cDevelopment of
Online Bus Ticket Management System for
“Sanaz Corporation”

A Practicum Report Submitted By

Anis Ahmmed

ID # 16103128

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

Fall 2019

Development of
Online Bus Ticket Management System for
"Sanaz Corporation"

Anis Ahmmed
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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,

_____

Prof Dr Md Abdul Haque
Chairman and Professor
Dept. of Computer Science and Engineering
IUBAT – International University of Business Agriculture and Technology

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Professor Dr. Utpal Kanti Das
Coordinator and Professor
Dept. of Computer Science and Engineering
IUBAT – International University of Business Agriculture and Technology

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Rubayea Ferdows
Lecturer
Dept. of Computer Science and Engineering
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Department of Computer Science and Engineering
College of Engineering and Technology

IUBAT – International University of Business Agriculture and Technology
Fall 2019

Letter of Transmittal

20th December, 2019

To

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 "Online Bus Ticket 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.

Thanking you

_____

Anis Ahmmed

ID# 16103128

Program: BCSE

Letter of Authorization

20th September, 2019

IUBAT- International University of Business Agriculture and Technology

4, Embankment Drive Road, Uttara Model Town

Sector 10, Dhaka -1230, Bangladesh.

Sub: Letter of Authorization

Dear Anis Ahmmed,

You will be happy to know that project on **"Development of Online Bus Ticket Management System"** I have received your proposal under my continue internship. Based on your proposal you will have to submit the project within given time. I 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 needs don't hesitate to contact with me.

Co-supervisor	Supervisor
Prof. Dr. Utpal Kanti Das	**Rubayea Ferdows**
Coordinator,	Lecturer,
Department of Computer Science and Engineering	Department of Computer Science and Engineering

Student's Declaration

I am Anis Ahmmed 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 Development of Online Bus Ticket Management System for Sanaz Corporation 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 Online Bus Ticket Management System for Sanaz Corporation 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

…….

Anis Ahmmed

ID #16103128

Program: BCSE

Supervisor's Certification

This is to certify that Practicum report on **"Development of Online Bus Ticket Management System For Sanaz Corporation"** has been carried out by Anis Ahmmed bearing ID# 16103128, 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 his 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

Rubayea Ferdows

Lecturer,

Department of

Computer Science and Engineering

IUBAT- International University of Business Agriculture and Technology

Departmental Declaration

On behalf of the Department of Computer Science and Engineering of International University of Business Agriculture and Technology (IUBAT University) we, the undersigned, certify that this practicum report on "Online Bus Ticket Management System for Sanaz Corporation" for the award of Bachelor of Computer Science and Engineering (BCSE) degree was duly presented by Anis Ahmmed (ID No. 16103128) and accepted by the department.

_____

Prof Dr. Md Abdul Haque
Chairman and Professor
Dept. of Computer Science and Engineering
IUBAT – International University of Business Agriculture and Technology

_____

Professor Dr. Utpal Kanti Das
Coordinator and Professor
Dept. of Computer Science and Engineering
IUBAT – International University of Business Agriculture and Technology

_____

Rubayea Ferdowa
Lecturer
Dept. of Computer Science and Engineering
IUBAT – International University of Business Agriculture and Technology

Dedication

This humble effort, the fruit of my thoughts and study is dedicated to the people who have always been there to encourage and support me and especially to my beloved parents whose affection, love, and prays of day and night make me able to get this project done.

I would also like to dedicate this to my friends, who have inspired me throughout my university.

Acknowledgement

In the name of ALLAH, In the Name of Allah, the Most Beneficent, the Most Merciful.

It's my pleasure to take this occasion to thank a few people, who have, assisted, encouraged, directed and supported me throughout my practicum program.

First of all, I want to thank my parents, who have endowed their immeasurable-innumerable support and encouragement to attain this exquisite event of my life.

My sincere thanks to our Vice Chancellor Dr. Abdur Rab to give me an opportunity to submit this report

My outmost and sincere gratitude goes to Prof. Dr. Utpal Kanti Das, Coordinator of Department of Computer Science and Engineering, IUBAT-International University of Business Agriculture and Technology for allowing me to work on the project.

I would like to pay my gratitude to my faculty advisor Rubayea Ferdows, Faculty of Computer Science & Engineering Department, who has given me the opportunity to make such a report for not only in this semester but also throughout my education life at IUBAT- International University of Business Agriculture and Technology by giving her valuable suggestions and advices at any time, at any situation. I would able to make this report effectively and properly only for her right direction.

