

Effective Demand for Laundry Services Using Decentralized Blockchain

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Abstract

In today's world, mobile apps play a prominent role in delivering diverse services like apps for Food, Shopping, Banking, etc... They are the smarter way to get the requirements done easily. The proposed project is an application which is built on Android platform especially for laundry servicing companies and washer men to make it a one stop solution for all kinds of laundry activities. The application aims to provide a platform to connect laundry companies, unemployed washer men, students, working people and people who stay away from their homes to get mutually benefitted from one another. The proposed application is user friendly and lets the users search and place their orders securely with no loss of integrity.

Keywords: *Laundry application, android, block chain, QR-code.*

I. Introduction

In the daily-life, people often come across Laundry servicing issues very frequently. The products are not serviced in time and sometimes it even takes days to get them delivered. The main scope of the project is to reduce the workload and save time efficiently for the company as well as users. The proposed

app helps in managing orders efficiently and delivers an immediate solution for the user concerns if required.

II. PLATFORM KNOWLEDGE

A. Platform - Android

It is an open source OS. It is a mobile platform which depends on Linux operating system, middleware, and key application system.

B. Advantages of Android:

- 1) **Low investment and high ROI:** The costs for development and licensing will be minimised as the Software Development Kit (SDK) is freely provided by the Android to the developer community.
- 2) **Open Source:** The software is an excellent technology framework openly available which is a benefit of not purchasing license or paying royalty-fee .
- 3) **Easy to Integrate:** Android is easily customizable which helps the mobile apps to integrate according to their needs comfortably.
- 4) **Multiple Sales Channels:** The applications don't need to depend on only one market for distribution as Android application development services are deployed in different ways unlike other mobile platforms.
- 5) **Quick Adoption:** As all Android apps are written in Java, Java programmers can easily adopt and code for mobile applications using huge java library sets.
- 6) **Architecture**

7) **Linux kernel:** It is the most important part of android architecture present at the root of android architecture. Linux kernel manages memory, device, power, device drivers and access to the resource.

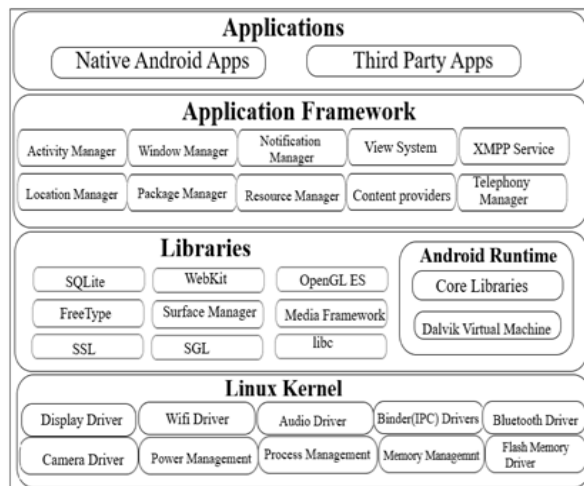
8) **Native Libraries:** They are like SQLite, Open-GL, Web kit, Media, Free Type, C runtime library (libc), etc...and run on top of Linux kernel. The browser is supported by Web kit, database on SQLite, font support by Free Type, recording audio, video formatting and for playing media is used.

9) **Runtime of Android:** To run the apps, android has its libraries and Dalvik Virtual Machine (DVM). DVM is like JVM. It utilizes very less amount of memory and gives fast execution and it's hugely optimized for mobile devices.

10) **Android Framework:** Android framework will be over the Native libraries and android runtime. APIs such as telephony, UI, locations, content Providers (data), resources and package managers are included in Android framework. For developing an android app, Android framework supplies a number of classes and interfaces.

11) **Applications:** Applications will be built on top of Android framework. Apps such as settings, contacts, home and browsers use the android framework which inturn uses the android runtime and libraries. Linux kernel is used by Android runtime and native libraries.

