

# **Development of Hospital Management System**

A Practicum Report Submitted By

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ID # 18103391

In Partial Fulfillment of the Requirements for the Award of  
**Bachelor of Computer Science and Engineering**



**Department of Computer Science and Engineering**

College of Engineering and Technology

IUBAT – International University of Business Agriculture and Technology

Spring 2021

# **Hospital Management System**

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A practicum report submitted in partial fulfillment of the requirements for the degree of Bachelor of Computer Science and Engineering (BCSE) The practicum has been examined and approved by

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2021

## **Letter of Transmittal**

March 15, 2022

The Chairman, Practicum and Placement Board

College of Engineering and Technology - CEAT

IUBAT- International University of Business Agriculture and Technology

4, Embankment Drive Road, Sector 10

Uttara Model Town, Dhaka -1230, Bangladesh.

Subject: Letter of Transmittal.

Sir,

With due respect, I would like to approach you that it is a great opportunity as well as immense pleasure for me to submit this report titled “Hospital Management System” for the fulfillment of my Practicum course.

It was undoubtedly a splendid opportunity for me to work on this project to actualize my theoretical knowledge and has an enormous exposure with the corporate culture of a renowned company. Now I am looking forward for your kind appraisal regarding this practicum report.

I shall remain deeply grateful to you if you kindly go through this report and evaluate my performance. I hope that you would find the report comprehensive and competent augmented.

Thank you,

---

Rafiyatul Rabby Ridam

ID # 18103391

Program: BCSE

## Letter of Authorization

March 15, 2022

IUBAT- International University of Business Agriculture and Technology  
4, Embankment Drive Road, Sector 10  
Uttara Model Town, Dhaka -1230, Bangladesh.

Subject: Letter of  
Authorization.

Dear Rafiyatul Rabby Ridam,

You will be happy to know that the project on “**Development of Hospital Management System**” has been assigned to you. Based on your proposal you will have to submit it as soon as possible. We hope you will successfully complete the project on time. After successful completion of the project, you are requested to write a report based on the project.

For any kind of assistance feel free to contact with me.

Co – Supervisor

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Dr. Muhammad Hasibur  
Rashid Chayon  
Coordinator and Associate  
Professor  
Dept. of Computer Science and Engineering  
IUBAT – International University of  
Business Agriculture and Technology

Practicum Supervisor

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M M Rakibul Hasan  
Senior Lecturer  
Dept. of Computer Science and Engineering  
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## **Student's Declaration**

I am Rafiyatul Rabby Ridam , bearing ID# 18103391, student of BCSE - Bachelor of Computer Science and Engineering program, under the College of Engineering and Technology (CEAT) of IUBAT- International University of Business Agriculture and Technology declaring that, this report on the topic of “Hospital Management System” has been prepared for the fulfillment of the internship CSC 490, Practicum as well as the partial requirement of BCSE-Bachelor of Computer Science and Engineering degree.

The report and the project on — “Development of Hospital Management System” Information and Technologies Ltd. are originally prepared by me. All module and procedure of this project is being made after proper inspection and internet information.

It has not been prepared for any other purposes, rewards or presentations.

---

Rafiyatul Rabby Ridam

ID # 18103391

Program: BCSE

## **Acknowledgements**

I, first and foremost, would like to express our gratitude to Almighty Allah for helping me to complete the report properly.

My sincere thanks to Prof. Dr. Abdur Rab, Honorable Vice Chancellor, IUBAT-International University of Business Agriculture and Technology to give me an opportunity to submit this practicum report.

My profound respect goes to Prof. Dr.Utpal Kanti Das, Chair and Professor, Department of Computer Science and Engineering, IUBAT- International University of Business Agriculture and Technology for approving me to work on the project.

My outmost and sincere gratitude goes to Prof. Dr Hasibur Rashid Chayon , Coordinator of Department of Computer Science and Engineering, IUBAT- International University of Business Agriculture and Technology for allowing me to complete the project.

I would like to express our gratefulness to my supervisor M M Rakibul Hasan, Senior Lecturer, Department of Computer Science and Engineering, IUBAT- International University of Business Agriculture and Technology who has given me the opportunity to make such a project report for not only in this semester but also throughout my whole education life at IUBAT- International University of Business Agriculture and Technology by giving his valuable suggestions and advices at any time, at any situation. I would able to make this report effectively and properly only for his right direction.

I owe my deepest gratitude to my parents and our family members whose inexhaustible love was indispensable to endure in the tragic moments that confronted me once again with the vulnerability of life.

Lastly, this report would not have been possible without the essential and gracious support of many individuals who encouraged and supported us in any respect to complete this thesis on time. I am also so grateful to them.

## **Supervisor's Certification**

This is to certify that Practicum report on “Hospital Management System” has been carried out by Rafiyatul Rabby Ridam bearing ID# 18103391 of IUBAT – International University of Business Agriculture and Technology as a partial fulfillment of the requirement of practicum defense course. The report has been prepared under my guidance and is a record of the accomplished work carried out successfully. To the best of my knowledge and as per her declaration, no parts of this report has been submitted anywhere for any degree, diploma or certification.

Now he is permitted to submit the report. I wish him success in all his future endeavors.

Practicum Supervisor,

---

M M Rakibul Hasan

Senior Lecturer

Department of Computer Science and Engineering

IUBAT- International University of Business Agriculture and Technology

## Departmental Certification

On behalf of the Department of Computer Science and Engineering of International University of Business Agriculture and Technology (IUBAT) we, the undersigned, certify that this practicum report “Hospital Management System for icddr,b” for the award of Bachelor of Computer Science and Engineering (BCSE) degree was duly presented by Rafiyatul Rabby Ridam (ID No. 18103391) and accepted by the department.

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M M Rakibul Hasan

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## **Abbreviations**

## **Abstract**

Hospital Management System” is Hospital Web Application developed for practicum project.

## **Internship Certification**

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# **Chapter 1: Organization Overview**

Chapter 1 is representing the organizational overview, mission, vision and about company's various services. In this chapter detailed organizational overview is discussed along with the organizational hierarchy and my position over there as intern.

## **1.1 Organizational Overview**

ICDDR,B a full-featured web solution, software development, mobile application, service providing company in Bangladesh. Its core with the highly qualified Designers and Developers having experience of more than 10 years in various and complex designs and development. ICDDR,B (formerly known as the International Centre for Diarrhoeal Disease Research, Bangladesh) is an international health research organization located in Dhaka, Bangladesh.[1] Dedicated to saving lives through research and treatment, icddr,b addresses some of the most critical health concerns facing the world today, ranging from improving neonatal survival to HIV/AIDS.[2] In collaboration with academic and research institutions over the world, icddr,b conducts research, training and extension activities, as well as programme-based activities, to develop and share knowledge for global lifesaving solutions.

icddr,b is one of the leading research institutes of the Global South, releasing, according to the Thomson Reuters Web of Science, 18 percent of the Bangladesh's publications.

icddr,b has a mix of national and international staff, including public health scientists, laboratory scientists, clinicians, nutritionists, epidemiologists, demographers, social and behavioral scientists, IT professionals, and experts in emerging and re-emerging infectious diseases, and vaccine sciences.

## **1.2 Organization Services**

Information Technology is a part of ICDDR,B which provides all kinds of professional and creative software, Enterprise software integration, Management info system, Web development & Mobile app solutions for their organization.

**Web Development:** At ICDDR,B we focus on creating search engine friendly, aesthetically appealing and interactive website designs. It is a known fact that to build a strong web presence and to secure the countless marketing opportunities available on the internet, a good website is imperative, thus triggering a race for website design while designing and developing your website, our professionals

keep in mind key factors like easy-navigation, overall consistency and content quality, stipulated timeframes and budget and backend support.

### 1.3 Organization Location

68 Shaheed Tajuddin Ahmed Ave, Dhaka 1212

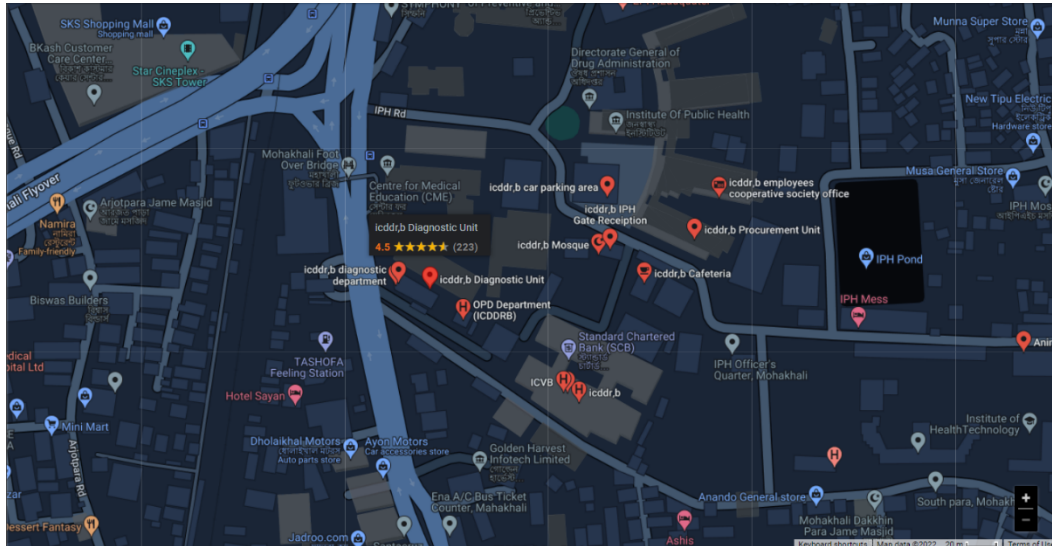


Figure 1. 1: Organization Location (Source: [www.icddrb.org](http://www.icddrb.org))

### 1.4 Organization Vision

ICDDR,B (formerly known as the International Center for Diarrhoeal Disease Research, Bangladesh) is an international health research organization located in Dhaka, Bangladesh.[1] Dedicated to saving lives through research and treatment, icddr,b addresses some of the most critical health concerns facing the world today, ranging from improving neonatal survival to HIV/AIDS.[2] In collaboration with academic and research institutions over the world, icddr,b conducts research, training and extension activities, as well as programme-based activities, to develop and share knowledge for global lifesaving solutions. icddr,b is one of the leading research institutes of the Global South, releasing, according to the Thomson Reuters Web of Science, 18 percent of the Bangladesh's publications. icddr,b has a mix of national and international staff, including public health scientists, laboratory scientists, clinicians, nutritionists, epidemiologists, demographers, social and behavioral scientists, IT professionals, and experts in emerging and re-emerging infectious diseases, and vaccine sciences.

## 1.5 Organization Mission

Proactively enable sustainable and quality IT solution to achieve organizational goal in an effective way ensuring excellence in service.

## 1.6 My position in this Organization

I am an intern developer to this organization. I am guided by a supervisor in this organization. He is very helpful and informative. I really learn a lot from him. I successfully completed my project in time. It was only possible by the guidance of my supervisor. It was also a big experience to maintain the office time for me. I also maintain the other rules of this organization.

I am happy to work with this office. It's really made me prepare for the beginning of my career.

