

ROAD REPAIR TRACKING SYSTEM

(SOFTWARE ENGINEERING LAB)



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CSE

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1. Introduction

1.1 Purpose

Road Repair Tracking System(RRTS) is to be developed for automating various book keeping activities associated with the road repairing task of the Public Works Department of the Corporation of a large city.

1.2 Product Scope

.This document will describe the functional and non-functional requirements of the Road Repair Tracking System. It will detail all objects involved in the system and present each objects properties and available actions. The system is designed to facilitate the process of tracking and repairing of roads. Potential scenarios include registration of complaints, tracking and viewing status of repairs, time-line of events and Scheduling of repairs.

1.3 References

SRS Format adheres to the format specified by:
830-1998 — *IEEE Recommended Practice for Software Requirements Specifications*. 1998.
[doi:10.1109/IEEESTD.1998.88286](https://doi.org/10.1109/IEEESTD.1998.88286). ISBN 0-7381-0332-2.

2. Overall Description

2.1 Product Perspective

Road Repair Tracking System(RRTS) is a new, self-sustained product that is to be developed for automating various book keeping activities associated with the road repairing task.

2.2 Product Functions

The RRTS system should be able to:

- *Accept road repair requests from residents where they directly access the system online.*
- *Accept road repair requests from residents which enter the requests offline from the residents.*
- *Accept values for the different quantities that define the state of the road by the supervisor. The supervisor should be able to schedule repair of the road along with the repair of the other roads. Also the supervisor should be able to enter the statistics about the work progress.*
- *Accept the available manpower and machines available currently by the City Corporation Administrator.*
- *Return the road repair statistics for the mayor.*

2.3 User Classes

The different user classes that will use this product are Residents, Clerks, Supervisors, City mayor.

2.4 Design and Implementation Constraints

No constraints

2.5 Assumptions and Dependencies

All residents, clerks, supervisors, city corporation administrators, mayors have a basic understanding of how to navigate a webpage as well as filling in basic text forms.

3. External Interface Requirements

3.1 User Class: Resident

R.3.1.1: Raise requests in system

Description: The residents will raise requests for road repair.

Input: Location of road, start point of road, end point of road, name of resident, address and contact details of resident, Unique Government issued ID Card number(For example Aadhar card number).

Output: True/False depending on whether the request was successfully entered in the system or not.

3.2 User Class:Clerk

R.3.2.1: Enter requests in system.

Description: The requests of the residents will be entered by the clerk if the residents choose to manually come to the office to register a road repair request.

Input: Location of road, start point of road, end point of road, name of resident, address and contact details of resident, Unique Government issued ID Card number(For example Aadhar card number).

Output: True/False depending on whether all information about the road is provided or not.

3.3 User Class: Supervisor

R.3.3.1: Enter information about the road in system

Description: Studies severity of road condition. The information is entered in the system about the road by the following sub-functions from R.3.3.1.1-R.3.3.1.4.

Input: Information required for R.3.3.1.1-R.3.3.1.4.

Output: Summary of the requirements of this particular road repair project if all information has been correctly entered. The system should return an error if erroneous information has been entered.

R.3.3.1.1 Enter priority of road repair.

Description: Estimate and enter the priority of the road repair on some fixed scale.

He/She estimates this value based on the severity of the road condition and the type of the locality(ex. Commercial area, busy area, relatively deserted area, etc.)

Input: Priority of road repair.

Output: Nil

R.3.3.1.2 Enter raw material for road repair.

Description: Estimate they types of raw materials required and enter the estimated quantity required for the road repair

Input: Types of raw materials and quantity of each material.

Output: Nil

R.3.3.1.3 Enter type and number of machines required for road repair

Description: Estimate types of machine required and enter the information about machines for the road repair

Input: Types of machines required and number of each machine required.

Output: Nil.

R.3.3.1.4 Enter number and type of personnel for road repair

Description: Estimate and enter information of personnel required for road repair

Input: Types of personnel and number of personnel required.

Output: Nil

R.3.3.2: Schedule repair of the road along with other roads.