Fig.1. Android Architecture



III. DOMAIN KNOWLEDGE

A. Blockchain:

A block chain is a chain of blocks where the blocks contain digital ledgers which record transactions from various computers distributed around the world. Blockchain is decentralized and no block can be altered without changing the adjacent blocks. So, the blocks are immutable. This makes blockchain easy and less expensive for auditing the

transactions. The managing of blockchain is done by an autonomous P2P network with a server for time stamping. The infinite reproducibility characteristic is removed from a digital asset with the use of blockchain. It assures that the value of each unit is transferred only one time so that removing the double spending issue. A blockchain can be taken as a protocol of exchanging of values. These exchanges are secure, faster and economical.

IV. PROPOSED SYSTEM

The proposed project concentrates on laundry services where the user can book easily and get the delivery confirmation through the app. The proposed app takes the orders and makes delivery on time to the users. The data will be maintained safely. All the credentials and transactions are secured using blockchain.

The existing system bundles with various disadvantages. Due to more physical activities a greater number of working staff is required. This in turn increases the amount for production on companies to be paid for workers. In traditional system, data storing and retrieval would demand a lot of time and more physical work. The data may be unorganized many times. The payment process doesn't provide all the details regarding the percentages of the taxes paid etc. The traditional way is more challenging due to its high waiting time.

The owner of the application will be the administrator and the admin has the privilege to make orders with the help of team members. The users can select the category, number of clothes and type of washing through the online application and get an immediate response from the shop side once the order is placed. The owner has the privilege to add offers for the customers for each wash. The owner also has the access to the customer's order details. The user details will be maintained securely from the company's end as they maintain a secure credential process.

The proposed application includes advanced technology like block chain for securing data and for delivering products correctly. The proposed app mainly has – User, Admin and Deliveryman.

Advantages:

Effective services will be delivered immediately for any user concerns.

Accurate data will be provided by the company/laundry person to the user.

Reduces time and cost efficient services are delivered.

Laundry priority can be setup.

Premium customers can have special offers and quick deliveries.

Effective services will be delivered immediately for any user concerns.

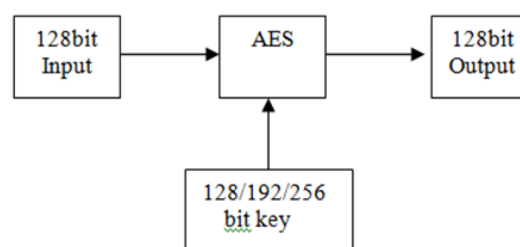
Comfortable and easy to use.

Third Parties cannot hack the details as they are secured more effectively.

V. Advanced Encryption Standard (Aes) Algorithm

The Rijndael algorithm is the other name of the AES algorithm. This algorithm produces cipher text by converting plaintext of 128bits in the form of blocks. AES is a secure encryption and it's a world-wide standard. It uses the keys of 128, 192 and 256 bits for the conversion.

Fig.2. Working of AES algorithm



Substitution-permutation is the process followed by the AES algorithm. It has a number

of rounds to convert plaintext to the cipher text. The key size used decides the number of rounds to be done. For 128 , 192 and 256 bit keys – 10,12 and 14 rounds to be done respectively. Different steps in a round include – (a) Substitution of bytes basing on the predefined substitution boxes, the bytes of block text is substituted. (b) Except the first row all the rows are shifted by one. (c) By using Hill cipher, the columns of the message are jumbled and (d) the text is XORed in the final step. All these steps are repeated multiple times to produce the cipher text to ensure the security of the message.

The new system is in form of a computerized system to control the following- customer information, products, services, users, carts and receipt. These services are to be provided in an efficient, cost-effective manner, with the goal of reducing the delay.

VI. MODULES

A. Checking Internet Connection: Firstly user must ensure that the mobile data is turned on. If not, user can turn it on by dragging down the notification menu or by opening settings>wireless and Networks>mobile data or cellular data.