## 1.7 Organizational Structure

The structure of my organization is drawn below:

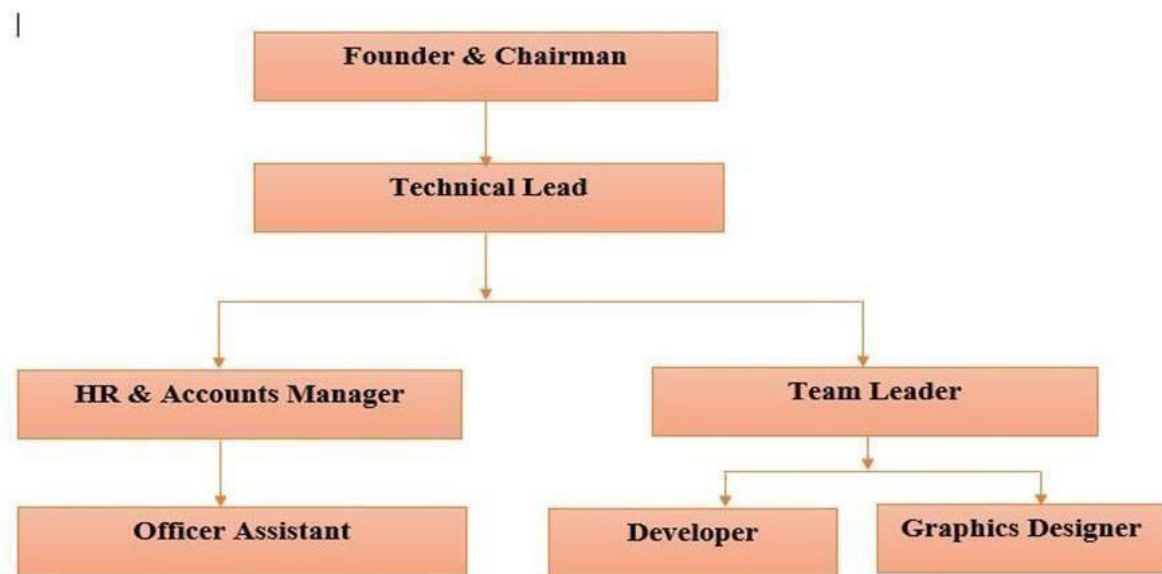


Figure 1. 2: Organization Structure of ICDDR,B

## **Chapter 2: Introduction**

### **2.1 Introduction**

Hospital Management System is a web application where the system uses different types of relations to create a network between different types of people. In the Hospital Management System, people work in different posts where they express their work which other people can see and work on the post and can give their comments. People can send messages to other people and can get messages from others through this process they create a network between them. There will be 3 types of user (Admin, Employee, Guests ).Guests can take doctor's advise remotely. So, this project helps the ones to get the main goal of Hospital Management System .it provides 100% message and data encryption which can allow hiding data form admin or from any user expect the use who is meant to see the message or data.

### **2.2 Background of study**

In the 20<sup>th</sup> century hospitals are transferring their services in online, we use them every day but its still not much developed yet, so this project is all about to highlight some possible features which a hospital can have in their website.

### **2.3 Objective**

To create a Hospital Management System to minimize the hustle of people and maintain a well management in organization.

#### **2.3.1 Broad Objective**

The main objective of Hospital Management System is to minimize the hustle of people and maintain a well management in organization., Guests can take doctor's advise remotely, also give the opportunity to modify their profile as their wills.

#### **2.3.2 Specific Objective**

This Hospital Management System architecture can handle the issues like,

- The project maintains an echo system in which all the information contains at a central
- DB, which leads easy accessibility and consistency.
- Guests can take doctor's advise remotely.
- User Can modify their profile as their wills.

- User of the post can update his/her profiles.
- Every user can see some specific pages of work .
- User can send or receive message form users by following each other's.
- The Text of the message are encrypted so there is no way to leak.
- User can see all details one user created in that user profile.

## **2.4 Proposed System Benefits**

This proposed system gives the safety from information leaking like text messages also this system gives an opportunity create a friendly network between different types of people from different region.

- Provides instant information.
- The project reduces time.
- User friendly System for User Satisfaction.
- Data are secured.

## **2.5 Methodology**

For this project, two types of data are required primary data secondary data. ICDDR,B provided all types of primary and secondary data needed to develop the system. In the Analysis and Design chapter, I have described the procedure and processes that were followed by me to develop the system.

### **2.5.1 Data Sources**

The sources of data for the purpose of this project are:

- Primary Data
- Secondary Data

#### **2.5.2 Primary Data**

The organization (ICDDR,B) provided the primary data which was collected from user. The organizations practical experience, observation, and face-to-face interview with user, the primary data that were required was generated by organization web administrators .

#### **2.5.3 Secondary Data**

Secondary data are the data which are generated by real life experiences, studying different articles, newspapers and research papers and another great source for collecting information was via Internet. Data, facts and statistics were collected via internet navigation which made me understand the project better. For that I searched some Hospital Management System, read articles about management.

## 2.6 Limitation of the Project

Some limitations of my project are:

- Huge database needed.
- This system does not allow any type of calling feature.
- Group and Page feature also not in the system.

## 2.7 Process Model

There are many situations during which initial software requirements are reasonably well defined, but the general scope of the event effort precludes a purely linear process, additionally, there could also be a compelling got to provide a limited set of software functionality to users quickly then refine and expand thereon functionality in later software releases, The incremental process model is a method of software development where the model is designed, implemented and tested incrementally until the product is finished. It involves both development and maintenance. The product is defined as finished when it satisfies all its requirements. This model combines the properties of the waterfall model with the iterative philosophy of prototyping.

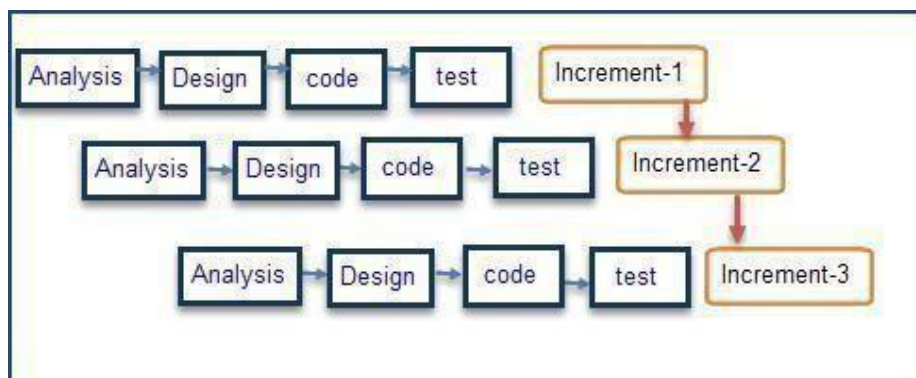


Figure 2. 1: Incremental Process Model (Source: thegeek.com)

### Reason for choosing Incremental Process Model

- Provides better support for process iteration.
- Increase reusability of the code in this process.

- As it increases code reusability in work process, so it is time efficient.
- This model allows early delivery of parts of the system which is perfect of internship.
- This model supports easier integration of subsystems which allow
- As this model allows integration of sub-system so whole system failure is less.

## **2.8 Feasibility Study**

Feasibility study determines whether that solution is possible or achievable for the organization. This means that the tasks that we'll perform are worth enough or not. There are three major areas of investigation and generating ideas a for new systems. On studying the feasibility of the system, three major considerations are addressed, to seek out whether the automation of the system is possible.

- Technical feasibility
- Economic feasibility
- Operational feasibility

### **2.8.1 Technical Feasibility**

Technical feasibility addresses concerns about hardware capability, reliability, availability, and the skills of the development team. So, I found that this model is technically feasible because this can be developed by the following lines.

To develop this project, need a high-level programming language like PHP. For frontend HTML, CSS, Bootstrap, the framework is Laravel, and for databases Xampp Server is used to user MySQL. To store data an editor (VsCode) needed, a cloud server and a computing device like a computer or Smartphone with a simple configuration and data connection. All the technology which is mentioned above is ready to use. So, our project is technically feasible.

### **2.8.2 Economic Feasibility**

Profitable feasibility determines to what extent a new system, is cost-effective. My software is economically doable. This project can run any OS with medium requirements. So, the cost will be not that much as it gives an opportunity to use any OS.

### **2.8.3 Operational Feasibility**

Operational feasibility addresses concerns about user acceptance, operation support, and the conditions of entities and factors in the association's external terrain. It's operationally feasible. Anyone can

fluently understand the process of our software. They do need not any redundant training to understand it. Users can use the system by subscribing in and logging in to our site.  
So, it's operationally feasible.



## **Chapter 3: Requirement Engineering**

The process of establishing the services that the customer requires from a system and the constraint under which it operates and is developed. Requirement reflects the needs of user for a system that serves a certain purpose such as controlling a device, placing a command or finding information.

### **3.1 Requirement Engineering**

Requirement engineering is, as its name suggests, the engineering discipline of establishing user requirements and specifying software systems. There are numerous definitions of Requirements Engineering; still, they all partake the idea that conditions involve chancing out what people want from a computer system and understanding what their requirements mean in terms of design. Requirements engineering is nearly related to software engineering, which focuses further on the process of designing the system that users want.

- User requirements
- System requirements
- Functional requirements
- Non-functional requirements
- Hardware Requirements
- Software Requirements

### **3.2 Requirement Analysis**

Requirement analysis provides the software designer with a representation of information, function and behavior that can be translated to data, architectural, interface and component level designs. In the following task phases the requirement analysis was done.

#### **3.2.1 User Requirements**

Admin:

- Admin can login/register.
- Admin can (View, Update) their profile.
- Admin can manage (View, Block) user.
- Admin can manage (View, Delete) post information.

User:

- User Can login/register.

- User Can manage ( View) posts.
- User Can manage (View, Update) their profile.
- User Can manage (View, Update, Delete) their response.
- User Can manage (Send, Receive) messages.
- User Can manage (Send, Receive) emails.
- User Can manage (Send, Receive) QR codes.

Guest:

- Guest can see ( View) the dashboard.
- Guest can submit (Send, Receive)their problems and get response through emails.

### 3.2.2 System Requirements

Admin:

- Admin can login/register.
- For login, login form will be appeared.
  - ✓ Admin must provide required information for login in the form and click “Log in”.
  - ✓ If the provided information of the admin has been matched with the database, then the admin can access his/her panel. If required information doesn’t match the system will not allow her/him to admin panel and will ask for create a new account.
- Admin can (View, Update) their profile.
  - ✓ Using the admin panel an admin can view his/her profile of the system by clicking on “Employees” button from the menu bar.
  - ✓ After clicking on “Profile” button, the system shows the all information on a table.
  - ✓ There will be a “Edit” button. Using this button, admin can edit the information of his/her profile.
- Admin can manage (View, Update) User information
  - ✓ Using the admin panel an admin can manage user information of the system by clicking on “User” button from the side bar.