Description: The supervisor will ask the system to schedule the road repair according to the data entered in R.3.3.1.

Input: Nil. System can access the information to compute priority directly.

Output: The schedule report. The position of this particular road repair project in the list of all road repair projects handled by the system should be indicated clearly.

The system should return an error if sufficient information about priority, raw materials, machines, personnel is not provided by the supervisor.

R.3.3.1 should return successfully without an error before the execution of R.3.3.2

R.3.3.3: Enter the Statistics about the work progress.

Description: The supervisor will Enter the various statistics like Repair work overtime, Repair work outstanding, repair utilization.

Input: Repair work overtime, Repair work outstanding, Repair utilization.

Output: Nil.

3.4 User Class: City Corporation Administrator

R.3.4.1: Enter information about the resources available.

Description: City Corporation Administrator (CCA) should be able to enter and edit the available manpower and machines for road repair.

Input: New values for manpower and machines in the system.

Output: True/False depending on whether the values have been successfully entered in the system or not.

R.3.4.1.1: Enter the available manpower and machines in the system

Description: Enter the currently available manpower and machines for road repair.

Input: Values for currently available manpower and machines.

Output: True/False depending on whether the values have been successfully entered in the system or not.

3.5 User Class: Mayor

R.3.5.1: Query road repair statistics about the road repair.

Description: The mayor should be able to query the following statistics at any moment.

Executed by Mayor

R.3.5.1.1: Return Percentage of Repair over time, Repair Outstanding, Repair Utilization.

Description: As above.

Input: Nil

Output:Percentage of Repair over time, Repair Outstanding, Repair Utilization.

4. Nonfunctional Requirements

4.1 Performance Requirements

The system must retrieve data and load pages within a reasonable amount of time. The load time must be within 20 seconds. The system must be capable of supporting simultaneous connections without supporting performance loss. The system must be capable of supporting a minimum of 1000 simultaneous connections.

