Aptech
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Software Requirements Specification

Version 1.0

Domain: Traffic Management
Category: Mobile Application

Contents

1.0 Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of RouteAlert. RouteAlert is a Mobile Application that will be used by individuals and officials of traffic control department. This document will explain the purpose and features of the system, the interfaces of the system, what the system will do, and the constraints under which it must operate. This document is intended for both stakeholders and developers of the system and will be proposed to the client for approval.

1.2 Need for the System

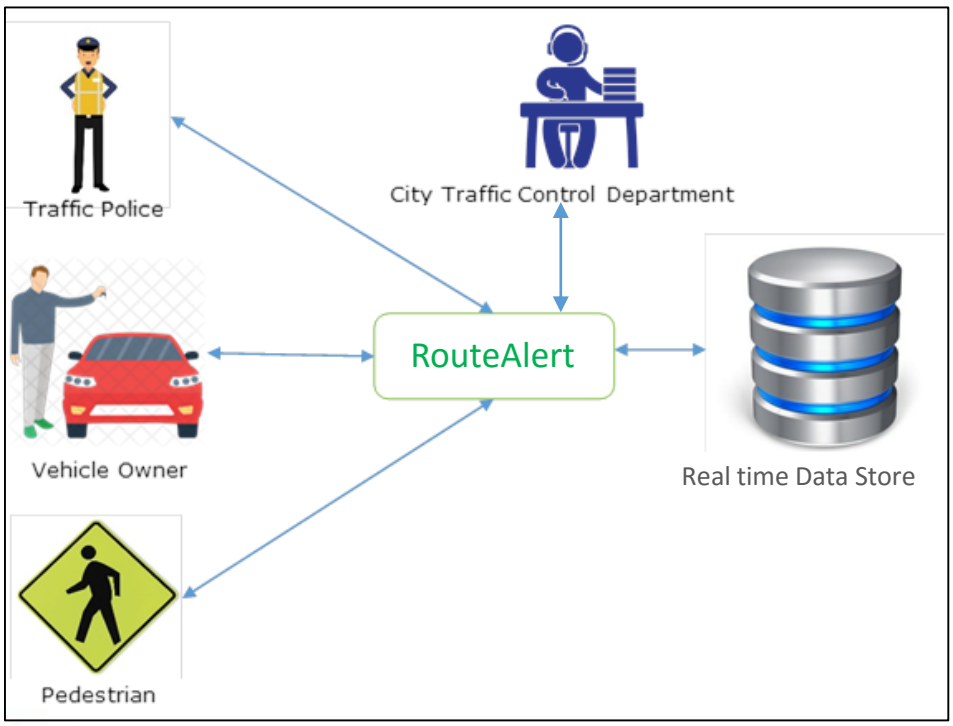
Urban cities across the world are frequently facing traffic issues. Main junctions inside cities encounter massive jams or bottlenecks in traffic, which result in frustration for vehicle owners, pedestrians, and city traffic department including traffic police and traffic controllers. This impacts day-to-day lives of all these individuals as well as emergency facilities. For instance, ambulances and fire brigades cannot afford to be stuck in such jams as every minute is precious to them to save lives.

1.3 Proposed Solution

To resolve this issue of traffic, the city traffic department has reached out to your organization. It has given your organization a contract to develop a Mobile Application that will help people across the city and city traffic department to reduce traffic bottlenecks.

The proposed application RouteAlert should guide its entire user base about traffic conditions inside the city. This system will allow various types of users to register and thereafter, receive notifications, submit complaints, view status of their submitted complaints, provide feedback about RouteAlert, and so on.

At the other end, city traffic department and traffic police will receive complaints from users and share notifications regarding traffic issues.

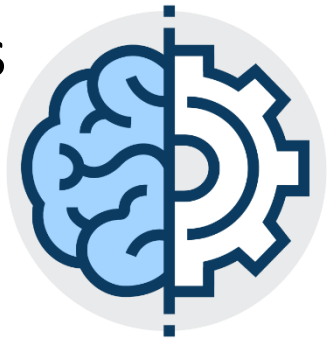


Broad View of System

1.4 Scope of Project

This software system will be a Mobile Application to be used by individuals as well as city traffic control department. This system will be designed to minimize traffic related issues and provide users a platform to request for emergency help as well as submit their grievances regarding traffic.

1.5 Functional Requirements



The app will be designed as a set of forms/pages, Navigation, and Fragments with menus representing choice of activities to be performed.

Following are the functional requirements of the system:

Registration: It will allow various individuals across city to get registered with RouteAlert by city traffic department based on valid identity proof such as Passport, Voter ID/SSNID, or Driving Licenses. At the time of registration, users' needs to provide First Name, Last Name, Email ID, Contact Number, Valid Identity Proof, and Address. Also, they need to choose password to get logged in into the RouteAlert system.

Appropriate error-checking must be done on the fields of the form to ensure correct data. For example, email id can be checked to see if it is of the appropriate format. (Hint: Use client-side/Form validation).

Note 1: Physical validation of the proofs is considered to be beyond the scope of the project.

Note 2: Staff of City Traffic Control Department (CTCD) need not register as they are considered as Administrators. They will have special logins and passwords.

Registration details will be sent to the administrator for validation and approval based on the ID proof and after successfully validation, they will be added into the table as a record. An email will be sent to the user informing him/her about success of validation. A unique registration id would be auto-generated for each user upon successful registration.

Login: It will allow successful registered users to get logged in into RouteAlert and access various features of system through menus or other options such as View Notifications, Submit Complaints, Check Status of Complaints, Emergency Help, Feedback, and Logout.

