTION	7
•	Problem statement	8
•	Proposed system	10
•	Existing systems	12
Chapter 1.	14
❖	What is QR Code based inventory Management System....	15
❖	Working of barcode system.....	16
❖	Representation of bar codes	18
Chapter 2 Types of barcodes.....	19
❖	One Dimensional (1D) barcode types.....	20
❖	Two-Dimensional (2D) Barcode Types.....	23
Chapter 3	Advantages of 2D bar code	26
❖	Advantages of 2D bar code.....	27
❖	Information that a QR Code contains.....	28
❖	NEED OF PROJECT.....	30
Chapter 4	working of IMS	31
❖	How this system Works.....	32
❖	Product Management.....	33

❖ Purchase Management.....	34
❖ Sales Management	35
❖ User Management.....	36
Chapter -5.....Result.....	38
❖ The Android part.....	39
❖ Profile Page:	39
❖ Login page	40
❖ Storage Page	42
❖ Item pages	44
Chapter-6Conclusion.....	45
❖ References	49

Figures

Figure 1 Architecture of our system.....	10
Figure 2 current system	11
Figure .3 Barcode Image.....	14
Figure 4 Barcode representations of numbers	17
Figure 5 UPC Barcode.....	19
Figure 6 . EAN Code.....	19
Figure 7 CODE39.....	20
Figure 8. Code 128	20
Figure 9 .TF	21
Figure 10. CODE 93	21
Figure 11.CODABAR	22
Figure 11.GS1 DATABAR	23
Figure 12 MSI PLESSEY.....	24
Figure 13. QRCODE	25
Figure14 DATAMATRIX CODE.....	25
Figure 15 DATAMATRIX CODE	25
Figure 16 PDF417	25
Figure 17 AZTEC	26
Figure 18 image scan by a phone.....	28

Figure 19 Information a QR code contains.....28

Figure 20. Architecture of our system.....31

Figure 21. Home Activity.....40

Figure 22. login \signup page41

Figure 23 add assets42

Figure 24 add details of equipment.....43

Figure 25 . showing the assets image44

Figure 26 generated qr code asset.....45

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 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 Systemise important to ensure quality control in businesses that handle 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 wholesaler when it is time to record. Inventory Management System is also unimportant means of automatically tracking large shipment. An automated Inventory Management System helps to minimize the errors while recording the stock

Inventory management system which is a QR based system, plays a significant role in the management of stocks & Maintenance of equipment's for any or - Inventory Management System is software which is helpful for the businesses operate hardware stores, where store-owner keeps the records of sales and purchase .Mismanaged inventory means disappointed customers, too much cash tied up in warehouses and slower sales. This project eliminates the paper work, human faults, manual delay and speed up process. Inventory Management System will have the ability to track sales and available inventory, tells a store-owner when it's time to reorder and how much to purchase .Inventory Management System is an Android application developed for Android operating systems which focused in the area of Inventory control and generates the various required report organization.

INTRODUCTION

The project Inventory Management System is a complete mobile based Android application designed on JAVA 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, it should be made available even the next time when you need that information. For this purpose, the inventory control management database is necessary. The inventory control management database can maintain proper management of variety of items. It can also increase the inventory turnover ad also optimize the sales stock levels

Control and management of the inventories may be the small or 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 godowns 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.

Problem statement

After analysing 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 there 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.

Proposed System:

The Inventory Management System is a real-time inventory database capable of connecting multiple stores. This can be used to track the inventory of a single store, or to manage the delivery of stock between several branches of a larger franchise. However, the system merely records sales and restocking data and provides warning of low stock at any location through email at a specified interval. The goal is to reduce the stress of tracking rather than to hold all store maintenance. Further features may consist of the ability to create reports of sales, but again the explanation is left to the management. In addition, since theft does occasionally occur, the system provides solutions for confirming the store inventory and for correcting stock quantities. Production unit use inventory management system to reduce their transport costs. The system is used to track products and parts as they are transported from a seller to a storeroom, between storerooms, and finally to a retail location or directly to a customer. Inventory management system is used for various purposes,

including:

- Maintaining and recording the information between too much and too little inventory in company.
- Keep track of inventories as it is transported between different locations.
- Recording products information in a warehouse or other location.
- Having record of Picking, packing, and selling products from a warehouse.
- Reduction of product obsolescence and decay.

Avoiding the out-of-stock situations. To overcome the drawbacks and limitations of the existing system, this inventory Management System software is proposed. It is a more efficient web application developed using Java. This application is more effective for stock data management; the data is more secured and can be accessed easily.

Features of Project This application is used to show the stock remaining and details about the sales and purchase. It gives the details about the stock on daily based and weekly based. The details components are described below:

Login page: As application starts the login page appears. Admin login is determined by the username and password that has all the authority to add, update and delete the stock of the organization as per the requirement. Create Godwom: We can create godwom if we need to extend or we have more than one godwom. We can create the godwom along with the date. Sales details: It show the details about the sales and the remaining stock of sales. It also show the details about the sales in return. Purchase details: It shows the details about the purchase made by the organization along with the price and dates.

Scope of the Application Inventory Management System (IMS) is targeted to the small or medium organization which doesn't have many godwom or warehouses i.e. only to those organization that has single power of authority. Some of the scope are: Only one person is responsible in assigning the details or records It is security driven. Godown can be added as per the requirement.

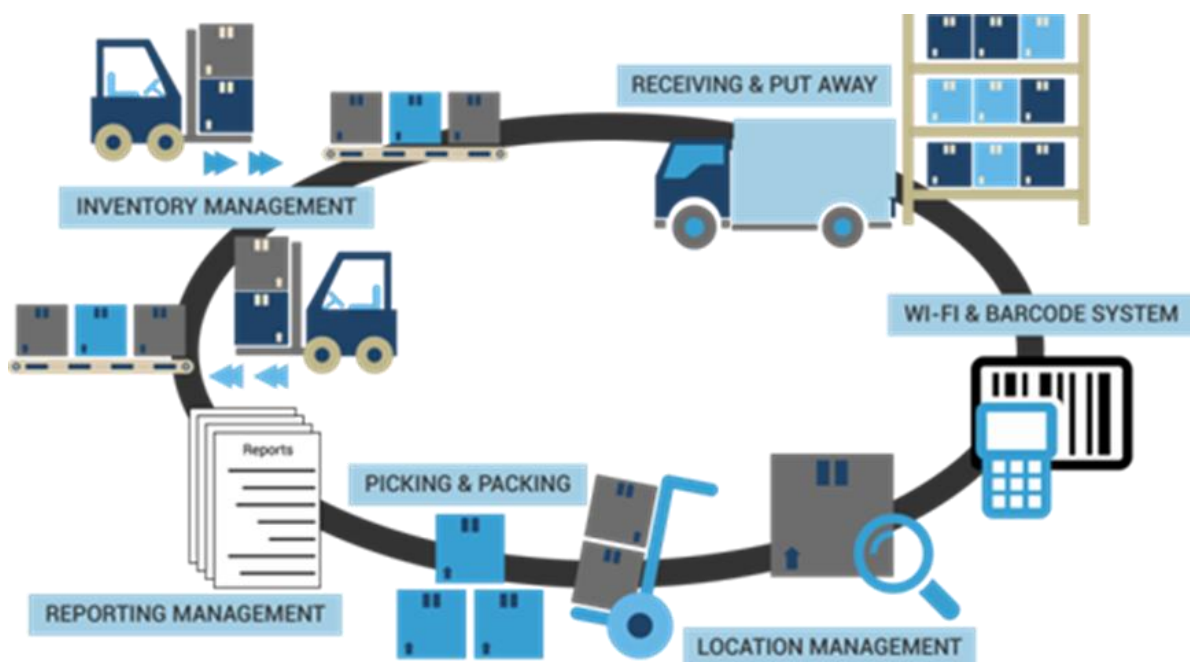


Figure 1 Architecture of our system

EXISTING ALTERNATIVES & LIMITATIONS

Existing applications

- Upkeep
- Eoffice inventory
- Cashier live
- Barcode express pro
- Good order inventory
- Sortly
- Business Inventor