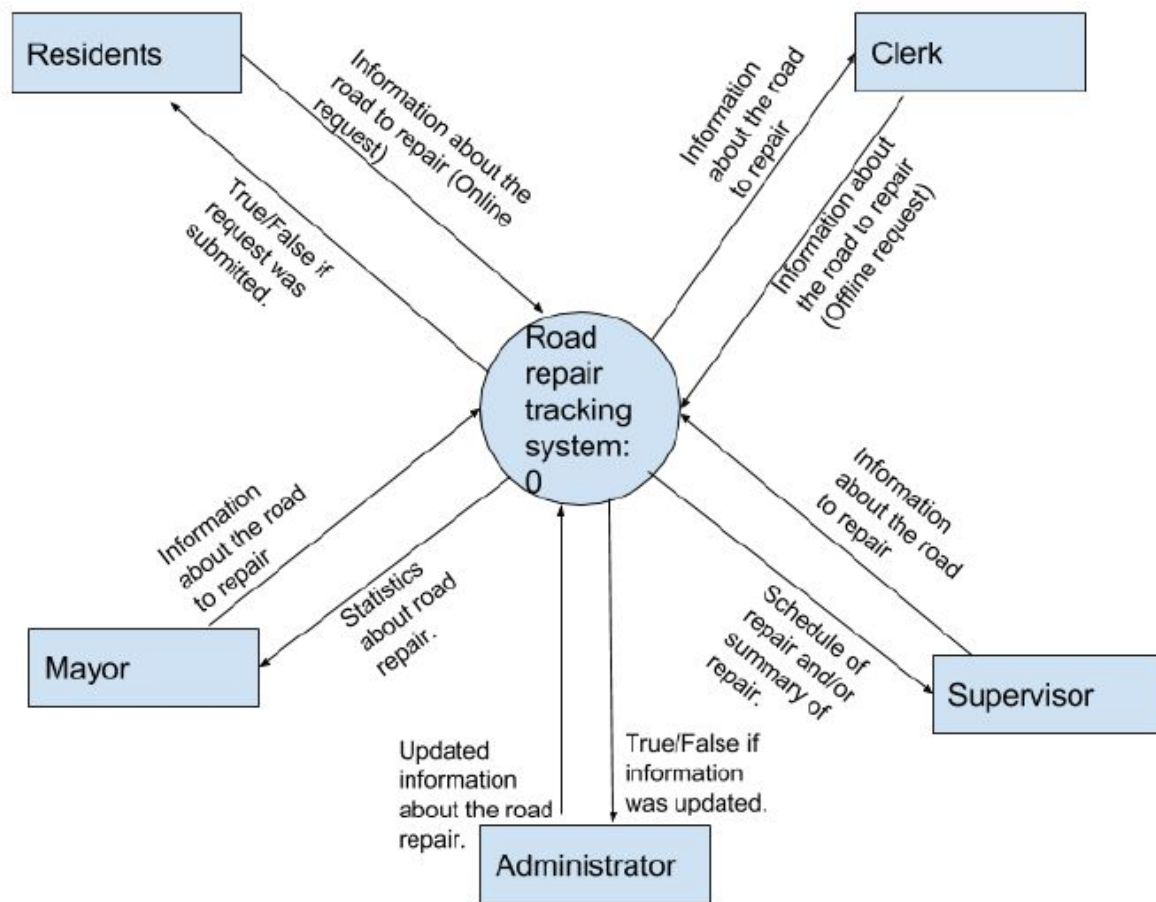
4.2 Backup requirements

The database contains not only the history of all consignments, but also existing consignments and work orders. Consequently, backing up