- ✓ After clicking on “User” button, the system shows the all-users information on a table.
  - ✓ There will be a “Block” button in every tuple. Using these buttons, admin can block the user.
  - ✓ After clicking on “Block” button, the system will show a notification message about blocking the user from the system.
  - ✓ From the all-user information page admin can also see who blocked user and a “Unblock” Button beside.
  - ✓ After clicking “Unblock” Button user will unblocked and can access to the site again.
  - Admin can manage (View, Delete) posts.
    - ✓ Using the admin panel an admin can manage posts of the system by clicking on “Post” button from the menu bar.
    - ✓ After clicking on “Posts” button, the system shows the all-post list on a table.
    - ✓ By clicking on the “Delete” button admin can delete the specific post from the system.
- User:
- User can see public posts.
    - ✓ Any User (Registered/Unregistered) can see the available public posts in the system by clicking on “Root URL” button from the navbar.
    - ✓ User can do anything else but see without login to the system.
  - User can login/register.
    - ✓ To interact with the system, user must need to have an account on the system.
    - ✓ The provided information of the user at registration has been stored in database, then the system will take her/him to the homepage of the system.

- ✓ If the provided information of the user has been matched with the database, then the user can go to the website. Otherwise, the system will show an error message and suggest registering as a new user or did you forget password.
- Customer can (View, Update) their profile.
  - ✓ After login user can view his/her profile of the system by clicking on “Profile” button from the menu bar.
  - ✓ After clicking on “Profile” button, the system shows the all information on a table.
  - ✓ There will be a “Edit” button. Using this button, user can edit the information of his/her profile.
  - ✓ All the post the user made will be under the profile section in a list.
- User can manage (“Send”, “Receive”) messages.
  - User can click on the “Chat” button on the navbar this will take her/him to the chat page
  - On the chat page user will find a list of users who are following him/her.
  - By clicking on a user, he/she can send and receive messages.
- User can manage (“Update”) profile.
  - ✓ On the details page of every post there are option for deleting the post.
  - ✓ “Delete” button is hidden for every user unless it’s the owner of the post.
  - ✓ By clicking “Delete” button user can delete post from the database.

- ✓ After clicking on update “Button” form update from the post will be updated, and  
can see the change on the post.

### **3.2.3 Functional Requirements:**

#### **Admin:**

- Registration
- Login
- View profile
- View Post List
- View User List
- Block User
- Unblock User
- Delete Post
- Logout

#### **User:**

- Registration
- Login
- View profile
- Edit Profile
- View Post
- Delete post
- Send messages
- Receive messages
- Logout

### **3.2.4 Non-Functional Requirements:**

- User cannot create more than one accounts using the same Mail Address.
- System will all store the Mail address and Password in Database.
- Admin and User will see their profile information in their profile after login.
- The registration will be validated with valid mail address and account will be verified.

### **3.2.5 Hardware Requirements:**

The hardware listed by no means a minimal demand to run the system, but rather a base limit for running the system easily and comfortably. This is also considering the implicit amount of traffic that may go through the server.

- 1 x Intel Core i3 6<sup>th</sup> gen Processor.
- 4 GB (DDR4) RAM
- 120 GB 7200 rpm SATA Hard Drive.
- 2 x 10/100/1000 Ethernet, 1 PCIe 2.0x16 slot.

### **3.2.6 Software Requirements:**

- Web Server: Xampp Server Bitnami 7.3.25
- Server-Side Scripting: Laravel 8 Framework of PHP-8.
- Database Engine: MySQL 5.1.34
- Database Tools: MySQL Administrator, MySQL Query Browser
- Designing Tools: Draw.io, Creately
- Text Editor: VsCode

## **3.3 Use Case Diagram of the System**

### **3.3.1 Use case symbols**

Important parts in a use case:

- Actor: An Actor is outside or external the system.
- Use case: Use case A use case represents a function or an action within the system. It's drawn as a round and named with the function.
- System Boundary: System Boundary A system is a sequence of events that be when a stoner interacts with the system and is drawn as a cube. This is a voluntary element but useful when you are imaging large systems.
- Relationship:

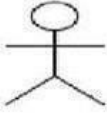
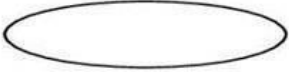
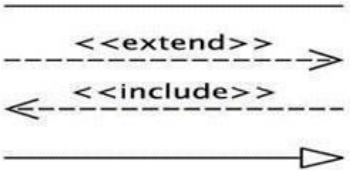
Symbol	Reference Name
	Actor
	Use case
	Relationship

Figure 3. 1: Use Case Symbols

### 3.3.2 Use case diagram

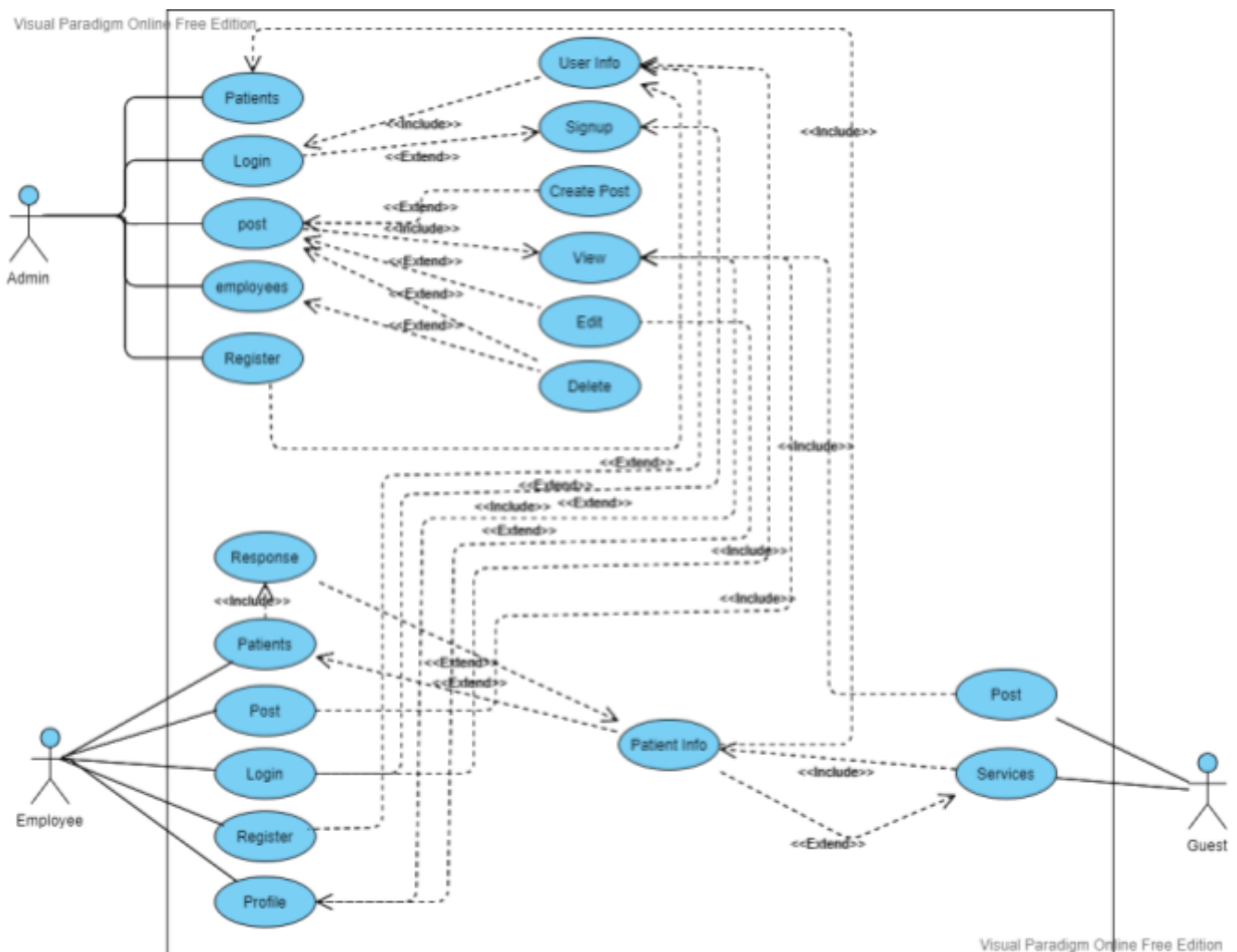


Figure 3. 2: Use Case Diagram for Hospital Management System

### 3.3.3 Use case text

In the project of ‘Development of Hospital Management System’, the use case diagram is used to visualize the different types of roles in a system and how those roles interact with the system.

This system is basically a platform where user can communicate with other users. Submit their problems respond according to the specific problem.

- Login: Actor Can Login to the system if they are registered. Actor are Admin, User.
- Actor Registration: Actor are Admin and Users. Admin can manage the users. Visitor can see only the post which are public.
- Audience Type: User can add audience type at time of creating post.
- Post Type: User can post in three ways with image, without image only text and with both image and text.
- Profile: User got a default profile with a default image they can modify it if they want.
- Messages: User can send message to another user if both them are following each other.
- Admin: Admin can block and unblock user blocked user cannot user the system as he/she won't be able to login and admin also can delete any post but can't modify any post information or user information.



## Chapter 4: System Planning

System planning chapter shows the functions of the project ‘Development of Hospital Management System’. The function point estimation, effort distribution and project schedule chart are also shown in this chapter.

### 4.1 Scope of Project

The scope of the project is to satisfy our clients and keep records of the ongoing project, work analysis. To use the system user do not need any technical knowledge. Some more scopes are:

- Web based application, can be accessible from anywhere by internet browser.
- Searching system is available here for all the transaction.
- Platform independent; run on Windows, Mac or Linux.
- No license fees or renewal fees.

### 4.2 Function of Proposed System

#### 4.2.1 Function Description

Create Account	F1
Login into the System	F2
Create post	F3
View post	F4
Update post	F5
Send mail	F6
Submit problem	F7
Respond to a problem	F8
Delete problem	F9
QR code generate	F10
Send Message	F11
Receive Message	F12

### 4.3 System Project Planning

Before starting any project, it is compulsory to estimate the work to be done, the resources that will be required, the time that will elapse from start to finish and to analyze the project to determine whether it is feasible or not. Software project management commences with a set of activities that collectively

called software project planning. Through the software project planning I estimate the work to be done, the resources that will be required, the time that will elapse from start to finish and finally I analyze the project to determine whether it is feasible or not. The activities which are followed in this project planning are:

- System Project Estimation
- Function Point Estimation
- Based Estimation
- Effort Distribution
- Task Scheduling Project
- Schedule Chart Cost
- Estimation

#### **4.3.1 System Project Estimation**

The accuracy of a software project estimate predicted based on a number of things:

- ✓ Properly estimated the size of the product to build.
- ✓ The degree to which the project plan reflects the abilities of the software team or engineer
- ✓ The stability of the product requirements and the environment that supports the software engineering effort.

Software size estimation is the most important matter that I have to consider during the software project. If the software size is not calculated properly, then this will cause various problems such as scheduling problems, budget problem etc. As the project is going on, before estimating the software size, I have to confirm that software scope is bounded.

Software size estimation is the most important matter that I have to consider during the software project. If the software size not calculate properly, then this will cause various problems such as scheduling problems, budget problem etc. As the project goes on before estimating the software size, I have to confirm that software scope is bounded.