Their continuous encouragement and contribution gave me the courage and determination needed to complete the internship and project properly.

Abstract

The primary objective of this report is to learn how to conduct a project and work in real field and write it down in a formal and specific way. The secondary objective of this report is to learn about how this Online Bus Ticket Management System can manage booking process for customer more effective. The Online Bus Ticket Management System is developed for providing the ticket booking service to the customer without facing any problem. Currently the Transport Companies handle ticket booking process manually which is a very time consuming process. There are two types of user in this system including admin and customer. Admin can handle customer information and also handle bus, train route information. Admin can handle booking details and update status for booked bus ticket. And customer can book ticket by searching ticket info according to their demand. The objective of this system is to make the bus ticket booking system easy, reliable, user friendly, and corrective. This system will reduce the bus ticket booking tedious job of system paperwork by keeping all the project details of bus ticket booking, cancelling tickets are stored in the database. The main objective of this system is to automate the ticket booking process like- creation of a customer id, assign the tickets according to customer‘s demand**,** advance bookings, ticket cancellation and so on. I have plans to implement other features in future. At the end of the day, what I can say is I put our honest effort and hard work to implement the system as efficient as possible. I wish to make it flawless in near future.

Internship Certification

SanaZcorp

Ref: SANAZCORP/HR/IC-201912181
Date: December 18, 2019

TO WHOM IT MAY CONCERN

This is to certify that Mr. **Anis Ahmmed**, Son of **MD. Shofiquel Islam** and **Shahera Khatun**, **Present Address** – Sector#10, Uttara, Dhaka-1230, **Permanent** Address – Joina Bazar, Sreepur, Gazipur, has been doing his interning for his Web Design & Development at our company from **3rd September - 2019** till **10th December - 2019**. During his internship with us, he was seen very dedicated and punctual during his official hours. He has successfully completed his interning and his project.

We wish all the very best in his future endeavors.

Thanks and regards

Tanvir Ashrafi
Manager (Department of HR Admin)
Email: tanvir@sanazcorp.com
Cell: +8801729177558
Website: www.sanazcorp.com

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Chapter 1: Organizational Overview

1.1 Organizational Overview

Sanaz Corporation is an IT company established in the year 2017 in Dhaka, Bangladesh. It is now established itself as one of the prestigious entities providing IT and telecommunications related services in Bangladesh. It is a software firm and training institute mainly focuses to the upgraded technology to be copped up and enriched as well as spreading and sharing knowledge to dig out the intellectuals by unleashing extreme potentiality within the new generation. It believes in acquiring and fostering talents and always ready to provide opportunities for fresh graduates to sharpen and strengthen their potentials by providing them the opportunities to work for Sanaz Corporation. This company tries to know their customers and understand their needs before starting to work individually with them. We regularly undertake challenging projects, work on those with great passion as a work of art, and deliver the end of result to the satisfaction of our valuable clients.

1.2 Organizational Services

Sanaz Corporation Services offering helps companies make the most of their IT investments from providing System Integration Solution, Industrial and Career Training, Customized Software Development, Mobile Applications and Testing solutions.

Sanaz Corporation is committed to deliver excellence and certainty across all of types of enterprise's IT needs.

It offers services that covers:

- Web Design and Development
- Software Design and Development
- Mobile Application Development
- Graphic Design
- Animations
- Interactive Design
- Online Marketing
- Domain Registration
- Web Hosting
- Training and Development
- Linux Network & Administration

1.3 Organizational Location

Sanaz Corporation is a software firm and training institute mainly focuses to the upgraded technology to be copped up and enriched as well as spreading and sharing knowledge to dig out the intellectuals by unleashing extreme potentiality within the new generation. Our office is located at: House #65, Road-12/A, Dhanmondi R/A, Dhaka-1205.

1.4 The Vision

Sanaz Corporation is a growing IT company having a vision to be at the cutting edge of technology and to become a key player in the field of Software Development, IT Training and Systems, Bulk SMS, Domain and Hosting, Networking Solutions. We have a team of highly skilled and successful technical as well as management experts with us, who can deliver unmatched business value to customer through a combination of process excellence, quality frameworks, and service delivery innovation and in delivering technology-driven business solutions that meet the strategic objectives and that create solutions around specific needs of industries.

