Public Works Complaint Management System

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***Abstract*: In India, many accidents happen due to improper maintenance of road works. There are many services which are under public works department and so as a citizen of this country we have right to complaint about it. There are websites and mobile applications of government to register complaints but complaint forms are too lengthy also mobile applications are not maintained properly. In Bangalore, their government implemented garbage complaint system. Inspired by that, this system mainly proposes to resolve issues faced by citizens due to lack of maintenance of footpath, paver blocks and manholes by government. In this, citizen can report a complaint by clicking picture. Then this system detects location of complainant at time of clicking photo. Then at the back-end by image processing it will detect problem of particular category and according to location, it will redirect to particular department. They will take proper action and update about progress of work. After resolving complaint, acknowledgement is given to citizen. For this, content management system and image processing is needed. Also, it will need mobile application for user interface. It is very easy to use because complainant only needs to take photo and upload it and rest of the work is done at back-end.**

***Keywords*: complaint management system, citizen, contractor, pothole, manhole, footpath, paver blocks.**

1. Introduction

Every day there is many accidents which happened due to improper maintenance of road works. The reason for our group undertaking this project is that BMC (Brihan mumbai Municipal Corporation) announced 27258cr budget this year for maintenance, repairing and development of various works in city. But due to their negligence the work done are shoddy and short-lived. Due to this citizen have to face a tough time and tax payer's money should be properly utilized. So there must be some medium to lodge a complaint in simplified way, so using the application interface we can lodge a complaint by uploading the photo.

A. Aim & objective

1) Aim

Create an application to register a complaint with less effort and time.

2) Objective

The objective of the project is to reduce amount of time for registering/posting a complaint. With the use of this application complainant can easily post a complaint by taking photo of it and uploading in application. At the back-end it will apply image processing techniques and determine which contractor did particular work by traversing database and then it will send notification to that contractor to resolve the complaint. After resolving a complaint, complainant will get status of completion with photo of resolved complaint.

2. Problem statement & scope

A. Problem statement

Our BMC is assigned 27258cr for development which includes maintenance, repair and construction of various operations undertaken such as footpath, manhole and drainage. But works done are short-lived and qualities of materials are poor which lead to drastic condition for dwellers of city. This condition is major problem in city and it can also be fatal, if so much expenditure is spent but the work is bad there must be some mechanism to monitor or procedure to complain about the work so that only work with higher quality are done so that tax-payer's money is correctly utilized.

B. Scope

The scope of our Public Works Complaint Management System is limited to footpaths, paver blocks, manholes, drainage system, and railings.

3. Proposed system

We are using the Incremental software process model for developing the project. So we will divide our system in different modules. First module is to design a user interface, to design a database, to code for connecting back-end and front-end. For designing a GUI, we will create a layout, code it in Android Studio and test it on any smartphone. Second module is designing database by creating table and coding for it and testing it. Third module is coding for front-end for better user interface and back-end to integrate interface of modules for proper functioning of the application.
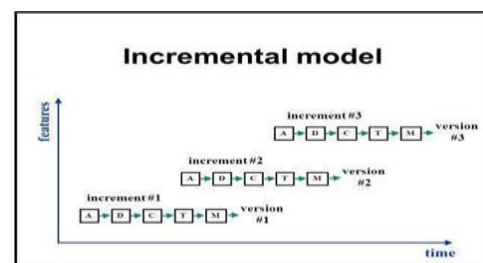

Fig. 1. Incremental model

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219

A. Methodology

1) Requirement analysis

It includes software requirements and knowledge about it. In this we need Android Studio software to code the application and xampp server to code the back-end connection.

B. Design

It includes layout designing part of application. This has layout of front end that means it contains how user interface looks, how it navigates and layout for database connectivity also.
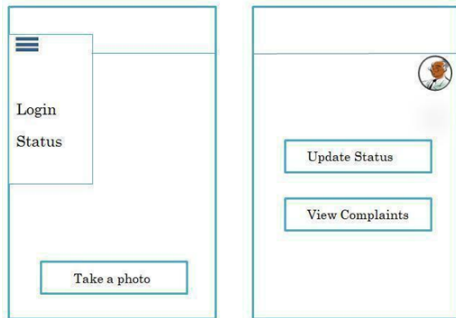
Fig. 2. Design

C. Coding/Implementation

The project is implemented using Android SDK, Android Studio, xampp server in which database used will be Sqlite.

D. Testing

Along with the completion of task we will require to test for any defects, errors, modules are working properly, it is meeting the requirement specified. So we will require some testing methodologies to carry out this process. Whenever we are coding a piece of code we will using unit testing so as to check it is fulfilling the functionality and working properly without any error with considering other exception handling. We will require to use integration testing to check whether two or modules when integrated are working properly without any glitches. Graphical User Interface testing to verify that the GUI is working properly.

E. Maintenance

Corrective, perfective and adaptive maintenance will be carried out.

