SOFTWARE ENGINEERING

SOFTWARE REQUIREMENT SPECIFICATION

e-sanitization

A smart city system for garbage collection

Group Name- *InfiniteLoop*

Section- *B*

GROUP MEMBERS-

Tejas Milind Mane	IIT2018135
Chinmay Shravanbal Tayade	IIT2018138
Ravi Kumar Sharma	IIT2018108
Sagar Kumar	IIT2018154
Ratan Kumar	IIT2018136

1. <u>Introduction:</u>

e-sanitization is basically an android app which allows a transparent and regular garbage collection system throughout the city.

1.1 <u>Purpose</u>:

The purpose of the app is to make the process of collecting garbage transparent and regular. It will also help in maintaining the cleanliness in that particular area.

From User's point of view,

•   Users need not go anywhere to dispose of the waste material.

•   Users can file the complaint of their issue by using an app from anywhere if they can see any type of discrepancy related to service .

From Admin's point of view,

•   Department of Solid Waste Management can handle the process of garbage collection throughout the city efficiently.

•   It will allow them to ensure that garbage is collected from each house regularly.

•   Admin can keep track on records about daily garbage collection.

•   As daily records are maintained, it will be easy for recycling this trash.

1.2 <u>Scope:</u>

We describe what features are in the scope of the software and what are not in the scope of the software to be developed.

<u>In Scope:</u>

a.   Garbage collection in the city could be tracked on a regular basis.
b.   Complaints and issues of citizens will be resolved regarding garbage collection and city cleanliness.

<u>Out of Scope:</u>

a.   Maintenance issues of the city irrespective of Garbage will not be considered.

1.3   Definitions, Acronyms, and Abbreviations:

Acronyms and Abbreviations:

a.   "**e-sanitization**": App name.
b.   SRS: Software Requirement Specification

Definitions:

a.   Municipal Corporation: An authority that administers urban areas with a population of more than one
        million.

b.   Department of Solid Waste Management: A department which handles daily garbage collection system
        throughout the city.

1.4   References:

IEEE SRS Format

1.5   Overview:

The rest of this SRS is organized as follows: Section 2 gives an overall description of the software. It gives
what level of proficiency is expected of the user, some general constraints while making the software and some
assumptions and dependencies that are assumed. Section 3 gives specific requirements which the software is
expected to deliver. Functional requirements are given by various use cases. Some performance requirements
and design constraints are also given.

2. Overall Description:

2.1 Product Perspective:

"e-sanitization" aims to eradicate garbage accumulation inside the city by regularly checking / tracking garbage collection of the city. The app is handled by the Department of Solid Waste Management of the municipal corporation to maintain cleanliness and hygiene inside the city. This will help to ensure the healthy environment of the city and will lead the civilization to an ideal neat and clean society.

Product Functions:

"e-sanitization" supports the following use cases:

Use cases	Description of use cases
Admin:	
Authorized login	Allows Admin to login.
View Collection Data	Admin can View all data related to Collection.
Track Vehicle	Admin can track the vehicle so that he can ensure either cleaners reach or not.
Approve Cleaner Profile	Admin can approve the details filled in by the cleaner.
Updates 'About Us'	Admin can make changes to the 'About us' page.
Update user's Profile	Admin can view the profile of any user he wishes to and check if he has uploaded all the necessary documents or submitted a particular document.
View/Answer FAQ	Admin can view the frequently asked questions posted by the user's as well as cleaners on the FAQ page and answer them.
View cleaners Profile	Admin can view cleaners' profiles and also can notify them if there are any documents which are not uploaded by the cleaner.
Track Complaint	Admin can track the complaints regarding the maintenance or system.

