

CLEAN DHAKA A SMART GARBAGE MANAGEMENT APPLICATION

BY

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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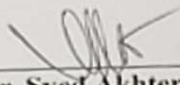
DHAKA, BANGLADESH

SEPTEMBER 2019

APPROVAL

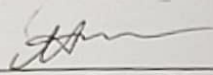
This Project titled "Clean Dhaka: A smart garbage management application", submitted by Md. Rashedul Islam, ID No: 153-15-6564 and Kazi Ariful Islam, ID No: 153-15-6567 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 14-9-2019.

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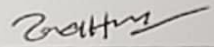
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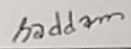
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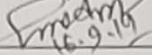
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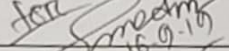
We hereby declare that, this project has been done by us under the supervision of **Ahmed Al Marouf, Lecturer, and Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:


16.9.19

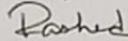
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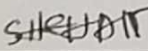

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ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year project/internship successfully.

We really grateful and wish our profound our indebtedness to **Mr. Ahmed Al Marouf, Lecturer**, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “*Human Computer Interaction*” to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to Prof. Dr. Syed Akhter Hossian and Head, Department of CSE, for his kind help to finish our project and also to other faculty members and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

This project is on “Clean Dhaka (A smart garbage management application)”. Garbage management is one of the biggest problems in Dhaka city. We can see the garbage everywhere in the city. Dustbin is not available for throwing the waste at specific place. It’s a matter of great that cleaner don’t know where is the garbage. To solve this problem our project “CLEAN DHAKA” (A smart garbage management application). Anyone with this application can easily able to send requests to the cleaner if the dustbins is full. This will make the cleaner very easy to know that which dustbin is full and if there is any garbage, as a result cleaner can quickly move the garbage to the specific place.

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CHAPTER 1

Introduction

1.1 Introduction

Dhaka is one of the busiest cities in the world and one of the most densely populated cities. It is a city of approximately 18.237million populations. We can see the garbage everywhere in the city. People throw the waste everywhere. Dustbin is installed to remove the waste in the city, but they are not used. Most of the dustbins have been stolen. In many places it is seen that there is waste under the dustbin. Moreover, there is no effective solution for this problem. On the other hand, during Eid-UL-Adha the whole city is filling up with animal's garbage. It is very hard to remove animal's garbage in limited time. The most important thing is that cleaner don't know that where the dustbin is full and where the garbage. It is very important that a developing country like Bangladesh should have a smart garbage management system and to use of technology should need to solve this problem. On the other hand, this suppressed our standard of living.



Fig 1.1:Present condition of garbage

1.2 Motivation

Dhaka is one of the contaminated areas in the world. In that city the whole area is going to be a dustbin day by day. Everywhere in this city is filling up with garbage. Water logging is mostly responsible for this garbage. Drains are filling up with garbage. We get dignity of developing country that's why this type of disorganization very sad for us. Otherwise to carry forward the standard of living a smart garbage management policy is must be needed for us, this is related to our country's imagination. To solve this problem Clean Dhaka Application mostly will contribute and gift us a clean and beautiful city. ,On the other hand the mobile application is very useful right now. People are like to use android application. Clean Dhaka is more user friendly android application people can use it easily. This application will be very effective to solve garbage management problem.

1.3 Objective

Objective of **Clean Dhaka** are given below:

It's an effective solution for garbage management system for Dhaka city

- Anyone can easily able to tell to the cleaner if the dustbin is full.
- The cleaner very easy to know that which dustbin is full.
- And if there is any .garbage
- As a result cleaner can quickly move the waste to the specific place
- The Impact of the project “CLEAN DHAKA” would be a significant change in our Dhaka city.
- We will see our city as a clean city

1.4 Expected Outcome

User will get two option in Dashboard Scan QR code and Uplaod Photo. After scan QR code the system will show to the user Bin Number, Cleaner Name, Location, Clener phone number. After that user able to send request by Submit button. User will able to send .request by Upload photo This will make the cleaner very easy to know that which dustbin is full and if there is any garbage, as a result cleaner can quickly move the garbage to the specific place.

1.5 Report Layout

The entire project is composed by six chapters. In the report, layout is summarized that five chapter. Discuss the summarized below: Chapter 2 covers background of this project, related works, comparative studies, scope of the problem and challenges. Chapter 3 contains business process modeling, requirement collection and analysis, use case modeling and design requirements. Chapter 4 contains front-end, back-end and interaction design and UX. Chapter 5 is about implementation of project and testing results. Chapter 6 covers conclusion, limitation and future development. And at last of this report there is a reference.

CHAPTER 2

Background

2.1 Introduction

Garbage management is a big problem for Dhaka City. DNCC has done a lot of work on this. So far, no good solution has been provided. Apart from this, dustbin has been installed in the whole of Dhaka for this solution and there is no good result.

2.2 Related Works

To solve this problem, the DNCC builds some garbage zone in specific areas. All the garbage is collected there. Dustbin has been set up all over the city. The matter of great that we have not yet found anything that has solved this problem using technology.

2.3 Comparative Studies

The great thing is that most of the dustbins that were have been stolen. The most important thing is that the cleaner does not know where the garbage was deposited at any given moment. And he/she cannot inform to cleaner if he/she wants to inform.

In our system, user able to send a request by QR code scan if dustbin is full or user able to send a request by upload photo of garbage with the location so that cleaner easily able to know where is the garbage or which dustbin is full now. The system will show the all request to the cleaner.

2.4 Scope of the Problem

Since this is a big problem, there are a few ways we have to deal with it. We need to build a better network between cleaner and people and also whole system. Increase the manpower. People need to be made aware of this. Necessary steps should be taken to stop dustbin theft. Cleaners need to be trained. The area should be a beautiful place for garbage collection.

2.5 Challenges

One of the most challenges was to handle multi request in a minute we have done it, another challenge was QR scanner implementation we have also done it. On the other hand, fake QR code handle was another challenge we have also done it.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

This model is represented the all business process of the project. It will help to the developer to develop the project and clearly understand the business process.