### 4.3.2 Function Oriented Metrics

#### Complexity Matrix

Table 4. 1: Complexity Matrix

<b>EI</b>	<b>1-4 DETs</b>	<b>5-15 DETs</b>	<b>16 or more DETS</b>
<b>1 FTR</b>	<b>Low</b>	<b>Low</b>	<b>Average</b>
<b>2 FTRs</b>	<b>Low</b>	<b>Average</b>	<b>High</b>
<b>3orMoreFTRs</b>	<b>Average</b>	<b>High</b>	<b>High</b>

Table 4. 2: Complexity Matrix 2

<b>EO/EQ</b>	<b>1-5 DETs</b>	<b>6-19 DETs</b>	<b>20 or more DETS</b>
<b>2 to 3 FTRs</b>	<b>Low</b>	<b>Average</b>	<b>High</b>
<b>4 or More FTRs</b>	<b>Average</b>	<b>High</b>	<b>High</b>

Table 4. 3: Complexity Matrix for UFP

<b>Complexity</b>	<b>Transaction Function Type</b>	<b>Transaction Function Type</b>
	<b>EI/EQ</b>	<b>EO</b>
<b>Low</b>	3	4
<b>Average</b>	4	5
<b>High</b>	6	7

Table 4. 4: Complexity Matrix 3

<b>ILF/EIF</b>	<b>1-19 DETs</b>	<b>20-50 DETs</b>	<b>51 or more DETS</b>
<b>1 RET</b>	<b>Low</b>	<b>Low</b>	<b>Average</b>
<b>2 to 5 RETs</b>	<b>Low</b>	<b>Average</b>	<b>High</b>
<b>6 or More RETs</b>	<b>Average</b>	<b>High</b>	<b>High</b>

Table 4. 5: Complexity Matrix for UFP 2

Complexity	Transaction Function Type	Transaction Function Type
	<b>ILF</b>	<b>EIF</b>
<b>Low</b>	<b>7</b>	<b>5</b>
<b>Average</b>	<b>10</b>	<b>7</b>
<b>High</b>	<b>15</b>	<b>10</b>

#### 4.4 Identifying Complexity

The task of counting function points should be included as part of the overall project design plan. This is counting function points should be listed and planned. The first function point count should be developed to give sizing used for estimating.

##### Transactional Functions:

- External Inputs [EI]
- External Outputs [EO]
- External Queries [EQ]

##### Data Functions:

- Internal Logical Files [ILF]
- External interface files [EIF]

Also, FETs, DET, RET and FTR have been applied for the analysis of data function and transactional functions.

##### 4.4.1 Identifying complexity of transition function

Table 4. 6: Identifying complexity of transition function

Transition function	Fields/File involve	FTRs	DETs
1. Create account (EI)	Fields- id, name, username, email, role, address, password, submit File Name-users	1	8
2.Login(3*EI)	Fields- email, password, submit File Name: users	1	3

3. User can view their profile (EQ)	Fields- username, name, email, bios, url, followers, following, post list File Name: profile, user, post	3	8
4. User can update their profile (EI)	Fields- name, bios, image, url, submit File Name: profile	1	5
5. Visitors Can see public post (EO)	Fields- caption, image, date, like, comment, audience status. File Name: post, user	2	5
6. User can create post (EI)	Fields- id, caption, images, user id, emotion, type, select audience, File Name: post, user	2	6
7. Post details view (EO)	Field- users name, post caption, image, emotion, date, likes, comment, edit, delete, count comment, count like. File Name: user, post, like, comment.	4	11
8. Edit post (EI)	Fields- Select audience, caption, image, submit. File Name: post	1	4
9. Send message (EI)	Fields- user name, message, date, sent button File Name: profile, message	2	4
10. Receive message (EO)	Fields- user name, message, date, sent button File Name: profile, message	1	4
11. Find user (EQ)	Fields- user name, bios, visit profile button File Name: user, profile	1	5
12. Admin view posts (EO)	Fields- caption, username, date, File Name: post, user	2	3
13. Admin hide post (EI)	Fields- caption, username, date, hide button File Name: post, user	2	4
14. Admin view users (EO)	Fields- name, username, date, block button File Name: user	1	4
15. Admin block users (EI)	Fields- name, username, date, block button File Name: user	1	4

#### 4.4.2 Identifying complexity of data function

Table 4. 7: Identifying complexity of data function

Data function	Fields/File involve	R E Ts	D E Ts
1. users (ILF)	<b>Fields-</b> id, name, username, status, is active, email, role, password	1	8
2. profile (ILF)	<b>Fields-</b> id, user id, title, bios, url, image.	1	7
3. posts (ILF)	<b>Fields-</b> id, user id, type, caption, image, emotion	1	6
4. message (ILF)	<b>Fields-</b> user id, receiver id, is seen, message	1	4

#### 4.4.3 Unadjusted function point contribution

Table 4. 8: Unadjusted function point contribution of transition function

Transition function	FTRs	DETs	Complexity	UFP
1. Create account (EI)	1	8	Low	3
2. Login (EI)	1	3	Low	3
3. User can view their profile (EQ)	1	8	Low	3
4. User can update their profile (EI)	1	5	Low	3
5. Visitors Can see public post (EO)	2	5	Average	5
6. User can create post (EI)	2	6	Average	4
7. Newsfeed for users (EO)	3	5	Average	5
8. Post details view (EO)	4	11	High	7
9. Edit post (EI)	1	4	Low	3
10. Find friends (EO)	1	1	Low	4
11. Send message (EI)	2	4	Low	3
12. Find user (EQ)	1	5	Low	3
13. Admin view posts (EO)	2	3	Low	4
14. Admin hide post (EI)	2	4	Low	3
15. Admin view users (EO)	1	4	Low	4
26. Admin block users (EI)	1	4	Low	3
Total				60

Table 4. 9: Unadjusted function point contribution for data functions

Data function	RETs	DETs	Complexity	UFP
1. users (ILF)	1	8	Low	7
2. profile (ILF)	1	7	Low	7
3. posts (ILF)	1	6	Low	7
4. message (ILF)	1	4	Low	7
Total				28

#### 4.4.4 Performance and Environmental impact

Table 4. 10: Performance and environmental impact

GSC (General System Characteristics)	TDI
1. Data Communications	4
2. Distributed Data Processing	1
3. Performance	4
4. Heavily Used Configuration	2
5. Transaction Rate	2
6. On-Line Data Entry	1
7. End-user Efficiency	2
8. Online Update	1
9. Complex Processing	2
10. Reusability	2
11. Installation Ease	4
12. Operational Ease	3
13. Multiple Sites	3
14. Facilitate Change	1
Total Degree of Influence (TDI) (Range 0 to 70 -> influence size $\pm 35\%$ )	32

3

#### 4.4.5 Counting Function Point

Value Adjustment Factor (VAF) =  $(0.65 + (0.01 * TDI))$

=  $(0.65 + (0.01 * 32))$

= 0.97

UFP = UFP (Data Function) + UFP (Transition Function)

= 60+28

=88

Adjusted Function Point (AFP) = UFP \* VAF

$$= 88 * 0.97$$

$$= 85.36$$

Efforts for Project

$$= \text{AFP} * \text{Productivity}$$

$$= 85.36 \times 15.5$$

$$= 1,323.08 \text{ hours}$$

One person works 8 hour per day

$$= 1,323.08 / 8 = 165.385 \text{ days}$$

Approximate 166 days

In a group, there are 2 members

$$= 166 / 2 = 83 \text{ days}$$

In a month, 20 days are working days and 5 days from home

$$= 83 / 25 = 3.32 \text{ months}$$



## Processed Based Estimation

Table 4. 11: Processed based Estimation

Function Name	RG (Client Visit))	Data Analysis	Risk Analysis	Engineering		Developing		Testing	Implementation And Support	Total
				Planning	Design	Coding	Documentation			
F1	0.2	0.9	0.1	0.1	0.6	1.62	0.6	0.9	0.4	5.42
F2	0.6	1.0	0.01	0.01	0.82	2.5	0.82	1.44	0.42	7.62
F3	0.2	0.8	0.1	0.2	0.6	1.9	0.6	0.9	0.4	5.7
F4	0.2	0.7	0.1	0.1	0.5	2.01	0.5	0.7	0.79	5.6
F5	0.3	0.8	0.02	0.1	0.5	1.5	0.5	0.8	0.3	4.82
F6	0.2	1.0	0.1	0.14	0.5	2.0	0.7	1.37	0.5	6.51
F7	0.4	1.8	0.1	0.3	0.5	1.6	0.5	0.8	0.6	6.6
F8	0.4	1.1	0.1	0.3	0.7	2.3	0.7	1.5	0.5	7.6
F9	0.4	0.9	0.1	0.2	1.5	1.1	0.5	0.9	0.3	5.9
F10	0.2	1.2	0.2	0.49	0.88	1.3	1.51	1.4	0.5	7.68
F11	0.4	0.8	0.5	0.5	0.5	1.4	0.6	0.6	0.5	5.8
F12	0.4	1.6	0.23	0.1	0.7	2.1	0.87	1.2	0.5	7.7
F13	0.5	0.6	0.1	0.1	0.5	2.4	0.4	1.0	0.45	6.05
									Total	83
Total	4.4	13.2	1.76	2.64	8.8	23.73	8.8	13.51	6.16	
Percentage	5%	16%	2%	3%	10%	31%	10%	16%	7%	100%

#### 4.4.6 Effort Distribution

The software project estimation technique leads to estimate of work units required to complete the software development in this project, 40% of full software development has been allocated to Coding/Developing, 35% has been allocated to analysis, design and the remaining 25% has been allocated to software testing and support.

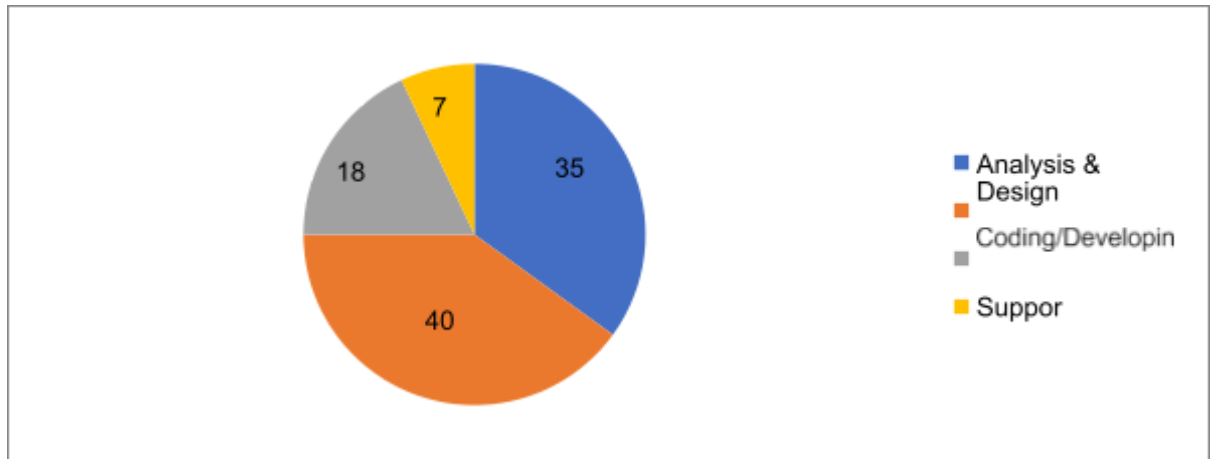


Figure 4. 1: Effort Based Estimation

A detailed view of the effort distribution chart is illustrated below:

In the Pie chart we can see that, among 35% of Analysis and Design we spend 5% for client visit and collect all requirement gathering, 15% for analysis the data and information, 2% for risk analysis, 3% for planning and 10% for designing.

