Smart City

A Project-II Report

Submitted in partial fulfillment of requirement of the

Degree of

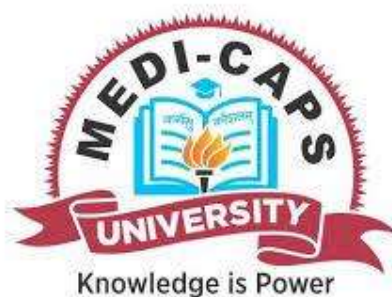## BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE & ENGINEERING

BY

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EN19CS3L1018

Under the Guidance of
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May 2022

Report Approval

The project work **"Smart City"** is hereby approved as a creditable study of an engineering/computer application subject carried out and presented in a manner satisfactory to warrant its acceptance as prerequisite for the Degree for which it has been submitted.

It is to be understood that by this approval the undersigned do not endorse or approved any statement made, opinion expressed, or conclusion drawn there in; but approve the "Project Report" only for the purpose for which it has been submitted.

Internal Examiner

Name:

Designation

Affiliation

External Examiner

Name:

Designation

Affiliation

Declaration

I/We hereby declare that the project entitled **"Smart City"** submitted in partial fulfillment for the award of the degree of Bachelor of Technology in '**Department of Computer Science & Engineering**' completed under the supervision of **Dr. Kailash Chandra Bandhu, Assistant Professor Department of Computer Science and Engineering** Faculty of Engineering, Medi-Caps University Indore is an authentic work.

Further, I/we declare that the content of this Project work, in full or in parts, have neither been taken from any other source nor have been submitted to any other Institute or University for the award of any degree or diploma.

Raghvendra Goud

EN19CS3L1018

Certificate

I, **Dr. Kailash Chandra Bandhu** certify that the project entitled **"Smart City"** submitted in partial fulfillment for the award of the degree of Bachelor of Technology by **Raghvendra Goud** is the record carried out by him/them under my/our guidance and that the work has not formed the basis of award of any other degree elsewhere.

_____

Dr. Kailash Chandra Bandhu

Computer Science and Engineering

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Offer Letter of the Project work-II/Internship

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Subject: Internship Confirmation

Dear Raghvendra,

We are pleased to inform you that you could undergo internship in our software development organization (CSL) from 01st Feb 2022, for the duration of four months.

During this period your project coordinator will be Mr. Rajesh Kumar Arora.

For Compucom Software Limited

Rajesh Kumar Arora

Manager Technical

ISO 9001 REGISTERED

DNV

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RvA C 024

Visit us at : www.compucom.co.in

Completion certificate/Letter

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Date: 06/05/2022   CSL/CBO/ 454491

CURRICULUM INTERNSHIP CERTIFICATE

This is to certify that **Mr. Raghvendra Goud** S/o **Mr. Gulab Singh Goud** pursuing **B.Tech(CS)** from **Medi-Caps University** has successfully completed his project training from our organization.

The duration of this project titled **Smart City** in **Java** stream was from **1st Feb 2022** to **4th May 2022**. During this period, his performance was good.

We wish him all the best for future endeavors.

Internship Coordinator: Mrs. Ruchi Agrawal

With Best Wishes,

From Compucom Software Limited

Nitin Kapoor

(Manager)

ISO 9001 REGISTERED

<u>Acknowledgements</u>

I would like to express my deepest gratitude to Honorable Chancellor, **Shri R C Mittal,** who has provided me with every facility to successfully carry out this project, and my profound indebtedness to **Prof. (Dr.) Dilip K. Patnaik,** Vice Chancellor, Medi-Caps University, whose unfailing support and enthusiasm has always boosted up my morale. I also thank **Prof. (Dr.) D K Panda,** Pro Vice Chancellor, **Dr. Suresh Jain,** Dean Faculty of Engineering, Medi-Caps University, for giving me a chance to work on this project. I would also like to thank my Head of the Department **Dr. Pramod S. Nair** for his continuous encouragement for betterment of the project.

I express my heartfelt gratitude to my **External Guide, Mrs Ruchi Agrawal, Project Lead, Compucom Software Limited** as well as to my Internal Guide, Dr**. Kailash Chandra Bandhu, Assistant Professor**, Department of Computer Science & Engineering, without whose continuous help and support, this project would ever have reached to the completion.

I would also like to thank to my team at Compucom Software Limited Mr. Mohit Acharya, Mr. Raghavendra Goud, Mr. Rishi Sharma who extended their kind support and help towards the completion of this project.

It is their help and support, due to which we became able to complete the design and technical report. Without their support this report would not have been possible.

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Abstract

Most of the world's population today lives in cities. By 2030, the population of the cities around the world is expected to grow from 3.3 billion to 5 billion people.

Due to resource constraints, there will be a problem in the future to provide all the services to the residents. To continue to serve and improve the standard of living of the growing population, it is necessary to develop smart cities. The main aim of this project services provided to the users who have registered in the site. The services regarding to city political, historical, conventional places, busroutes, business companies profile and jobs details. Smart city is a web-based product used to store the details of particular city and helps all the users who just visits our website. This site also provides all the services like Hotel booking for tourists, Ticket booking, Transport facility providing, business related information , marketing details, citynews ,shopping detail. The website contains the complete information about particular city like places to be visited,site maps route maps, Business environment, Job portal, information about organization that providetransport, Hospitality and total history of the city.This website can be used by any person who is having general knowledge about internet.

