# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama", Belgaum-590018

A Mini -Project Work on

# BBMP Complaint Management System

A Dissertation work submitted in partial fulfillment of the requirement
for the award of the degree

**Bachelor of Engineering**
In
**Information Science & Engineering**

Submitted by

| | |
|---|---|
| **Raghavendra H K** | **1AY18IS086** |
| **Nawang Thinley Bhutia** | **1AY18IS147** |

Under the guidance of
**Prof. Lokanna Kadakolmath**
Assistant Professor

ACHARYA

**DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING**

**ACHARYA INSTITUTE OF TECHNOLOGY**

**(AFFILIATED TO VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI.APPROVED BY AICTE, NEW DELHI)**
Acharya Dr. Sarvepalli Radhakrishnan Road, Soldevanahalli, Bengaluru-560107

**2020-21**

**DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING**

ACHARYA INSTITUTE OF TECHNOLOGY

**(AFFILIATED TO VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI.APPROVED BY AICTE, NEW DELHI)**

Acharya Dr. Sarvepalli Radhakrishnan Road, Soldevanahalli, Bengaluru-560107

ACHARYA

# *Certificate*

This is to certify that the Mini-Project work entitled **BBMP Complaint Management System** is a bonafide work carried out by **Nawang Thinley Bhutia 1AY16IS147** and **Raghavendra H K 1AY16IS086** in partial fulfillment for the award of the degree of **Bachelor of Engineering** in **Information Science and Engineering** of the **Visvesvaraya Technological University**, Belagavi during the year 2020-21. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the Report deposited in the departmental library. The Project has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

**(Prof. Lokanna Kadakolmath)**
Guide

**(Prof. C K Marigowda)**
HOD

**Name of the Examiners**

**Signature with date**

# ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of this mini-project would be incomplete without the mention of the people who made it possible through constant guidance and encouragement.

We would take this opportunity to express our heart-felt gratitude to **Sri. B. Premnath Reddy**, Chairman, Acharya Institutes and **Dr. Prakash M R**, Principal, Acharya Institute of Technology for providing the necessary infrastructure to complete this mini-project.

We wish to express our deepest gratitude and thanks to **Prof**. **C K Marigowda**, Head of the Department, Information Science and Engineering and the project coordinator **Prof. Pakruddin B and Prof. Raushan Kashypa** for their constant support.

We wish to express sincere thanks to our guide **Prof. (add your guide name here), designation here,** Department of Information Science and Engineering for helping us throughout and guiding us from time to time.

A warm thanks to all the faculty of the Department of Information Science and Engineering, who have helped us with their views and encouraging ideas.

**Raghavendra H K (1AY18IS086)**

**Nawang Thinley Bhutia (1AY18IS147)**

# ABSTRACT

This is a system/portal where users can register/lodge their complaints directly to the BBMP authorities. The users will have the ability to LogIn to their own personalized account. They then can lodge a brand new complaint, View all their complaints as well as modify and delete the complaints if they deem the complaint to be solved or unnecessary to their current predicament. The users will also be given a personalized unique Complaint ID thus making their complaints unique.

The Authorities on the other hand will also be given their own account and a list of commands tailored to their requirements.They can set the status of a complaint to ‘Resolved’ or ‘Pending’ depending on whatever progress has been made.

All in all this portal will make the lives of each and every citizen as well as authorities as it will remove any sort of manual labour. This is a project which is completely Command-Based and written using the ever reliable PYTHON Programming Language.

# TABLE OF CONTENTS

# CHAPTER 1

# INTRODUCTION

## 1.1 Introduction to File Structures

File Structures is the Organization of Data in Secondary Storage Devices in such a way that minimizes the access time and the storage space. A File Structure is a combination of representations for data in files and of operations for accessing the data. A File Structure allows applications to read, write and modify data. It might also support finding the data that matches some search criteria or reading through the data in some particular order.

**“File organization”** refers to the logical relationship among the various records that constitute the file, particularly with respect to means of identification access to any specific record. “File structure” refers to the format of label and data blocks and of any logical record control, information. The organization of the given file maybe sequential relative, or indexed.

### Co-Sequential Processing

Co-sequential Processing is the coordinated processing of two or more sequential lists to produce a single output list. Sometimes the processing results in a merging, or union, sometimes it results in a matching, or intersection and other times the operation is a combination of matching and merging of the items in the lists.

### Aim of the File Structure

The need for file structures

- Ideally, we would like to get the information we need once access to the disk
- If it is impossible to get what we need in one access, we want structures that allow us to find the target information with as few accesses as possible.
- We want our file structures to group information so we are likely to get thing
  We need with only trip to the disk.

## 1.2 Fundamental Operations on File

**Open:** A function or system call that makes a file ready for use. It may also bind a logical filename to a physical file. Its arguments include the logical filename, the physical filename and may also include information on how the file is to be accessed.

**Close:** A function or system call that breaks the link between the logical filename and the corresponding physical filename.

**Create:** A function or system call that causes a file to be created on secondary storage and may also binds a logical filename to the file's physical filename.

**Read:** A function or a system call used to obtain input from a file or device. When viewed at the lowest level, it requires three arguments: a source file logical name corresponding to an open file; the destination address for the address and the size or amount of data to be read.

**Write**: A function or system call used to provide output capabilities. When viewed at the lowest level, it requires three arguments: a destination filename corresponding to an open file; the source address of the bytes that are to be written and the size or amount of data to be written.

**Seek:** A function or a system call that sets the read/write pointer to a specified position in a file. Languages that provide seeking functions allow programs to access specific information.

## 1.3 Services Provided To The User

The functions that the BBMP Complaint Management System provides are as follows:

**1. LOGIN/REGISTER:** This portal allows the users to create an account by entering their phone number and password. Once the account has been created, the user can login through the same credentials. He will be able to perform the below mentioned activities only if he has logged into his account. Once he is done with using the portal, he can log out.