B. Authentication: The process of deciding the identity of someone or something what it claims to be.

C. Authorization: Authorization is the process of providing privileges to someone to access something. Assume if a person logs into a system, the system should distinguish the type of resources to be given to the person. In general, authentication means to set up permissions of a system in prior and checking the set up permission values when the access of the system is given to some user.

D. Admin: Admin can view all the users once registered through the application. Next the pickup and delivery will be scheduled once invoices/QR-codes of the orders are assigned to

deliverymen. Admin can create user codes and can fix days for the pickup and delivery. Admin can create new categories of services such as normal washing, dry cleaning, rolling, etc. Admin can view all the orders and can categorize the status as processing, completed and pending.

E. User: The modules provide with the user details. Firstly, the user needs to register to this application to get access to it. During the registration process, the user must provide all the valid details in the required fields. After choosing the category and type of washing, the final default rates with all taxes are displayed. Users can edit their profile after validating password and can update it whenever required. The user can check the order list, order status and can find the invoice.

F. Data Security: As the application is backed by blockchain, the integrity and security of the user data will be reinforced. No third party apps or hackers can get or alter the data easily.

G. Category and Methodology:

This module provides the information about the category and working method of the application. The default categories will be provided by the admin and the user can choose from the respective categories and types of washing. The user can pay the amount through the application. Once the admin confirms details are sent to the user. The estimated time duration will be issued by the admin once they start washing.

Fig.3. categories of washing**H. Location:**

This module provides the information about the delivery location. This application will make use of maps to get the live location and for providing live tracking information to the user.

I. Payment:

Payments can be made online using debit card, credit card, UPI method or through any wallet transfer.

J. Confirmation:

This module provides the order confirmation for the respective user. Once the payment gets confirmed at admin's end, the confirmation details and invoice are sent to the user.

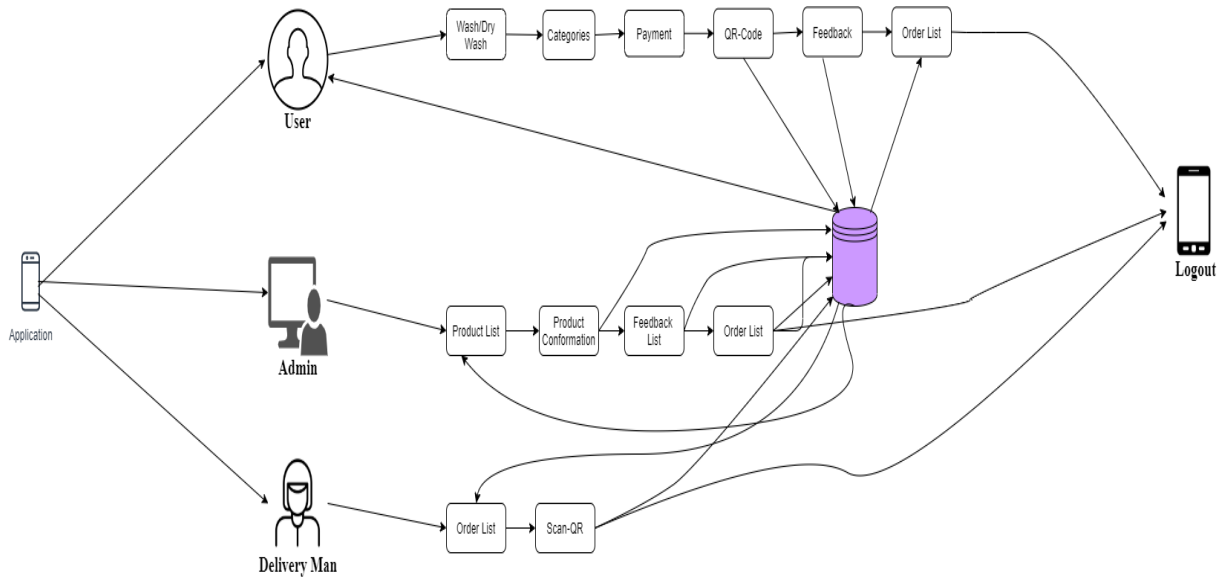
K. QR-Code Scanning:

QR code (Quick Response Code) contains the information about the item for which it's been given. A QR code uses numeric, alphanumeric, byte or binary and kanji for efficient data storage. The order details of the user are encrypted using these QR-codes.