Keywords: Services, Smart City, Web Application, Facilities.

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Chapter-1

Introduction

1.1 Introduction

Smart City web application ensures the proper and smart utilization of city resources. It is the single point access for all different resources available in the city.

Citizens can avail different facilities with a single click and minimum efforts. All kinds of information is available within different categories. This web application ensures the listing of facilities and information on the basis of rating so that users can see the best thing at first click. User experience can be shown and recorded as review, feedback or comment.

Smart City is a city that works for its people and this application is designed by keeping in mind all day to day basic needs of an ordinary person. smart City application figure out various service groups like medical facility, library, food, health, hobby, studies, sports, house services, tour and trip and etc. Under different categories different options and sub options are required to filter the required resource. Our project title is 'Make My Smart City', a web-based product used to store the details of particular city and helps all the users who just visits our website. This site also provides all the services like Hotel booking for tourists, Ticket booking, Transport facility providing, business related information , marketing details, citynews ,shopping detail. The website contains the complete information about particular city like places to be visited, Business environment, Job portal, information about organization that provide transport, Hospitality and total history of the city.This website can be used by any person who is having general knowledge about internet. All the users will be first considered as anonymous user later if he needs any service then he will be treated as registered user.

Overall description consists of background of the entire specific requirement. It also gives explanation about actor and function which is used. It gives explanation about architecture diagram and it also gives what we are assumed and dependencies. It also support specific requirement and also it support functional requirement, supplementary requirement other than actor which is used. It also gives index and appendices. It also gives explanation about any

doubt and queries.This system can be used as an application for the handicraft employees and customers of the Handicraft company to manage the product information. Customer logging should be able to upload the information of the any required product. Customers/Company representatives logging in may also access/search any information of product related.

1.2 Literature review

Intensive development, which is undoubtedly a challenge for modern cities, can give rise to positive outcomes for urban communities as well as negatively affect the smooth functioning of the city. Knowing the identified challenges and the expected increase in the number of urban residents around the world, there is an increasing need for new and innovative ways to manage the complexity of urban life. In the last decade, the smart city concept has gained considerable popularity, ultimately enabling residents to better meet their housing, trans-port, energy and other infrastructure needs, but also as a key strategy to combat poverty and inequality, unemployment and energy management. The smart city concept assumes that a city should be a creative, sustainable area that improves the quality of life, creates a friendlier environment and the prospects of economic development are stronger. Intelligence as a distinguishing feature of this type of a city, should not be treated in the literal sense of the word but perceived as the sum of various improve-ments in urban infrastructure, resources and public services . Although there is no formal and widely accepted definition of a "smart city", the ultimate goal is a better use of public resources, the improvement of the quality of services offered to citizens, while reducing opera-tional costs of public administration. The smart economy is measured by entrepre-neurship and a city's productivity, adaptation to changes, the flexibility of the labour market and international cooperation. Smart mobility is perceived by the accessibility of information and communication infrastructure, through the development of sustainable, innovative and safe transport. The smart environment is measured by the attractiveness of the natural environment, pollution levels, environ-mental protection activities and resource management methods. Smart people are characterized by the level of qualifications, lifelong learning, social and ethnic diversity, creativity, openness and participation in public life. Smart living is measured by existing cultural facilities, living conditions (health, safety, housing), educational facilities, tourist attractiveness and social cohesion. Smart governance is expressed by the transparency of city management, social participation, the level of public services and the implementation of development strategies

1.3 Objective

The main aim of this project services provided to the users who have registered in the site. The services regarding to city political, historical, conventional places, busroutes, business companies profile and jobs details. Smart city is a web-based product used to store the details of particular city and helps all the users who just visits our website. This site also provides all the services like Hotel booking for tourists, Ticket booking, Transport facility providing, business related information , marketing details, citynews ,shopping detail. The website contains the complete information about particular city like places to be visited,site maps route maps, Business environment, Job portal, information about organization that providetransport, Hospitality and total history of the city.This website can be used by any person who is having general knowledge about internet. All the users will be first considered as anonymous user later if he needs any service then he will be treated as registered user.

It facilitate communication between users,experts and general public through chat/polls/mail. This will definitely help the users for the purpose of saving their valuable time which can't be got back which is also economically viable.This system provides a registration form for all who wants to get the services. This can be categorized based on the type of users.   It provides different registration forms for different categories. In case of students if they need to download any material or to get information about coaching centres and college institutions/Incase of businessmen to get the information about any kind of business/Incase of tourists to get the hospitality facilities/in case of jobseekers to get the information about available job details they need to give their ID & PASSWORD for security purpose and AC.NO only at the time of transactional providence.

1.4 Scope

• Each user will be assigned a different set of permissions for each module of the system.

• The user can have access to all the information in the site with limited services and provide extra services to registered users.

• Track all the transaction details of the customer.