the data on a regular basis is necessary. There should be multiple copies of the database to ensure backups.

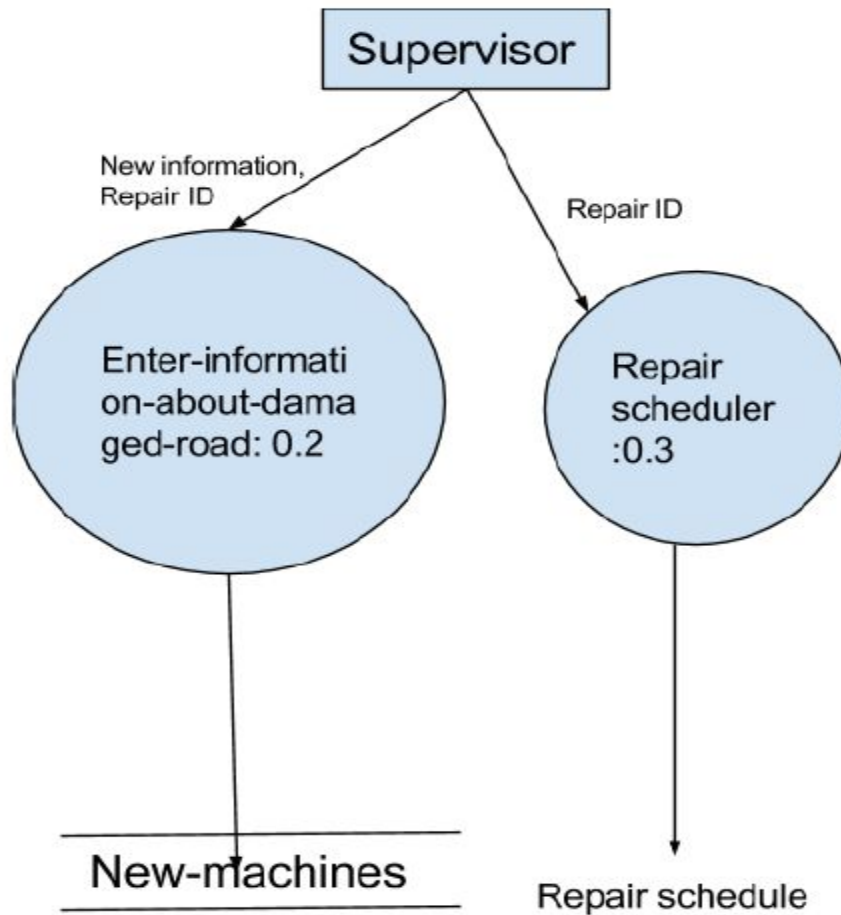
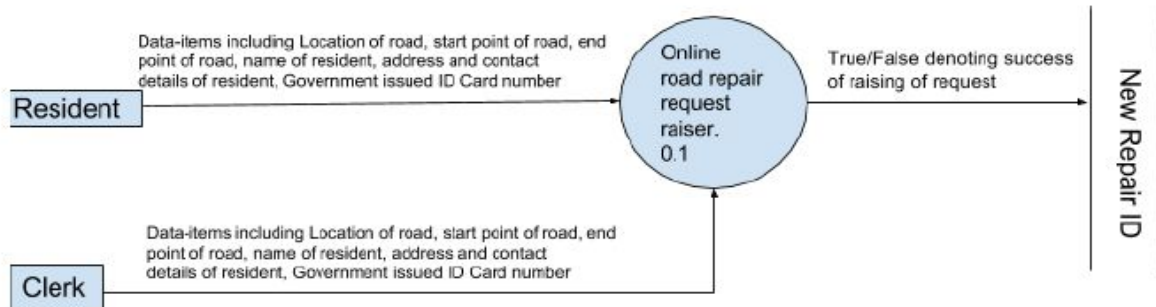
5. Diagrams