Among 40% of Developing, 30% is used for coding, 10% is used for documentation, 18% is used for testing and last 7% is used for implementing, giving the support to the client.

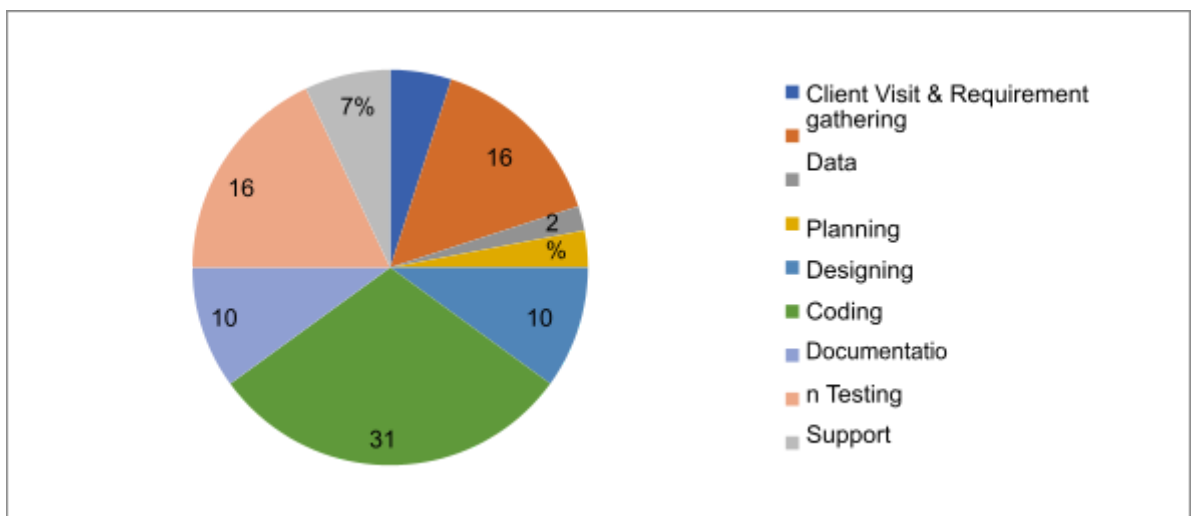


Figure 4. 2: Effort Distribution PIE Chart

#### 4.4.7 Project Schedule

Total system development is a combination set of tasks. This set of tasks should do successionally and timely. The project schedule works as the guideline of the developer of the system. The chart is given below is for developing this project:

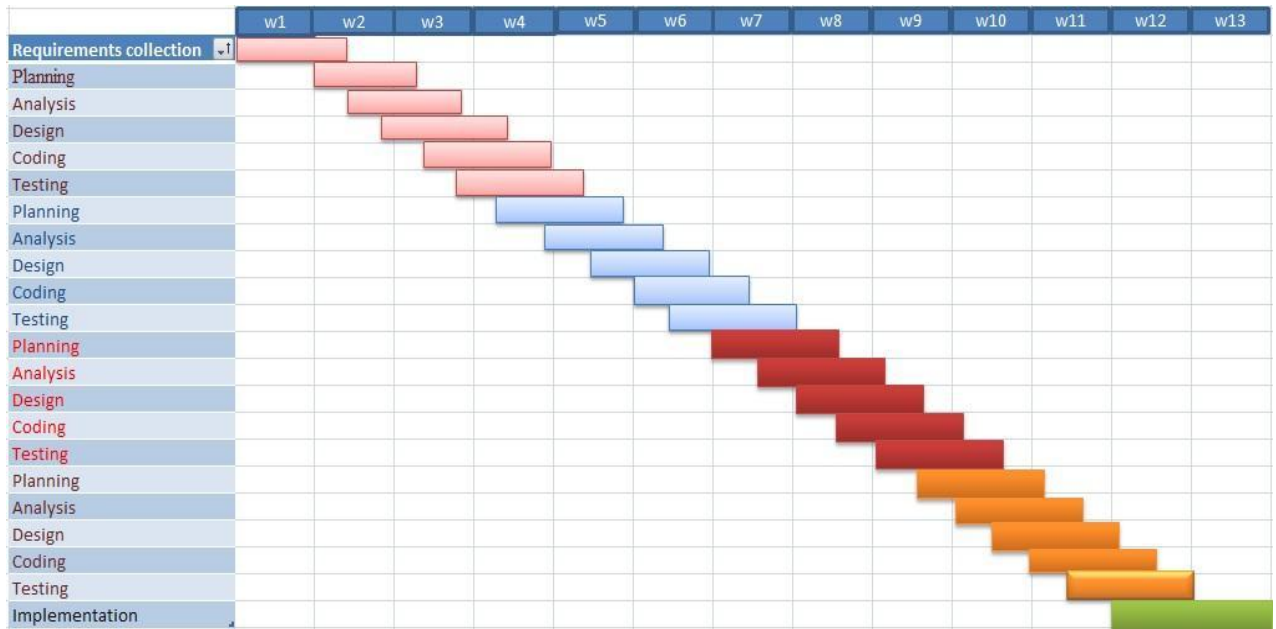


Figure 4. 3: Project Schedule Chart

## 4.5 Cost Estimation

The approximation of the cost of a program is cost estimation. In this project, there are few factors to analyze and calculate the cost. Given below,

- Personal costs
- Software costs
- Hardware costs
- Other costs

### 4.5.1 Personnel cost

Number of days in a year = 365

Number of government holidays in a year = 24 Number of weekly holidays in a year = 52

Total number of working days to develop the project =  $365 - (52 + 24) = 289$  days  
Total number of working days per months to develop the project =  $289 / 12$

=24.083 days

Organization working hours per day = 8 hours

Organization working hours per month =  $24.083 \times 8 = 192.664$  hours

Total working hour in 3.33 months =  $24.083 \times 8 \times 3.33 =$  Approximately 642 hours

Table 4. 12: Personnel Cost

Position	Salary/month	Salary/hour
System Analyst	35000	182.29
Designer	25000	130.2
Coder	20000	104.17
Tester	20000	104.17

Total salary of Analyst in 3.33 months =  $\text{TK } 83 \times 182.29$

= TK 15130

Total salary of Designer in 3.33 months =  $\text{TK } 180 \times 130.2$

= TK 23436

Total salary of Coder in 3.33 months =  $\text{TK } 290 \times 104.17$

= TK 30209

Total salary of Tester in 3.33 months =  $\text{TK } 90 \times 104.17$

= TK 9375

Table 4. 13: Personnel Cost 2

Designation	Person	Working Hour	Salary	Total Salary
System Analyst	One	83	15130	<b>78150 BDT</b>
Designer	One	180	23436	
Coder	One	290	30209	
Tester	One	90	9375	

#### 4.5.2 Hardware cost

Cost of a computer = 35000

Computer life = 3 years

Computer Usage = 13 weeks = 3.33 months

Computer cost =  $(35000/36) * 3.33 * 8 = 25900$  BDT

Table 4. 14: Hardware Cost

Hardware	Cost
Computer	25900
Modem	1600
Printer	5000
<b>Total</b>	<b>32500 BDT</b>

#### 4.5.3 Software cost

Table 4. 15: Software Cost

Name	Amount
Windows 10	8500
MS Office 2016	Free
XAMPP	Free
MySQL	Free
Notepad++	Free
<b>Total</b>	<b>8500 BDT</b>

#### 4.5.4 Others Cost

Table 4. 16: Estimation of Other Cost

Name	Price (BDT)
Transport	2000
House Rent	10000
Other	1500
<b>Total</b>	<b>13500 BDT</b>

#### 4.6 Account Table

Table 4. 17: Accounts Table

Particulars	TK
Salary-	
• System Analyst	15130
• Designer	23436
• Coder	30209
• Tester	9375
	<b>78150 BDT</b>
Hardware Cost –	
• Computer	25900
• Modem	1600
• Printer	5000
	<b>32500 BDT</b>
Software Cost –	
• Windows 10	8500
• MS office 2016	Free
• Xampp	Free
• MySQL	Free
• Notepad++	Free
	<b>8500 BDT</b>
Other Costs-	
• Transport	2000
• House Rent	10000
• Other	1500
	<b>13500 BDT</b>
Total Cost	<b>132650 BDT</b>

## Chapter 5: Risk Engineering

### 5.1 Risk Management

A threat is a serious problem that might or might not be. It's necessary to dissect the potential risks in a project. However, many problems can plague the software project, If the risks of a software project aren't properly analyzed and estimated. Anyone developing any type of system encounters it and it has to be managed.

#### 5.1.1 Stages of Risk

Risk analysis and management are a series of steps that help a software team understand and manage uncertainty. Many problems can plague of software project. A risk is a probably problem; it might happen, it might not. But regardless of the outcome, it's a really good idea to identify it, assess its probability of occurrence, and estimate its impact, and establish a contingency plan should the problem actually occur. Risk analysis and management are a series of steps that help a software them to understand and manage uncertainty. For establish risks managements model the following steps are followed:

**Identification:** Risk picking out is the process of detecting probable risks or hazards through data collection. An area of data collection and manipulation tools and techniques exists. The team is using both automated and manual techniques to gather data and begin to distinguish potential risks to Web resources. Web scraping is one of the effective ways to gather information about the state of web pages and sites.

**Classification:** Risk classifying is the process of developing a structured model to categorize risk and fitting observable risk attributes and events into the model. The team combines quantitative and qualitative methods to characterize and classify the risks to Web pages, Web sites, and the hosting servers.

**Assessment:** Risk assessment is the process of defining relevant risk scenarios or sequences of events that could cause damage or loss and the likelihood of such events. Many sources focus on risk assessment. Rosenthal describes the characteristics of a generic risk assessment standard as "transparent, consistent, consistent, comprehensive, comprehensive, unbiased, uniform, balanced, defensible, enduring, flexible, and accompanied by adequate and sufficient guidelines.

**Analysis:** Risk analysis determines the potential impact of risk models or scenarios, the possible extent of loss, and the direct and indirect costs of recovery. This step identifies vulnerabilities,

considers the organization's willingness to accept the risk given the potential consequences, and develops mitigation responses.

**Implementation:** Risk management defines policies, procedures, and mechanisms implementation to manage and respond to recognizable risks. The implemented program should balance the value of assets and the direct and indirect costs of preventing or recovering from loss. To take comprehensive care of a web-based system we must consider the following points:

- Hardware and software environment including any upgrades to the operating system and Web server, the installation of security patches, the removal of insecure services, use of firewalls, etc.
- Procedures such as contracting with reputable service providers, renewing domain name registration, etc.
- Network configuration and maintenance including load balancing, traffic management, and usage monitoring.
- Backup and archiving policies and procedures including the choice of back up media, media replacement interval, number of backups made and storage location.
- Physical location of the server and its vulnerability to fire, flood, earthquake, electric power anomalies, power interruption, temperature fluctuations, theft, and vandalism.