1.5 The Mission

The mission of Sanaz Corporation is to provide the community with the most innovative, state-of-threat, and comprehensive communications, information technology, and software system solutions through a highly motivated, creative, experienced, and talented team of professionals contributing to the success and satisfaction of the industries and customers we serve. Our training division will offer a wide range of career and professional courses in the field of Telecommunication, Software, Web development and Networking. These courses will help us to shape the trainees as a specialist with in-depth and concept driven and skill development program. We will ensure a professional excellence in everything we do and promote high standards of business ethics and long-term growth and stability through the process of delivering the best and being the best in our approach.

1.6 Software Developer Intern

At Sanaz Corporation, I have worked as an intern with a software developer team. Here we offer fully integrated software development and technical support solutions. Sanaz Corporation is well-experienced custom software Development Company and software outsourcing

company. We have great expertise in the development of custom software applications due to our professional team efforts in performing the work according to the need of our offshore clients. We strive to focus on the customer and deliver solutions designed around their requirements rather than focusing on a specific technology and expecting the customer to adapt to the technology and platform of our choice. We use to fulfil specific needs of our clients as per their convenience for their business.

1.7 Organization Structure

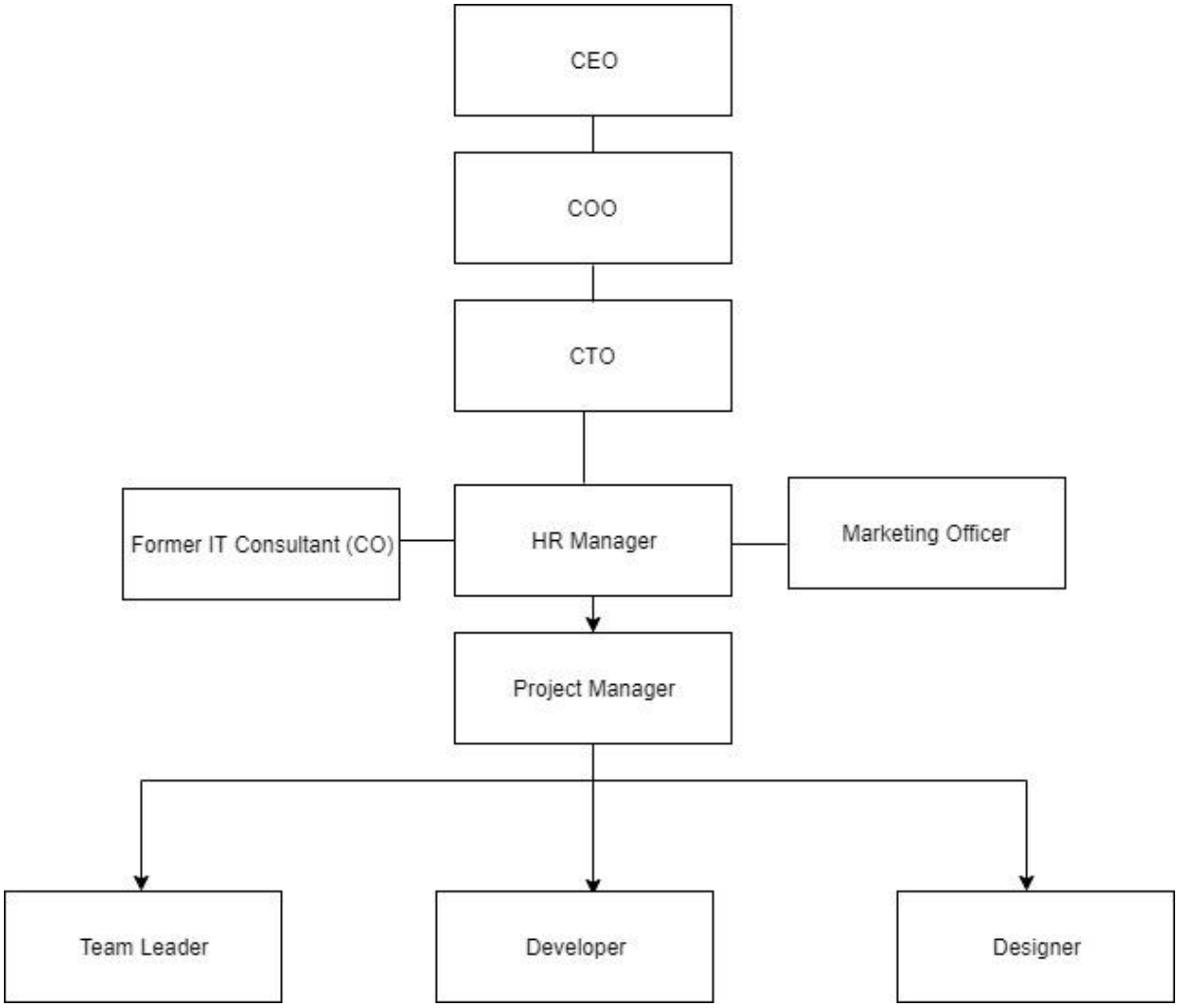

Figure 1.1: Organizational Structure of Sanaz Corporatio

Chapter 2: Introduction

2.1 Introduction

Internship is a practical experience of theoretically gained knowledge and can measure as a groundwork trial to be aware with any organization and to make oneself confident enough to enter into service life and start building career. And also wonderful and effective way to connect academic experience with the professional work arena. It allows gaining valuable experience to the workplace, provides the opportunity for skill development, and gives a competitive edge in the job search. This chapter attempts to describe the objectives, scope and all topics of initialization period of this project.

2.2 Project Overview

Online Bus Ticket Management System is a Web based application that works within a centralized network. This project presents a review on the software program **Online Bus Ticket Management System** as should be used in a transportation system, a facility which is used to reserve seats, cancellation of Booking and different types of route enquiries used on securing quick Bookings. OBTMS is built for managing and computerizing the traditional database, ticket booking for bus. It maintains all customer details, and Booking details. The Project named as **"Development of Online Bus Ticket Management System for Sanaz Corporation"**. It is a web based and database based application. This report based on internship, I completed this project at Sanaz Corporation, Dhanmondi. In this report, I will describe how we developed this system and how it will work.