**2. LODGE:** This operation is performed when the user has an issue in his locality and he wants to report it to the concerned authorities. Whenever he chooses the lodge complaint option, he has to enter the below mentioned details.

a) Phone number
b) Name
c) Area Pincode
d) Ward Number
e) Complaint Description

Once he clicks enter, the data will be stored in the file which can be viewed by himself as well as the admin who monitors the complaints.

**3.DISPLAY:** This operation is performed when the user clicks option 2. Whenever he does so, it displays all the complaints that he has lodged over time with the associated details.

**4. MODIFY:** This function is used to modify a particular complaint that he has lodged. To do the same, he has to enter the complaint ID of the respective complaint and then the changes that he wants to make in the complaint. Once he clicks enter, the old complaint will be written with a new one.

**5. DELETE:** This operation is used to delete a particular complaint. Once he clicks on delete, the details related to that complaint will be erased from the file that stores the details.

Then the complaint will not be accessible by both the user and the admin.

To delete a complaint, the user has to enter the complaint ID of the respective complaint and once he clicks enter, the complaint will be deleted from the records

# CHAPTER 2

# HARDWARE AND SOFTWARE REQUIREMENTS

## 2.1 Software requirements (Minimum)

- **Operating System:** Windows® Vista 32/64-Bit / Windows®7 32/64-Bit / Windows® 8 32/64-Bit, Windows® 8.1 32/64-Bit, Windows® 8.1 32/64-Bit.
- **Documentation Tool:** MS Word
- **IDE:** Visual Studio Code

## 2.2 Hardware requirements

- **Processor:** Intel Core2 Quad @ 2.4Ghz
- **RAM:** 4GB RAM
- **Memory:** 16 GB Hard disk

# CHAPTER 3

# SYSTEM OVERVIEW

## 3.1 Problem Definition

Currently the process that has to be followed is, a person has to manually go to the BBMP office in his locality and write a complaint letter to the authorities and then it will be written into a ledger. This process involves a lot of manual tasks and it is very hectic to do the same. The authorities also have to maintain a ledger for all complaints and that can be simple initially but with time the contents of the ledger will increase and the number of ledgers required will also increase and thus it also has to be maintained. Hence the possibility of it getting lost in the pile of documents increases. The amount of time taken for a complaint to be searched would also require a lot of time and effort if the number of complaints is very high. Overall the effort required is much more as compared to what it should be and the amount of human touch is a lot and that can cause a lot of problems as the chances of error is quite high relative to what a system can do.

### 3.1.1 Solution On Problem

Creating new software we should analyze what is the basic need of the software. Analysis is nothing but a planning of creation of software to get proper output from it. Analysis is detail study of protects that you want to show in your software solving problems. The basic need of the software is to save the time of the user with the help of all useful information. And also to maintain the collection of data in your system/portal systematically. so that it’s easy to understand. The proposed system provides lot of facility to the user to store information of all their complaints and it provides information in quick time in a systematic manner.

The processing time on the data is very fast. It provides required data quickly to the user and also in specified manner to the user. All the information of any changes to the complaints status is given to the user and also the reports are also generated according to the requirement of the user. Today it is becoming very difficult to maintain records/complaints manually. This is where our BBMP Complaint Management System comes in to replace all these manual tasks. It also removes a large amount of human task handling and thus decreases the chances of any sort of errors taking place.

## 3.2 The Sequential Search

Data items are stored in a collection such as a list, we say that they have a linear or sequential relationship. Each data item is stored in a position relative to the others. In Python lists, these relative positions are the index values of the individual items. Since these index values are ordered, it is possible for us to visit them in sequence. This process gives rise to our first searching technique, the **Sequential search**.

### 3.2.1 Analysis of Sequential Search

To analyze searching algorithms, we need to decide on a basic unit of computation. This is typically the common step that must be repeated in order to solve the problem. For searching, it makes sense to count the number of comparisons performed. Each comparison may or may not discover the item we are looking for.

We make another assumption here. The list of items is not ordered in any way. The items have been placed randomly into the list. In other words, the probability that the item we are looking for is in any particular position is exactly the same for each position of the list.

To check the item is in the list, the only way to know it is to compare it against every item present. If there are n items, then the sequential search requires n comparisons to discover that the item is not there. In the case where the item is in the list, the analysis is not so straightforward. There are actually three different scenarios that can occur. In the best case we will find the item in the first place we look, at the beginning of the list. We will need only one comparison. In the worst case, we will not discover the item until the very last comparison, the nth comparison.

On average, we will find the item about halfway into the list; that is, we will compare against n/2 items. However, that as *n* gets large, the coefficients, no matter what they are, become insignificant in our approximation, so the complexity of the sequential search, is O(n).

# CHAPTER 4

# DESIGN

## 4.1 DATA FLOW DESIGN

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. The purpose of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system.