• Confirmation of end user identity and will verify which users are authorized to receive Support. Maintain history of each customer and their related Maintain history of each customer and their related information.

• Every user must have their ID& PASSWORD for security purpose and AC.NO for transaction purpose.

• All the job seekers must have their Resume document to submit to administrator.

• Only registered members will be provided with communication between user, experts and general public through poll/chat/mails.

• Administrator is created in the system already.

• The administrator has to generate daily/weekly/Monthly reports, of the business and political news of the city.

• This site is best designed to be useful through internet to people of different places.

1.5 Problem Statement and Justification

In Existing system the person who are visiting a particular city need to gather information from the person who is staying in the city or take the help of the guide in the city. Gather of all these information you need to visit the city. This posses a lot of timeand pre-planning. In order to get each piece of information we need to go for help desk.

•The existing system is a manual system. Here the city information needs to save his information in the form of excel sheets or Disk Drives.

•There is no sharing is possible if the data is in the form of paper or Disk drives.

•It's a limited system and fewer users friendly.

The development of this new system contains the following activities, which try to automate the entire process keeping in the view of database integration approach.

• User Friendliness is provided in the application with various controls provided by system Rich User Interface.

•The system makes the overall project management much easier and flexible.

•The city information files can be stored in centralized database which can be maintained by the system.

1.6 Organization

The organization of the report is as follows:

Chapter 1: This includes the main aim of the project and how we managed to come up with the whole idea.

Chapter 2: This talks about all the technology used for this project along with the feasibility of that technology.

Chapter 3: The Information flow is shown in this unit using different figures such as use case, and class diagram.

Chapter 4: The Architecture of the project is shown along with the user interface

Chapter 5: This talks about the testing done in the project and the test cases which we have verified along with the results and samples.

Chapter 2

System Requirment Analysis

2.1 Information Gathering

The information gathering for the working of the proposed model is done through analyzing and studying previous works.

It is a way of collecting data by reviewing existing works mainly to gather the background information. Reviewing existing works helps to understand the history, and operation of the program that is being evaluated and the organization in which it operates.

2.2 Software Feasibility

This chapter presents the analysis completed before starting implementation of proposed application. After requirements clarification, analysis proposes some solutions. After this it is checked whether it is practically possible to implement that solution or not. This is done through feasibility study. In this various feasibility aspects are analyzed depending on the context of the system.

2.2.1 Economical

We find out cost of development & resource (including men and money) required during development of the project and ensure that the project will be beneficial for both, the society and the members as well.

The project implemented is economically feasible because the resources and the tools used are easily available.

2.2.2 Technical

Focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. It is an evolution of the hardware and software and how it meets the need of the proposed system. In Development of project, core concepts of python are used and freely available.

2.2.3 Behavioral

How well a proposed system solves the problems and takes advantage of the opportunities identified during scope definition and how it specifies the requirements identified in the requirement analysis phase of system development.

2.2.4 Operational Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he isthe final user of the system.

2.3 **Platform Specification (Development and Deployment)**

2.3.1 Hardware

The most common requirements defined by any operating system or software application the physical computer resource also known as hardware. A hardware requirements list softens accompanied by a hardware compatibility list especially in case of operating system.

A hardware compatibility list tested, compatibility and sometime incompatible hardware device for a particular operating system or application. Processors: Intel Atom® processor or Intel Core i5 processor

Disk space: 5 GB

2.3.2 Software implementation language

Software requirements deal with defining software resource requirements and pre requisites that need to be installed on a computer to provide optimal functioning of an application.

These requirements or pre requisites are generally not included in the software installation package and need to be install separately before the software is installed. Following software's are required to run the project.

- Html/CSS/Javascript
- JAVA
- JDBC
- Mysql
- JSP

2.3.2 Software Requirements

Minimum software requirements for different OS –

1. Windows

● Windows 7, Windows 8, Windows 8.1, Windows 10 or later

● An Intel Pentium 4 processor or later that's SSE3 capable

● Note: Servers require Windows Server 2008 R2, Windows Server 2012, Windows Server 2012

R2, or Windows Server 2016.