2.3 Background of Study

Today we can see different types of management software to manage our everyday tasks smoothly and perfectly. The company where I have done my intern is basically concerned about the making of daily life & financial related management software. So for this reason I have chosen to develop Online Bus Ticket Management System for this company. Because currently, staffs at the ticket counter are using the manual system to sell tickets and manage bus seats booking. The customers always complain on how they hate to queue up to buy the tickets for bus. Most of them preferred the online ticket booking system. However, the booking system of bus ticket is manually done which is just by calling the ticket counter and the staff there will record the booking on their specific booking book. Besides, the telephone line is sometimes too busy to reach since it has only one official contact number. Sometimes customer needs to call the counter many times. This brings a lot of inconvenience to the customer. As

for the counter staff, it is very inconvenient to refer the booking book to check for the available ticket for customer every time they asked. Therefore, Online Bus Ticket Management System for Sanaz Corporation is developed to make it easier for the customer to reserve all tickets into one system. The user can simply reserve book the ticket using this system. In addition, customer can check the necessary information regarding bus tickets before they reserve the ticket. There are numbers of available application for ticket booking system. But in Online Bus Ticket Management System, user or customer can book ticket easily and can cancel ticket without any hidden charge.

2.4 Objectives

Currently the Transport Companies handle ticket booking process manually which is a very time consuming process. The Online Bus Ticket Management System deals with online bus ticket booking for bus. This system will lead to increase in the ticket booking efficiency of the members of the Ticket Booking Agency with little throughput. This system project is made as user friendly as possible so that anyone can use it with little knowledge about computer system. The OBTMS will reduce the ticket booking tedious job of system paperwork by keeping all the project details of bus ticket booking, cancelling tickets are stored in the database. This system provides up to date information that is not possible manually.

The objective of this system is to make the ticket booking system easy, reliable, user friendly, and corrective. Moreover less time consuming as compared to manual work. This system also provides report of the ticket booking different aspects can be generated. The main objective of this system is to automate the ticket booking process like- creation of a customer, assign the tickets according to customer‘s demand, advance bookings, ticket cancellation and so on.

2.4.1 Broad Objective

The broad objective of this project is to use my institutional educational experience in the real life working environment by developing Online Bus Ticket Management System for Sanaz Corporation.