### 5.1.2 Categories of Risk

There are different categories of risks that should keep in consideration for any software project. The following categories of risks have been considered in this software project.

- **Project risks:** The risks which threaten the project plan. If these risks come into the project, it is likely that the project schedule will delay and that costs will rise up. Project risks identify probable budgetary, schedule, personnel, resource, client, and requirement problems and their impact on the software project.
- **Technical risks:** if these type threats of arise its threats the quality and timeliness of the software to be produced. If a technical risk come software development life time, implementation may become difficult or impossible. Technical risks identify potential design, implementation, interface, verification, and maintenance problems. Moreover, specification ambiguity, technical uncertainty, technical obsolescence is also risk factors.
- **Business risks:** These risks threaten the viability of the software to be built. The business risks can be market risks, building a system that no one really wants. Strategic risks,



building a system that no longer fits into the overall business strategy for the company. Management risks, losing the support of senior management due to a change in focus or a change in people. Budget risks, losing budgetary or personnel commitment.

## 5.2 The RMMM Plan

- Risk Mitigation: Proactive coming up with for risk avoidance.
- Risk Monitoring: Assessing whether or not expected risks occur or not, guaranteeing Preventive steps are being properly applied, collect info for future risk Analysis, attempt to see that risks caused which problem.
- Risk Management: Actions to be taken within the event, that mitigation steps have Failed and the chance has become a live problem.

**Type of Impact:** Catastrophic (1), Marginal (2), Tolerable (3), Critical (4).

**Type of Probability:** very low (<10%), low (10–25%), moderate (25–50%), high (50– 75%), very high (>75%)

**Project Risks:** In my system, the bellow mentioned projects risks I needed manage..

### 5.2.1 Project Risks:

Table 5. 1: Project Risk (P01)

Project Risk(P01)	Date: 22-03-20
Name	Changes the requirements
Probability	Low (25%)
Impact	Marginal (2)
Description	Customer may change their requirement
Mitigation and Monitoring	Requirements are redefined by the company due to time or business needs. Meeting will be held with the company regularly. This ensures that the product we are producing solves a problem.
Management	Emergency meeting between both parties to identify new project requirement and goals.
Status	Not occur.

Table 5. 2: Project Risk (P02)

Project Risk (PR02)	Date: 08-11-2020
Name	Poor Quality Documentation
Impact	Catastrophic

Description	Poor quality documentation of the members.
Mitigation and Monitoring	The meeting will be held routinely to offer documentation suggestions and topics. The progress on documentation will also have monitored in each meeting.
Management	The addition of new topics or removal of unnecessary topics into the documentation will assigned to responsible person.
Status	Monitoring it.

### 5.2.2 Technical Risks:

Table 5. 3: Technical Risk (TR01)

Technical Risks (TR01)	Date:
Name	Computer Crash
Impact	Catastrophic
Description	Computer may crash due to several reasons.
	every day and we can use IPS to stop unexpected shutdown.
Management	If our computer has been crashed then we will restore backup.
Status	We are not facing such kind of problem yet.

Table 5. 4: Technical Risk (TR02)

Technical Risk (TR02)	<b>Date:</b>
Name	Technology doesn't meet specifications.
Impact	Catastrophic
Description	Customer doesn't have the technology to their desired specification.
Mitigation & Monitoring	Ensures that the product we are producing and the specifications of the customer are equivalent.
Management	The customer should be immediately notified and whatever steps necessary to rectify this problem should be done. Preferably a meeting should be held between the development team and the customer to discuss at length this issue.
Status	We are not facing such kind of problem yet.

Table 5. 5: Technical Risk (TR03)

Technical Risks (TR03)	Date:
Name	Poor training skill in team members.
Impact	Catastrophic
Description	Poor training skill in team members to train the client.
Mitigation & Monitoring	The training team should have a clear knowledge about the entire functionality of the software. System analyst need to ensure and monitor it while training session start.
Management	We should arrange a meeting with the train team and come to a point to solve this problem.

### 5.2.3 Business Risks:

Table 5. 6: Business Risk (BR01)

Business Risk (BR01)	Date:
Name	Insufficient Budget
Impact	Marginal
Description	If the budget is low project may not complete
Mitigation & Monitoring	The project needs streaming server that is costly to set-up. We find several alternative streaming services to reduce the budget risk.
Management	Refinement in project goal. A new plan for regulate the budget.
Status	We are not facing such kind of problem yet.

Table 5. 7: Business Risk (BR02)

Business Risk (BR02)	Date:
Name	Not pay the installment of Software Cost.
Impact	Catastrophic
Description	Customer doesn't pay for the installment of software cost.
Mitigation & Monitoring	We should make a good communication between customers and ensure that the entire installment will be completed.

Management	The only course of action available would be find out the reason and come in a solution.
Status	The risk has not been arisen yet.

Table 5. 8: Business Risk (BR03)

Business Risk (BR03)	Date:
Name	Late delivery of the project
Impact	Catastrophic
Description	The project may take more time to complete what was estimated.
Mitigation & Monitoring	Steps have been taken to ensure a timely delivery by determining the scope of project.
Management	The only course of action available would be to request an extension to the deadline from customer.
Status	Our project is completed in time.

Table 5. 1: Project Risk (P01)

Project Risk(P01)	Date: 22-03-20
Name	Changes the requirements
Probability	Low (25%)
Impact	Marginal (2)
Description	Customer may change their requirement
Mitigation and Monitoring	Requirements are redefined by the company due to time or business needs. Meeting will be held with the company regularly. This ensures that the product we are producing solves a problem.
Management	Emergency meeting between both parties to identify new project requirement and goals.
Status	Not occur.

Table 5. 2: Project Risk (P02)

Project Risk (PR02)	Date: 08-11-2020
Name	Poor Quality Documentation
Impact	Catastrophic
Description	Poor quality documentation of the members.

Mitigation and Monitoring	The meeting will be held routinely to offer documentation suggestions and topics. The progress on documentation will also have monitored in each meeting.
Management	The addition of new topics or removal of unnecessary topics into the documentation will assigned to responsible person.
Status	Monitoring it.

### 5.2.2 Technical Risks:

Table 5. 3: Technical Risk (TR01)

Technical Risks (TR01)	Date:
Name	Computer Crash
Impact	Catastrophic
Description	Computer may crash due to several reasons.
	every day and we can use IPS to stop unexpected shutdown.
Management	If our computer has been crashed then we will restore backup.
Status	We are not facing such kind of problem yet.

Table 5. 4: Technical Risk (TR02)

Technical Risk (TR02)	<b>Date:</b>
Name	Technology doesn't meet specifications.
Impact	Catastrophic
Description	Customer doesn't have the technology to their desired specification.
Mitigation & Monitoring	Ensures that the product we are producing and the specifications of the customer are equivalent.
Management	The customer should be immediately notified and whatever steps necessary to rectify this problem should be done. Preferably a meeting should be held between the development team and the customer to discuss at length this issue.
Status	We are not facing such kind of problem yet.

Table 5. 5: Technical Risk (TR03)

<b>Technical Risks (TR03)</b>	<b>Date:</b>
Name	Poor training skill in team members.
Impact	Catastrophic
Description	Poor training skill in team members to train the client.
Mitigation & Monitoring	The training team should have a clear knowledge about the entire functionality of the software. System analyst need to ensure and monitor it while training session start.
Management	We should arrange a meeting with the train team and come to a point to solve this problem.

### 5.2.3 Business Risks:

Table 5. 6: Business Risk (BR01)

<b>Business Risk (BR01)</b>	<b>Date:</b>
Name	Insufficient Budget
Impact	Marginal
Description	If the budget is low project may not complete
Mitigation & Monitoring	The project needs streaming server that is costly to set-up. We find several alternative streaming services to reduce the budget risk.
Management	Refinement in project goal. A new plan for regulate the budget.
Status	We are not facing such kind of problem yet.

Table 5. 7: Business Risk (BR02)

<b>Business Risk (BR02)</b>	<b>Date:</b>
Name	Not pay the installment of Software Cost.
Impact	Catastrophic
Description	Customer doesn't pay for the installment of software cost.
Mitigation & Monitoring	We should make a good communication between customers and ensure that the entire installment will be completed.
Management	The only course of action available would be find out the reason and come in a solution.
Status	The risk has not been arisen yet.

Table 5. 8: Business Risk (BR03)

Business Risk (BR03)	Date:
Name	Late delivery of the project
Impact	Catastrophic
Description	The project may take more time to complete what was estimated.
Mitigation & Monitoring	Steps have been taken to ensure a timely delivery by determining the scope of project.
Management	The only course of action available would be to request an extension to the deadline from customer.
Status	Our project is completed in time.

## **Chapter 6: Analysis Modeling**

Analysis modeling uses a combination of text and diagrammatic forms to depict requirements for data, function, and behavior in a way that is relatively easy to understand, and more important, straightforward to review for correctness, completeness and consistency. This section presents resources for conventional and object-oriented analysis (OOA) methods as well as resources for UML.

### **6.1 Software Analysis Pattern**

Objectives of analysis Pattern

- Domain Analysis
- Describe what the client requires
- Establish a basis for the creation of a software design
- Define a set of requirements that can be validated once the software is built.

### **6.2 Activity Diagram**

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams are intended to model both computational and organizational processes. Activity diagrams show the overall flow of control.