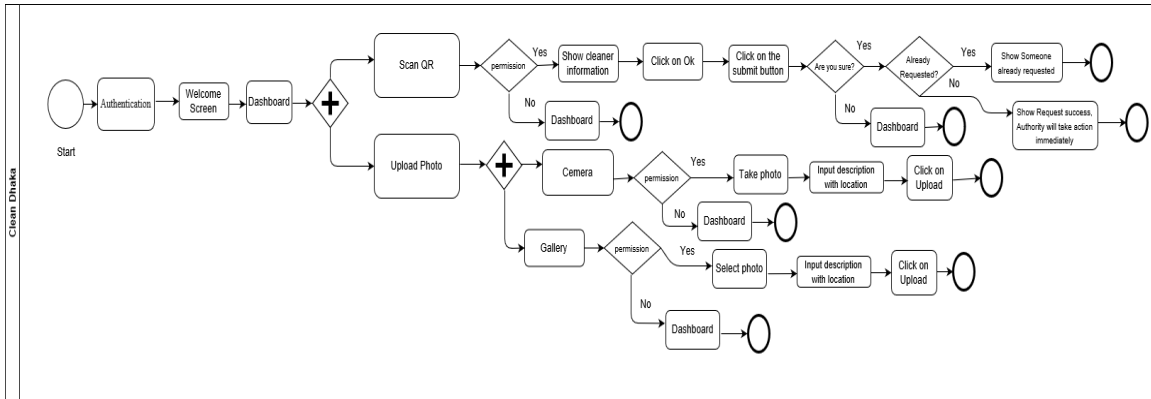


Fig 3.1: BPM for app

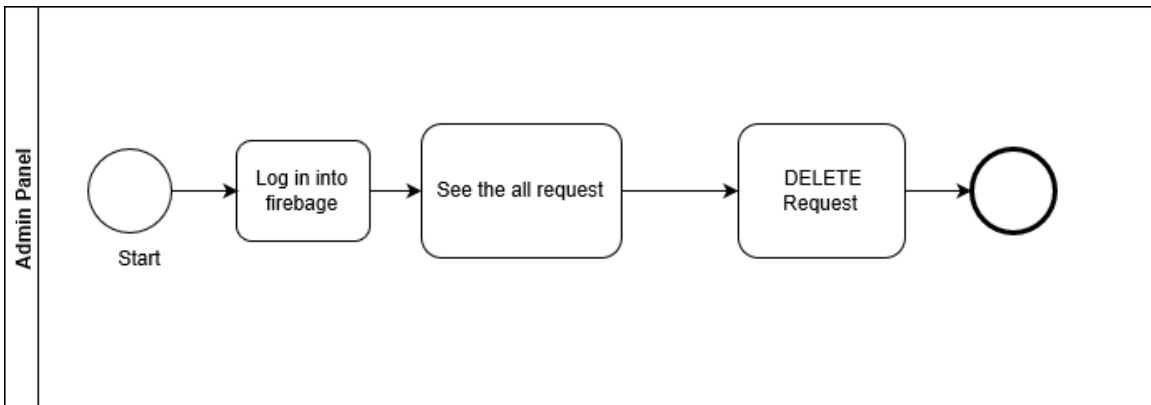


Fig .32 : BPM for admin panel

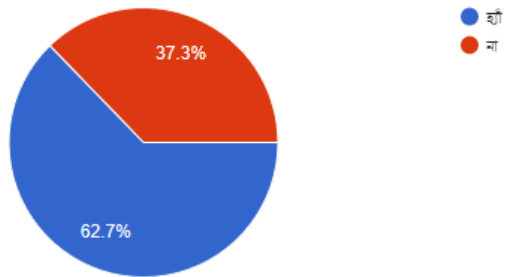
3.2 Requirement Collection and Analysis

In requirement collection and analysis at first we collect data from people with some question. After data collection we analysis the data and try to understand the user requirements. To make it easy and user friendly we develop the project peopleopinion.

The results of data collection are given below:

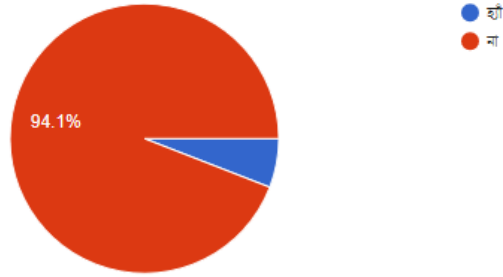
আপনি কি যথাস্থানে বর্জ্য ফেলেন?

51 responses



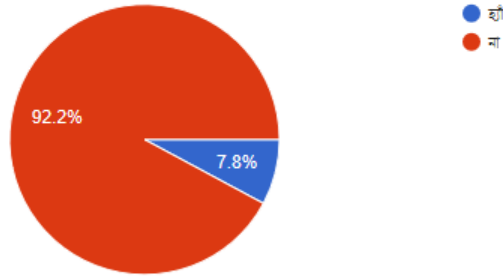
ঢাকা শহরের বর্জ্য ব্যবস্থাপনায় আপনি কি সন্তুষ্ট?

51 responses



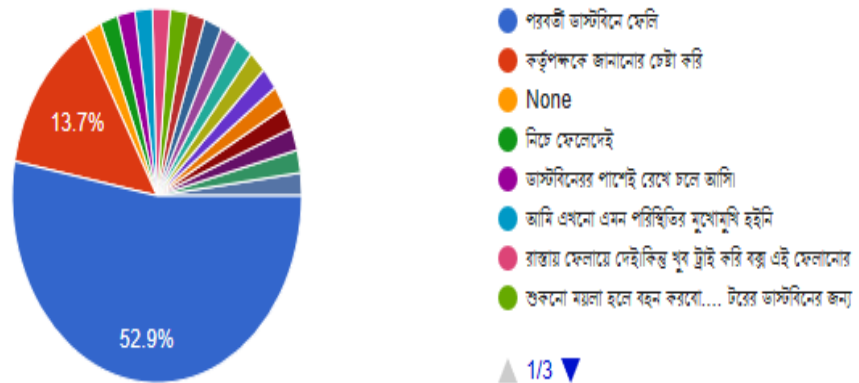
যথাস্থানে বর্জ্য ফেলার জন্য আপনি কি ডাস্টবিন খুঁজে পান?

51 responses



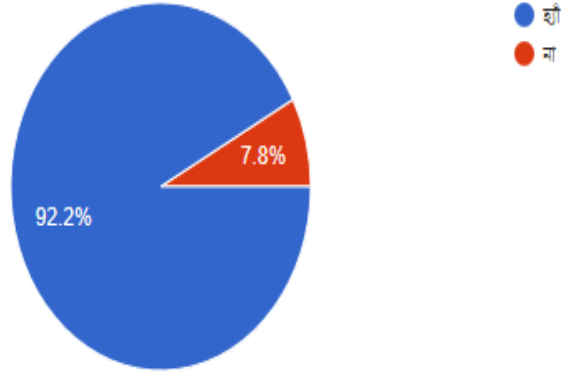
আপনি যদি দেখতে পান ডাস্টবিন ভর্তি তাহলে আপনি বর্জ্য গুলো কি করবেন?

51 responses



বর্জব্যবস্থাপনা নিয়ে যদি কোন স্মার্ট সিস্টেম তৈরী করা হয় তাহলে আপনি কি সেটা ব্যবহারে আগ্রহী হবেন?

51 responses



বর্জব্যবস্থাপনা নিয়ে যদি কোন স্মার্ট সিস্টেম/ মোবাইল অ্যাপ তৈরী করা হয়, তাহলে এতে আপনি কি কি ফিচার চান?

51 responses

১. ডার্স্টবিনের লোকেশন দেওয়া থাকবে
২. ইমারজেন্সি সুইপারের ব্যবস্থা থাকবে
৩. যেখানে সেখানে ময়লা ফেলার অপরাধে, ইমারজেন্সি অভিযোগের ব্যবস্থা থাকবে

এমন কিছু ফিচার আনা হোক, যেটা দ্বারা আমি যদি কখনো যথাযথ জায়গা/ডার্স্টবিন ব্যতীত অন্য কোন জায়গায় ময়লা ফেলি, সেই অ্যাপটা যেন আমাকে ঠিক জায়গা ময়লা ফেলানোর নির্দেশ দেয়, আর হিসেব রাখা যায় যে আমি কতবার ভুল জায়গায় ময়লা ফেললাম, আর কতবার নিয়ম মেনে ডার্স্টবিন ব্যবহার করলাম।

As ur wish

App ta jno hoi free and offline all city information and update hoi mb die kew ai kaj korbena r hosse manus jate ata use korte agrohi hoi amon normal er modde vlo kno akta kisu korte hbe

Offline mode

Locetion

easy user

1. Location 2.picture 3.Navigation

কোথায় ডার্স্টবিন আছে? সেটি কি আর্জনায়ে ভর্তি? যদি ভর্তি থাকে কখন খালি হবে?