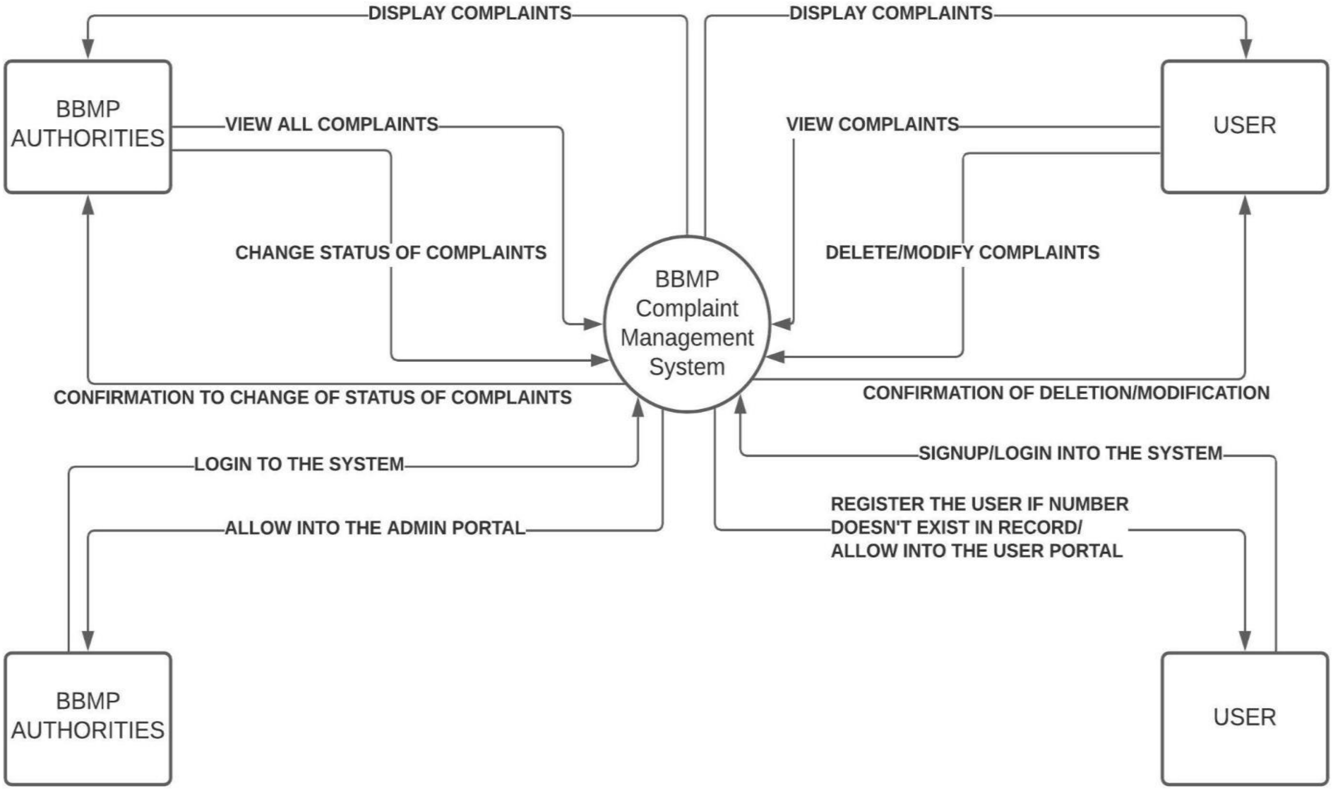

DISPLAY COMPLAINTS
DISPLAY COMPLAINTS
BBMP AUTHORITIES
VIEW ALL COMPLAINTS
VIEW COMPLAINTS
USER
CHANGE STATUS OF COMPLAINTS
DELETE/MODIFY COMPLAINTS
BBMP Complaint Management System
CONFIRMATION TO CHANGE OF STATUS OF COMPLAINTS
CONFIRMATION OF DELETION/MODIFICATION
LOGIN TO THE SYSTEM
SIGNUP/LOGIN INTO THE SYSTEM
ALLOW INTO THE ADMIN PORTAL
REGISTER THE USER IF NUMBER DOESN'T EXIST IN RECORD/ ALLOW INTO THE USER PORTAL
BBMP AUTHORITIES
USER

**Fig 4.1: Data Flow Design**

## 4.2 CLASS DIAGRAM

A class diagram is an illustration of the relationships and source code dependencies among classes in the Unified Modeling Language (UML). In this context, a class defines the methods and variables in an object, which is a specific entity in a program or the unit of code representing that entity. Class diagrams are useful in all forms of object-oriented programming (OOP). The concept is several years old but has been refined as OOP modeling paradigms have evolved.