Limitations

- Cost intensive
- Lacks real time data updating
- Data redundancy / loss
- Customization is not available as per user needs

Existing System:

The existing Stock Management procedure is a manual one which run with pen and paper. It is very time consuming and uneconomical for an organization. Data organization is not effective and efficient in the current system, and there is more risk of data mismanagement.

There are number of Inventory Management System available in the market. After doing my research, I have come to know that most of them are limited to few products. Some others are lacking in good UI. Marketing points are not much focus to increasing sales. Customer management system and Inventory Management system can't be linked due to different organization which leads to compromising the client satisfaction level. Most of them are not using cloud computer concept but we are trying to develop such a system which is for everyone rather than for only big companies or for small organisation. Most of them are expensive to use and their maintenance is generally not cheap .Our system is Pay-as-per-Use.

- Currently using pen & paper and excel sheets for maintaining the database.
- Time consuming ,prone to error & cost intensive.
- Requires more man power.
- Organizationsis outsourcing basic management apps .



Figure 2 current system

Chapter -1

What is QR code based

Inventory Management

System ?

What is QR Code based inventory Management System ?

QR based inventory management system is an android application which utilizes the barcode scanner in the mobile to record and maintain the stock details. Generation of barcode for any item and scanning of the barcode are the two main features in the android app.

To carry out this project it was subdivided into several topics:

- Working of barcode system
- Types of barcodes
- Information that a QR code contains
- Actual implementation of the selected type of barcode

Working of barcode system

Computers understand 1 and 0, so if while scanning it reflects no light then it is considered as 1 & if light reflects then it is considered as 0. These are then grouped into 15 different sections out of 12 are used for numbers which are shown at the top in the above image. As you can see there are guards in the barcode image above(Left guard, Center guard & Right guard). Guards let the computer know where the barcode begins & ends.



Figure 3 Barcode Image

Left side codes	Left side codes
0001101 = 0	1110010 = 0
0011001 = 1	1100110 = 1
0010011 = 2	1101100 = 2
0111101 = 3	1000010 = 3
0100011 = 4	1011100 = 4
0110001 = 5	1001110 = 5
0101111 = 6	1010000 = 6
0111011 = 7	1000100 = 7
0110111 = 8	1001000 = 8
0001011 = 9	1110100 = 9
Error checks	Error checks

Odd number of 1's Even number of 1s Begins 0 Begins 1

Ends 1 Ends 0

So if computer reads even number of 1's on the left hand side it knows that the barcode is flipped upside down and once it reads it, it can just flip the numbers while processing. Also as an error check all the codes on the left side begin with a 0 and end with a 1 and all the codes on Right side begin with a 1 and end with a 0.

Let's take an example, as shown in the image the numbers shown are as 0, 5, 1, 0, 0, 0, 0, 1, 2, 5, 1,

7. First number is 0 which is outside of barcode. It tells us what type of barcode this is.

0 = Standard barcode

2 = Weight item like fruit or meat

3 = Pharmacy item

5 = Coupon

The next set of 5 numbers tells us who the manufacturer of the product : 51000 is manufacturer code for Campbell soup company. The next set of 5 numbers tells us product code 012517 which is 10 ¾ ounce can of chicken noodle soup.

Finally, the last number on the right hand side is Modulo check character. This is another form of error checking..

When the computer scans the barcode and processes the numbers it means a final way to know that it read & processed everything correctly so it performs a calculation and comes up with a modulo check character.

Modulo check character formula is based upon the positions of each of the numbers at the bottom of the barcode it first adds up the digit and the odd-numbered positions and the adds up the digits and the even – numbered positions.

It then multiplies the odd-numbered digits the 3 and adds that amount to the sum of the even-numbered digits.

So the calculation goes like

$$3 \times (0 + 1 + 0 + 0 + 2 + 1) + (5 + 0 + 0 + 1 + 5) = 23$$

We then subtract the result of this formula from the next highest multiple of 10 to get modulo check character. So the next highest multiple of 10 after 23 is 30 and $30 - 23$

$= 7$ so we know we read the barcode correctly.

UPC – Universal Product Code, black lines of the barcode absorb light which is read & translated into bits of information. Thickness & order of these lines represent a number. A UPC is a barcode symbology that maps a products information to its visual manifestation in the form of a barcode.

UPC's are not unique because there is no centralized database to store all UPCs and check against.

How barcodes represent numbers 0 – 9

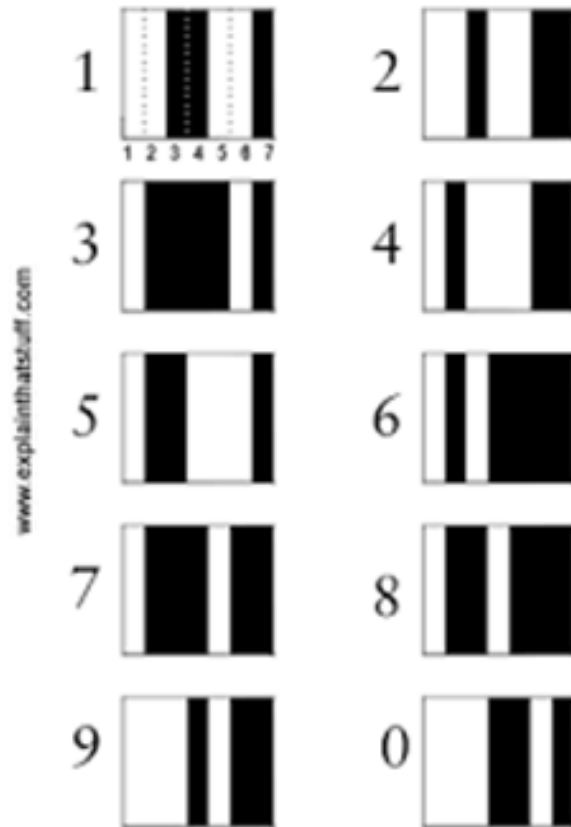


Figure 4 Barcode representation of numbers

Give every item that you want to classify its own, unique number and then simply print the number on the item.

Each and every number is given the same number of horizontal space which is 7 units. Then, to represent any number from 0 through 9 we simply color those seven units with a different pattern of black & white stripes.