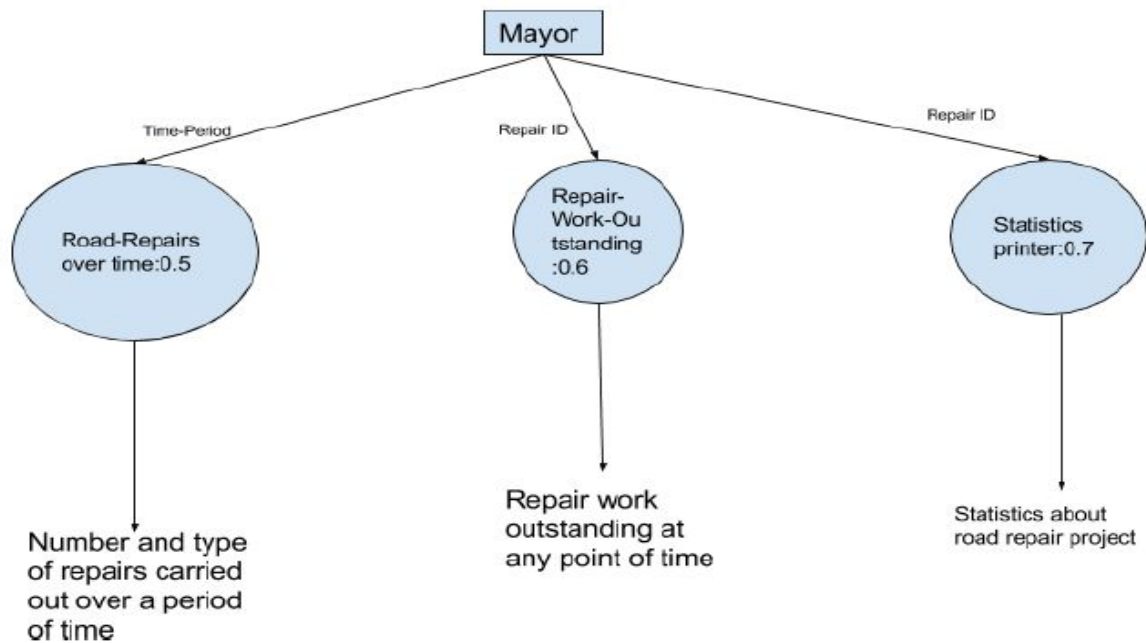
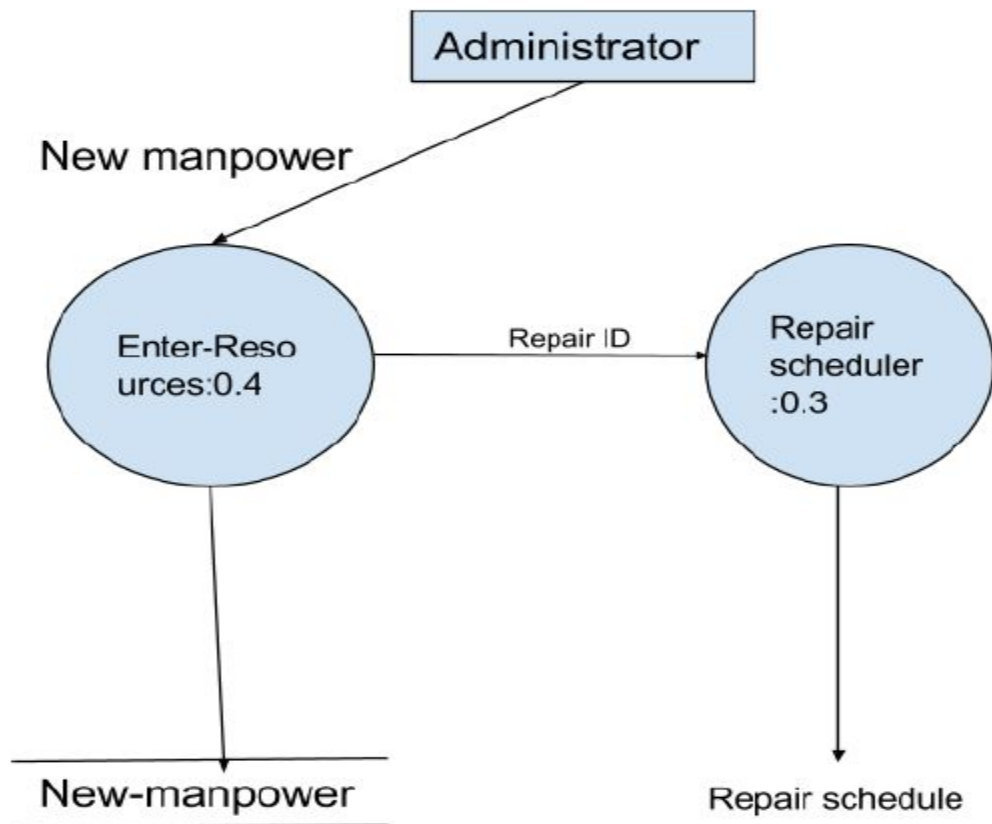
5.1 DFD