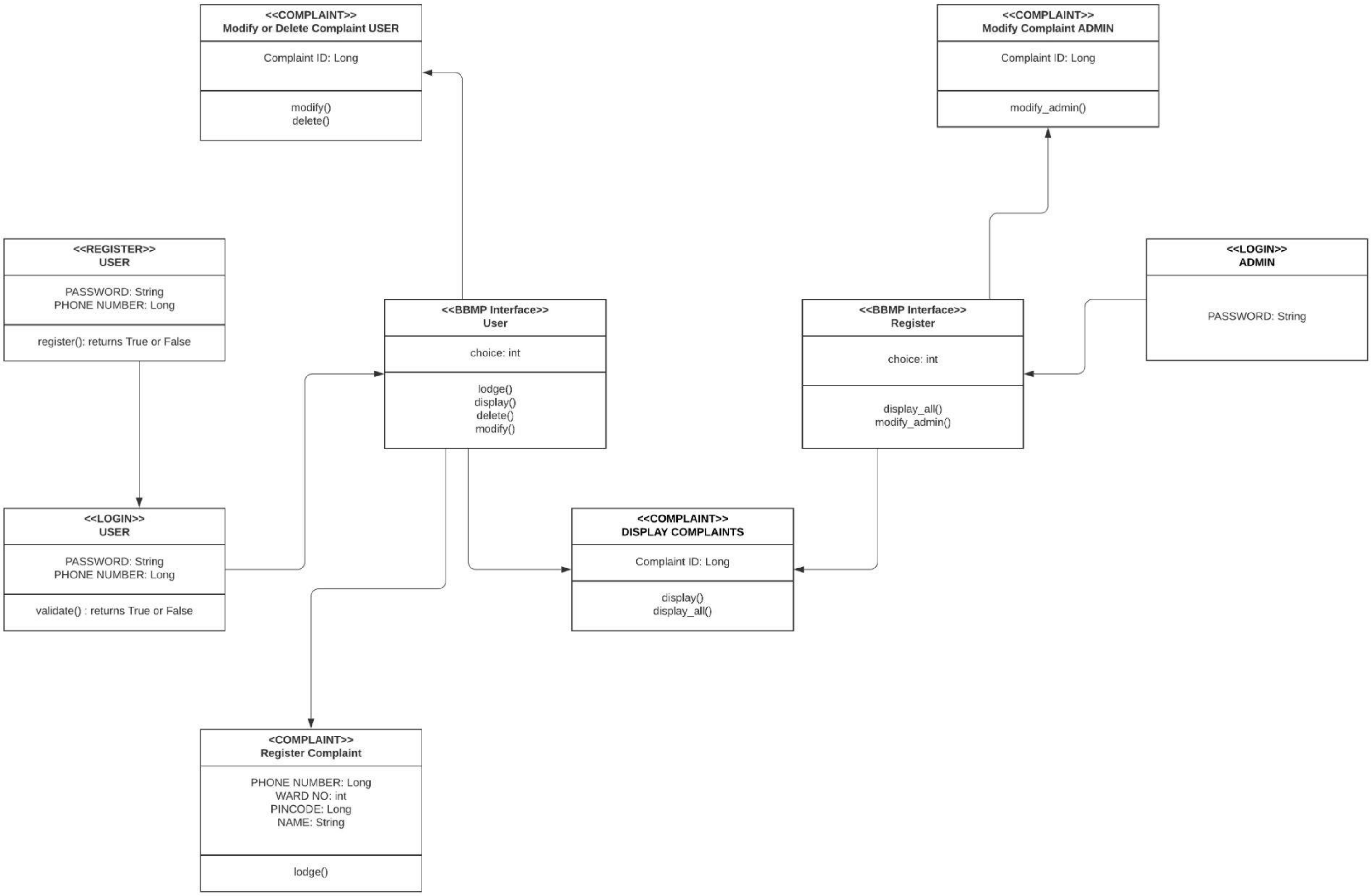


**Fig 4.2: Class Diagram**

# CHAPTER 5

# IMPLEMENTATION

## Introduction:

This project is completely command based with proper implementation of File Structure concepts and its implementation is done using Python. The file structure concepts used in this project are File handling property and Sequential Search. Open, Read and Write operations are performed on the file to store and retrieve the details.

## Functions and the members involved:

The functions used are;

- lodge() → Used to lodge the complaints and it takes a phone number as the parameter. The members within this function are Name, Pincode, Wardno, complaint ID and complaint description.
- display() → It displays the complaints that have been lodged by the user and it takes the phone number as the parameter. It uses a list to store all the variables and then it is displayed.
- display_all() → It is used by the admin to display all the complaints lodged by the users and this function also uses the same technique used by the display() function.
- modify() → It is used to modify the complaints that have been lodged by the user. It takes the phone number as the parameter. Once the complaint ID has been entered, a sequential search will be performed to find the associated complaint and then the list is used to accept the modification and the same is written into the file.
- modify_admin() → It is used by the admin to update the status of the complaint if the issue has been resolved. The complaint ID is used to find the associated complaint using sequential search  and then the status can be updated.
- delete() → It is a function to delete the complaints lodged by the users. It takes the phone number as the parameter and a complaint ID is used to find the complaint to delete it.

# CHAPTER 6

# TESTING

The integral part of any system's development life cycle is testing without which the system developed is sure to fail and result in loss of economic and manpower investments besides user's dissatisfaction and downfall of reputation. System testing is the stage of implementation, which aims at ensuring that the system works accurately and efficiently before actual operation commences. No program or system design is perfect, communication between the user and the designer is not always complete or clear. All this can result in errors.

Another reason for system testing is its utility as a user oriented vehicle before implementation. The application system is worthless if it does not meet user needs, thus the system should be tested to see whether it meets the user requirements.

Testing here is conducted in bottom up approach as follows:

- Module testing: Here testing is done at each module level. Each case has been thoroughly tested to discover pitfalls.
- System testing: Here testing is done after all the modules have been integrated.

## Test Cases

| Sl.No | Module | Test Case Description | Input | Expected Output | Actual Output | Status |
|---|---|---|---|---|---|---|
| 1 | Welcome Page | Verify whether the Menu page is displayed. | Run the program. | Displays Menu page | Displays Menu Page | Pass |
| 2 | Display User or Admin Choice Menu | Displays the menu | Enter your choice. | Assigns you the role which you've selected and sends you to the login page. | Assigns you the role which you have selected and sends you to login page | Pass |

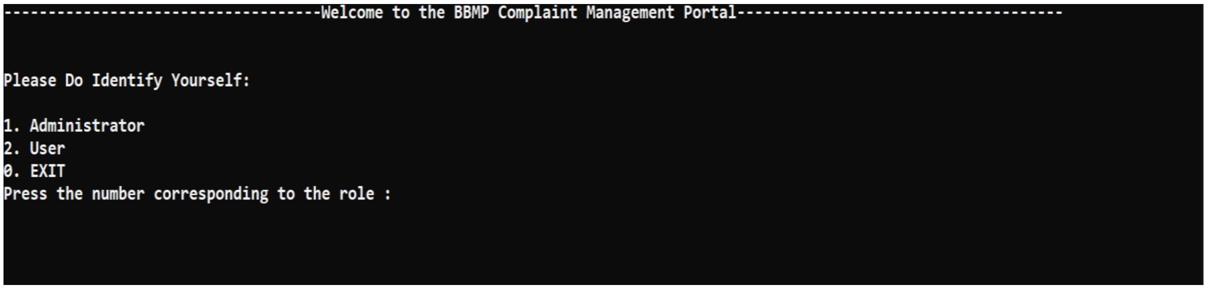
| Sl.No | Module | Test Case Description | Input | Expected Output | Actual Output | Status |
|---|---|---|---|---|---|---|
| 3 | Sign Up Of User | Successful registration for users who have input valid phone numbers. | Input Phone Number and Password | Successful Registration | Successful Registration | Pass |
| 4 | Login Of User | Login to account using valid phone number and password | Input Phone Number and Password | User Portal of BBMP Management System with Menu | User Portal of BBMP Management System with Menu | Pass |
| 5 | Login Of Admin | Login By the Admin using Phone Number and Password | Input Phone Number and Password | Admin Portal of BBMP Management System with Menu | Admin Portal of BBMP Management System with Menu | Pass |
| 6 | Sign Up Of User who already has account | SignUp with a Phone Number which is already registered | Input Phone Number and Password | Unsuccessful Registration and Valid Error is Displayed | Unsuccessful Registration and Valid Error is Displayed | Pass |
| 7 | Unsuccessful Login By User/Admin | Login Of User/Admin with invalid password or phone number | Input Invalid Password or Phone Number | Do not allow successful Login with appropriate message | Do not allow Successful Login with appropriate message | Pass |
| 8 | Lodging the Complaints | Registers Complaints into the Complaint File | Provide Complaint Description, PinCode, WardNo | Complaint will be lodged with status set as pending | Complaint will be lodged with status set as pending | Pass |
| 9 | Display all complaints | Displays the complaints of all the workers. | Enter choice 1 to display | Displays the complaints in tabular form | Displays the complaints in tabular form | Pass |