Thus number 1 represented by coloring in 2 white stripes, 2 black stripes, 2 white stripes & 1 black stripe

Chapter -2

Types of bar codes

Types of barcodes:

One Dimensional (1D) barcode types

One-dimensional, or 1D barcodes, in a systematic manner represent data by varying the width and spacing of parallel lines, and refer to it as linear or one- dimensional. These include traditional, or most barcode types such as the UPC and EAN code types.

UPC CODE(Universal Product Code)

UPC barcodes are used to label and scan consumer goods at points-of-sale around the globe. The UPC-A type encodes 12 numbers while UPC-E encodes 6 numbers.

Industry: Retail



Figure 5. UPC Barcode



Figure 6. EAN Code

EAN CODE(European Article Number)

EAN barcodes are used to label consumer goods for point-of-sale scanning.

Industry: Retail

CODE 39

Code39 barcode (or Code 3 of 9) are used to label goods across industries, and are mainly used in the automotive industry and in the Defense department of certain countries.

Industry: Automotive and Defense



Figure 6. CODE39.

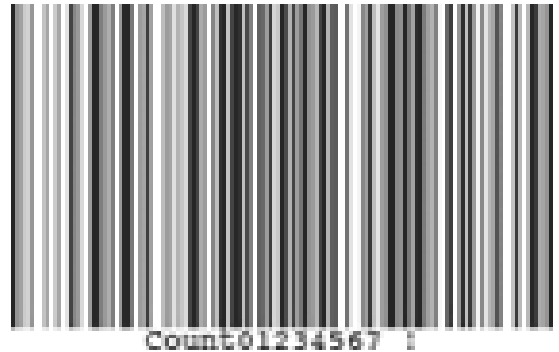


Figure 7. Code 128

CODE 128

Code 128 barcodes are compact & high-density codes which are used in logistics and transportation industries for order & distribution. They're used in non-Point of sale products.

Industry: Supply Chain

ITF (Interleaved 2 OF 5 / Interleaved Two of Five)

ITF barcodes are used for the labeling of packaging materials.

Industry: Packaging



Figure 9 .TF

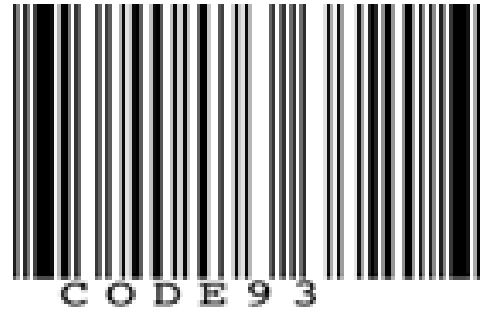


Figure 10. CODE 93

CODABAR

Codabar barcodes are used by logistics and healthcare professionals. Therefore, maker can make many codabar codes using successive numbers without the use of a computer.

Industry: Logistics, Healthcare and Education



Figure 11. CODABAR

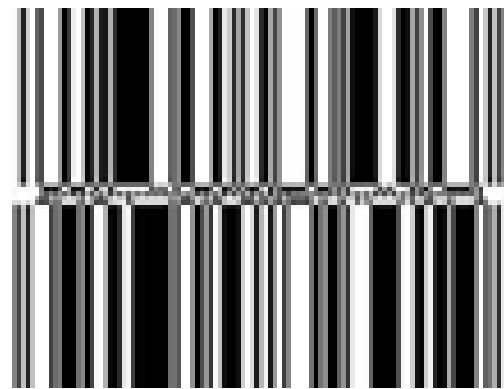


Figure 11. GS1 DATABAR

GS1 DATABAR

GS1 DataBar barcodes are used by retail outlets for the identification of consumer coupons, produce, and perishables, also in the healthcare industry.

Industry: Retail and Healthcare

MSI PLESSEY

MSI Plessey (or Modified Plessey) barcodes are used for inventory management in retail environments, such as labeling supermarket shelves.

Industry: Retail

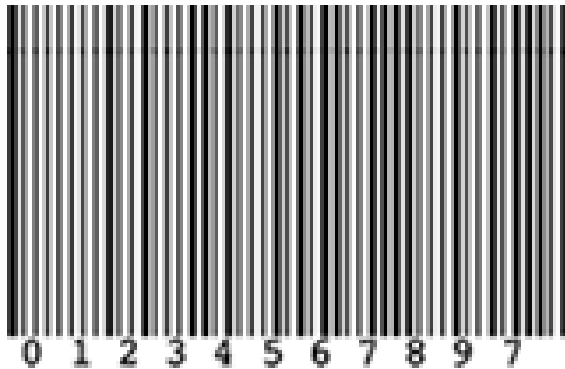


Figure 12 MSI PLESSEY

Two-Dimensional (2D) Barcode Types

Two-dimensional barcode represent data using two- dimensional symbols & shapes. They are identical to a 1D barcode, but they can represent more information per unit area.

QR CODE

QR codes are 2D matrix barcodes are often used in tracking and marketing such as for the advertisements, magazines, and business cards. QR codes support four different types of data: numbers, alphanumeric characters, byte/binary information, and Kanji characters.

Industry: Retail, Entertainment and Advertisements



Figure 13. QR CODE



Figure 14 DATAMATRIX CODE

DATAMATRIX CODE

Datamatrix codes are used in labeling small items, goods, and documents. They are suitable for small products in logistics and operations.

Industry: Electronics, Retail and Government

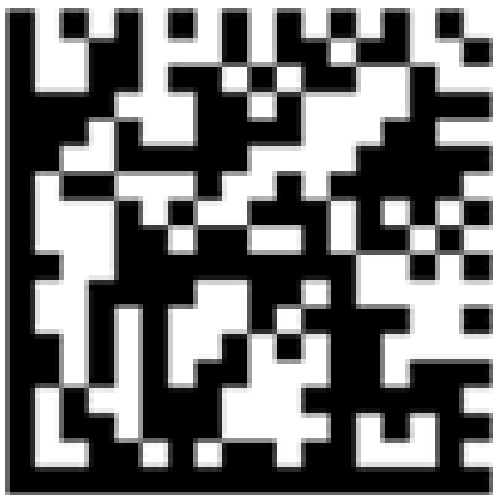


Figure 15 DATAMATRIX CODE

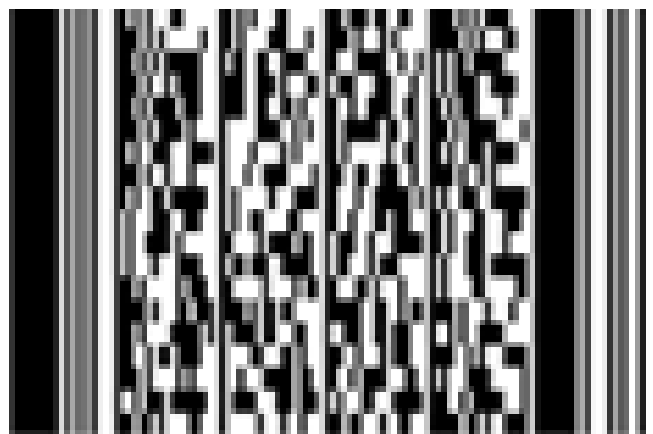


Figure 16 PDF417

PDF417

PDF417 codes are used in systems that require the storage of huge amounts of data, such as photographs, fingerprints, signatures, text, numbers, and graphics.