কি জানি	^
no comment	
যথাস্থানে ময়লা ফেলি, স্বাস্থ সম্মত দেশ গড়ি।	
1. Show some important data on app (Which area is more clean, How many bin in my area and exact location of it)	
-Contact to responsible authority -Find nearest dustbin -Report to clean specific spot	
ময়লা গুলুকে কিভাবে অন্য কাজে ব্যবহার করা যেতে পারে। এবং কোথায় কোথায় ডাস্টবিন আছে তা শো করবে।	
আমরা যেন অচেনা জায়গায় গেলে মালা ফেলার স্থানটা খুঁজে পাই সহজে	
Search Nearest Bin , Bin Will Send a message to city corporation if it is full.	
একটাই চাই। যেই বস্ত্র গুলো দেয়া হয় সরকার থেকে তা যানো চুরি না হয়।বস্ত্র সামনে পেলে অবশ্যই বস্ত্র এ ফেলি ময়লা। টাই ডাস্টবিন রক্ষা মেইন।	
ডাস্টবিনের স্থান	∨
১. কোথায় কোথায় ডাস্টবিন রয়েছে তা যেন অ্যাপে দেখা যায়। ২. ডাস্টবিন ফিল-আপ হয়ে গেলে তা কর্তৃপক্ষকে জানানোর ব্যবস্থা থাকতে হবে। ৩.	^
চাই তো অনেক কিছুই কিন্তু ওতো কিছু উল্লেখ করা সম্ভব নয়। প্রাথমিকভাবে একটি গ্র্যাপ খোলার পর সেখানে কি কি আপডেট করতে হবে সেই সম্পর্কে পরামর্শ দিতে পারি। ধন্যবাদ।	
ডাস্টবিনে qr কোড থাকবে তা স্ক্যান করে সেন্ট্রাল মনিটরিং সেল এ তথ্য পাঠানো যাবে। ম্যাপের সাহায্যে জানতে পারবে কোথায় ডাস্টবিন আছে। আর ডাস্টবিন চুরি রোধ এ ব্যবস্থা নিতে হবে।	
সিস্টেম যেন শুধু সিস্টেম পর্যন্তই না থাকে,কার্যকর হয়! সেটাই চাই আপাতত ।	
nearest dustbin	
আশেপাশে কোথায় ডাস্টবিন আছে সেটা যেনো জানা যায়।	
Something more better than now a day'.	
Daily use r shuvhida	
Kothai dustbin ase saiter map	
পরবর্তীতে জানাবো।	∨

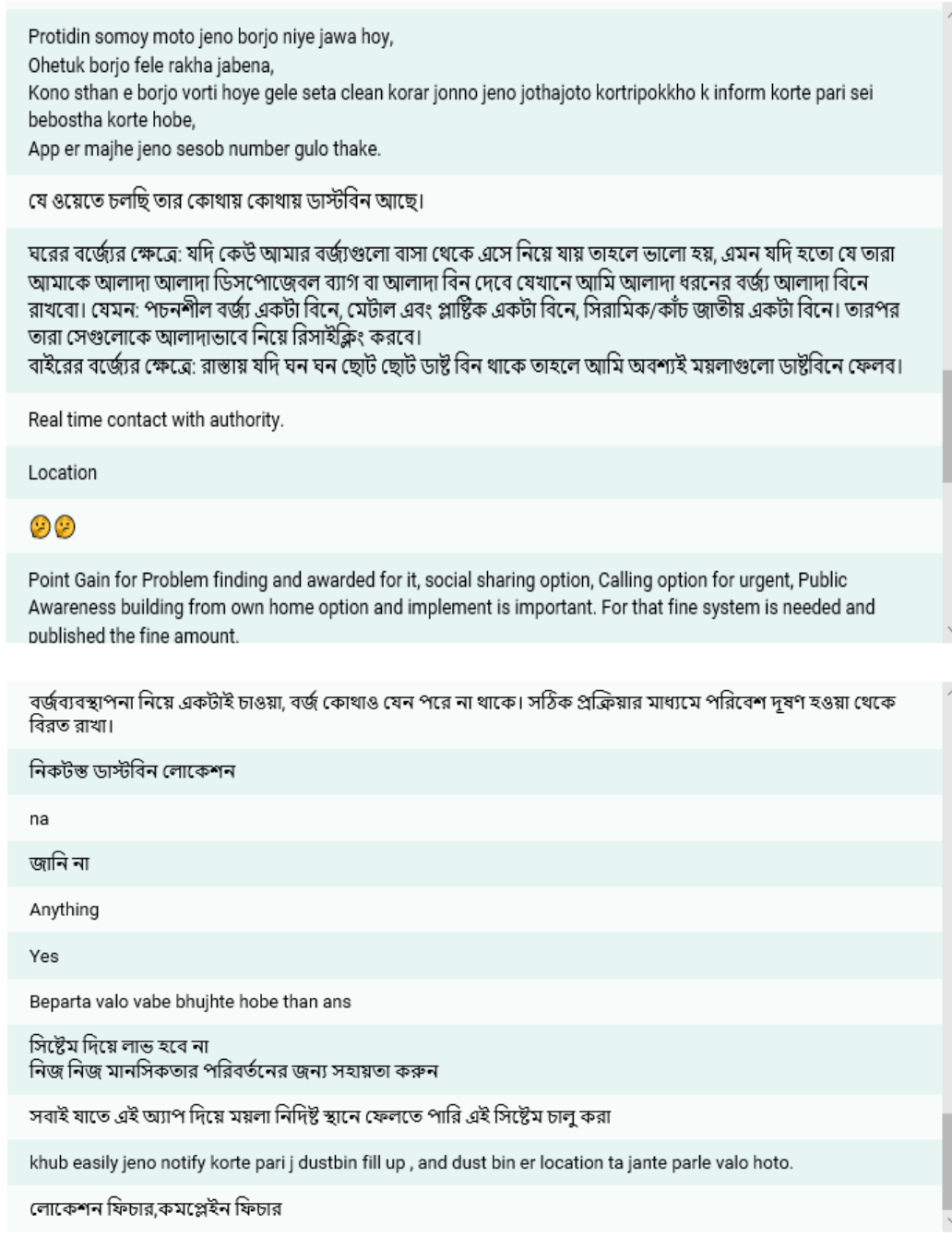


Fig .33 :User Requirements

3.3 Use Case Modeling and Description

This use case model represented the user activities. User will be able to send request by scan .QR code and user also send request by upload photo from camera and Gallery

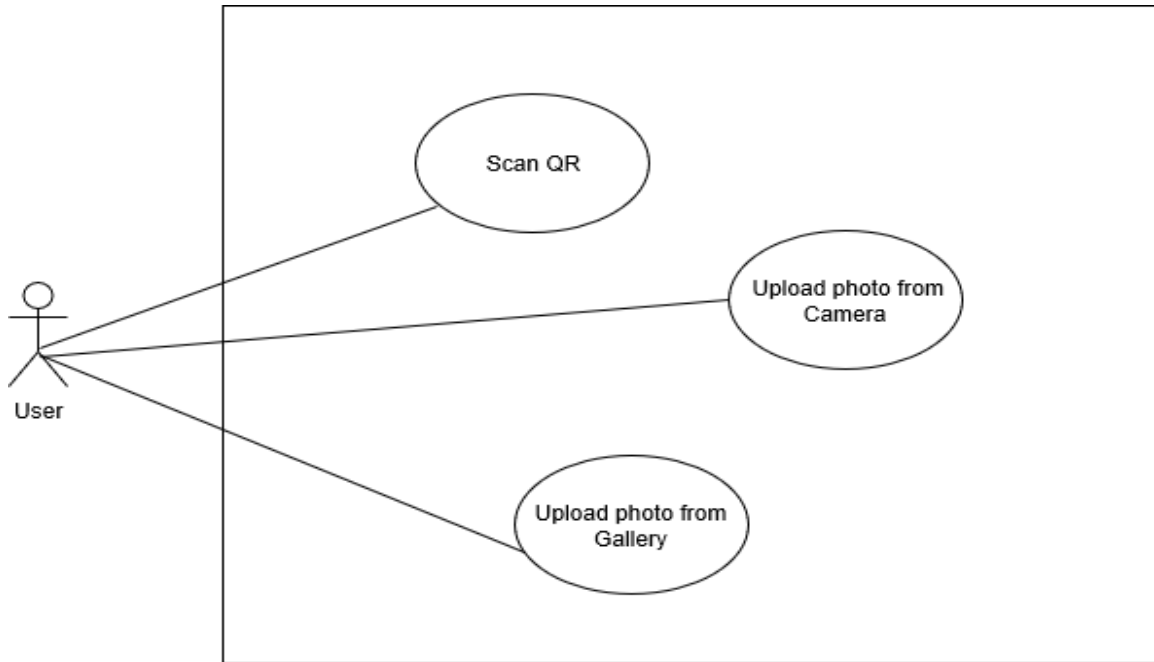


Fig 3.4: Use Case model for user

This use case model represented the Admin activities. The system will show the all request to the admin, admin will able to see the all request and also admin able to delete request