DFD - 0



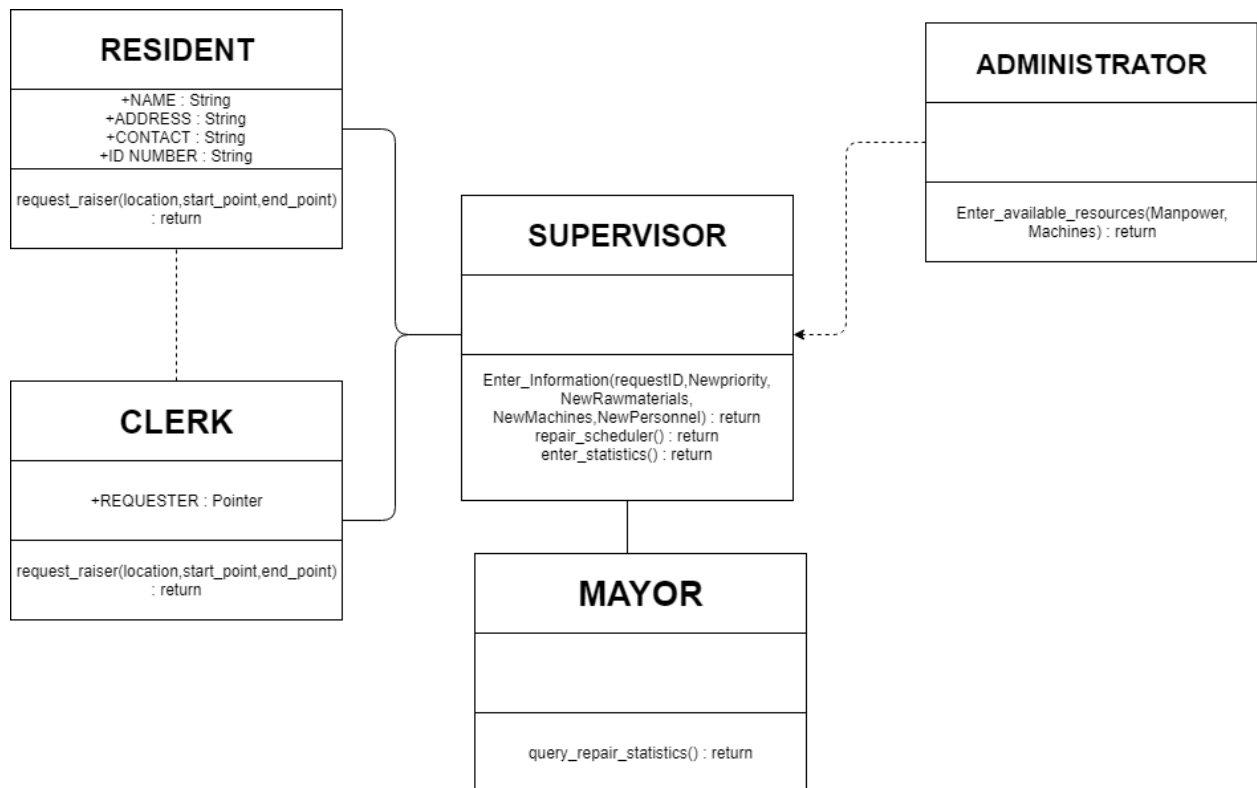
DFD - 1



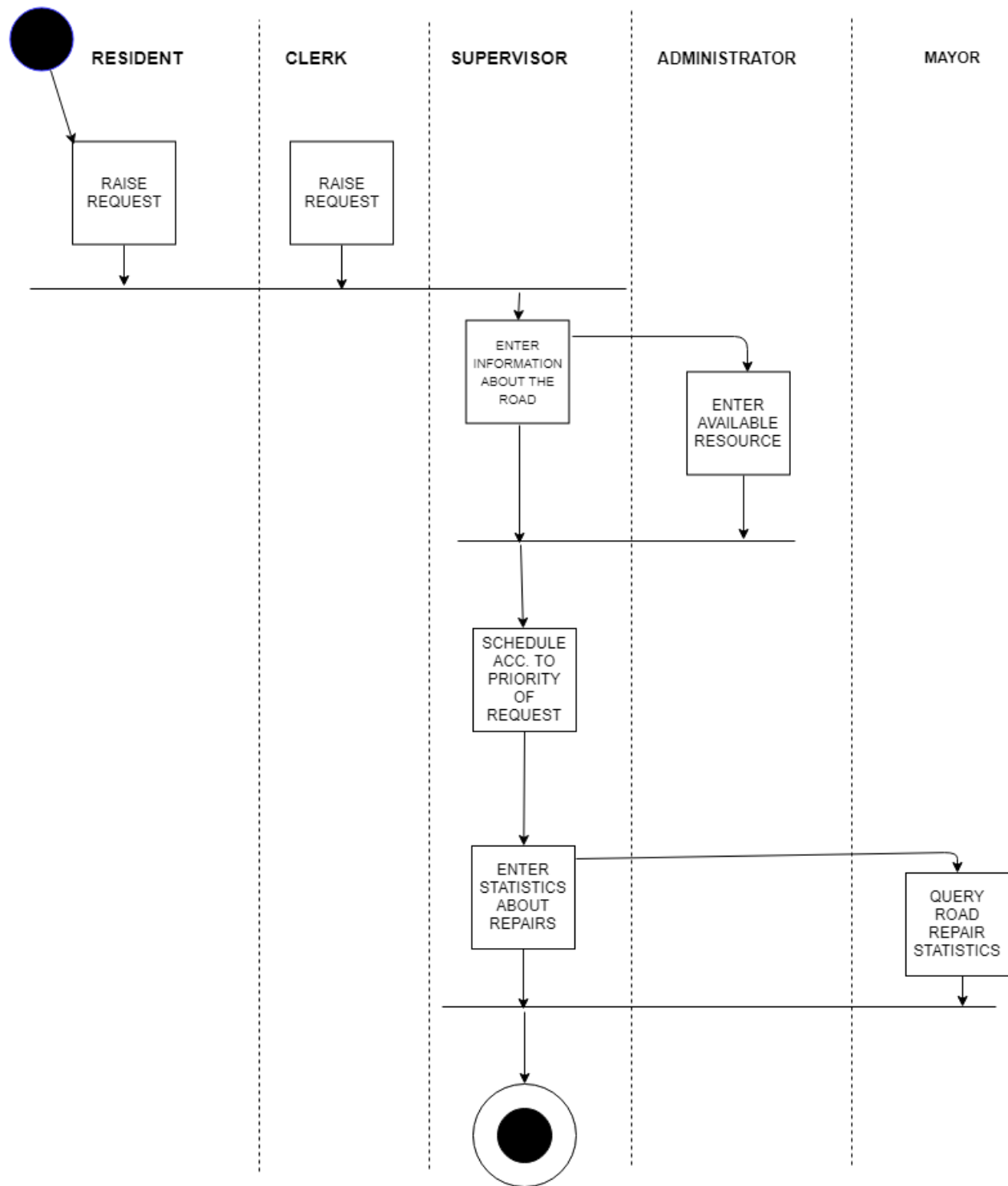


5.2 UML

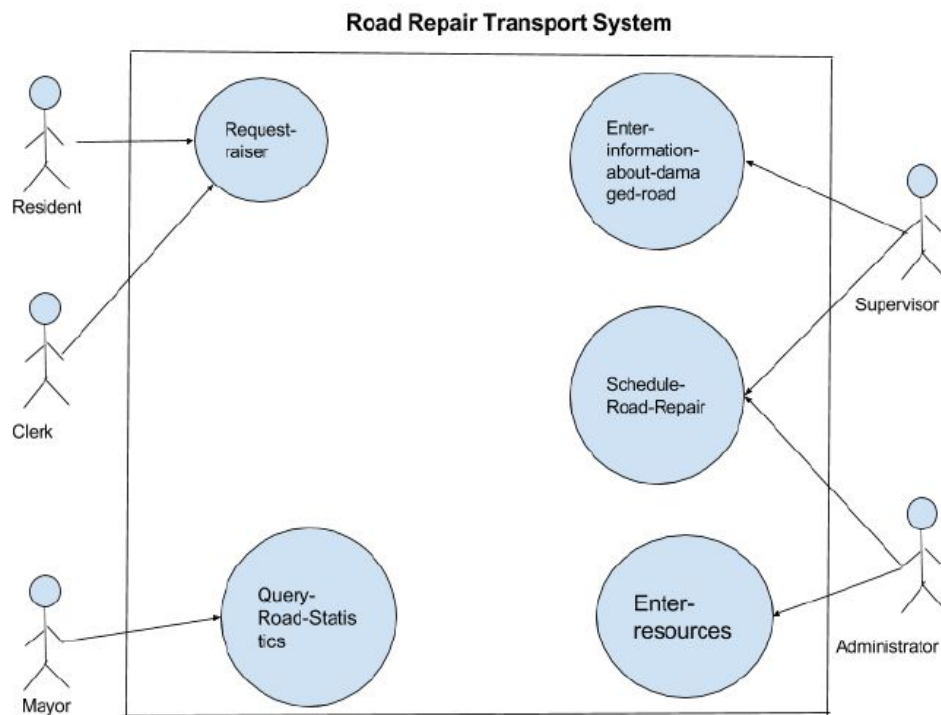
5.2.1: Class Diagrams



5.2.2: Activity chart

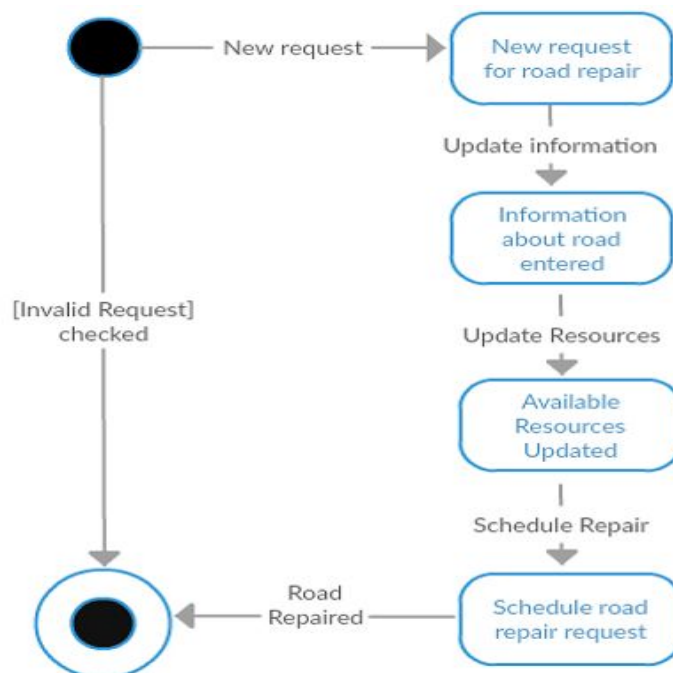


5.2.3: Use case Diagram



Use Case Diagram

5.2.4: State Chart for RRTS



6. Test Cases

6.1 : Resident output window

```
Road Repair Tracking System
=====
Road Repair Tracking System
=====
Please choose your identity:
1. Resident
2. Clerk
3. Supervisor
4. Administrator
5. Mayor
6. Exit

Enter user :- 1

Raise request for road repair by resident.
Enter Location: Charbatia
Enter start point of road: ARC Road
Enter end point of road: Kalinga Chowk
Enter your name: Abinash
Enter your address: QTR 3R-2 ARC Charbatia
Enter your contact number: 9674321804
Enter your IDNumber: b213095
Request ID: 12
Request Raised successfully by resident !!
```

6.2 : Supervisor output window

```
Road Repair Tracking System
=====
Road Repair Tracking System
=====