View Notification: A registered user will be able to view various notifications provided by city traffic department.

Notifications can be generated datewise by the admin (hint: you can accept them in the form of a text area or similar element) and sent to all registered users. Notification text will include location, date, time, and description. Every unique notification will have an auto-generated id.

For example, a sample notification can look like this:

Notification ID: 9032019001
Street Number 45, 11th Main Road, Port Avenue, Glasgow
9th March 2019, 10 AM
There is a road block on Street 45 due to an overturned oil truck.

Submit Complaints: A registered user is allowed to submit complaints. He/she needs to select complaint category such as Natural Calamities, Accident, Traffic Congestion, and so on. Each complaint will have an auto-generated complaint id which will be given to the user. Using this id, they can follow up on the complaint status.

Check Complaints Status: Users who submitted complaints earlier will be able to check the status of their complaints, whether in-process or resolved. They can do this based on the complaint id.

Emergency Help: It is a feature specially designed to help registered users in terms of emergency such as Accident or medical emergency. ID of the user who submits the help request and the emergency help id along with location and user details such as address and contact number will be stored in the database for each request.

Feedback: A registered user can submit feedback about RouteAlert in terms of improvements required to the system. User id, auto-generated feedback id, date and description will be added to each feedback entry.

Logout: This feature will allow logged-in users to log out of the system.

On the other hand, traffic control department login has functionality as follows:

City Traffic Control Department (CTCD):

Validate Users: It will allow CTCD to see date-wise user validation requests in terms of Sr. No and other User details along with Validate and Reject options. CTCD will validate or invalidate the users by selecting either of the two options based on valid identity proof check. Upon successful validation, a 16-digit User ID will be auto-generated.

Note: This is a simplified view of validation. As mentioned earlier, actual validation is beyond the scope of the project.

Create and Send Traffic Notifications: This feature will allow CTCD to generate and send notifications regarding emergency situations, heavy traffic areas, and so on to all registered users.

View and Resolve Complaints: Here, CTCD will be able to view date-wise complaints submitted by various users which includes Complaint ID, Title, Description, and Change Status option. During processing as well as after resolving, they can change the status of complaints, which will get updated in user's account. Updated status of issue or complaints will be seen as 'Resolved' or 'In-process'.

View and Send Emergency Help: In this section, CTCD will able to view details of person or location where emergency help is required. CTCD can also view other information such as user's contact number and address.

Check Feedback: CTCD will check feedback submitted by various users for system improvements.

Generate Reports: CTCD will generate reports such as Daily Complaints Summary, Daily Feedback Summary, and Location-wise Notification Summary.

1.6 Non-Functional Requirements

There are several non-functional requirements that should be fulfilled by the system.

The system should be:

- **Safe to use**: The system should not result in any malicious downloads or unnecessary file downloads.
- **Accessible**: The system should have clear and legible fonts, user-interface elements, and navigation elements.
- **User-friendly**: The system should be easy to navigate with clear menus and other elements and easy to understand.
- **Operability**: The system should operate in a reliably efficient manner.
- **Performance**: The system should demonstrate high value of performance through speed and throughput. In simple terms, the system should be fast to load and page redirection should be smooth.
- **Security**: The system should implement adequate security measures such as authentication. For example, only registered users can access certain features.
- **Capacity**: The system should support large number of users.
- **Availability**: The system should be available 24/7 with minimum down time.
- **Compatibility**: The system should be compatible with latest browsers.

1.7 Interface Requirements

Hardware

- Intel Core i3 Processor or higher
- 8 GB RAM or above
- Color SVGA
- 120 GB Hard Disk space
- Mouse
- Keyboard
- Android Supporting Smart Phone

Software

Technologies to be used:

1. Technology: Android (Java)
2. IDE: Android Studio
3. Database: SQLite

Other Requirements:

1. Operating System: Windows, Linux
2. Browsers: Edge, Chrome, Mozilla Firefox

Database Design

Data Dictionary: Users, Registration, Complaints, Emergency Help, Feedback, Status, Notification, User Validation, Status Update, Resolved Complaints, Send Emergency Help, and Check Feedback.

Based on the given specifications, you will define suitable entities, attributes for these entities, and identify relationships between the entities.

For example, some entities along with their attributes can be identified as follows:

Registration:
1. User ID
2. First Name
3. Last Name
4. Email ID
5. Contact
6. ID Proof
7. Password

Notification:
1. Notification ID
2. Date
3. Time
4. Location
5. Description

Complaints:
1. User ID
2. Complaint ID
3. Title
4. Complaint Category
5. Description
6. Date
7. Status

Feedback:
1. User ID
2. Feedback ID
3. Description
4. Date

Emergency Help:
1. User ID
2. Help ID
3. Location
4. User Details (Name, Address, and Contact No)

Similarly, you will define relationships between entities and methods representing activities on the entities.

1.8 Project Deliverables

You will need to design and build the project and submit it along with a complete project report that includes:

- Problem Definition
- Design specifications
- Diagrams such as flowcharts for various activities, Data Flow Diagrams, and so on
- Database Design
- Source Code
- Test Data Used in the Project
- Project Installation Instructions (if any)

The consolidated project will be submitted as a zip file with a ReadMe.doc file listing assumptions (if any) made at your end and SQL scripts files (.sql) containing database and table definitions.

Over and above the given specifications, you can apply your creativity and logic to improve the system.

Help: To understand the flow and usage of RouteAlert Mobile Application, you will have to provide complete guideline document.

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