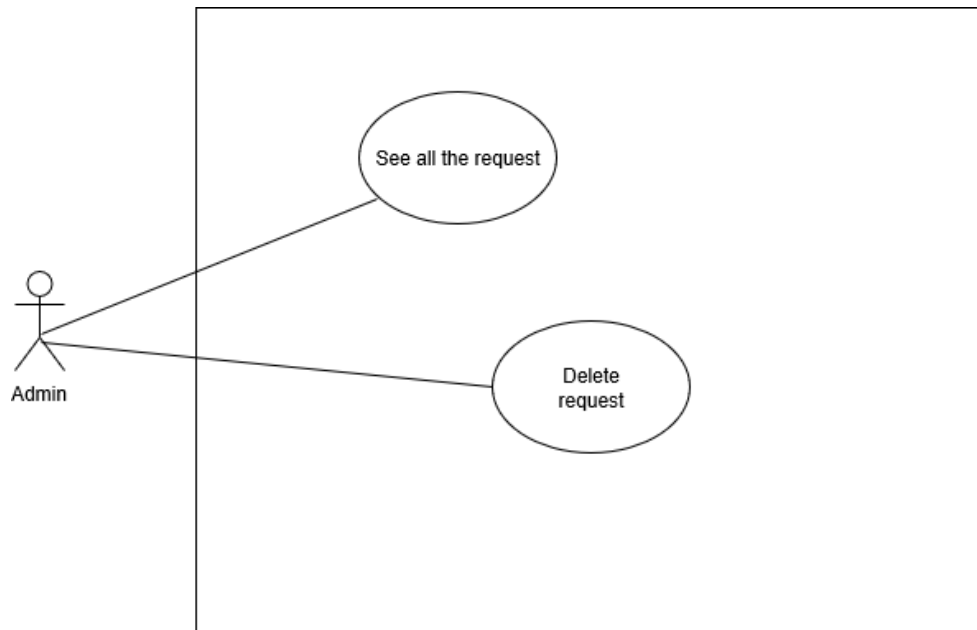


Fig 3.5: Use case model for admin

3.4 Logical Data Model

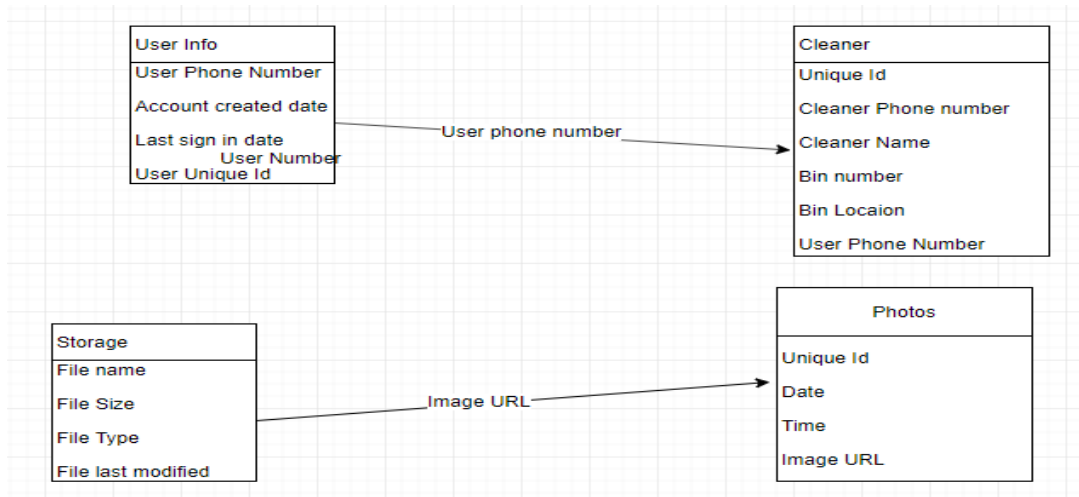


Fig .36: Logical data model

3.5 Design Requirement

The design of our system is user friendly, we try to design our application in that way, that user can easily use this application. When the application is open, it will show welcome screen. Then user will get two options, Scan QR and upload photo. After touch Scan QR it will start scanning QR code and show the result with two options that scan again and ok. If we will press ok then it will ask me to confirm to submit the request. And if we will press upload photo, then we will have to choose a photo from the gallery or camera. After select photo we have to input a description of the photo, after press upload the photo will be uploaded to the database.

Design requirement for the user:

- Welcome Screen
- Dashboard
- Permission
- Scanner
- Camera
- Gallery
- Submit Screen
- Upload Screen

CHAPTER 4

Design Specification

4.1 Front-end Design

- Linear Layout:

Linear Layout is a straightforward layout for template design that is used in android. All the components are presented in linear fashion in the linear layout implies that all linear layout components of the child are displayed according to their orientation. The estate orientation value may be either horizontal or vertical.

- Relative Layout:

The Relative Layout is a very versatile layout that is used for custom layout design in android. It provides us the flexibility of positioning our component / view depending on the position of the relative or sibling component. Just because it enables us to place the element wherever we want it to be deemed the most flexible layout. Relative design is the most widely used layout after Android's Relative Layout for the same reason. It allows you to position your child's view relative to each other or relative to the container or other container.

- Image View:

Image View class is used in Android to show an application image file. Because of the different screen sizes in Android devices, image file is simple to use but difficult to master in Android. An android is enhanced with some of the finest UI design widgets that enable us to create a nice look and appealing application based on the UI

- Text View:

To display text in operation and in the bottom sheet, we use text perspective. It makes a user friendly system that plays a very significant part in an application's user experience. Sometimes viewing the text can also take user action. In a Text View, we can use a tiny text icon.

- **Button:**
A button comprises of either text or picture or both, user action is taken and action is taken. We use the button to submit and upload action in our application.
- **Bottom Sheet:**
It is merely a perspective, not an activity. It functions as a fragment. From the bottom, it views the user, it apps flexibility and user experience.
- **Alert Dialog**
Alert dialog in an android user interface prompts a tiny window for mobile screen decision making. Sometimes it is necessary to send the user an alert without going to the next activity before making a choice. To solve this problem alert dialog came into practise. For example you have seen this type of alert when you try to exit the App and App asks you to confirm exiting.

4.2 Back-end Design

- **Alert Dialog:**
We used Android library projects that provides easy to use and extensible Barcode Scanner views based on ZXing. It is third party library, using this third party library we can easily scan QR code or bar code in offline mode. This library has a trained data model that that can easily convert code to text.
- **Database**
We use firebase real time database and firebase store as our main database because it is very fast and work real time with Nano second in application and Google is now recommended this feature with android application, otherwise this had flexibility to work with offline. This is no-SQL data so data are store as a parent child relationship.

