

A QR CODE TECHNOLOGY FOR CENTRALIZED INVENTORY MANAGEMENT SYSTEM

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Abstract - In this proposed system, we attempting to create a mobile application that is capable of providing us with information about the specific details of the equipment of any Inventory by Scanning the QR code. The Quick Response Code (QR Code) is defined as the machine-readable optical label that contains information about the item to which it is attached. This project ideology is carried on Airport Inventory Management System which includes all the airport inventory product details .i.e. (Serial Number, Date of installation, etc.) which are present on the premises and their maintenance data too. The QR code placed on the equipment will be scanned by the app. As soon as the QR Code is scanned, the equipment ID will be fetched by the app. This ID will be crossed verified with the database. Once validation is done, all the details from the database will be retrieved, which will readily give us proper and full-fledged information of previous services record which were carried out in the past with Serial Number and Date of Installation of that particular equipment. It also enables the user to efficiently update the service history details on the spot from the app, which is done right after the maintenance.

Key Words: QR code, QR Scanner, Android Application, Inventory Management System, Database, Google Firebase, Flutter.

1. INTRODUCTION

In the world today, we use technology to make our lives simple in all our everyday work. For all the people of the country, we have to make our India digital, stable, and transparent. In this proposed system, we attempt to create a mobile application, which is capable of providing us information about the specific details of the equipment in the Inventory by Scanning the QR code. An Android-based object recognition application based on reading QR codes. The system is designed to promote the identification of different items that exist in the inventory already produced. The developed framework consists of a database, a Network intermediary service for accessing the database, and an

Android client program that can be run on Cell phones or Mobile tablet. How this method can be used for computer equipment cataloguing is seen, but the use of the system is not limited solely to this. The Quick Response Code (QR Code) is a machine-readable optical label that contains information about the equipment to which it is attached. These include all the inventory details of the application and

other information i.e. (Serial Number, Date of installation, etc.). The QR code placed on the equipment will be scanned by the app. As soon as the QR Code is scanned, the equipment ID will be fetched by the app. This ID will be crossed verified with the database. Once validation is done, all the details from the database will be retrieved, which will readily give us a proper and a full-fledged information of previous services record which were carried out in the past with Serial Number and Date of Installation of that Equipment. It also enables the user to efficiently update the service history details on the spot from the app, which is done right after the maintenance.

1.1 Working of QR Code

A QR Code, or Quick Response Code, is a code that a cell phone (hence the word "quick" in the name) can read easily. A large amount of information is transmitted when the QR Code is scanned using a spacing combination as some kind of Matrix Barcode (a 2-D Barcode).

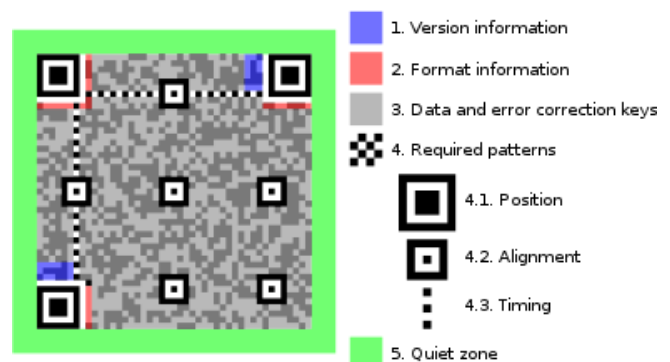


Fig -1: QR Code Structure

QR codes are widely used in all types of sectors, including retail, marketing, and distribution. In practice, while QR Codes and Barcodes are identical, QR Codes provide more information since they can carry both horizontal and vertical information. Only horizontal information is used in barcodes. While barcodes work well for situations such as scanning supermarket products, QR codes have a much greater capacity to move data, possibly due to their simplicity, which has made them extremely prevalent. With the increase development in technology, the uses of electronic devices are also increasing and so as the various applications of QR codes. QR Code has been approved as an AIM (Automatic

Identification and Mobility) Standard, a JIS (Japanese Industrial Standard) Standard and an ISO standard Indefinitely QR Code is being used in a wide category of applications, such as manufacturing, logistics, and sales applications. QR codes are being used as ticket checker for various transportation systems to avoid manual works and queues. It helps in providing station level security by acting as a ticket and validating the users whether he enters or leaves the station

1.2 Problem Statement

The literal meaning of the “Inventory” is a stock of assets. Every enterprise needs inventory for the smooth running of its activities. Inventory Management has been practiced by many companies to increase their work efficiency of item flow. Nowadays, small and medium entrepreneurs still practice inventory management using traditional methods such as paper base, spreadsheets, etc. Although they are living in the era of technology. Still, the manual process is carried out on large scale. The use of paper and human power to maintain such inventory is practice over the period and throughout the globe. Due to such practices, a huge amount of paper waste, lack of maintenance record and communication gap is been caused. So, the need for a virtual and computerized inventory management system has occurred which can overcome all the issues by utilizing the better use of technology.