| **Sl.No** | **Module** | **Test Case Description** | **Input** | **Expected Output** | **Actual Output** | **Status** |
|---|---|---|---|---|---|---|
| 10 | Modify Complaint in file | Takes data to insert into the file | Input values of the user | Reads the values and modifies the file | Reads the values and modifies the file | Pass |
| 11 | Search for complaint using Sequential Search | Searches for the complaints | Enter Complaint ID to search | Displays the Complaint | Displays the Complaint | Pass |
| 12 | Delete Complaint | Deletes the complaint of the User | Asks for the Complaint ID | Deletes the Complaint | Deletes the Complaint | Pass |
| 13 | Update Complaint Status By Admin | Updates the Complaint Status of the Complaint | Enter The Complaint ID and then enter the status | Updates the complaint status of the user | Updates the complaint status of the user | Pass |
| 14 | Log Out | Log Out Of The Portal | Enter the number ‘0’ related to Logging Out | Returns the User back to the Admin/User Menu | Returns the User back to the Admin/User Menu | Pass |
| 15 | Quit | Exits from the program | Select the choice to quit | Quits from the program | Quits from the program | Pass |

# CHAPTER 7

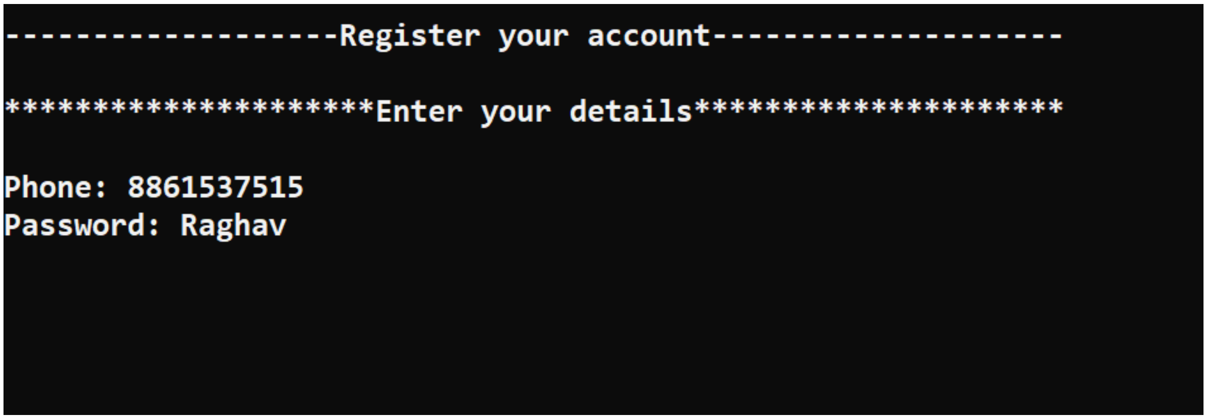
## SNAPSHOTS

**Fig 7.1: Home page**



```
-----------------------------------Welcome to the BBMP Complaint Management Portal------------------------------------


Please Do Identify Yourself:

1. Administrator
2. User
0. EXIT
Press the number corresponding to the role :
```

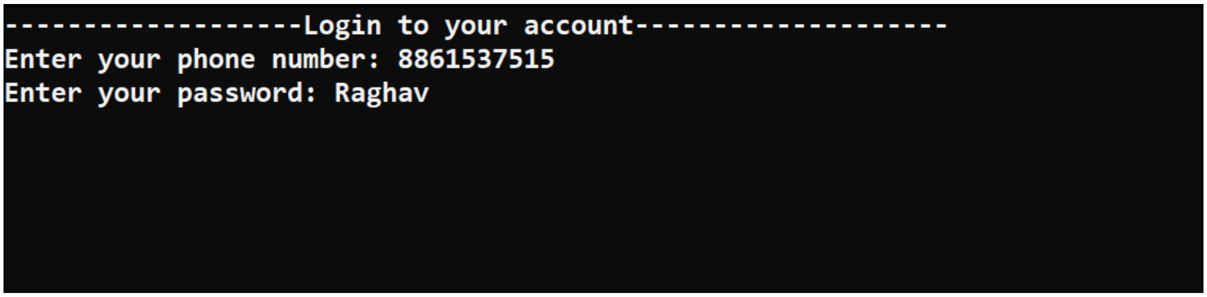
This is the Welcome page that displays the menu. The user chooses from the menu provided what he wants to execute.



```
-------------------Register your account--------------------

*********************Enter your details*********************

Phone: 8861537515
Password: Raghav
```