Industry: Logistics and Government

AZTEC

Aztec codes main use is in the transportation industry, viz. for tickets and airline boarding passes.

Industry: Transportation



Figure 17 AZTEC

Chapter -3

Advantages of 2D bar code

Advantages of 2D barcodes:

- **More information:**

A barcode is can't contain much information: typically just a dozen digits, but not much more. On the other hand, 2D barcode can pack more information into the same space. It can hold up to about 2000 characters of information.

- **Fewer errors:**

Since barcodes hold little information there is very little redundancy. Apart from the length of the bars there is no duplication of information to guard against a code being misprinted or damaged. The advantage of 2D barcodes, the higher capacity means they can hold the same information in different ways with sophisticated, built-in error checking systems. If a code is damaged, that's easy to detect—and it may still be possible to read some or all of the code.

- **Easier to read:**

2D barcodes can be read by smart phones and tablet computers using their built-in digital cameras. No special reading equipment is needed. Even though they contain more information, they can be read accurately at high speeds.

- **Easy to transmit:**

2D barcodes can be sent as SMS text messages between cell phones.

- **More secure:**

It's possible to encrypt the information in 2D barcodes to protect it.

: Information that a QR Code contains

It's a margin space necessary for reading the QR Code. This quiet zone makes it easier to have the symbol detected from among the image read by the CCD sensor. Four or more cells are necessary for the quiet zone. An empty white border makes it possible to isolate the code from among other printed information



Figure 18 image scan by a phone

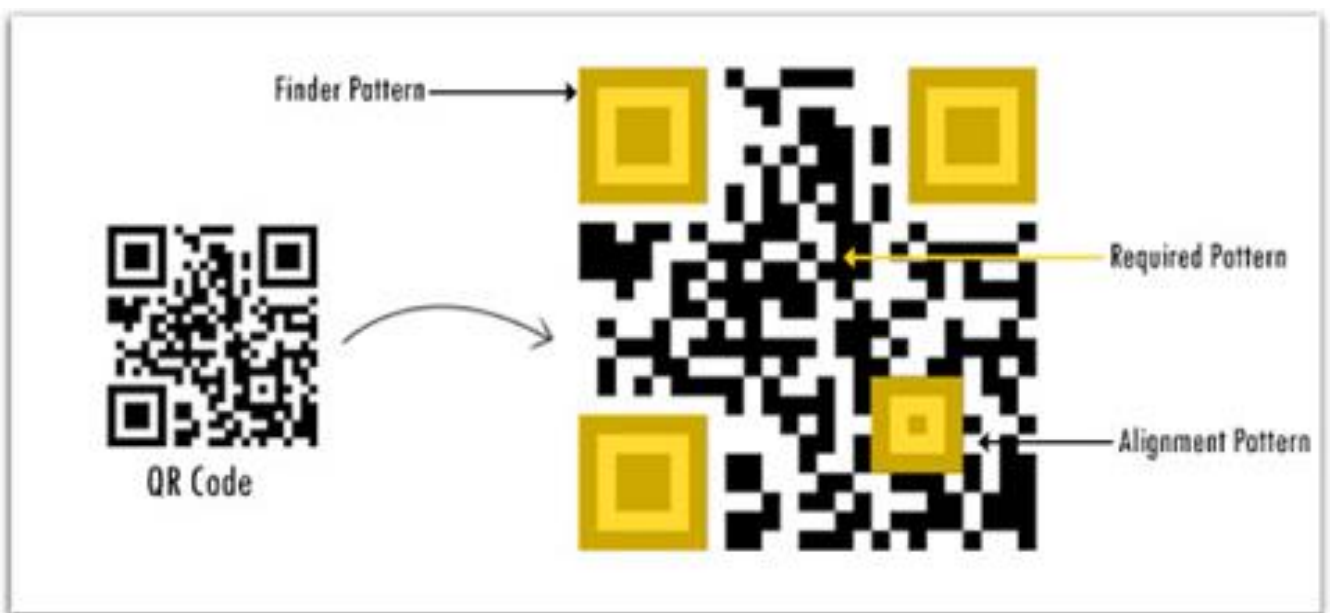


Figure 19 Information a QR code contains

Finder patterns:

A pattern for detecting the position of the QR Code. With the arrangement of this pattern at the three corners of a symbol, the position, the size, and the angle of the symbol is detected. This finder pattern has a structure which can be detected in all directions (360°). Large black and white squares in three of the corners make it easy to confirm that this is a QR code. Since there are only three of them, it's immediately obvious which way up the code is and which angle it's pointing at.

- **Alignment pattern:**

A pattern for correcting the distortion of the QR Code. This ensures the code can be deciphered even if it's distorted (viewed at an angle, printed on a curved surface, and so on).

- **Timing pattern:**

This runs horizontally and vertically between the three finder patterns and consists of alternate black and white squares. The timing pattern makes it easy to identify the individual data cells within a QR code and is especially useful when the code is damaged or distorted.

- **Version information:**

There are various different versions of the QR code standard; the version information simply identifies which one is being used in a particular code.

- **Data cells / Data Area:**

The QR Code data will be stored (encoded) into the data area. Each individual black or white square that's not part of one of the standard features (the timing, alignment, and other patterns) contains some of the actual data in the code. The grey part in represents the data area. The data will be encoded into the binary numbers of '0' and '1' based on the encoding rule. The binary numbers of '0' and '1' will be converted into black and white cells and then will be arranged.

NEED OF PROJECT

The purpose of this “QR Based Stock Management System” software project is same as its name, i.e. it is used for the recording or scanning the Stock related information. It is developed to manage the stock information, so that people who work in the organization can access accurate stock information quickly and easily as and when required, thereby improving its operational efficiency and effectiveness. Computerized software systems help to fulfill these goals. Computerization of the official work will help in doing a lot of manual work quickly. It will help in easy storage and access of all information, in a short period of time. The development of this software access facilitates accurate information correctly and easily which leads to increased efficiency & effectiveness of the organization too. This project reduces the amount of work the workers have to do. The workers will not have to write item-related information on a tag manually. The workers will not have to go to the owner and ask information related to the item, and they also don't have to calculate the item price, as it will be automatically calculated. The entire process of stock keeping using our system reduces the probability of human error. The project reduces the time required for the entire process of stock maintenance as the worker can directly



Figure 20. Architecture of our system

Chapter -4

Working of IMS

How this system Works

So now let me tell you how the system works. We will understand this with an example of a retailer selling items to its customer as an example. Suppose you are shopping in a mart. Now when you have picked up the items you intend to buy, you will go to the billing point. Here the sales person will scan the bar code of each of the item you have picked up. Now the software will interpret the bar code of each of the item and match it with those available in the database of the system. By this procedure the Manager can track the sales of the items from its shop. The system now gives a clear picture to the manager about the total sales and items available in the stock. It tells him/her the quantities present on shelves or in warehouse. So now the manager can decide that which items have sufficient stock or which items needs reordering. The reordering of items is also provided by the Stock Management System. It has an interface to communicate with vendors providing the required goods. The order is placed and payment is done with the use of Internet. Now let me tell you what happens when the reordered items reach the warehouse. The item is added into the warehouse by reading its bar code through a bar-code scanner and its quantity is updated into the system. If any new item is ordered then the details of the new product is added in the system. Its barcode and quantity is added in the system. This bar code stored in the system is matched at the time of billing to update the items in stock.