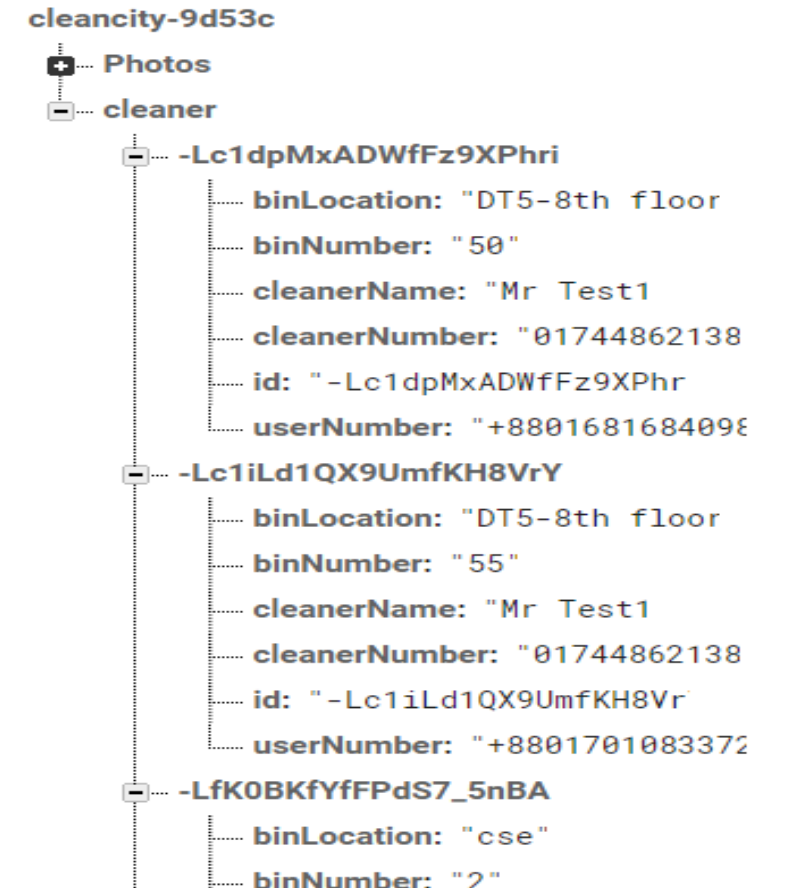


Fig. 4.1:Database

4.3 Interaction Design and UX

Dashboard View:

- Scan QR
- Upload Photo

Request Submit View:

- Shows scan result with proper information
- Submit the result

Request Submit View:

- Chose photo from Gallery or capture from Camera

- Give description with location
- Upload photo

UX

UX means User Experience. This system design should be user friendly for good user experience To make easy and user friendly we followed the user experience. In requirement analysis we worked with ux so that our application is more user friendly to use

4.4 Implementation Requirement

To implement our project, we need Android Studio for Build Android application and Tesseract OCR engine and trained data set for Bengali language. We need XML code to design UI/UX for our Application. To implement other thing, we need Java programming language to do add image and scanning QR code. We need to add Zxing library for scanning feature. We also have to implement firebase dependency for connect our project with firebase we need all the tool to work with this project already I have discussed above.

Software Requirements for our application

- Windows 7 or higher/ Linux (Ubuntu, Fedora)
- Android studio 2.3 or higher
- Java Runtime Environment 1.5 or higher
- Java development kit 1.5 or higher
- Android operating system minimum SDK version 15 to 28

Hardware Requirements for our application

Windows:

- Microsoft windows (8/8.1/10)
- 8GB RAM recommended, Min: 3GB and 1 GB for the Android Emulator
- Minimum 2 GB of available disk space, Recommended 4 GB
- Screen Resolution: 1280 x 800 minimum

Linux:

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GNOME or KDE desktop

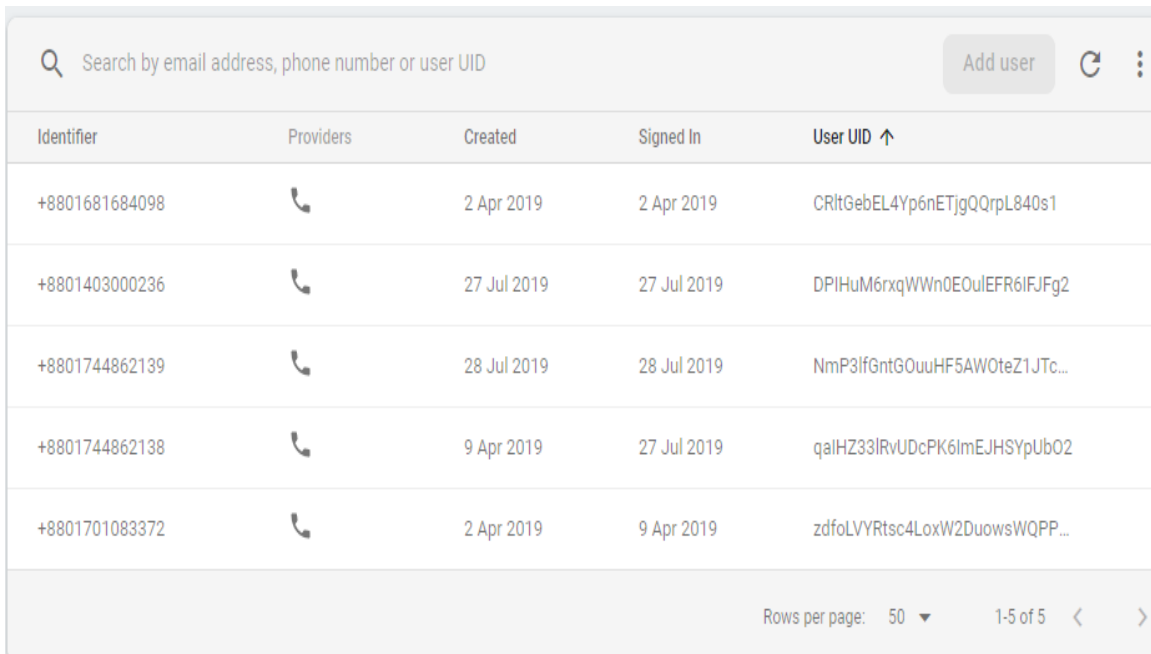
- Tested on Ubuntu 14.04 LTS.
- 64-bit distribution capable of running 32-bit applications
- GNU C Library 2.19 or later
- 8 GB RAM recommended; 3 GB minimum and 1 GB for the Android Emulator

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database

Database implementation is a very difficult part of the system. No-SQL database is going to popular day by day because of smoothness, accuracy. So we use Firebase database system in our project. We use firebase real time database and firebase store as our main database because it is very fast and work real time with Nano second in application and Google has now recommended this feature with android application, otherwise this had the flexibility to work with offline. This is no-SQL data so data are stored as a parent child relationship. In figure 5.1 we get authenticate user list with their id and verified phone number. In figure 5.2 shows the storage of the firebase where all the image age stored. Figure 5.3 shows the request from the user with bin location, bin number, cleaner name, cleaner mobile number. and user mobile number. Figure 5.4 shown the uploaded image information like image url, image id, uploaded date and time.



Identifier	Providers	Created	Signed In	User UID ↑
+8801681684098	📞	2 Apr 2019	2 Apr 2019	CRltGebEL4Yp6nETJgQQrpL840s1
+8801403000236	📞	27 Jul 2019	27 Jul 2019	DPIHuM6rxqWWn0EOulEFR6iFJFg2
+8801744862139	📞	28 Jul 2019	28 Jul 2019	NmP3lfGntG0uuHF5AW0teZ1JTc...
+8801744862138	📞	9 Apr 2019	27 Jul 2019	qalHZ33lRvUDcPK6ImEJHSYpUb02
+8801701083372	📞	2 Apr 2019	9 Apr 2019	zdfolVYRtsc4LoxW2DuowsWQPP...