F. Feasibility study

A feasibility study looks at the viability of an idea with an emphasis on identifying potential problems. It attempts to answer two main questions: Will the idea work, and should you proceed with it? There are following types of feasibilities:

- *Technical feasibility:* Both the Citizen's and Constructor application will be made in java using Android Studio which would be exclusively for the Android Devices. We use image processing for severity of problem, Cloud Computing, Google API

for detection of location.
- *Economic feasibility:* Project will be done using open source technologies and hence the development cost with respect to software is negligible. For Applications we may need to buy domain name and hosting charges in order to run the Android application and cannot be specified currently. Launching the project on android play store would just require developer's one-time registration of $25.
- *Optional Feasibility:* Application will be on Android smartphone as most of people use smartphone in India.

4. System design

A. Data flow diagram

A Data Flow Diagram (DFD) for our system is done in two levels. Level 0 is a context diagram in which complainant and contractor directly communicate with complaint management system. In level 1 complaint management system is subdivided into three modules as complain, image analysis and report generation module. And complainant, Contractor.
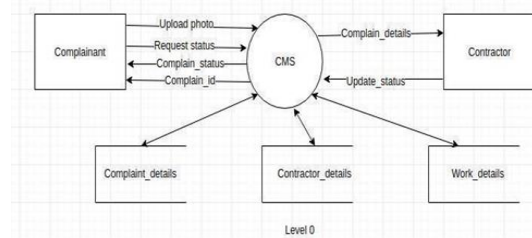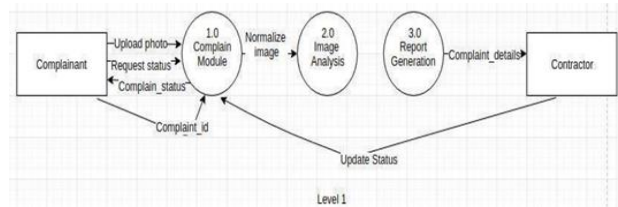

Fig. 3. Data flow diagram level 0

Fig. 4. Data Flow Diagram Level 1

B. Activity diagram

Activity diagrams are graphical representations of work of step-wise activities which are mentioned in the use case diagram.
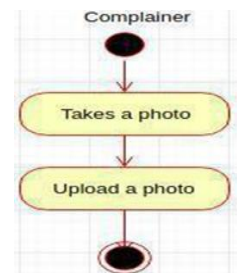
Upload a photo

Fig. 5. Photo upload

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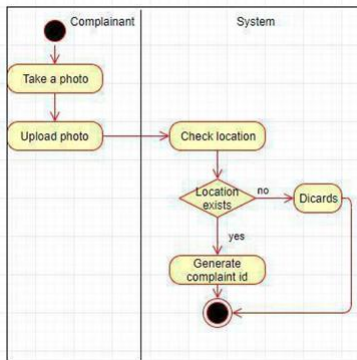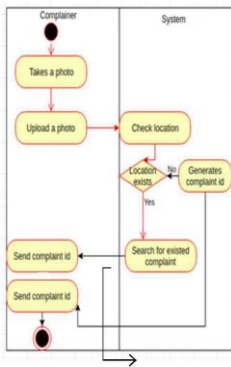
220

Generate complaint id

Fig. 6. Generate complaint id

Send complaint id   *Seriousness of work*

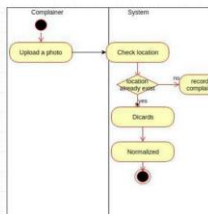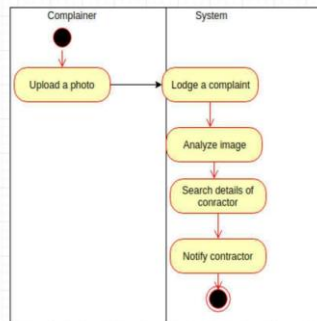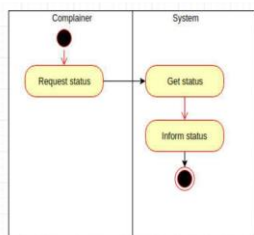Fig. 7. Notification to concern stakeholder

Fig. 8. Complaint status and normalization

C. *Features:*

- Lodge a complaint
- Complaint status
- Notify to Contractor

5. Conclusion

Our project Public Works Complaint Management System is

thus described as above which is unique idea can be implemented for citizen in our country. This application can be used to reduce efforts of complainant for complaining about public works which are done by government. And system can have processed these complaints directly and resolved by contacting concerned person authority. Thus in this synopsis we have mentioned every aspect and stages for developing a project.

A. *Future scope*

As our Public Works Complaint Management System project has some specific scope for taking complaints such as footpath work, railing work, manhole work and drainage system which are related to sideways of road. So may be in future this scope of work can be extended to all public work which are done by Mumbai government.

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