Now let me tell you about the features of this software. There are main 4 modules in the Stock Management system. They are:

- Product Management
- Purchase Management
- Sales Management
- User Management

Before discussing these modules in detail I would like to tell you that Stock Management System can have vast number of functionalities. Each organization has different set of requirements. That's why a company using this software can have different features from another company using it.

➤ **Product Management**

This module is used to manage the items being stocked in warehouse or in the mart. So let us dig deeper and look into the features of this module.

1. Add Product

This sub-module is used for adding new products to the system. It will require some basic details like Product Category, Product Name, cost price, selling price, its quantity. We can have other additional features like product image, supplier's name and its bar code. One other interesting feature this system can have is an alert system. You can set a particular quantity for each item. Now a notification or alert will be given to the user if a particular item's quantity gets below the set quantity. This will help the user in getting notifications of the items getting low in stock.

2. List Product

This sub-module lists all the items present in the database of the Stock Management System. It will have options to edit the details of each item or delete a particular item from the list.

3. Print Bar Code

Another feature which is widely used these days by the merchants in their Stock management is generating a bar code and printing its copies so that it can be pasted on the items. This increases efficiency and encourages automation.

➤ **Purchase Management**

This module is used to manage all purchases done by the retailer. It helps the retailer in maintaining the records of all its purchases from different suppliers.

- Add Order

It is used by the manager to add an order into the system. It requires details like items ordered and their quantities, date of ordering, suppliers details, total cost. It will also have a feature of current status of the order which will have options like Ordered, Pending and Received. It can have an additional feature of importing order details from a csv or excel file.

- List Orders

This feature is used to display all the orders made by the merchant. It displays all the details like date of ordering, supplier details, payment status, order status. There will be an option to view details of each order or to download those orders in pdf file format.

- Add Other Expenditures

The company makes purchases of not only the items it sells but other items as well. Suppose in a store an air conditioner has broken down and it needs to be replaced. So the owner buys a new air conditioner. This purchase is also funded by the store and will add to its expense list. This was just an example, but there are many of these types of expenses made by the companies. These expenses are added in this interface.

- Expenditures

This interface will show the expenditures of the company from ordering different items. It will also have expenditures of the company apart from these orders. It will have filtering options like Total expenditures of Last week or Last

➤ Sales Management

- Sell Items

This option is available to the sales persons who are at the point of sale. Point of sale is the place where billing and other transactions are done. So here bar code of each product is read using a bar code scanner and billing of the total items is done. After the billing the quantities of each item bought by the customer is also deducted from the available stock. The main benefit Stock Management system provides here is that the tasks performed here is all automated. The sales persons just need to scan the bar code of the items being purchased and all other calculations will be performed by the system.

- List Sales

This option, as the name suggests shows all the sales made by the retailer. It shows details like date, time, total bill, payment status, view bill.

- Home Deliveries

This option will vary from company to company and we can say that it will only be used by those retailers which have option of home delivery. It will show the details of customer, his/her address, payment status, date, time, option to view bill.

- Return of Items

Now there might be situations when a customer has to return items bought from the store. For these situations only the system provides interface to return items. This will make sure the returned items quantity is updated in its stock.

➤ **User Management**

Before discussing the sub-modules of this Module let me tell you the users of Stock Management System. It is required here to understand the functionalities of this module. We will discuss these users in detail later in this post. The users are Admin, Manager, Sales staff, Purchasing Staff. This module is only available to the Admin or Owner of the company.

- **Add Users**

This option is used by the Admin to add new Users into the system. It will ask for all the details of the user like his/her name, email id, phone number, gender. The admin will have the option to set the type of User. The Admin have to select that whether the new user created will be a Admin, Manager, Sales staff or Purchasing staff. The admin also have to set login credentials of the new user. For that a unique username and password will be set. After the new user account is successfully created, that user will be notified by email.

- **List Users**

This option will show the admin all the users using the system. This will show all the basic details of the user with its date of creation and last login time. It will also have an option to view all login details of each user. Other important feature in this module is to Activate or deactivate users account. So the admin has option to deactivate the account of any user. After which that particular user won't be able to login into his account.

- **Add Suppliers**

This option will help the company keep a record of suppliers by adding their details to the system. The admin will have to enter details like Name, Address, contact number and email Id.

- List Suppliers

It will list all the suppliers whose record is available in the database of the Stock Management System. It will also have an option to view all the dealings with that particular supplier.

The proposed system consist of three parts:

- Adding records of new items in the database Adding records as the name suggests adds a new item to the database and each item is given a unique SKU.
- Scanning QR code consists of scanning of QR code which are attached to each item and after the QR Code is scanned the item related information is shown on the screen.
- Generating QR code involves generation of QR Code which can be used to attach it to each item. Afterwards the generated QR code can then be printed by Label printer. The application uses uses ZXing library for QR Code Scanning and has used an QR Code API to generate the QR Code for each item.

Chapter -5

Result

The Android part

We have developed very simple, User friendly UI with all standardization. Followings are the interfaces

- **Profile Page:**

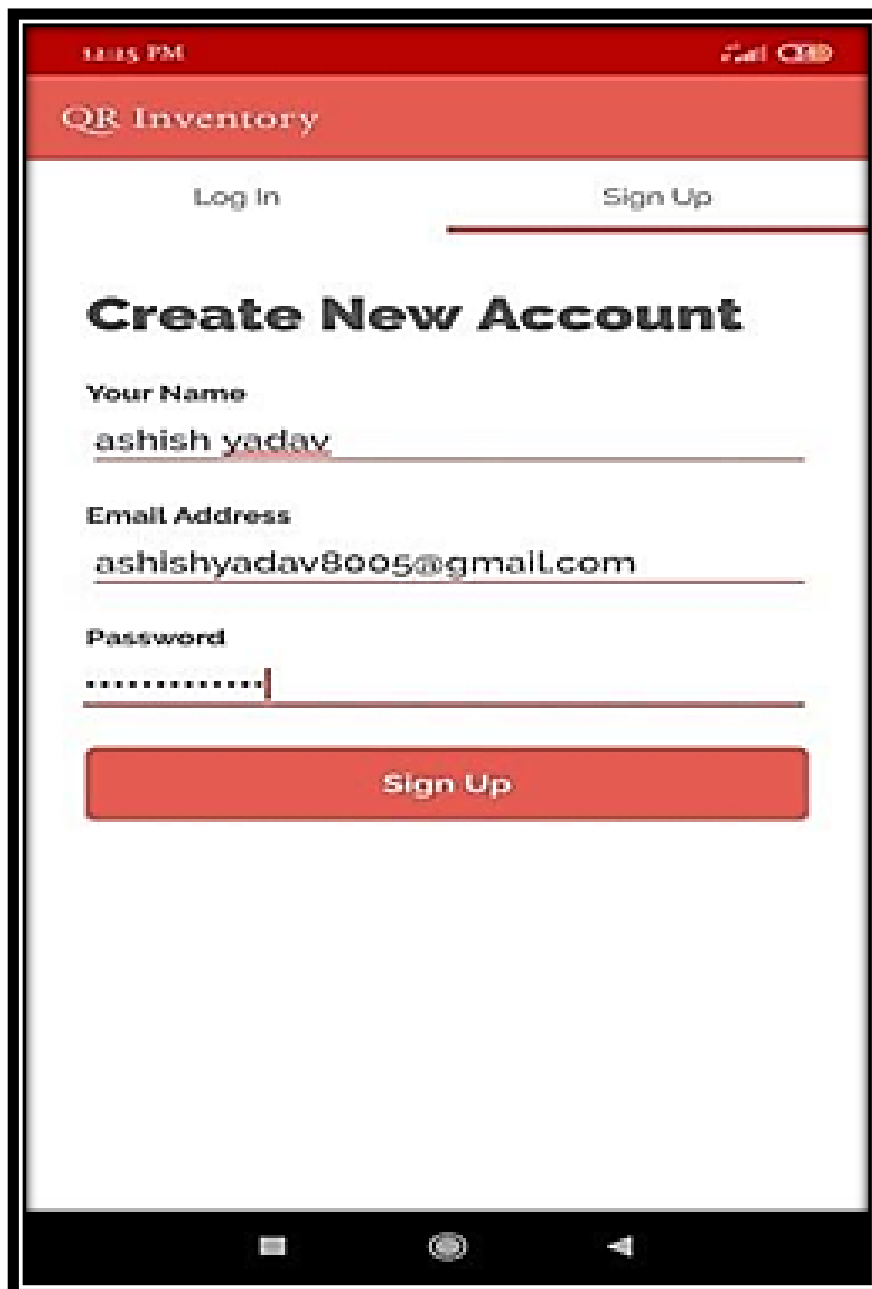
Every user has his own profile. From here they can change their information like correction in name, email id, address etc.