Fig 5.1:User Information in database








<input type="checkbox"/>	 23976121-May-201901:52.jpg	6.94 MB	image/jpeg	21 May 2019
<input type="checkbox"/>	 image:31276628-Jul-201900:42.jpg	86.04 KB	image/jpeg	28 Jul 2019
<input type="checkbox"/>	 image:31483328-Jul-201910:50.jpg	2.22 KB	image/png	28 Jul 2019
<input type="checkbox"/>	 image:549727-Jul-201921:23.jpg	198.8 KB	image/jpeg	27 Jul 2019
<input type="checkbox"/>	 JPEG_20190521_004348_7285092215756559457.jpg...	3.29 MB	image/jpeg	21 May 2019
<input type="checkbox"/>	 JPEG_20190727_212421_7351864452696395559.jpg...	1.05 MB	image/jpeg	27 Jul 2019
<input type="checkbox"/>	 JPEG_20190728_002704_6076993056874078753.jpg...	2.1 MB	image/jpeg	28 Jul 2019

Fig 5.2:Image data in database

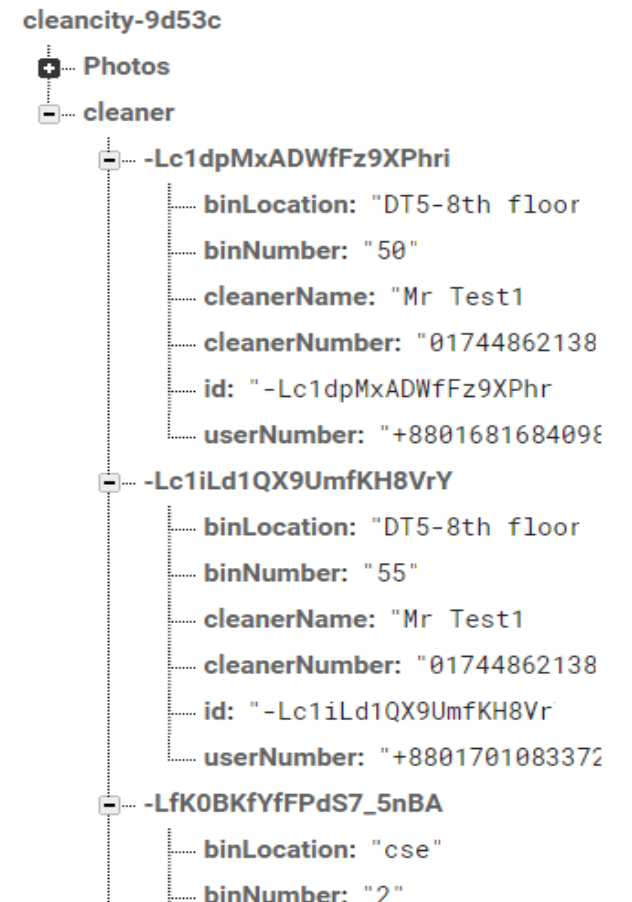


Fig 5.3: Database for cleaner



Fig 5.4:Database for photo

5.2 Implementation of Front-end Design

When the application is open, it will show welcome screen fig 5.5. The user has to verify their phone number with OTP for unique user id show in fig 5.6 and 5.7. Then user will get two options, Scan QR and upload photo show in fig 5.8. After touch Scan QR it will start scanning QR code fig 5.9 and show the result with two options that scan again and ok. If we will press ok then it will ask me to confirm to submit the request fig 5.10 and fig 5.11. And if we will press upload photo, then we will have to choose a photo from the gallery or camera fig 5.12 and 5.13. After select photo we have to input a description of the photo fig 5.14, after press upload the photo will be uploaded to the database.