**Fig 7.2: User Registration**

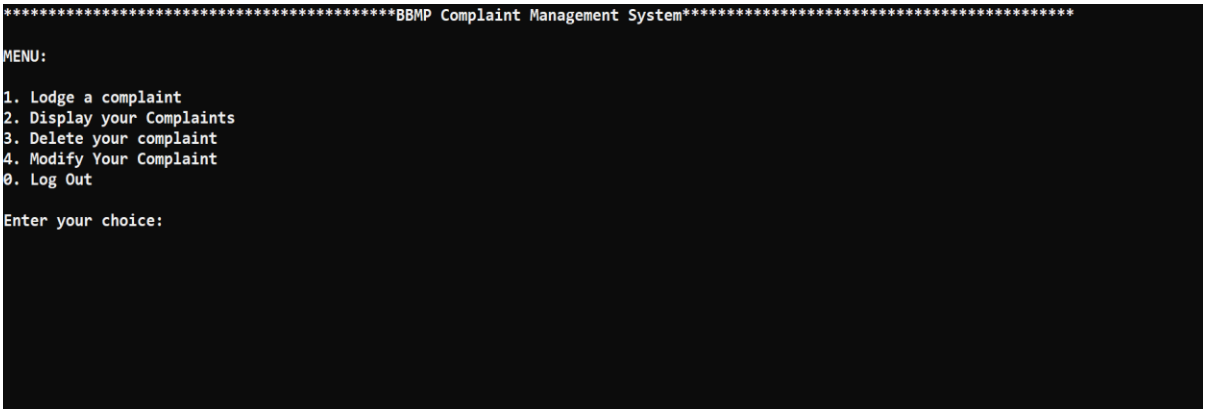
Users can register their account on the portal by providing their phone number and password



```
-------------------Login to your account--------------------
Enter your phone number: 8861537515
Enter your password: Raghav
```

**Fig 7.3: User Login**

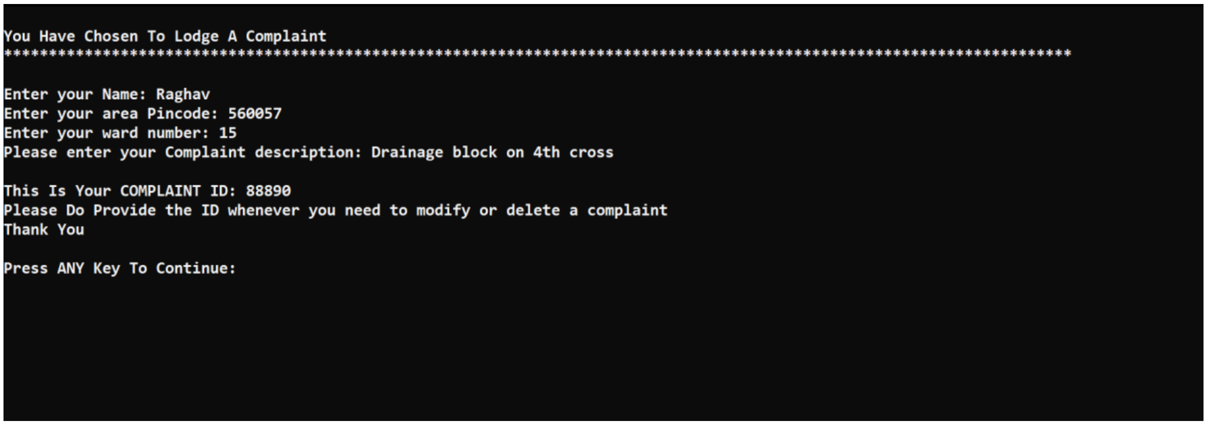
Users can login to their account with their credentials



```
********************************************BBMP Complaint Management System********************************************

MENU:

1. Lodge a complaint
2. Display your Complaints
3. Delete your complaint
4. Modify Your Complaint
0. Log Out

Enter your choice:
```

**Fig 7.4: User Dashboard**

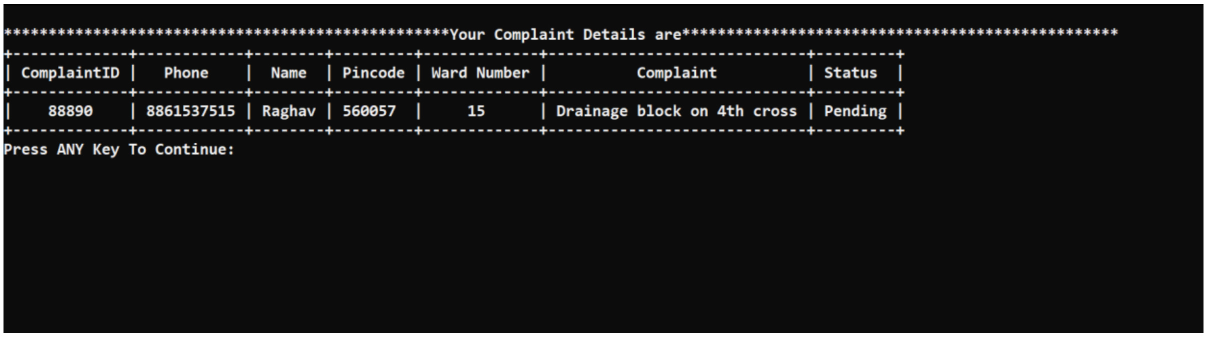
Options for the users to lodge, display, modify or delete a complaint.



```
You Have Chosen To Lodge A Complaint
************************************************************************************************************************

Enter your Name: Raghav
Enter your area Pincode: 560057
Enter your ward number: 15
Please enter your Complaint description: Drainage block on 4th cross

This Is Your COMPLAINT ID: 88890
Please Do Provide the ID whenever you need to modify or delete a complaint
Thank You

Press ANY Key To Continue:
```