Figure 21. Home Activity

Login Page:

Basically, for any software security is major concern. So, we have developed a secure application. Without being authenticated no user is allow to view any other interfaces. For login page we have User ID, Password, Profile. After being authenticated user is authorize to perform certain work according to his/her profile.



1:15 PM Full QR

QR Inventory

Log In Sign Up

Create New Account

Your Name
ashish yadav

Email Address
ashishyadav8005@gmail.com

Password
.....

Sign Up

Figure 22. login \signup page

The Android application begins with the Home Activity where three options are provided viz. Addition of New Item, Scanning of QR Code, & Generation of QR Code.

The New Item Activity is used by the workers to insert a record of new item into the database. This activity accepts several parameters related to the gold item such as Gross weight, item type etc. Once the upload button is clicked all the information is uploaded to the server. This activity is then redirected to the Generate QR Code activity to generate a QR Code specific to the item. After the QR Code is generated he then can print it or scan it to find item

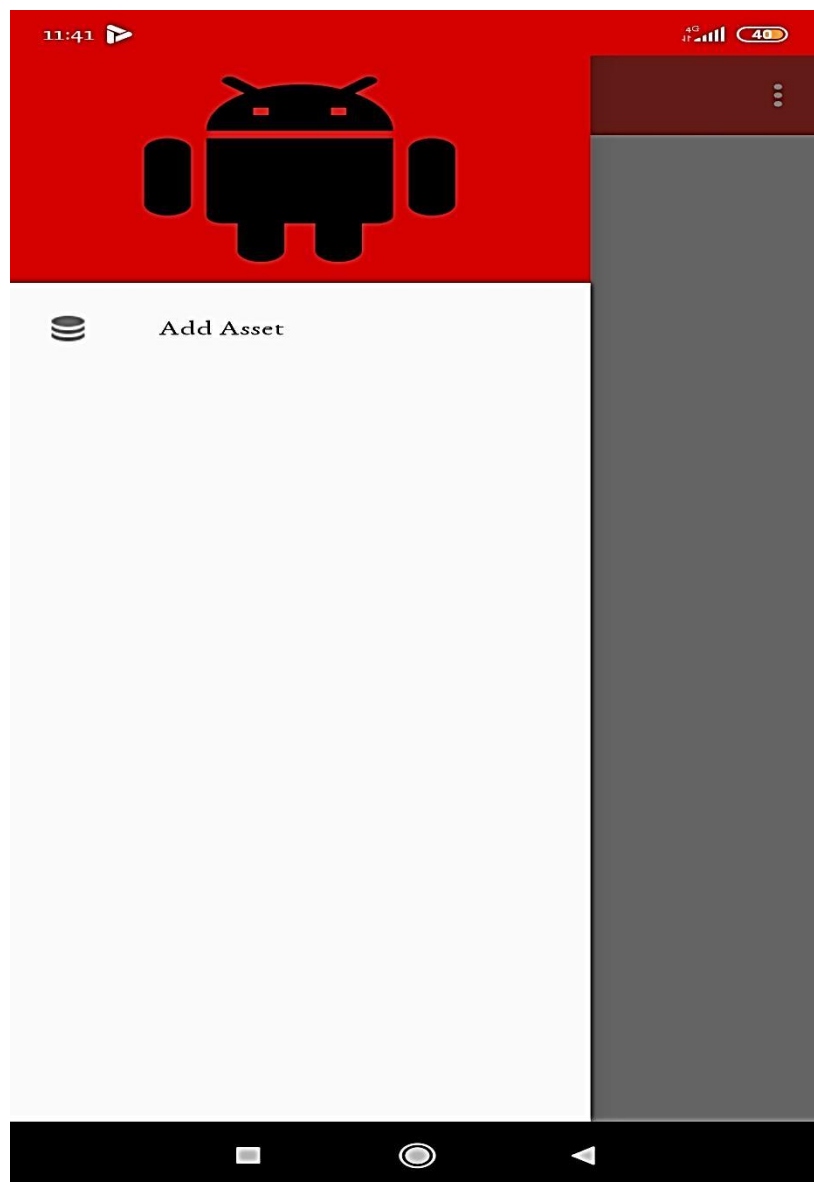


Figure 23 add assets

- **Storage Page:**

In this page users can add items to be stored using this page and barcode reader. After scanning barcode information that stored in barcode are fetch from database and desired data are stored in storage table.