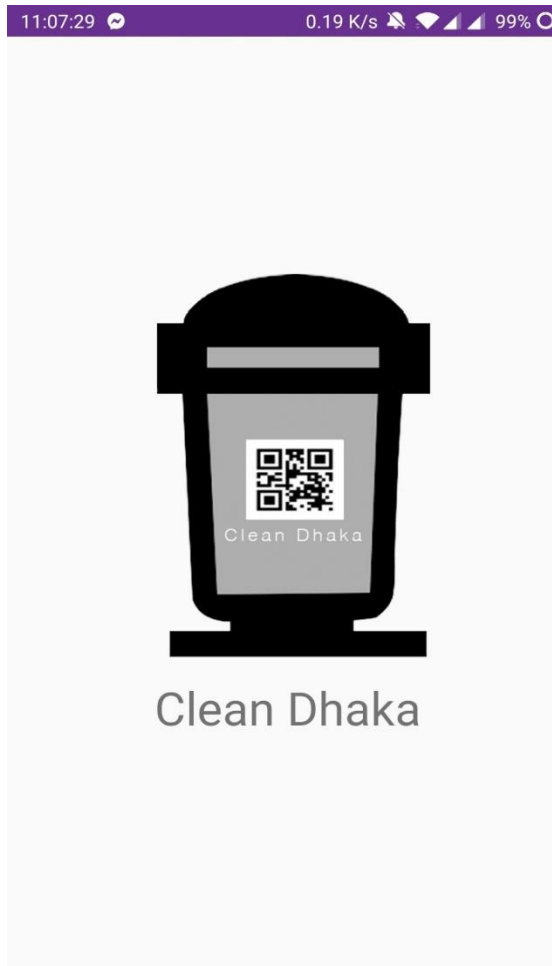


Fig 5.5: Welcome screen

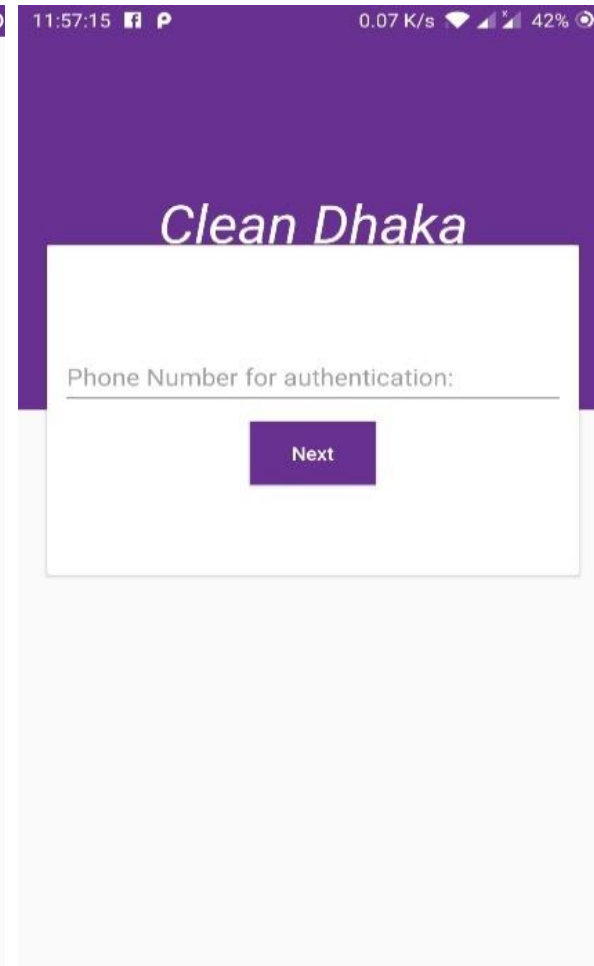


Fig 5.6: User Authentication

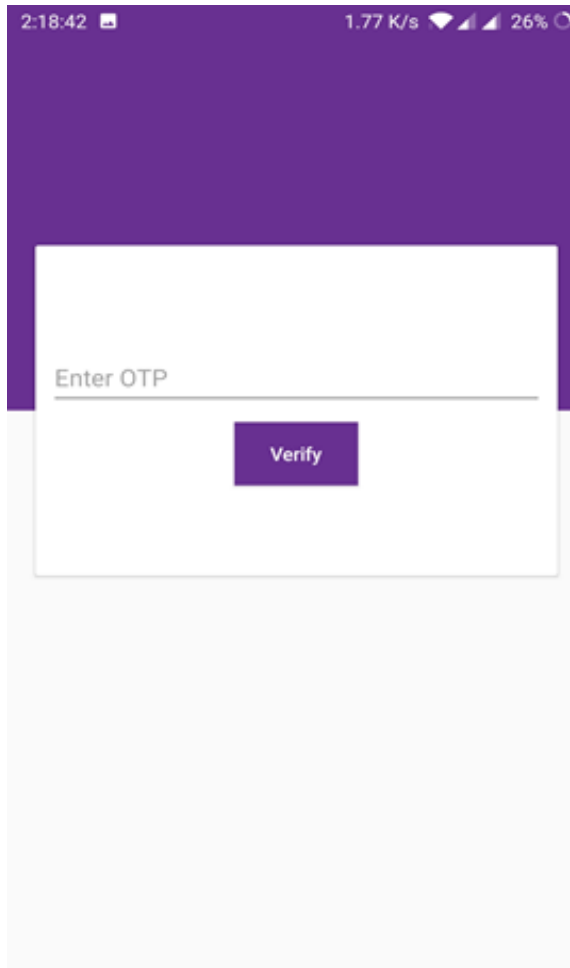
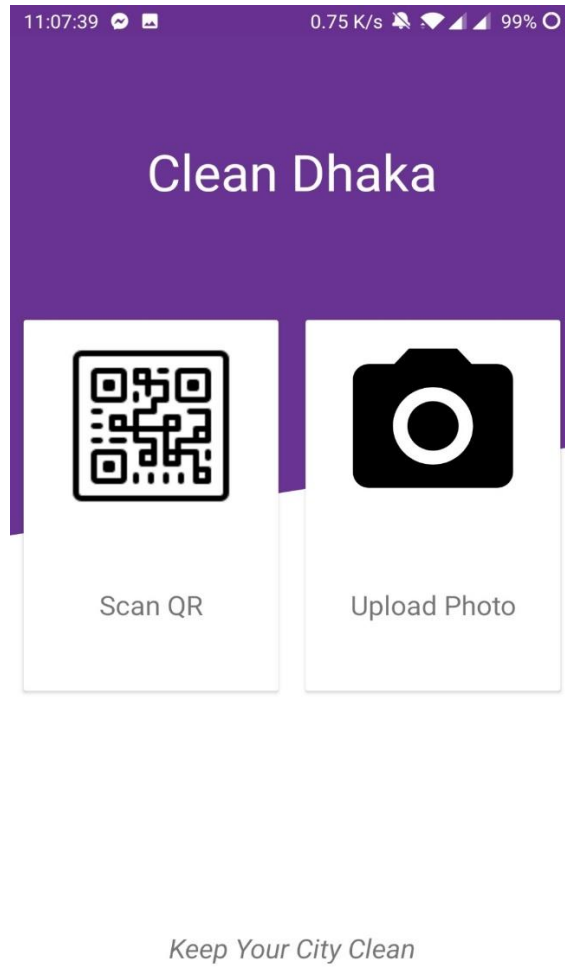