**Fig 7.5: Lodge a Complaint**

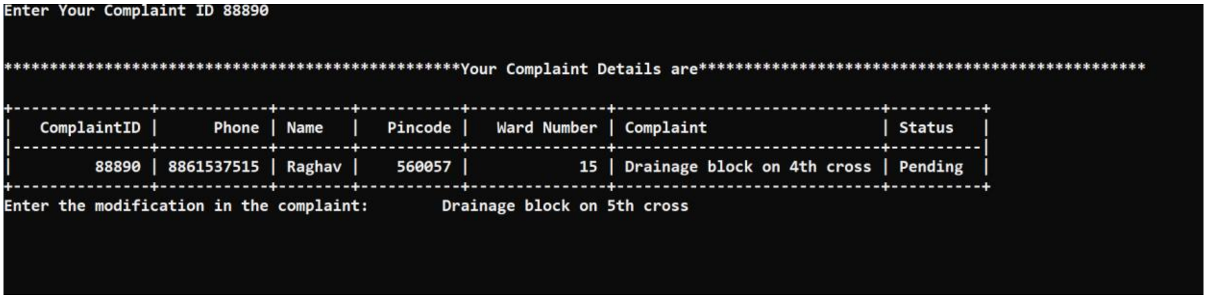
Enter the details to lodge a complaint.



```
**************************************************Your Complaint Details are**************************************************
+-------------+------------+--------+---------+-------------+-----------------------------+---------+
| ComplaintID |   Phone    |  Name  | Pincode | Ward Number |          Complaint          | Status  |
+-------------+------------+--------+---------+-------------+-----------------------------+---------+
|    88890    | 8861537515 | Raghav | 560057  |     15      | Drainage block on 4th cross | Pending |
+-------------+------------+--------+---------+-------------+-----------------------------+---------+
Press ANY Key To Continue:
```

**Fig 7.6: Display Complaint**

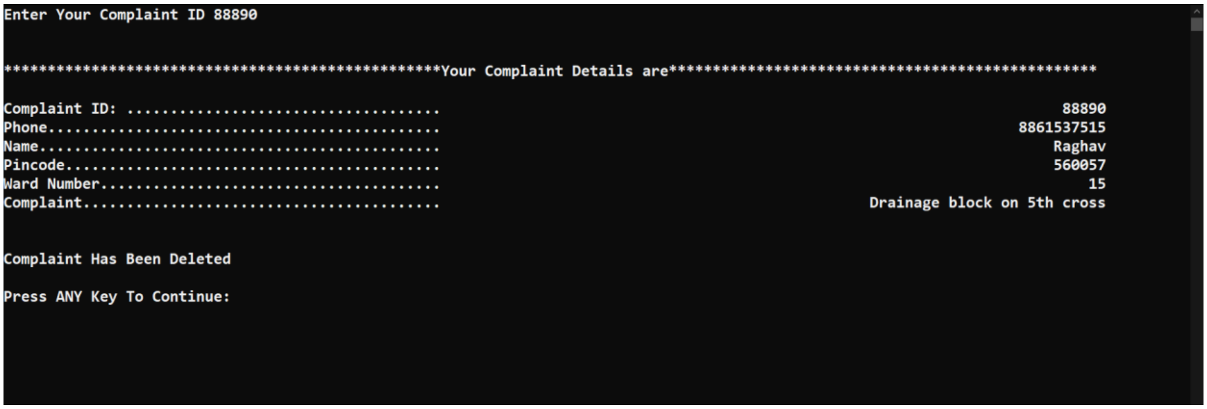
All the complaints that have been lodged by the user will be displayed.



```
Enter Your Complaint ID 88890

**************************************************Your Complaint Details are**************************************************

+---------------+------------+--------+----------+---------------+------------------------------+----------+
|   ComplaintID |      Phone | Name   |  Pincode |   Ward Number | Complaint                    | Status   |
|---------------+------------+--------+----------+---------------+------------------------------+----------|
|         88890 | 8861537515 | Raghav |   560057 |            15 | Drainage block on 4th cross  | Pending  |
+---------------+------------+--------+----------+---------------+------------------------------+----------+
Enter the modification in the complaint:        Drainage block on 5th cross
```

**Fig 7.7: Modify the complaint**

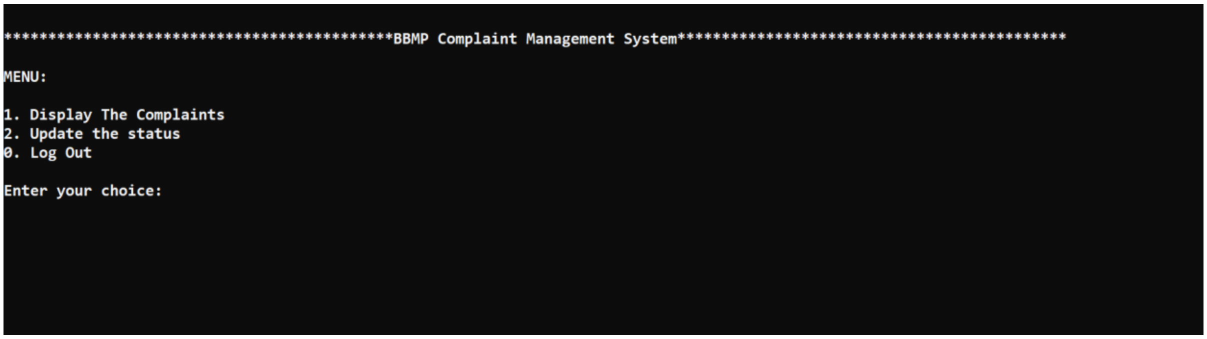
Lodged complaint can be modified.



```
Enter Your Complaint ID 88890


**************************************************Your Complaint Details are**************************************************

Complaint ID: ...................................                                                               88890
Phone............................................                                                          8861537515
Name.............................................                                                              Raghav
Pincode..........................................                                                              560057
Ward Number......................................                                                                  15
Complaint........................................                                             Drainage block on 5th cross


Complaint Has Been Deleted

Press ANY Key To Continue:
```