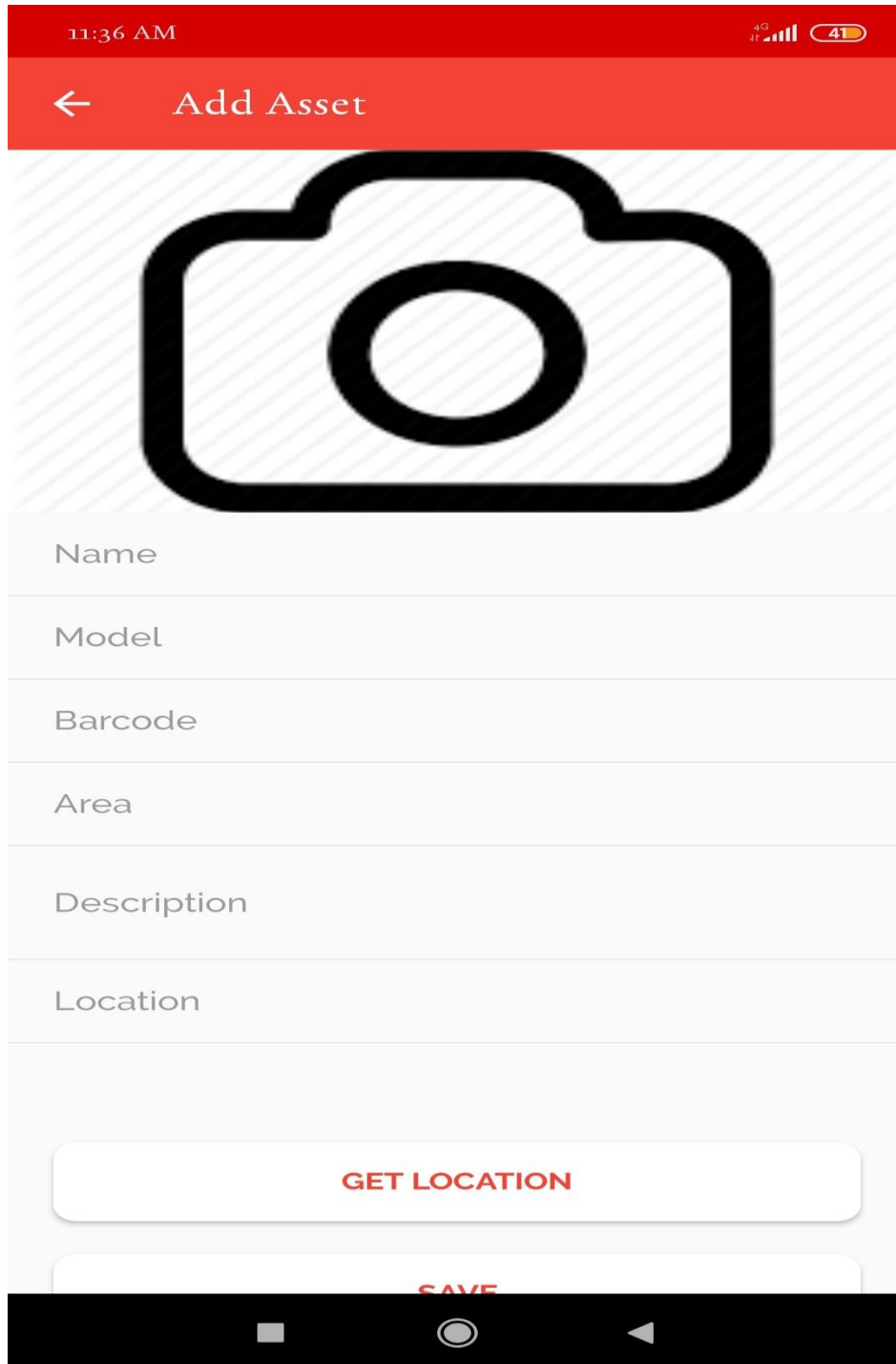


Figure 24 add details of equipment

The Scan QR Code activity scans the QR code and the information is then fetched and displayed on the same activity. When the Scan QR Code button is clicked, the Phone Camera scanner opens up which then scans the QR Code of the item and thus the information is displayed on the same activity after all the details are fetched from it.

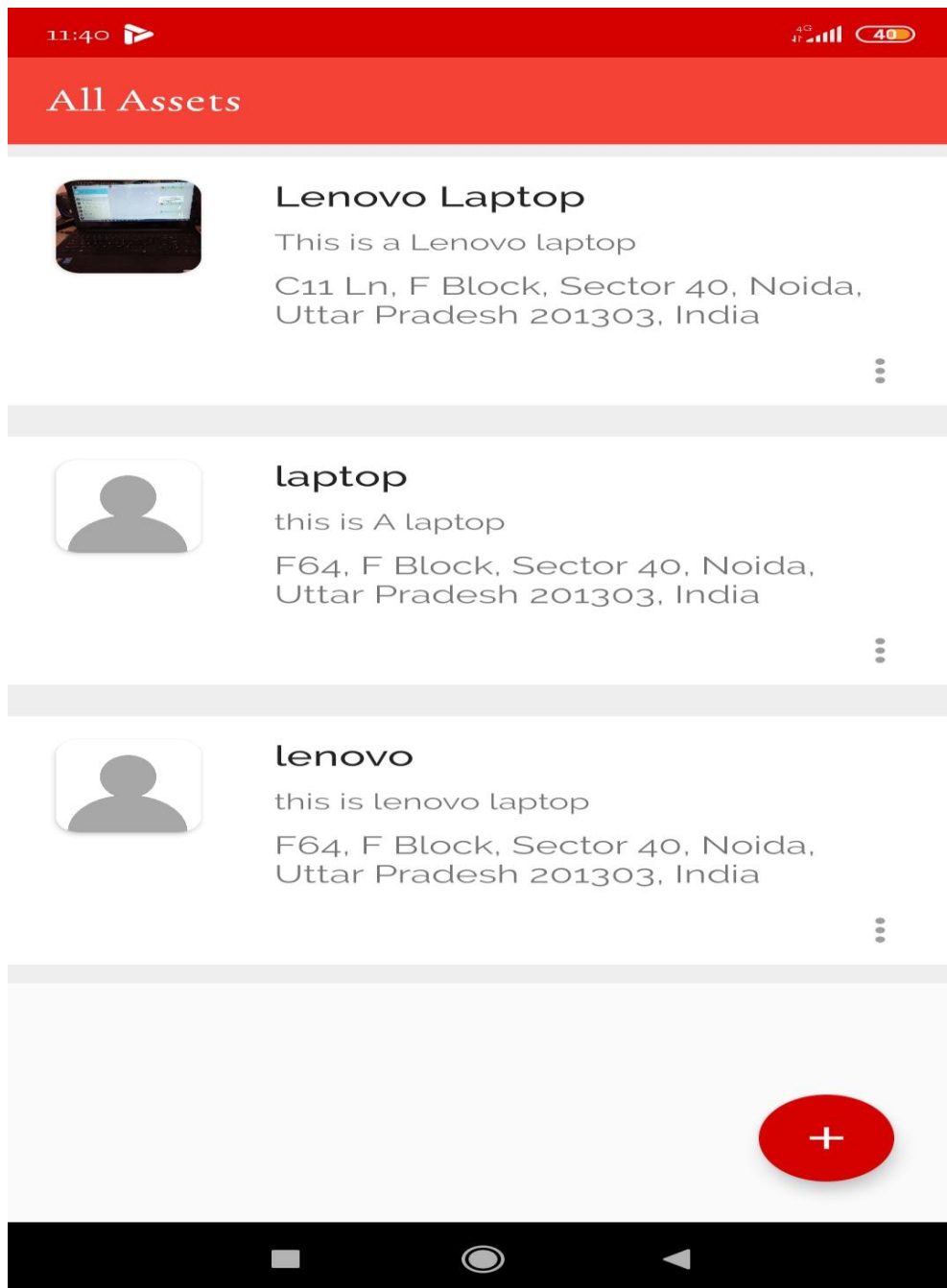


Figure 25 . showing the assets image

- **Items Page:**

User can add new items using this page. While adding the items to database user provide item description. This description help to understand the quality of product, uses, manufacture date, expiry date etc.