2. LITERATURE SURVEY

Once barcodes and stock management processes started spreading through grocery stores, it became less practical to manage inventory by hand. Scanning products and inputting information into a computer by hand was replaced by writing inventory data by hand on paper. Inventory management software improved from the early 2000s to the point where industry people no longer required to input data by hand but were able to update their database with barcode readers spontaneously. A new era for inventory management software is also marked by the existence of cloud-based business software and its increasing adoption by companies. Now they usually allow integration with other business backend processes, such as accounting and online sales. A significant drawback of inventory management software can be cost. An ERP is used by many large businesses as inventory management software, but it can be difficult for small businesses to afford it. By adding even more costs for businesses, barcode readers and other hardware can compound this issue. Many small businesses close inventory for a day or two per year. From counting on the warehouse floor to data entry to manipulating the data, each manual step is full of possibilities for human error. The issue can be exacerbated by each mistake-filled action, and only a manual re-do can restore any sense of accuracy. The difficulties of turning paper-based information into useful data are one of the big negative aspects of manual counting.

Table -1: Literature Review

Sr. no	Author Name	Paper Title	Publication Details	Description
1	Milind Amrurkar Dr.Anup Palsokar Asst.Prof. Pankaj Raibagkar	QR Code based Stock Management System	The Journal: International Research journal of Engineering and Technology (IRJET) e-ISSN: 23951056 p4SSN: 23910375	This plan which is executed has helped the shop managers to avoid the maintenance of the stock record book. The project is targeted for a shop that maintains records of gold items in a register, and maintenance of such valuable information in a register is very essential for any organization as the register may get into bad shape as and when time passes.
2	N Rodimawati , I G P A Budijahjanto, R E Putra and AY Wicaksono	A Responsive Web-Based QR Code for Inventory in The Laboratory of Informatics, UNESA	The 2nd Annual Applied Science and Engineering Conference (AASEC), U NESA I0P Conf. Series: Materials Science and Engineering 288	Every laboratory is a facility that provides all kinds of equipment important for scientific activities. Being one of the programs in the Faculty of Engineering, Universities Negeri Surabaya, Department of Informatics Engineering (MEI also has numerous laboratories to support the education and training process for both students and teachers.. Lots of equipment stored in the laboratory to promote learning in the Department of Informatics. Because of the many types of equipment in the laboratory, it is necessary to record inventory.. The reads that have been done so far are still manual using MS word or MS excel.
3	Rahman AI Sheikh, Raghad ALAssami, Maryam Albar, Murtha Al Suhaibani, Mutasem k. Alsmadi, Muneerah Alshabanah, Dan I a h Alrajhi, Ibrahim Al. Marashdeh, Sanaa	Developing And Implementing A Barcode Based Strident Attendance System	The Journal- International Research Journal of Engineering and Technology (IRJET) e-SSN: 2395_0056 p-ISSN: 2395-0072	This work aims to compose and implement a barcode-based student attendance system that can be easily reached by the lecturers, to help them to avoid managing the registry book, providing valuable information about the students and the reports can be produced using real-time processing.

Making marks on a checklist is one thing it can be a daunting task to type those outcomes into a spreadsheet. The benefit of enabling multiple staff to perform inventory management duties is moderated by the cost of additional barcode readers. The practice of mobile phones as QR code reader has been a way of avoiding the high cost of system hardware for inventory management by start-ups.

3. PROPOSED SYSTEM

The proposed system, which consists of an Android Application under the domain of Inventory Management System for any Inventory products. The Application utilizes QR (Quick Response) Code Technology. Using such a technology in which inventories can be shaped, maintained, manipulated easily and can be updated as well. Firstly, the admin will register the user with the application and at the same time, the user will be validated by the admin and with the database. Once the registration is completed, then the user can login through the app. Secondly, the user will again get verified and validated with the login credentials and the

database data, and once that cross verification is done the authorized user will get access to the app interface. After logging in, the authorized user will get two option 1- Scan the QR code, 2-Verify the QR code, the user needs to select the QR code Scanner option and scan the respective QR code on the device/product. The device will scan it and show and notify user stating that the QR code is scanned successfully, later the user needs to click on verify option proceed with the operation of verifying the QR code details.