L. Analysis: Before delivering the products, the user details are analyzed and compared with the invoice of pickup and with the Admin.

Since the existing system makes use of tedious administrative tasks, lots paperwork and time, in which full information cannot be gotten from busy customers. The proposed project concentrates on laundry services where the user can book easily and get the delivery confirmation through the app. The proposed app takes the orders and makes delivery on time to the users. The data will be maintained safely. All the credentials and transactions are secured using blockchain.

Fig.4. Working of the application



VII EXPERIMENT ANALYSIS

Fig.5. Login screen

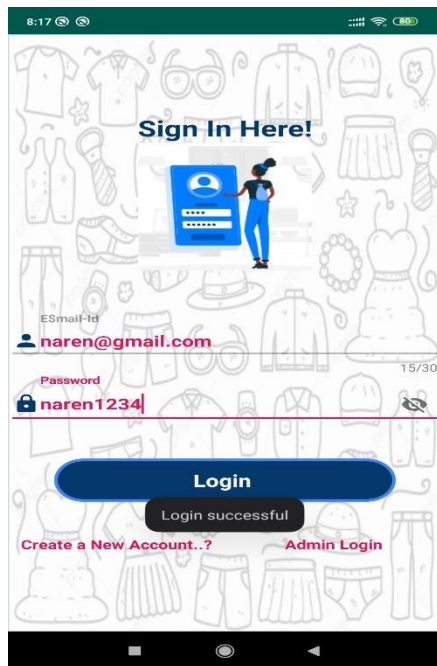


Fig.6. Selection screen



Fig.7. Payment screen



Fig.8. Order list

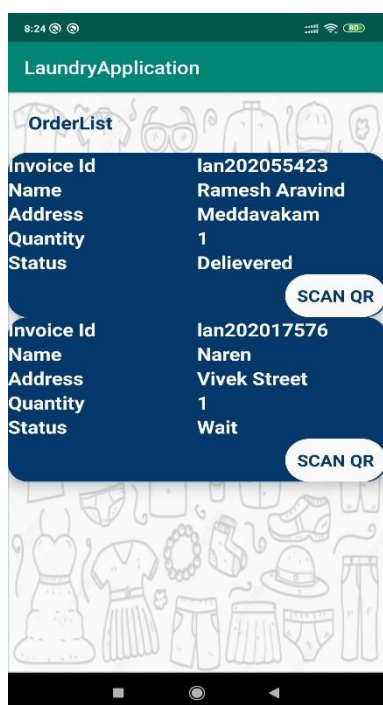


Fig.9. QR code



Fig.10. About us screen



Fig.11. Splash screen



The above figures from 5 to 11 shows the working flow of the proposed work.

VIII. CONCLUSION

The proposed application is designed mainly in intent to provide employment for laundry companies, individual washer men and unemployed youth. The application also makes a bridge between people and laundry firms by satisfying and getting benefitted by their mutual needs.

In the future, this proposed work will be developed and the following components can be added to this current system in order to improve the effectiveness and efficiency of the system, which includes:

1. An advanced encryption standard is adopted which, if any, invented in future to scaleup the security.
2. User Interface is made more comfortable for navigation in the application.

3. The user privacy policy is updated regularly.
4. Internet data saving features will be adopted.

ACKNOWLEDGMENT

I would like to thank my Professor Dr. Angelina Geetha, Assistant Professor Dr. SV. Shri Bharathi and Hindustan Institute of Technology and Science for extending their genuine support.

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