2. Mac

● OS X El Capitan 10.11 or later

3. Linux

● 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

● An Intel Pentium 4 processor or later that's SSE3 capable

Chapter 3

System Analysis

3.1 Information Flow Representation

3.1.1 Use Case Diagram: Use case diagrams model the functionality of a system using actors and use cases.

Admin Use Case Diagram
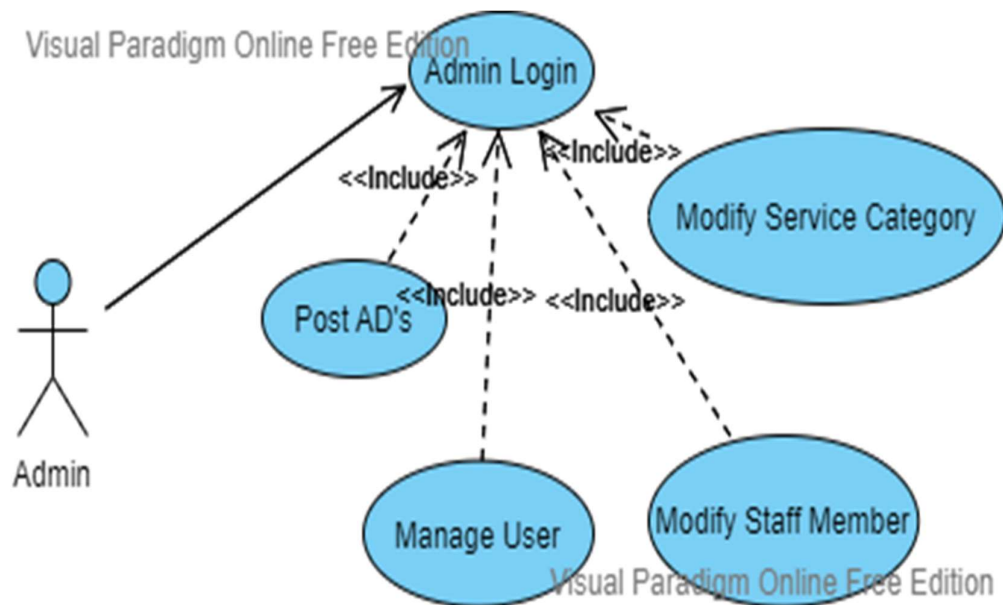
Consumer/S.P Use Case Diagram
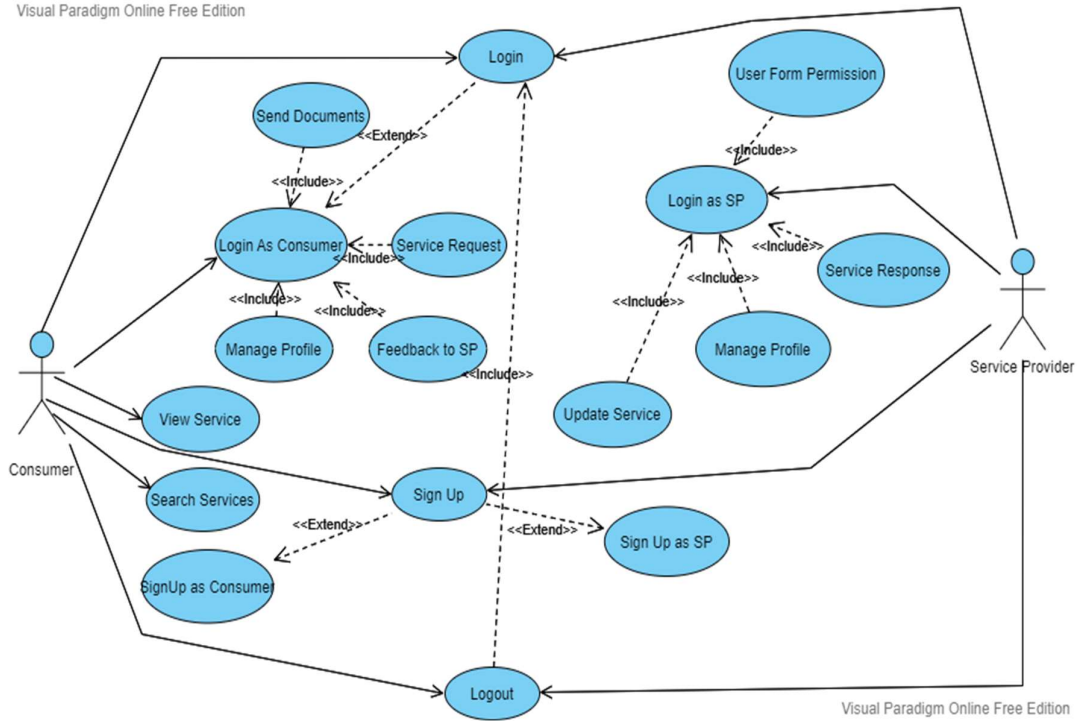
3.1.2 Activity diagram:

Activity diagram describes various activities that takes places given in a particular process. The administrator activity diagram describes how the admin performs various activities in order to provide various services to the different types of users.The user activity diagram how the user will interact with the system and also various services that are accessible by him.
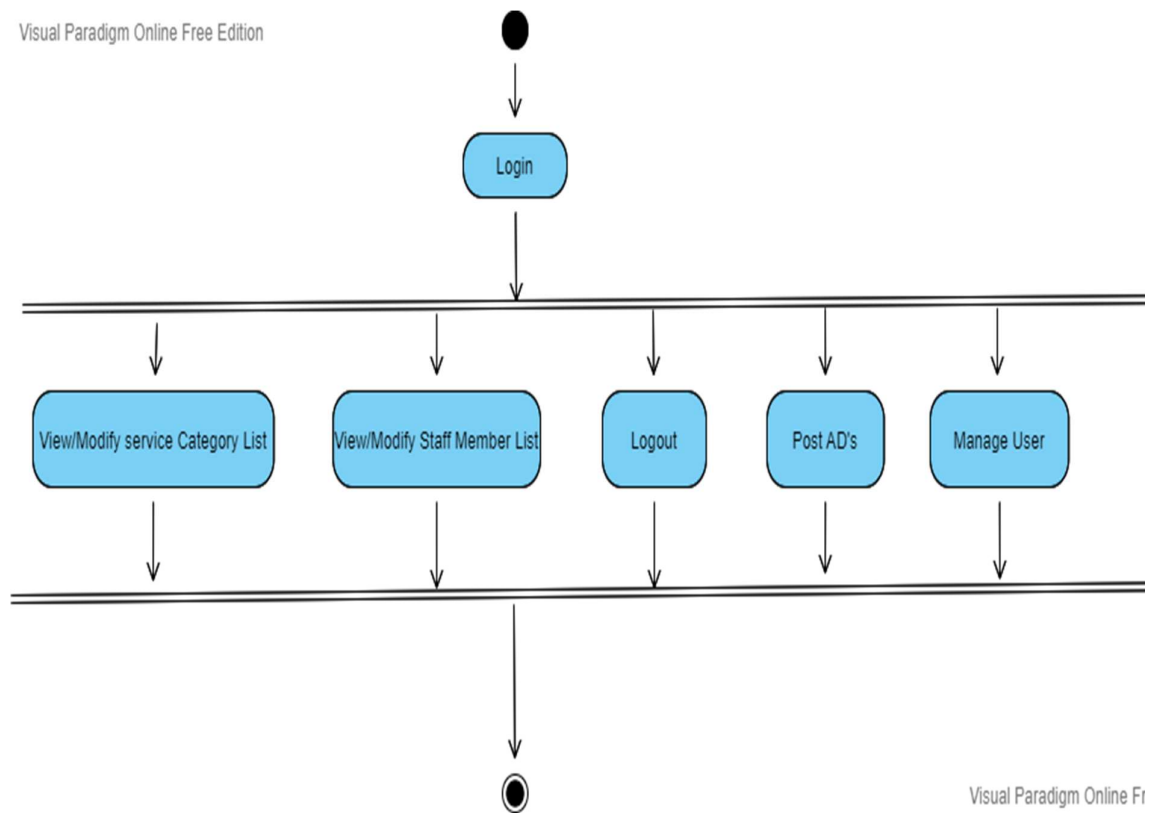
Service Provider Activity
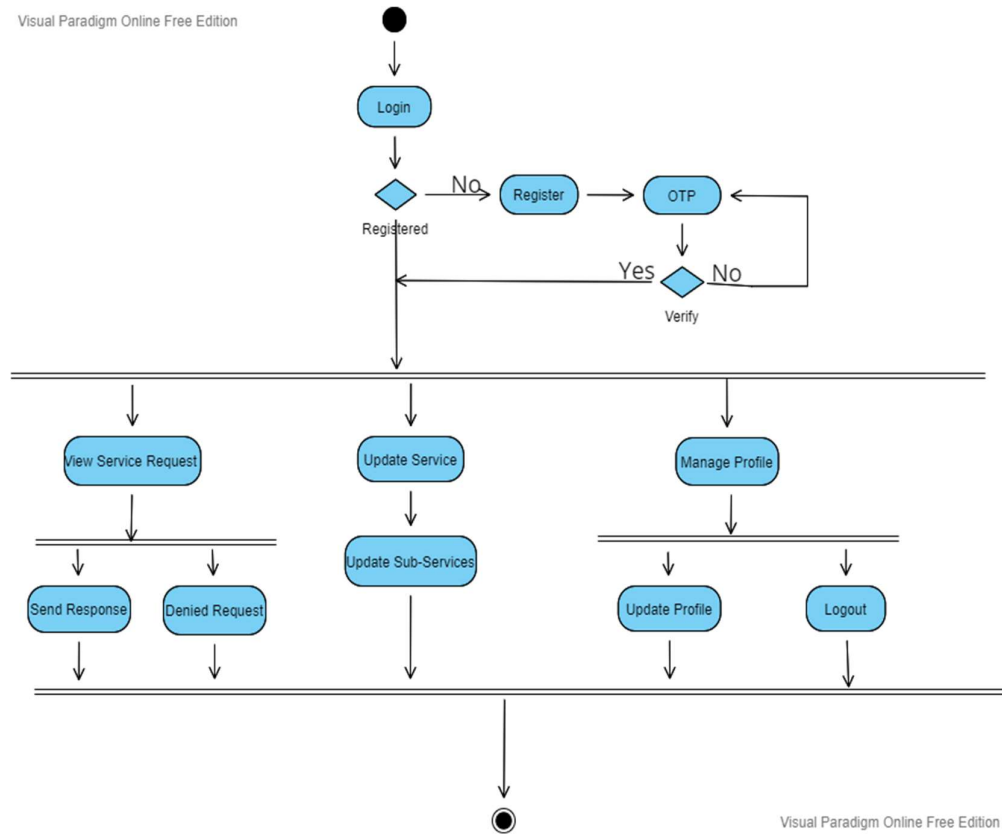
Consumer Activity Diagram
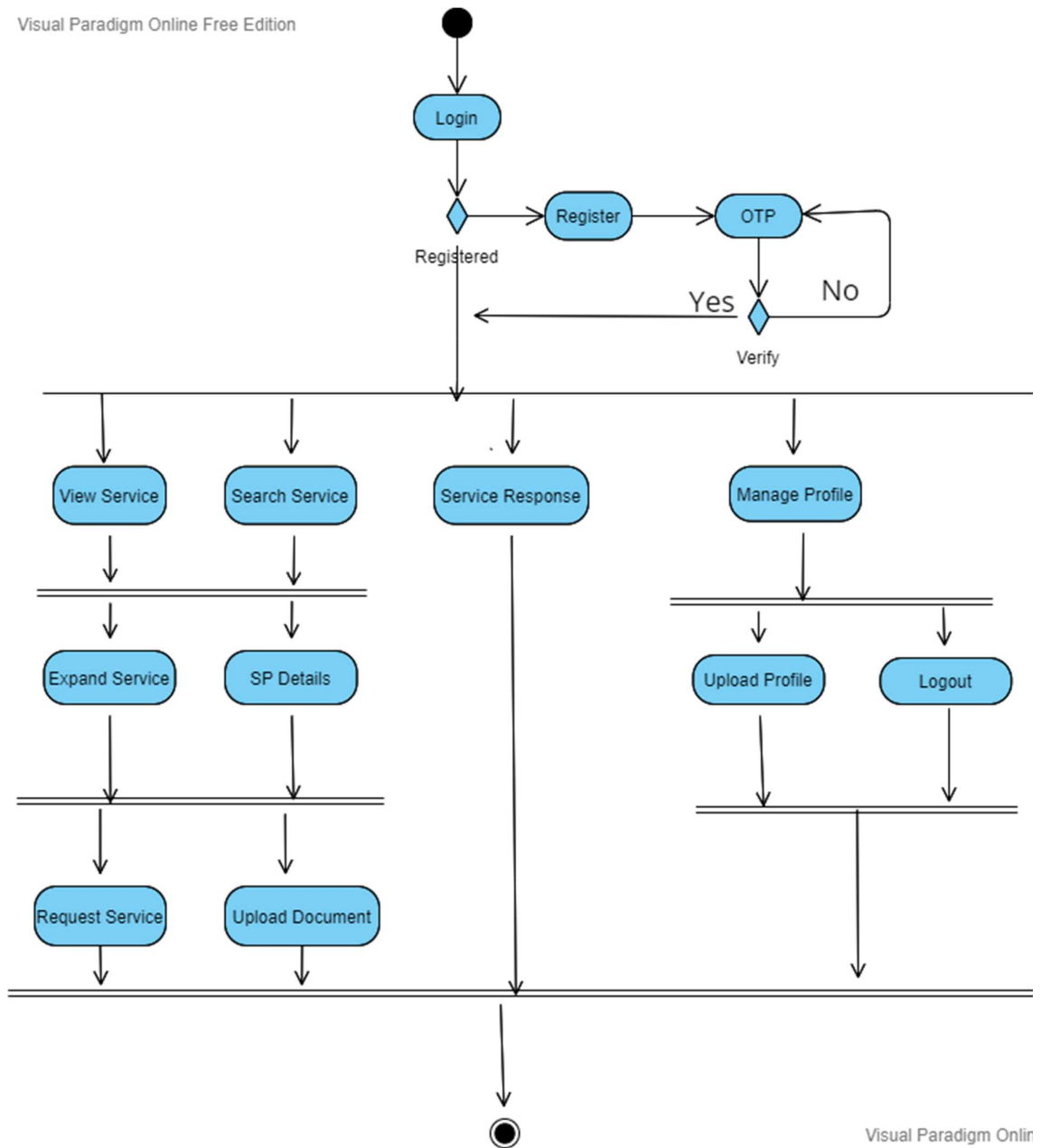
3.1.3 ER Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals and connecting lines to depict the interconnectedness of entities, relationships and their attributes.
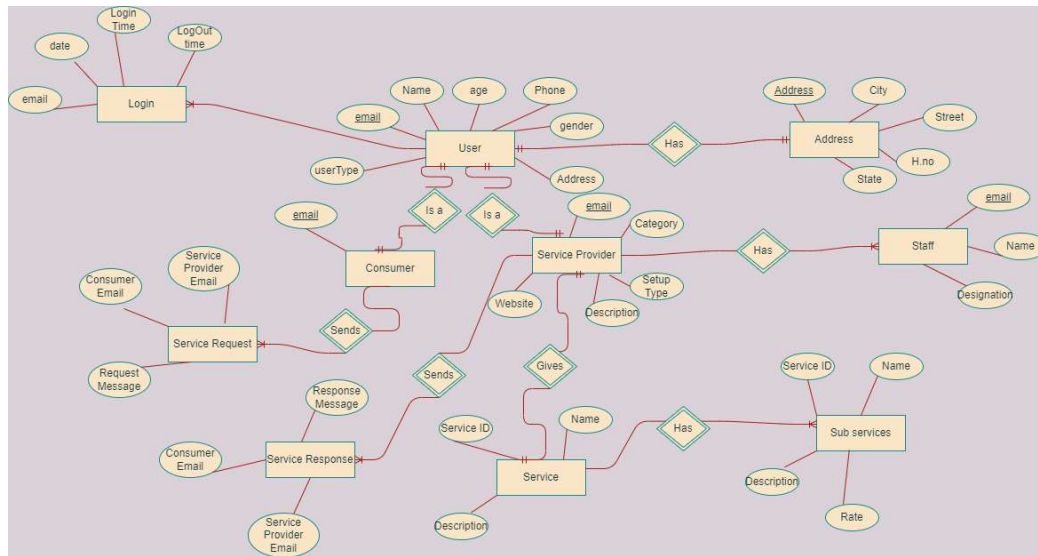
Chapter 4