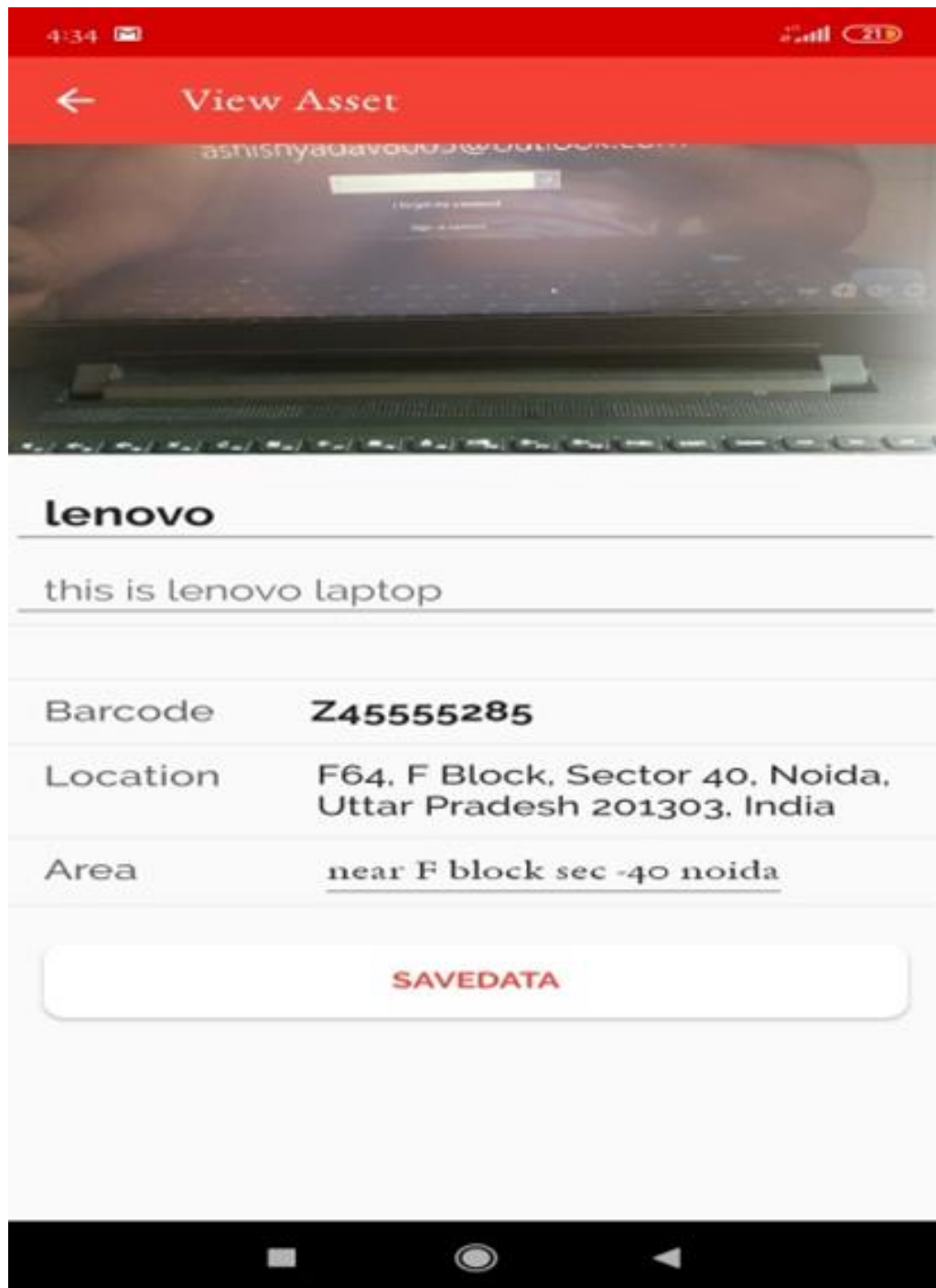


Figure 26 generated qr code asset

Chapter-6

Conclusion

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:** In many cases companies inventory is one of the major investments along with its employees and locations. inventory management system helps the companies to cut the expenses by minimizing the amount of needless products and materials in storage. It also helps companies keep lost sales to a minimum by having enough stock to meet demand.
- **Increased efficiency:** The inventory management system allows for many automated inventory tasks for example the system can automatically collect data, calculate costs. This also reduces in costs saving and time saving and thus subsequently leading to increase in business proficiency.
- **Warehouse organization:** Inventory management system help distributors, wholesalers, manufacturers, and retailers adjust their warehouses. If certain products are often sold together or are more popular than others, those products can be grouped together or placed near the delivery area to speed up the process of picking.
- **Updated data:** Provides up to date and real time data on inventory levels is and benefit of inventory management system. Company executives can usually access the software through their mobile devices, laptop for checking current inventory numbers this automatic updating of inventory allows the business to make informed decisions.

- **Data security:** By supplementary with the restricted user rights, company managers can allow many employees to contribution in inventory management. They can grant employees enough data access for tasks such as receiving products, making orders, transfer products and perform other tasks without compromising company security. This can speed up the inventory management process and save managers' time.
- **Insight into Trends:** This helps tracking the products which are in stock and from which suppliers do they come from and the length of the time they are deposited is made possible with inventory management system by analysing this data the company can improve their inventory levels and maximize the use of storeroom space. Additionally, firms are more prepared for the demands and supplies of the market, especially during special situations such as a peak season on a particular month.

References

1. [^ Lesonsky, Rieva \(1998\). "Tracking Inventory". Entrepreneur Magazine.](#)
2. [^ Dolinsky, Anton. "Inventory Management History Part Four". Almaty Systems. Retrieved August 17, 2010.](#)
3. [^ Polsson, Ken. "Chronology of Personal Computers – 1981". Polsson's Web World. Retrieved August 17, 2010.](#)
4. [^ Piasecki, Dave. "Optimizing Economic Order Quantity – Carrying Costs". Inventoryops.com. Retrieved August 17, 2010.](#)
5. [^ Lu, Clara \(March 27, 2014\). "Recent Study Shows that 66% of Warehouses Plan to Expand Technology Investments by 2018". TradeGecko Blog.](#)
6. [^ Lockard, Robert \(29 November 2010\). "3 Advantages of Using Inventory Management Software". Inventory System Software Blog. Retrieved 23 November 2012.](#)
7. [^ "Tamebay : Blog : Brightpearl adds Amazon integration". tamebay.com. Retrieved 2015-11-25.](#)
8. [^ https://www.stuff.co.nz/business/99540053/amazon-australia-opens--but-only-limited-goods-ship-to-new-zealand](https://www.stuff.co.nz/business/99540053/amazon-australia-opens--but-only-limited-goods-ship-to-new-zealand)

image references & their links

- [figure no. 1](#)
- [figure no. 2](#)
- [figure no. 3](#)
- [figure no. 4](#)
- [figure no. 5](#)
- [figure no. 6](#)
- [figure no. 8](#)
- [figure no. 9](#)
- [figure no. 10](#)
- [figure no. 11](#)
- [figure no. 12](#)
- [figure no. 13](#)
- [figure no. 14](#)