User:	
Authorised login	Allows users to login.
View / Update Profile	User is able to view or update their profile
View FAQ	Users can view the Frequently Asked Questions (FAQ).
Rate Service	Users can change Preferences of the job according to their requirements if they are willing to and can view them later.
Provide feedback	Users can view the job listing and can apply for the job of their choice.
Notify Closures	Users can notify the closure.
Contact Admin	Users can contact the Admin.
Verify Collection	Users can verify the collection either garbage collected or not.
Track Vehicle	Users can track the vehicle.
Update Profile	Users can update their profile.
View Cleaner's Profile	Users can view the cleaner's profile.
File Complaint	Users can file complaints about service.
Cleaner:	
Cleaner login	Allows cleaner to login.
Scan QR	cleaner can scan QR code to collect garbage.
Notify User	cleaner can notify users after collecting garbage.
Update Profile	cleaner can update profile and upload necessary documents.
Mark as Visited	cleaners can mark the home from where he already collected the garbage.

2.2 User Characteristics:

a. The user should be familiar with the operation of Android Device and Applications.

2.3 Principal Actors:

The three principal actors in "e-sanitization" are "Admin" and "Users" and "Cleaner".

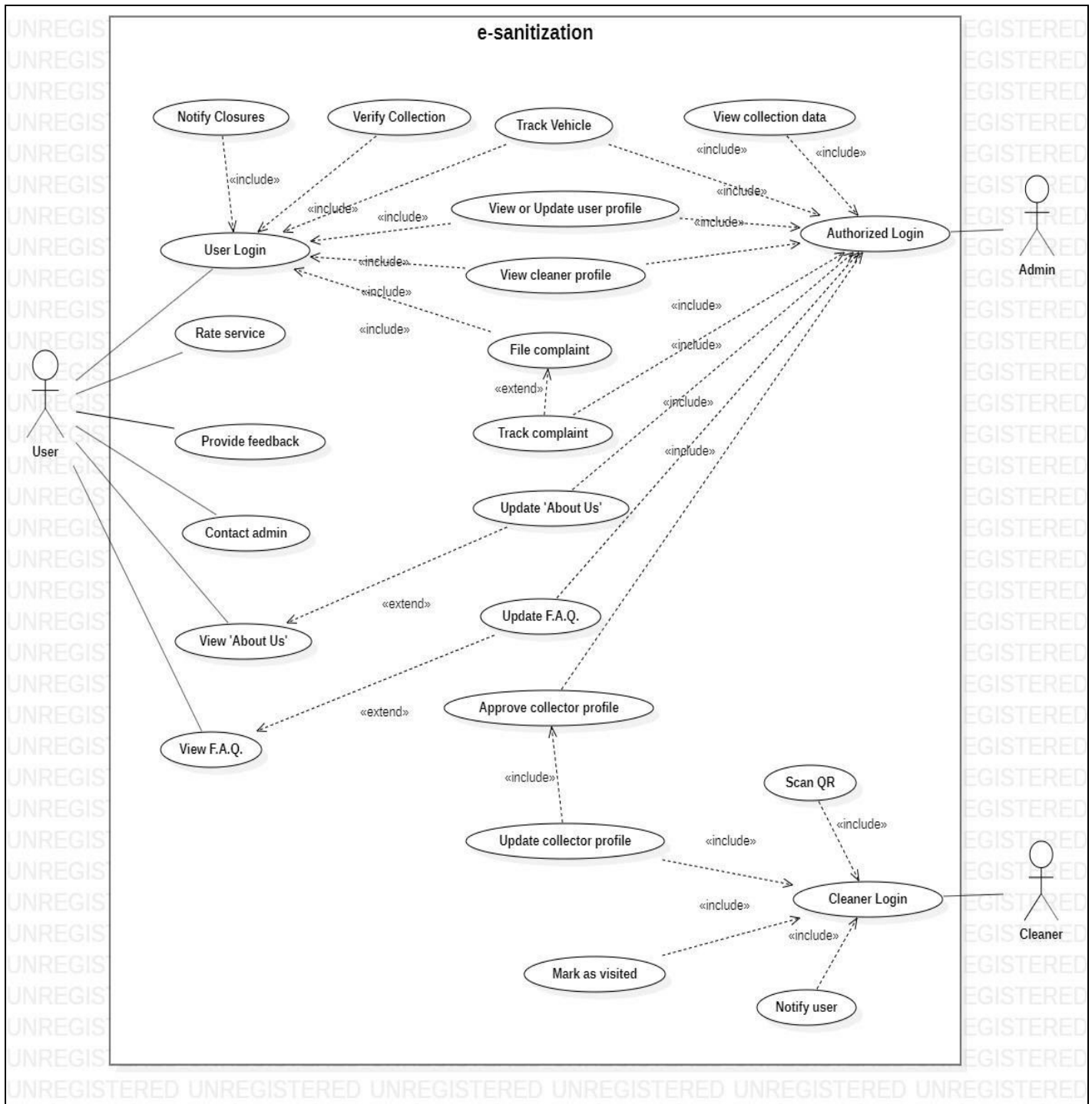## 2.4 General Constraints:

b. Working of "e-sanitization" requires Internet connection.
c. "e-sanitization" is a single-user Application. Every user must have this application on their android device.

2.5 Assumptions and Dependencies:

a.   Working of "e-sanitization" is dependent on the availability of Internet connection.
b.   Admin must be active to insert all the required information on the app.

APPENDIX A: USE CASE DIAGRAM

3. <u>Specific Requirements:</u>

3.1 Functional Requirements:

We describe the functional requirements by giving various use cases.

<u>Use Case 1:</u>

Name: Authorized Login

Summary: Allows Admin to login.

Actors: City Administration (Municipal Corporation)

Pre-conditions:

- Internet connectivity.

- Requires Admin id to login.

Main success scenario:

- The user clicks on the admin login and then gets redirected to a page.

- User enters id and password

- Admin submits and then redirects to the app again.

Extensions:

- Id or password incorrect. Shows error dialog box.

Post-conditions:

- Admin can access all the features.

<u>Use Case 2:</u>

Name: View Collection Data

Summary: Allows Admin to View Collection Data of garbage

Actors: City Administration (Municipal Corporation)

Pre-conditions:

●   Internet connectivity.

●   Requires Admin id to login.

Main success scenario:

●   The user clicks on the admin login and then gets redirected to a page.

●   User enters id and password

●   Admin submits and then redirects to the app again.

Extensions:

●   Could see collection data of previous days , week and month.

Post-conditions:

●   Could see collection data of previous days , week and month and current day.

Use Case 3:

Name: Track Vehicle

Summary: Collection vehicles can be tracked.

Actors: Admin, User

Pre-conditions:

●   Internet connectivity.
●   Cleaners need to update location through their app.
●   GPS enabled device

Main success scenario:

●   Users and admin can see the location of the vehicle along with vehicle details.

Post-condition:

NIL

Use Case 4:

Name: Approve cleaners Profile

Summary: Admin can approve cleaners Profile.

Actors: Admin

Pre-conditions:

● Internet connectivity.

Main success scenario:

● Admin can see and approve cleaners Profile.

Post-condition:

NIL

Use Case 5:

Name: Updates about page

Summary: Admin can make changes to the 'About us' page.

Actors: Admin

Pre-conditions:

• Internet connectivity.

• There must be a change in existing value or a new value should be present.

Main success scenario:

• Admin clicks on the update page in the 'About Us' section.

• Admin replaces/add the old/new values in the desired fields respectively.

• Admin then saves the values.

Extensions:

NIL

Post-condition:

About Us' Section gets updated by the admin.

Use Case 6:

Name: Update user's Profile

Summary: Admin can make changes to the 'About us' page.

Actors: Admin

Pre-conditions:

•   Internet connectivity.

•   There must be a change in existing value or a new value should be present.

Main success scenario:

•   Admin clicks on the update page in the 'About Us' section.

•   Admin replaces/add the old/new values in the desired fields respectively.

•   Admin then saves the values.

Extensions:

NIL

Post-condition:

'About Us' Section gets updated by the admin.

Use Case 7:

Name: Update FAQ

Summary: Admin can update the Frequently Asked Questions (FAQ) and answer them.

Actors: Admin

Pre-conditions:

● Internet connectivity.

Main success scenario:

•   Admin click on FAQ tab.