## Activity Diagram for Admin

Visual Paradigm Online Free Edition

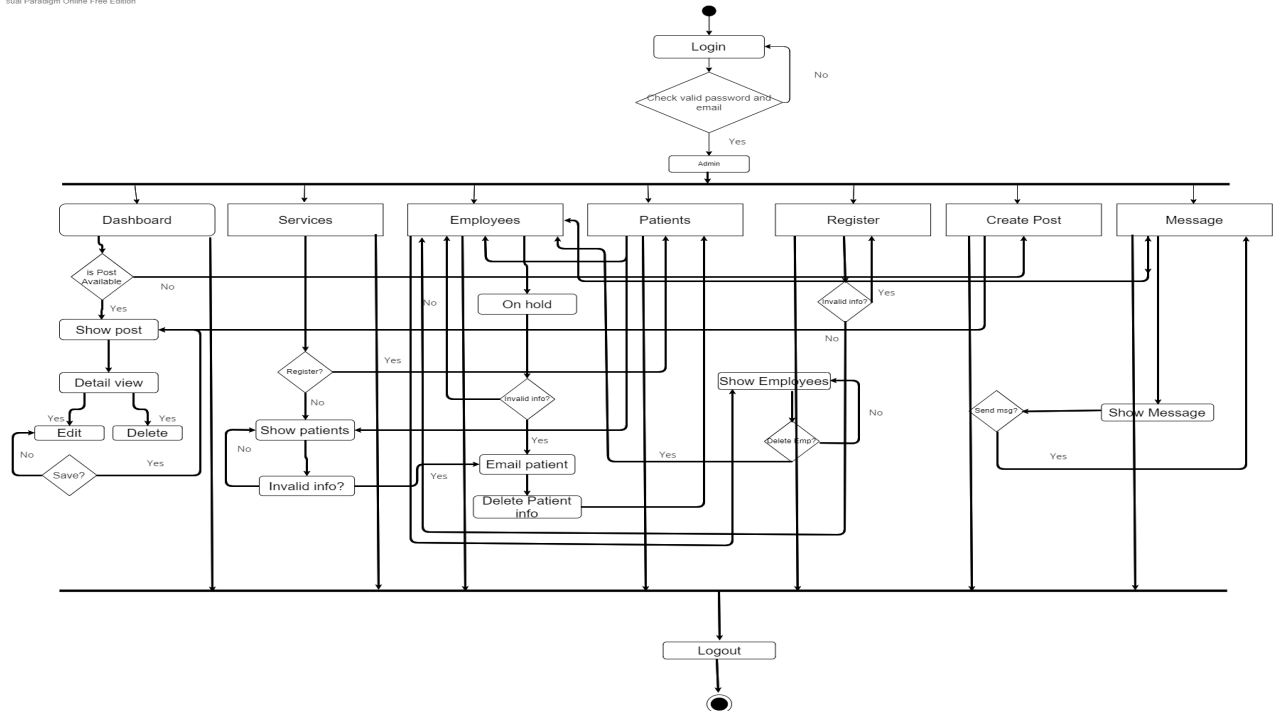
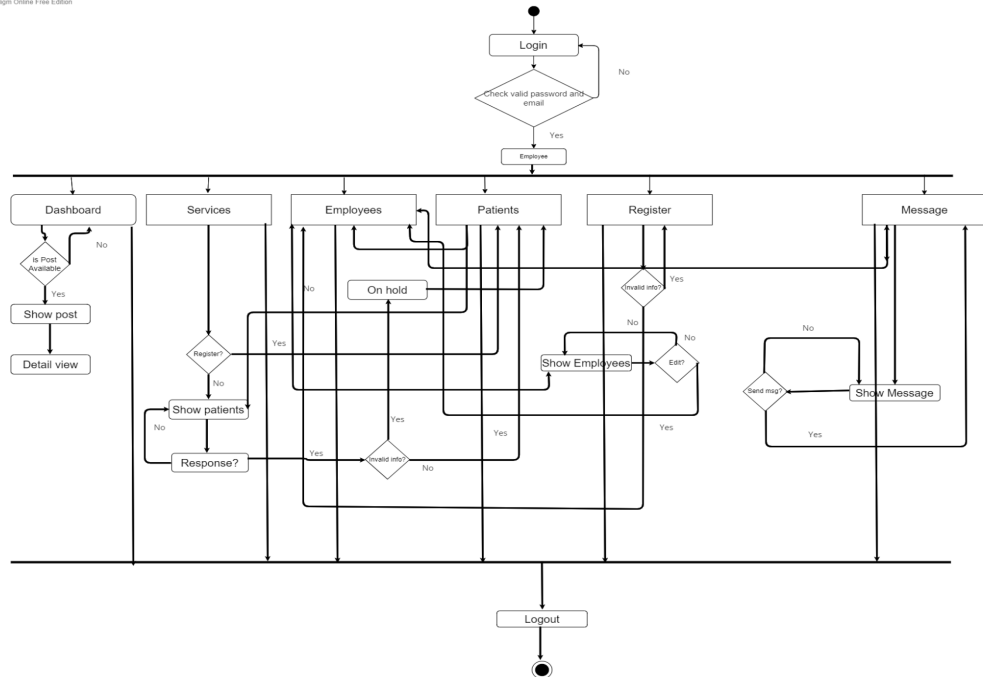


Figure 6. 1: Activity Diagram for Admin

## Activity Diagram for Employee

Visual Paradigm Online Free Edition



Visual Paradigm Online Free Edition

Figure 6. 2: Activity diagram for Employee

## Activity Diagram for Guest

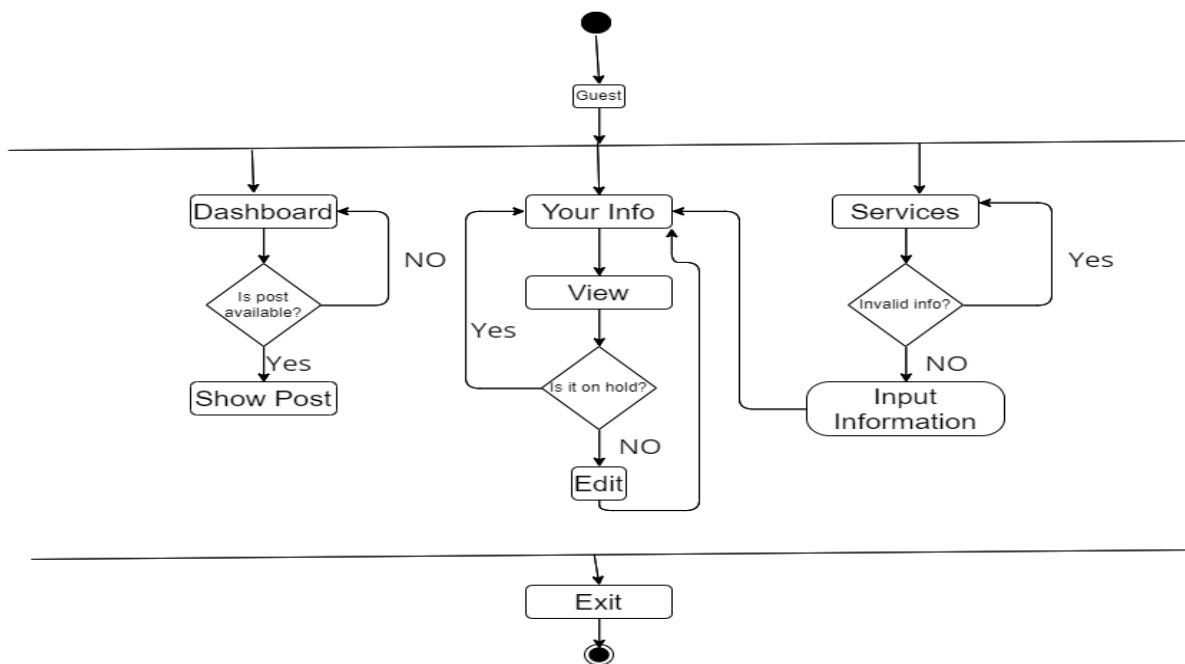


Figure 6. 2: Activity diagram for Guest

## 6.3 Swim Lane Diagram

A Swim Lane diagram is a type of flowchart that delineates who does what in a process. Using the metaphor of lanes in a pool, a Swim Lane diagram provides clarity and accountability by placing process steps within the horizontal or vertical “Swim lanes” of a particular employee, work group or department. It shows connections, communication and handoffs between these lanes, and it can serve to highlight waste, redundancy and inefficiency in a process.