Please choose your identity:
1. Resident
2. Clerk
3. Supervisor
4. Administrator
5. Mayor
6. Exit

Enter user :- 3

Supervisor
=====
1. Enter information about a road repair request.
2. Schedule road repair work
3. Enter Statistics

1

Now entering information about road repair request...
Enter request ID whose values have to be updated: 12
Enter new priority(1-100): 23
Enter new raw materials: 2kg cement and 10kg sand
Enter new machines required: 1 crane
Enter new personnel required: 10 workers
Values updated successfully!!!
```

6.3 : Supervisor output window

```
Road Repair Tracking System
=====
Road Repair Tracking System
=====
Please choose your identity:
1. Resident
2. Clerk
3. Supervisor
4. Administrator
5. Mayor
6. Exit

Enter user :- 3

Supervisor
=====
1. Enter information about a road repair request.
2. Schedule road repair work
3. Enter Statistics

3
Enter repair work over time: 60% in urban area and 37% in rural area
Enter repair work outstanding: 20% in urban area and 42% in rural area
Enter repair utilization: 43% of resources and 54% of personnel
Values updated successfully by supervisor!!
```

6.4 : Administrator output window

```
Road Repair Tracking System
=====
Road Repair Tracking System
=====
Please choose your identity:
1. Resident
2. Clerk
3. Supervisor
4. Administrator
5. Mayor
6. Exit

Enter user :- 4

Administrator
=====
Enter information about the available resources
Enter available manpower with the system: 100 workers and 10 supervisors
Enter available machines with the system: 10 cranes
Available resources updated successfully !!
```

6.5 : Mayor output window

```
Road Repair Tracking System
=====
Road Repair Tracking System
=====
Please choose your identity:
1. Resident
2. Clerk
3. Supervisor
4. Administrator
5. Mayor
6. Exit

Enter user :- 5
Mayor
=====
Query Repair Statistics.
Repair work over time: 60% in urban area and 37% in rural area
Repair work outstanding: 20% in urban area and 42% in rural area
Repair utilization: 43% of resources and 54% of personnel
```