**Fig 7.8: Delete the complaint**

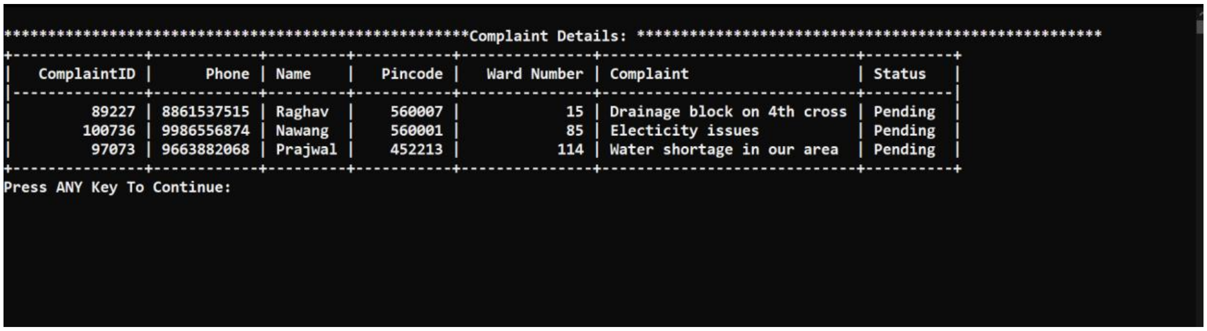
The complaint is deleted with the associated complaint ID.



```
********************************************BBMP Complaint Management System********************************************

MENU:

1. Display The Complaints
2. Update the status
0. Log Out

Enter your choice:
```

**Fig 7.9: Admin Dashboard**

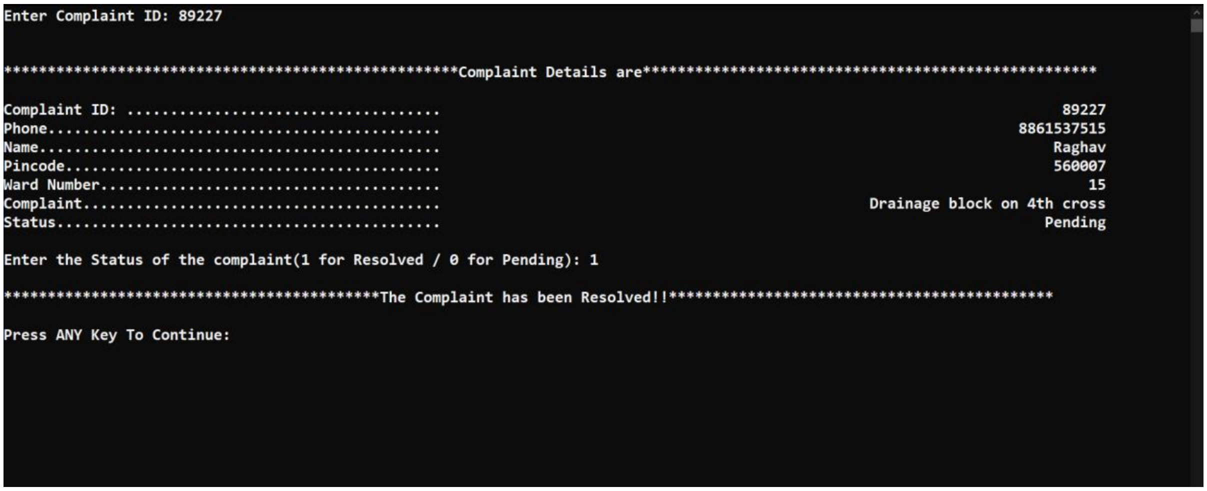
Admin dashboard provides the options to display all the complaints and set the status of the complaint if it is resolved.



```
*****************************************************Complaint Details: *****************************************************
+---------------+------------+---------+-----------+---------------+-----------------------------+----------+
|   ComplaintID |      Phone | Name    |   Pincode |   Ward Number | Complaint                   | Status   |
|---------------+------------+---------+-----------+---------------+-----------------------------+----------|
|         89227 | 8861537515 | Raghav  |    560007 |            15 | Drainage block on 4th cross | Pending  |
|        100736 | 9986556874 | Nawang  |    560001 |            85 | Electicity issues           | Pending  |
|         97073 | 9663882068 | Prajwal |    452213 |           114 | Water shortage in our area  | Pending  |
+---------------+------------+---------+-----------+---------------+-----------------------------+----------+
Press ANY Key To Continue:
```

**Fig 7.10: Display all the complaints**

Admin can view all the complaints that have been lodged by the users and their statuses.



```
Enter Complaint ID: 89227


****************************************************Complaint Details are****************************************************

Complaint ID: ..................................                                                        89227
Phone...........................................                                                   8861537515
Name............................................                                                       Raghav
Pincode.........................................                                                       560007
Ward Number.....................................                                                           15
Complaint.......................................                                          Drainage block on 4th cross
Status..........................................                                                      Pending

Enter the Status of the complaint(1 for Resolved / 0 for Pending): 1

*******************************************The Complaint has been Resolved!!*******************************************

Press ANY Key To Continue:
```

**Fig 7.11: Update the status of complaints**

The admin can set the status of the complaints once the issue has been resolved.

# CONCLUSIONS AND FUTURE ENHANCEMENT

## Conclusions

The concept of Co-sequential Processing, where we create operations like matching, merging for maintaining records. We have used buffer hierarchy in order to achieve this. Here a sorted file is maintained. These files are loaded into main memory. Since we are processing two files at a time we can hence reduce the number of disk accesses.

## Limitation

As the number of records grows, comparison processes also grow, hence maintaining the large files becomes very difficult as we cannot read.

## Future Enhancements

Given the File Structure design that we have built, we foresee a lot of areas that need enhancements.

1. First of all searching for records based on secondary key indexes is the major void that needs to be filled. Any database would require such facilities of record modifications and deletions.
2. Faster retrieval is one goal that the designers constantly try to achieve. One way of accomplishing the goal by using index structures itself is by creating multiple levels of these structures. The improvement will definitely show up as the database increases in size.
3. A Web based application can be designed which provides the users with a more user friendly interface and easy accessibility which can support the portal on multiple devices.

# BIBLIOGRAPHY

## Book references

1. Python for Everybody by Dr.Charles Severance
2. Software Engineering-by Ian Sommerville
3. Automate the boring stuff with python by AI Sweigart
4. Michael J. Folk, Bill Zoellick, Greg Riccardi: File Structures-An Object Oriented Approach with C++, 3rd Edition, Pearson Education, 1998

## Web references

1. www.stanford.edu
2. www.awl.com
3. www.codeproject.com
4. www.sourceforge.com
5. www.W3cschools.com
6. www.python4e.com