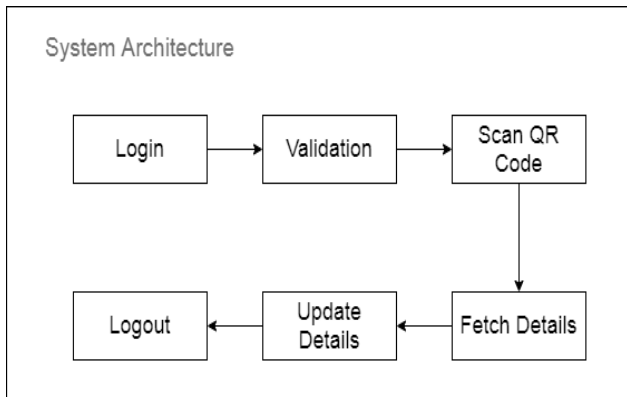


Fig -2: Proposed System Architecture

After verifying the QR code, the application will open the next page displaying all the product details. This page will show all the required details of the product/device. The page will consist of Serial No, Date of Installation, etc. details regarding the device. It will also show the previous maintenance record since inception. The app will also provide the Updating Section where in future if the user perform any maintenance that data user can update the details through the same app.

This proposed system consists of the following parts:

1. Registration: The admin will register the valid user by verifying the required details of the user, and will enter the user data in the database and will provide user with login credentials.
2. Login: After successful registration, the user can log in to the application by the registered user id and password. On successful login, the user will be again validated by the database.

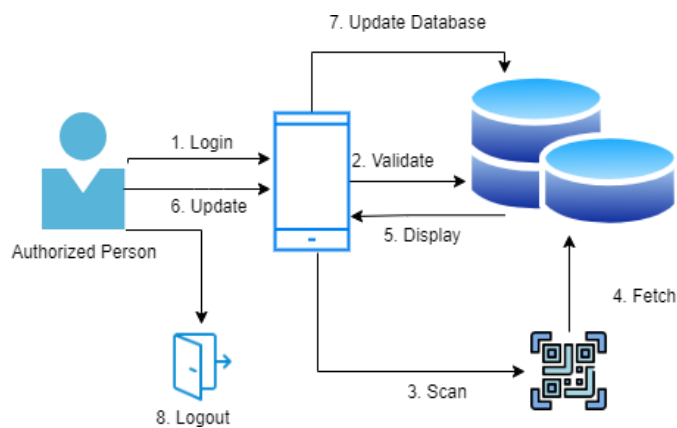


Fig -3: Working

3. Scanning 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.
4. Update: After scanning the QR Code, the authorized user will get complete detail of the product. In future, if any maintenance occurs that record can be updated through the same app interface using the Update option.

The android application begins with home activity one option is provided i.e. Scanning of QR Code. The Scan QR Code activity scans the QR Code and the information is then fetched from the database and is displayed on the same activity.

4. RESULT AND ANALYSIS

This implementation will result in centralized management of all previous maintenance record and the Admin or Central manager can monitor it through the database. This will help to reduce paperwork, follow-ups and human error. Also, it will serve more authenticity and smooth flow of entry without any hassle of taking care of the maintenance record sheet and also eradicate jumbling or mismatching the details with one another. The method developed proves that it is effective and efficient method to manage and manipulate the Airport Inventory Management System.



Fig -4: First Page



Fig -5: Log-In Page

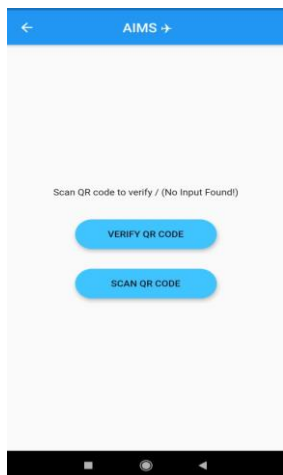


Fig -6: Home Page

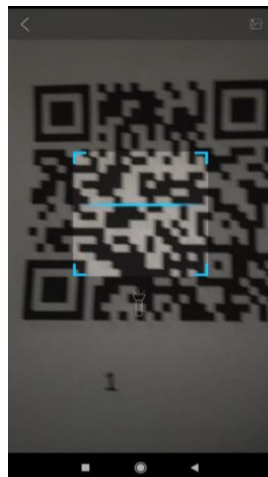


Fig -7: QR Code Scanner



Fig -8: Product Detail Portal



Fig -8: Product Detail Portal



Fig -9: Updation Page



Fig -7: Records Updated

5. CONCLUSIONS

The purpose of this study was to identify efficient flexibility to deal with Modern Inventory management. Based on the research conducted, that Digitalization was indeed necessary for convenient and immaculate management of Inventory in Contemporary forms. We can conclude that “A QR Code Technology for Centralized Inventory management system” will contribute towards digital and go green movements. This project includes the most versatile smart QR code technology which increases the reliability of the project. The system developed by us will be able to help the inventory management authorities to centralize their inventory process. The amount of manpower needed in the past has decreased because of the centralized inventory management system.

As a result of digitization, technology replaces the manual ways of keeping records. We conclude that the proposed system brings effective improvements as well as enhances the productivity of the current system.

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