### Swim Lane Diagram for Admin/Employee Login

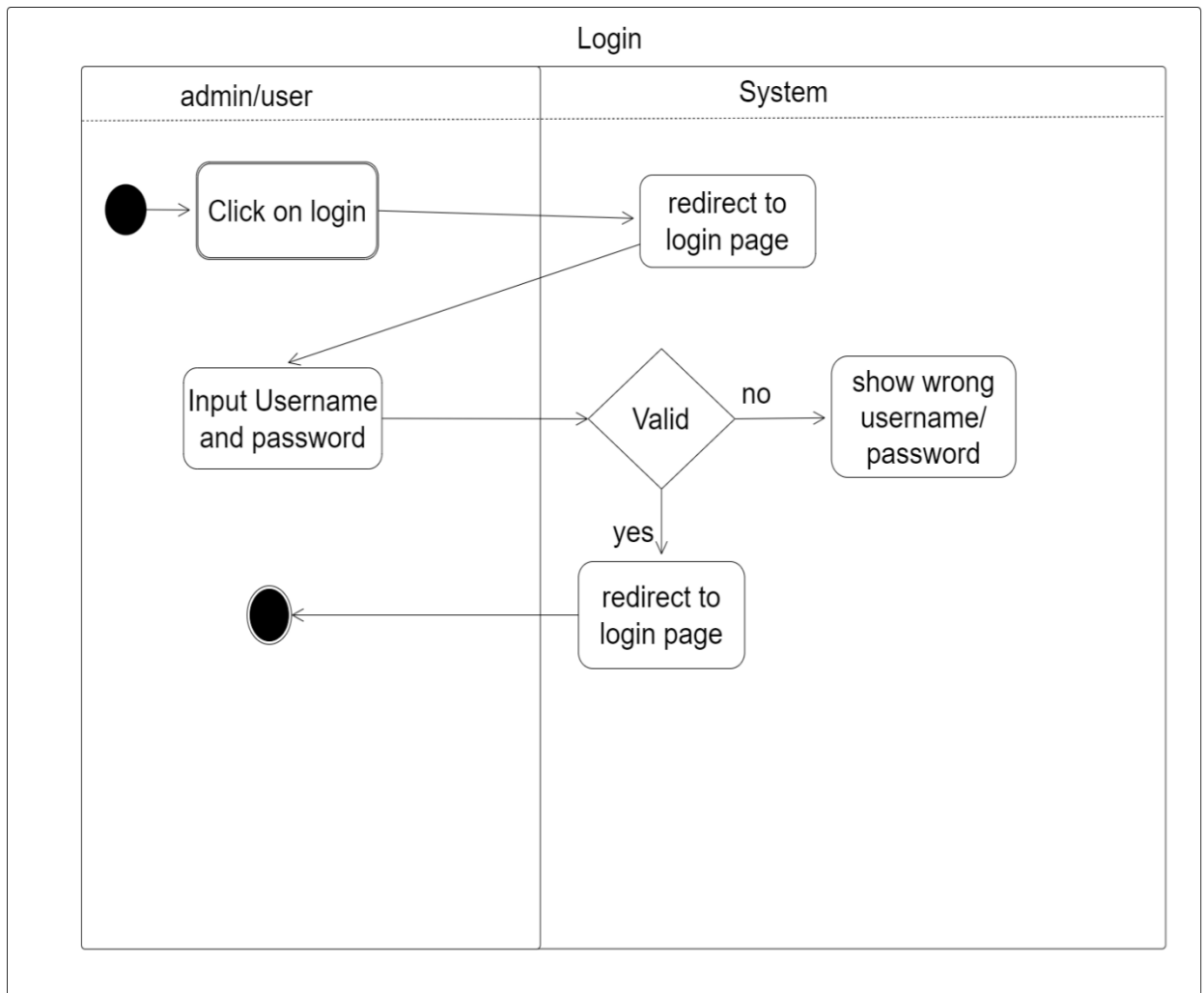


Figure 6. 3: Swim Lane Diagram for admin/Employee login

## Swim Lane Diagram for Post

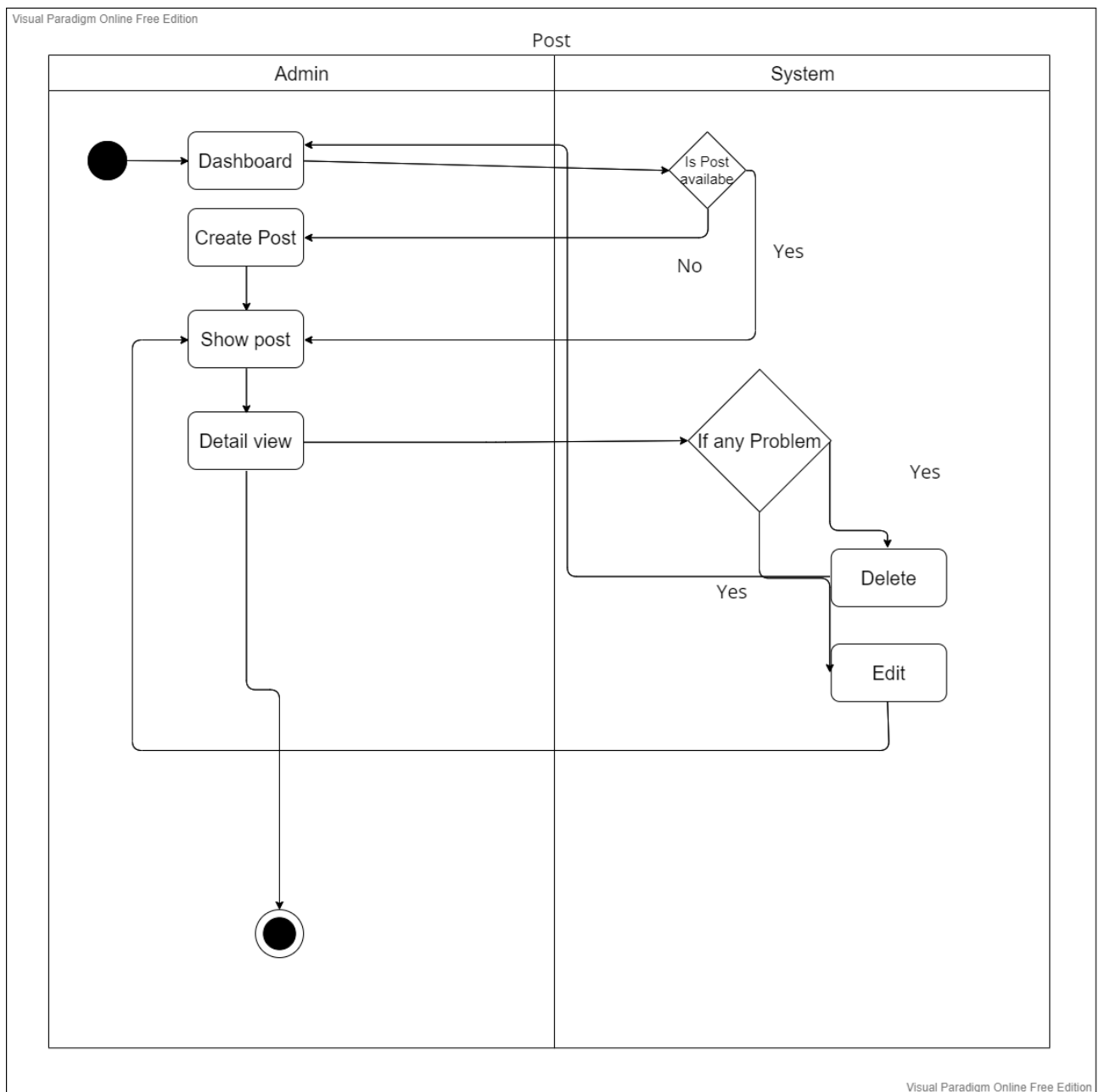


Figure 6. 4: Swim Lane diagram for Post

## Swim Lane Diagram for Message

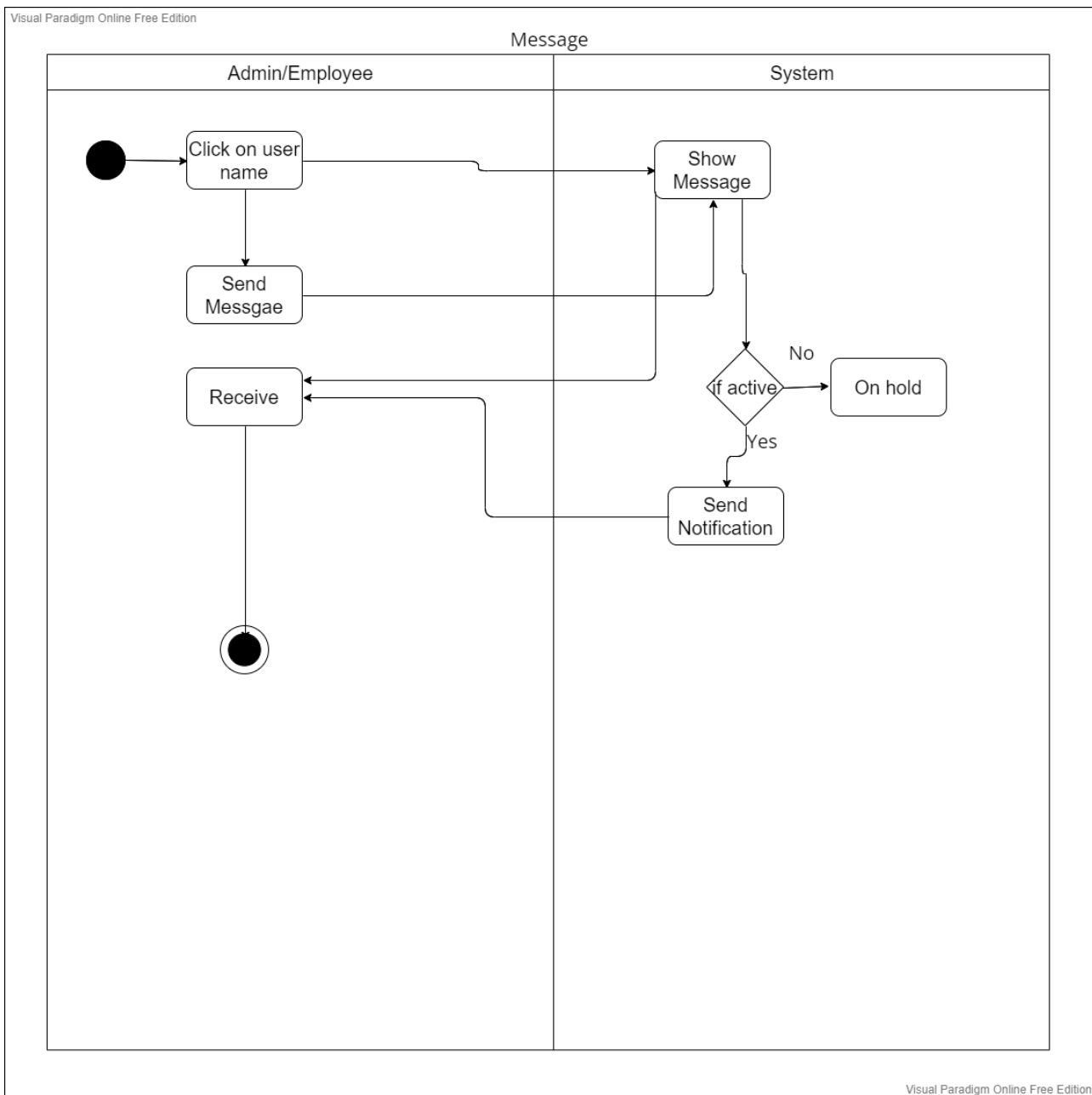


Figure 6. 5: Swim Lane diagram for Message

### Swim Lane Diagram for profile

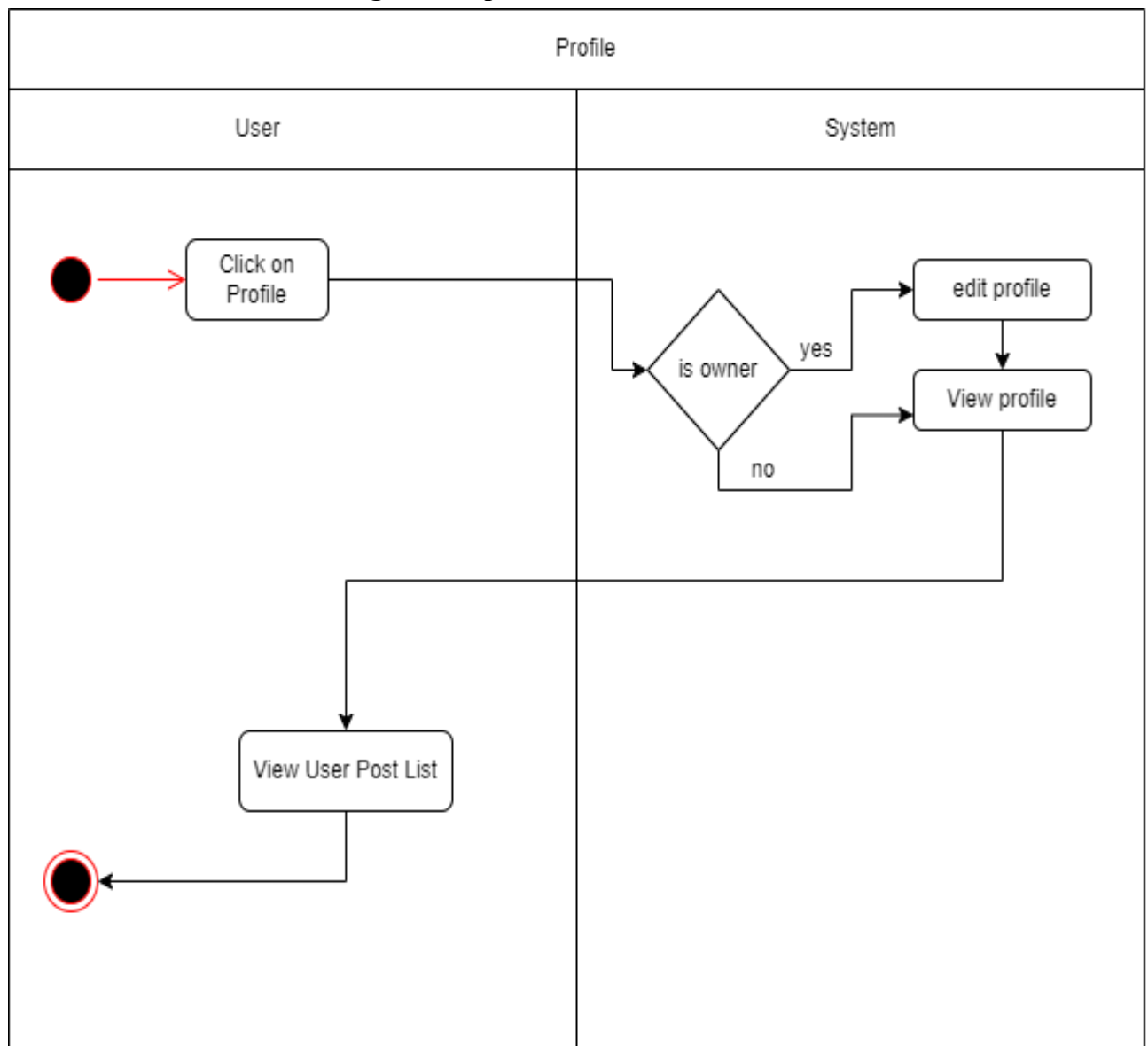


Figure 6. 7: Swim Lane diagram profile

### Swim Lane Diagram for Admin