•   Admin can answer the questions by the users.

Extensions:

To get a result, there must be either the same or the related question for the user query.

Post-condition:

Admin can make assurance that users are up to date with queries by resolving their problems.

Use Case 8:

Name: View cleaners profile

Summary: Admin and users can view cleaners profile

Actors: Admin, Users

Pre-conditions:

Internet connectivity.

Cleaner should have updated his/her profile.

Main success scenario:

● Both users and admin can see the details provided by the cleaner from the tracking page.

Post-condition:

Admin and users can see complete data of the cleaners profile.

Use Case 9:

Name: Track Complaint

Summary: Admin and user is able to track complaints about the collection process.

Actors: Admin, User

Pre - Conditions:

Internet Connectivity

User should be logged in

A complaint should have been filed before tracking.

GPS connectivity.

Main Success Scenario:

- Admin/user clicks on the view Complaint button.

- Admin/users can see details about what went wrong.

- Admin/users can see pictures for extra information.

- Admin/user returns back to the home screen.

Post condition:

Status of complaint is shown.

Use Case 10:

Name: User login

Summary: Allows users to login.

Actors: City residents

Pre-conditions:

- Internet connectivity.

- Requires user id to login.

Main success scenario:

- The user clicks on the user login tab and then gets redirected to a page.

- User enters user id and password

- User submits and then redirected to the app again.

Extensions:

- Id or password incorrect. Shows error dialog box.

Post-conditions:

- If first time login, then users are required to complete their profile, which includes filling house details and personal details. All fields are compulsory to be filled.

- Users can now access all features of the app provided for users.

Use Case 11:

Name: Notify Closure

Summary: Users can notify the cleaner or admin about house closures in the coming days.

Actors: Users

Pre-conditions:

Internet connectivity.

Only for allowed user ids

Main success scenario:

- Users click on 'Report Closure'.

- Users can fill up details about the duration of closure.

- Users get a message stating the notification is sent.

Extensions:

Users can help the cleaners to do work faster and effectively with advance closure notifications.

Post-condition:

Users won't receive notification about the collection process on the mentioned day.

Use Case 12:

Name: Verify Collection

Summary: Users can verify whether the cleaner has collected garbage for that day.

Actors: Users

Pre-conditions:

- Internet connectivity.
- Cleaner needs to send verification notification.

Main success scenario:

- Users click on 'Verify'.

- The process gets verified by both ends.

Extensions:

NIL

Post-condition:

The house will be marked visited by admin.

Use Case 13:

Name: View / Update Profile

Summary: Users are able to view or update the filled profile.

Actors: Users

Pre - Conditions:

Students click on the View / Update profile tab.

Internet Connectivity

User should be logged in

Main Success Scenario:

- User clicks on the View / Update profile tab.

- Users are able to view the uploaded details.

- If the user wants to update the profile, he / she will click on the Update profile button or if there is no update to be made then the student can return back to the main home screen.

- User fills in the updated profile details.

- User saves the updated profile and views the same for clarification.

- User returns back to the home screen

Post condition:

User has successfully viewed the profile or updated the same based on his choice.

Use Case 14:

Name: File Complaint

Summary: Users are able to file complaints about the collection process.

Actors: Users

Pre - Conditions:

Internet Connectivity

User should be logged in

Main Success Scenario:

- User clicks on the File Complaint button.

- Users are able to provide details about what went wrong.

- Users can provide pictures for extra information.

- User returns back to the home screen.

Post condition:

User has successfully filed the complaint and can track it.

Use Case 15:

Name: View About page.

Summary: Allows users to view the page which tells about the idea behind the app and the process adopted by it.

Actors: Users

Pre-conditions:

- Internet Connectivity.

- Admin must upload some data on the About page.

Main success scenario:

- User clicks on About page tab.

- Users can view all data shown there.

Extension:

NIL

Post-condition:

NIL

Use Case 16:

Name: Provide feedback

Summary: Allows users to give their opinion and suggestions.

Actors: User

Pre-conditions:

- Internet connectivity.