Design

4.1 Architectural Design

External Schema — External Level — External Level — External / Conceptual Mapping

Conceptual Schema — Conceptual Level — Conceptual / Internal Mapping

Internal Schema — Internal Level

Database
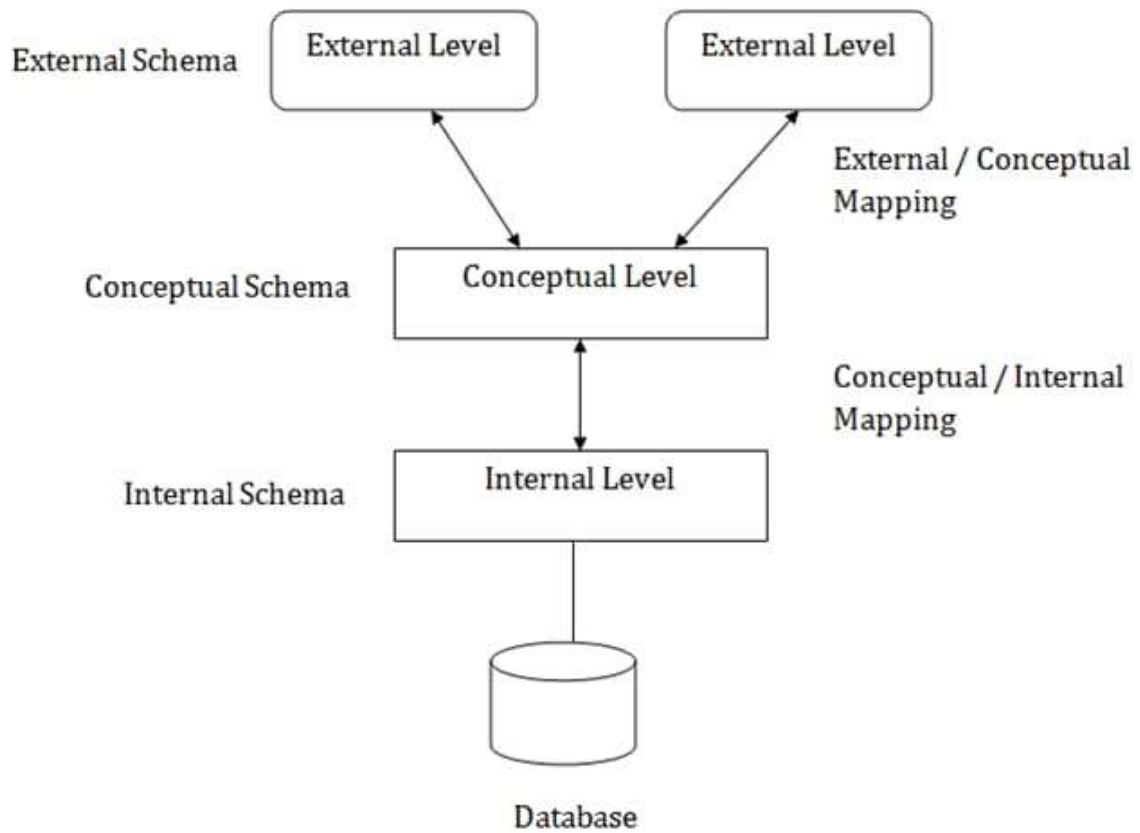
4.2 Modular Approach

 i. Modules Used

Main modules of smartcity project:-

1. User management

- user registration
- user login
- user permissions
- user updatable report

2. Service management

- service category
- service sub category
- service providers
- services
- services rates
- updatable reports

3. Message management

- service requests
- service response
- feedbacks
- message trackable reports

Database description:-

- servicecategoryMaster
- servicesubcatgMaster
- cityMaster
- userloginDetail
- userRegistrationDetail
- serviceproviderDetail

- services

- servicesDetail

- servicesRates

- servicerequest

- serviceresponse

- feedback

4.3 Interface Design

Registration Page

Login Page

Home Page

Chapter 5

Testing

5.1 Testing Objectives

Testing is the major quality control that can be used during software development. Its basic function is to detect the errors in the software. During requirement analysis and design, the output is a document that is usually textual and non-executable. After the coding phase, computer program is available that can be executed for testing purposes. This implies that testing not only has to uncover errors introduced during coding, but also errors introduced during previous phases. Thus the goal of the testing is to uncover requirement, design and coding errors in the program. An elaborate testing of data is prepared and the system is tested using that test date. Errors noted and corrections made during the testing. The corrections are also noted for future use. The users are trained to operate the developed system. Both hardware and software securities are made to run the developed system successfully in future. System testing is the stage of implementation, which is aimed at ensuring that the system works accurately before live operation commences. Testing is vital to the success of any system. System testing makes a logical assumption that if all the parts of the system are correct, the goal will be successfully achieved.