Fig 5.7 :OTP submission



Keep Your City Clean
Fig 5.8 :Dashboard



Fig 5.9 :QR code Scan

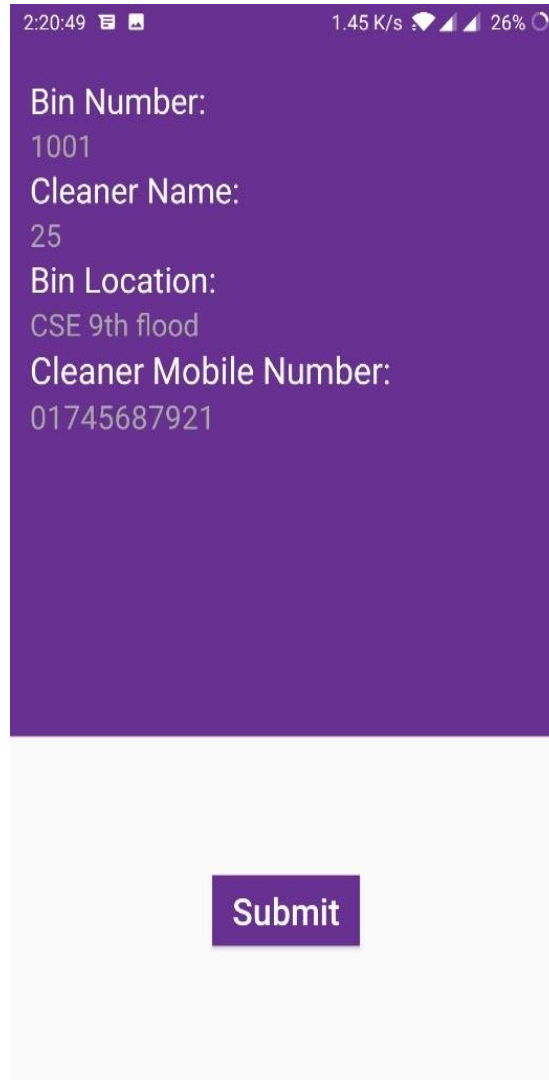


Fig5.10 :Cleaner Information

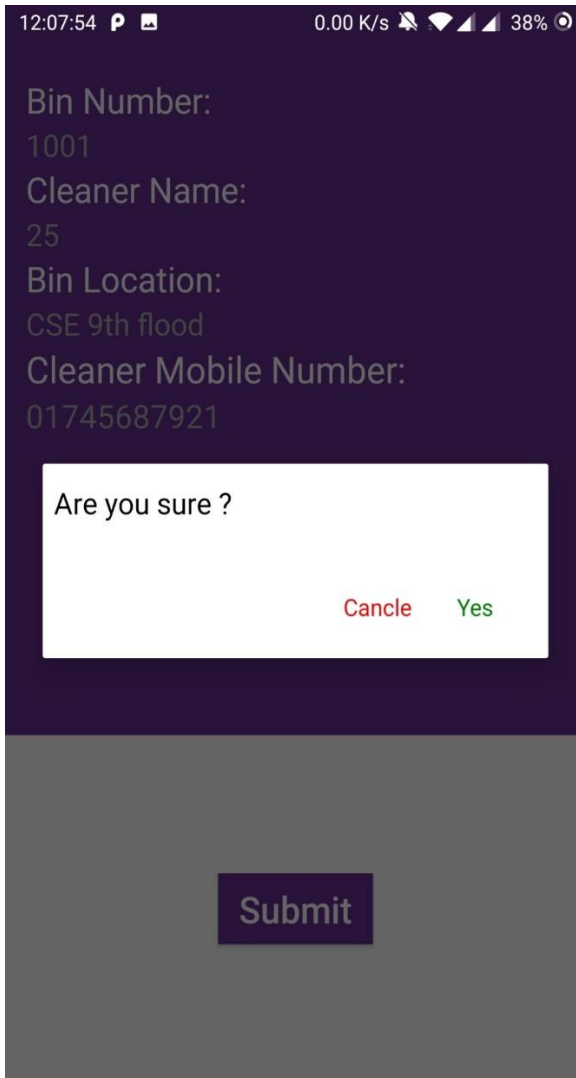


Fig 5.11:Confirmation

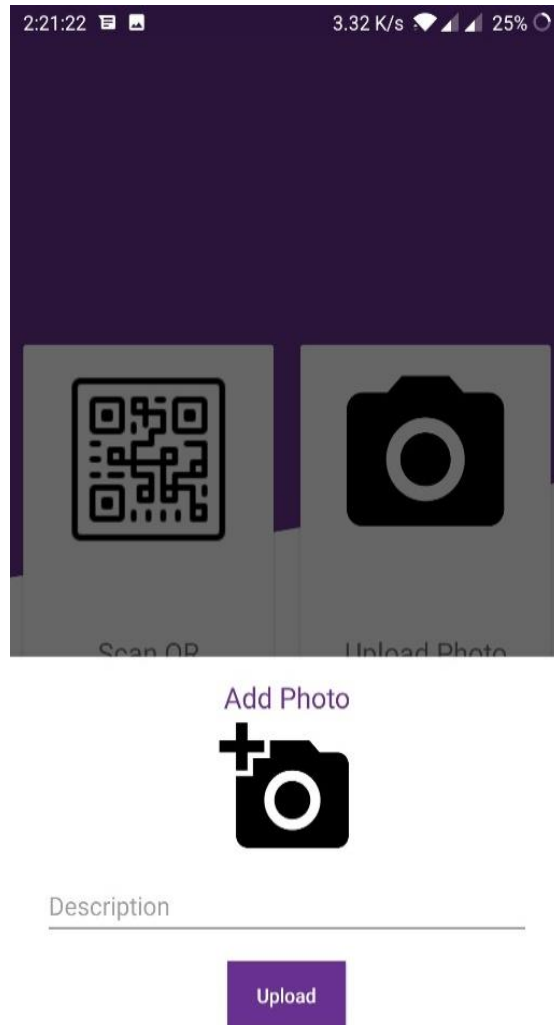


Fig 5.12 :Upload photo

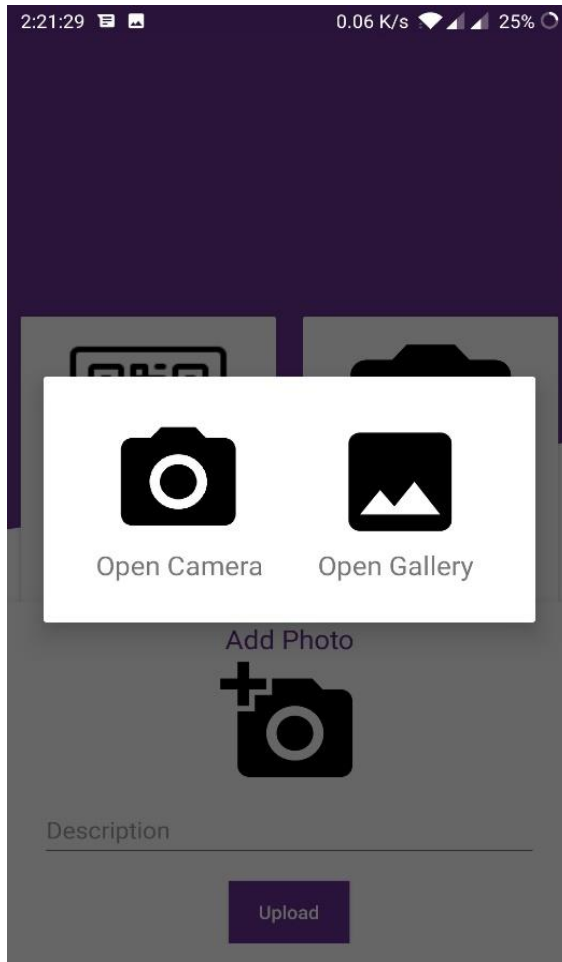


Fig 5.13 :Two option of Upload photo

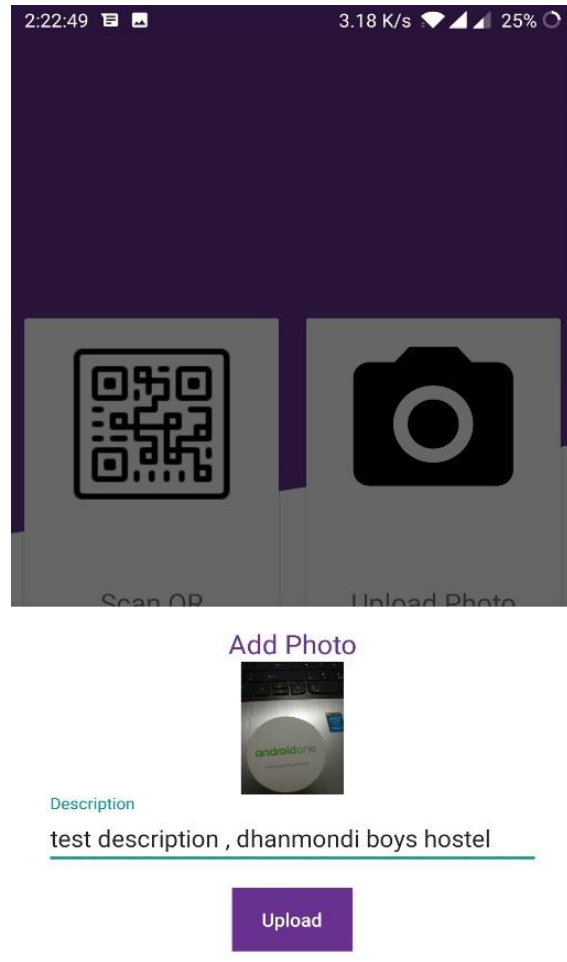


Fig 5.14 : Upload photo with description and location

Bins

1	Sobhanbag Quater Cleaner: Mr Jon Cleaner Number: 01744865253 User: +8801521302724	
1	Shukrabad Market Cleaner: Mr Rahim Cleaner Number: 01744865253 User: +8801521302724	
1	Cse 2nd Floor Cleaner: Mr smith Cleaner Number: 01744865255 User: +8801521302724	
1	Cse 3rd Floor Cleaner: Mr Helal Cleaner Number: 01744865280 User: +8801521302724	
1	Dt5 10th floor Cleaner: Mr Bond Cleaner Number: 01744865290 User: +8801521302724	
1	Dt5 5th floor Cleaner: Mr Rahim	

Photos

 Location: Behind DIU Cse Date 21-May-2019	 Location: Shukrabad Bus Stop Date 28-Jul-2019	 Location: Tree Date 28-Jul-2019	 Location: Bin Icon Date 28-Jul-2019
 Location: cse 5th floor Date 28-Jul-2019	 Location: abc Date 28-Jul-2019	 Location: In front Rapa plaza Date 31-Aug-2019	

Fig 5.15: Admin panel

5.3 Implementation of Interactions

To make this application interactive we have implemented responsive UI for a better user experience. To make things easy we have used image view, Text button, and Card view. The UI design of this application is user friendly. We use Progress dialog to help user to understand the uploading photo status.

5.4 Testing Implementation

System Testing is a level of the software testing where complete and integrated software is tested. To evaluate the system's compliance with the specified requirements is the purpose of this test.

Table 5.1: Testing Objective of our application

01	To check the program run or not
02	To check display all option
03	To check all option are working or not
04	To check whether ask for camera permission or not
06	To check camera option work or not
07	To check gallery option work or not
08	To check scanner option work or not
09	To check file uploaded to firebase or not
10	To check application work without internet connecting or not
11	To check ignore duplicate request or not
12	To check error handle when wrong QR code information uploaded.

Table 5.1 is the testing objective of this application. When we tested this application by real time user, we asked these questions to every user. Based on these objectives we have created our test results and reports.

5.5 Test Results and Reports

Table 5.2 shows the test results depending on the test cases implemented in the previous section of this chapter.

Table 5.2: Result of Test Objectives

01	To check the program run or not	Success
02	To check display all option	Success
03	To check all option are working or not	Success
04	To check whether ask for camera permission or not	Success
06	To check camera option work or not	Success
07	To check gallery option work or not	Success
08	To check scanner option work or not	Success
09	To check file uploaded to firebase or not	Success
10	To check application work without internet connecting or not	Success
11	To check ignore duplicate request or not	Success
12	To check error handle when wrong QR code information uploaded.	Success

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and Conclusion

Dhaka is a populous city. On the other hand, the first row on earth in a polluted city. Waste management is one of the biggest problems now. In the city most of place we see the waste falls .The city environment is getting worse day by day. To keep the city clean and to move the waste to the destination very quickly and this is our project Clean Dhaka (A smart garbage management application) to solve the problem. I hope this app plays a vital role in solving this problem.

6.2 Limitations

:We have some limitations

- .It's not multi language
- If network less work, then photo upload will be slow down.

.We will work for fix it in future

6.3 Scope for Further Developments

In future development features to make this application more effective will be:

- Map Integration
- Multi language
- Separation app for cleaner
- Updated features for admin panel

References

- [1] Population of Dhaka city, from at <http://worldpopulationreview.com/world-cities/dhaka-population/> , last accessed on 29November 2018 at 11:30pm.
- [2] Learn about Android Studio, from at <https://developer.android.com/>, last accessed on 13 December 2018 at 09:10pm.
- [3] Learn about android, from at <https://www.udacity.com/>, last accessed on 1 December 2018 at 10:20pm
- [4] Learn about UI/UX design, from at <https://www.udacity.com/>, last accessed on 23 December 2018 at 10:20pm
- [5] Learn about firebase, from at <https://firebase.google.com/docs/> , last accessed on 20 april 2019 at 7:10pm
- [6] Learn about QR code, from at <https://github.com/dm77/barcodescanner>, last accessed on 1 June 2019 at 9:20pm