- Only for allowed user ids.

Main success scenario:

- User clicks on the submit button.

- Feedback is submitted with a "Thank You" message.

Extension:

NIL

Post-condition:

NIL

Use Case 17:

Name: Rate Service

Summary: Allows users to rate the service provided by app.

Actors: User

Pre-conditions:

- Internet connectivity.

- Only for allowed user ids.

Main success scenario:

- User clicks on the rate button.

- Rating is submitted with a "Thank You" message.

Extension:

Can ask for feedback also.

Post-condition:

NIL

Use Case 18:

Name: View FAQ

Summary: Users can view the Frequently Asked Questions (FAQ)

Actors: Users

Pre-conditions:

Internet connectivity.

Main success scenario:

- Users click on the FAQ tab.

- Users browses to the desired question from list of FAQ'

- Users get the answer to the question they wish to look for an answer for.

Extensions:

To get a result, there must be either the same or the related question for the user query.

Post-condition:

Users will be up to date with queries.

Use Case 19:

Name: Contact Admin

Summary: Students can view the contact details of the Placement Cell of NIIT University.

Actors: Users

Pre-conditions:

Internet connectivity.

Main success scenario:

- Users click on 'View Contacts'.

- Users browses through the Contact details of the desired person until found.

- Users get the contact details of the desired person.

Extensions:

Users are able to get the contact information of a person only if it has been provided by the admin.

Post-condition:

Users get the desired contact details.

Use case 20:

 Name: Cleaner login

Summary: Cleaner can logged into

Actors: Users

Preconditions: Users must be logged into their own account.

 Main success scenarios:

- User can click on the complaint button

- User can fill up the complaint file very carefully and after that it must click on the submit button

 Extension:

Error in submitting.Error show in dialogue box if users are not fill all the details which are needed for file complaint.

Post Condition:

Users are able to see the notification in a dialogue box that their complaint is received by authority.

Use case 21:

Name: Notify user

Summary: After collecting solid waste from user home ,a notification send to user by cleaner

Actors: Cleaner

Preconditions: User must logged into their own account

Main success scenarios:

Users can click on the notify user button.

Extension:

NIL

Post Condition:

NIL

Use case 22:

Name: Update cleaner's profile

Summary: Here all the documents are uploaded by cleaner for approval by authority.

Actors: Cleaner

Preconditions: User must logged into their own account
and all the documents must be in given format

Main success scenarios:

- User can click on the Update profile button
- Select the option which document you have and want to upload
- Last click on the button submit to upload your document

Extension:

Show error if you do not upload all the documents.

Post Condition:

When your process is successfully done, a notification will pop up at the user interface.

Use case 23:

Name: Scan QR

Summary: this unique QR code is given to all the user for optional purpose, cleaner can used this if regular process is not working

Actors: Cleaner

Preconditions: Users must log into their own account and the scanner for QR in app must work well.

Main success scenarios:

- Cleaner can click on the scan QR code option
- scan the QR code which the user shows to the cleaner.

Extension:

NIL

Post Condition:
Users can get a notification after this process of scanning the QR code.

Use case 24:

Name: Mark as visited

Summary: cleaner can mark the visited user house

Actors: Cleaner

Preconditions: cleaner must logged into their own account
and cleaner must visit the house.

Main success scenarios:

- Cleaners can click on the visited button after selecting the given house.

Extension:

NIL

Post Condition:

This house is visited by shows on their app.

3.2 Non-Functional Requirements:

Restriction in login: user login with his UID (adhaar-Card) No. for to verify them as citizen of the respective city.

Admin should be able to push notification to be shown on a users interface, about any specific issue reported by the user.

3.3 Hardware Requirements:

Should run on an android device. Requires minimum 2gb ram for smooth functionality of the app.

3.4 Software Requirements:

Minimum SDK version: Android 4.4. (Kitkat).

3.5 Design Constraints:

Security: The files in which the information regarding securities and portfolios should be secured against malicious deformations.

Fault Tolerance: Data should not become corrupted in case of system crash or power failure.