▪ Testing is a process of executing a program with the intent of finding an error.

▪ A good test case is one that has a high probability of finding an undiscovered error.

▪ A successful test is one that uncovers an as-yet undiscovered error.

5.2 Testing Scope

Software testing is a matured process of verification or validation of software against the features, requirements or specifications, which are both functional as well as non-functional. It involves creating test plans, test specifications, test code development, execution of tests

and checking the documentation. Also, making sure that the product code changes doesn't cause the regressions, which means failure of earlier working.

features.

The prototype present in this report has a vast scope for testing the user interface by getting someone with a fresh set of eyes to review the portal.

When working on a project for a while, it's often difficult to spot typos, spelling mistakes, and other small errors. Whenever possible, some other person who is not directly involved with the project could be asked to review the same.

When added more functionalities we can also test by uploading different types of texts and compare the summaries. We can also give them guidelines about the type of feedback we are looking for in each review cycle.

5.3 Testing Principles

- All tests should be traceable to customer requirements
- Tests should be planned long before testing begins
- Testing should begin "in the small" and progress toward testing "in the large"
- Exhaustive testing is not completely possible
- To be most effective, testing should be conducted by an independent third part

5.4 Testing Methods Used

Software Testing Strategies

A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of software. As important, a software testing strategy provides a road map. Testing is a set of activities that can be planned in advance and conducted systematically.

Various strategies are given below:

- System Testing
- Alpha Testing
- Beta Testing

5.4.1 System Testing

System Testing is a level of testing that validates the complete and fully integrated software product. The purpose of a system test is to evaluate the end-to-end system specifications. Usually, the software is only one element of a larger computer-based system. Ultimately, the software is interfaced with other software/hardware systems. System Testing is actually a series of different tests whose sole purpose is to exercise the full computer-based system. For System Testing we tested our project on different OS platforms like Windows and Android.

5.4.2 Alpha Testing

Alpha Testing is a type of acceptance testing; performed to identify all possible issues and bugs before releasing the final product to the end users. Alpha testing is carried out by the testers who are internal employees of the organization. The main goal is to identify the tasks that a typical user might perform and test them. For Alpha Testing we had tested all the functionalities of the project among the developers.

5.4.3 Beta Testing

Beta testing is a type of User Acceptance Testing among the most crucial testing, which performed before the release of the software. Beta Testing is a type of Field Test. This testing performs at the end of the software testing life cycle. This type of testing can be considered as external user acceptance testing.

For Beta Testing we had tested all the functionalities of the project among the dummy users and colleagues.

5.5 Test Cases

For testing we had made a random temporary user and tried registering him, after it was successfully registered we tried attempting login and view available services, which was done successfully. The testing user was able to do all the tasks correctly and the in this way we tested our software for workability.

Chapter 6

Limitations

Following are the possible limitations of the system-

- Internet connection is compulsory: An Internet connection are going to be an absolute must run it. Otherwise, you"ll not be ready to browse the website.
- As website is in initial stage, so it can take more loading time when number of user are huge.
- Security issues in terms of public data.
- Pre-training is required: If the people of the city don't know about technology, then they will not be able to use it. Without training, they will find it irrelevant to their daily lives and will find it difficult to utilise it.
- Excess network trust: By relying almost entirely on electronics and networks, cities lose autonomy in decision making and could become incompetent to react or act in a scenario where these tools are not available.

Chapter 7

Future Scope

With the knowledge gained by developing this application. We can extend this application effectively by adding this services.

- Message and Email alerts for various happenings in the society can be added to the system so that users do not miss the updates and happenings of the society.
- Extending this application by providing stronger authorization service.
- Increasing the effectiveness of the application by providing Voice Chat Support.
- Extending it to Android app Support.
- By including payment gateway for more efficient billing processes.

Chapter 8

Conclusion

A smart city is a relatively new concept. The dynamic development of innovative technologies provides opportunities to build smart cities. However, as demonstrated by the literature review, excessive focus on the technological aspect alone leads to many problems in the implementation of the smart city concept. A city can hardly become smart only by using technology. In the current perception of the "smart city" concept, there is a return to the needs and preferences of the inhabitants. They are the focus, and technical solutions are to serve their interests. The bibliometric map created for this publication allowed identifying six sub-areas of research related to the smart city concept. While analyzing the individual clusters, it was noticed that they fit into the necessary elements of the smart city concept. For a city to be really smart, it must integrate such elements as the smart economy, smart people, smart living, the smart environment, the smart governance and smart mobility.

Chapter 9

References

Text Book References :

- The following books and manuals provided a lot of help to us in making this project a reality.
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- Java How To Program By H.M.Dietel and P.J.Dietel,Pearson Education/PHI
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