2.4.2 Specific Objective

1 Book tickets
2 View Bus Routes Information
3 Get Ticket price information

4 Payment in Online

5 Get ticket invoice

6 Cancel Tickets

7 Print book tickets

8 Manage bus information

9 Manage Register Terminal Information

10 Add, Update, Delete Customer Details

11 Manage Booking tickets information

12 Keep record of customer

13 Update and delete customer details

14 Search individual customer information

15 Generate Report

2.5 Proposed System

Online Ticket Booking system is one kind of web application which can control and manage entire bus ticket booking process through online without wasting of time. My proposed system is basically a web based system which provides ticket booking option for bus. In this system customer can book tickets according to their demand. In this system bus operator list will be available according to category and Customer can search the tickets according to the operator. Also customer can cancel the booked tickets within a limited time by contact with the software, can get information about price rate of tickets for Bus Operator through this system. The system can keep record of all customer's ticket list and generated report.

2.6 Methodology

The development process on –Online Bus Ticket Management System for Sanaz Corporation, Dhanmondi through Incremental Model will complete following the structure described later on Software Analysis & Design. This study on –Online Bus Ticket Management System for Sanaz Corporation, Dhanmondi, through Incremental Model is tentative in nature. It aims to development of management System. The variables identified to manipulate through a handy inspection and from primary and secondary data

2.6.1 Data Sources

For this project in data collection phase I collected two types of data

- Primary Data
- Secondary Data

Primary data are generated within the transport agencies. The transport agencies practical experience and observation helped me to generate the primary data.

Secondary data are generated by studying different articles, newspapers, research papers and of course information collected via Internet. Data, facts and statistics collected from different web sites and sources made us understand the project better.

2.7 Limitation of the Project

As I had mentioned early in this report that practicum is the bridge between theoretical and practical life, practicum program at IUBAT has given me this great opportunity to see how theories are put into action. In my case, there were lots of terms, conditions and systems that were not understandable for us at the beginning of my organizational attachment; however, lately I made myself familiar with those terms. So far, I have learned seeing my senior classmates and friends, they had experienced the same during their time as well. One of the limitations of this internship project is constraints of time. After applying the software engineering procedures, it is very difficult to develop the complete software within short time. For this reason, the scope of the internship project has become short.

2.8 Process Model

In my project I am using the Incremental Model. Incremental Model is a process of software development where requirements are broken down into multiple standalone modules of software development cycle.

Each iteration passes through the **requirements, design, coding and testing phases**. And each subsequent release of the system adds function to the previous release until all designed functionality has been implemented. That‘s why I am chosen this type of process Model.

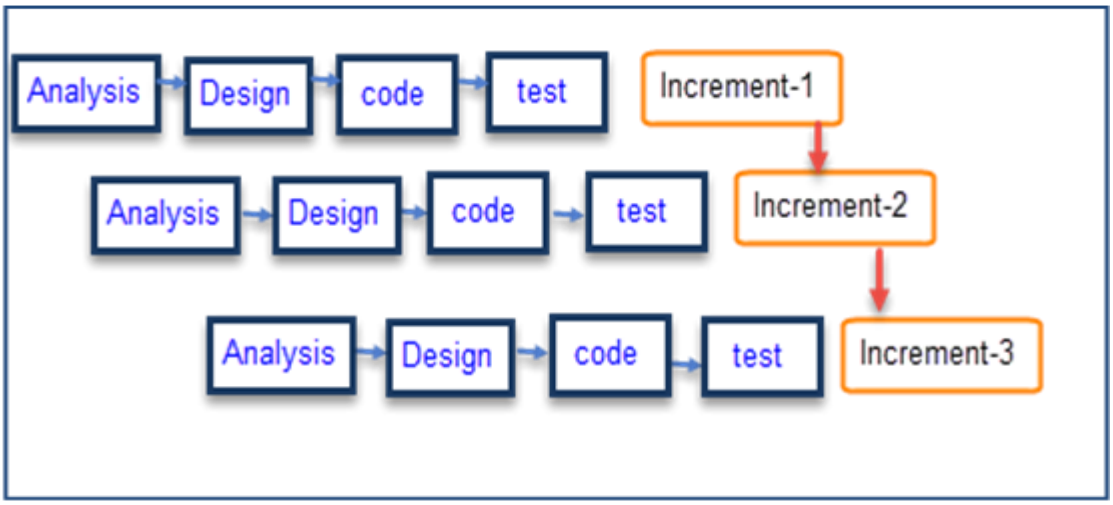

Figure 2.1: Incremental Process Model

2.8.1 Benefits of Incremental Model

- In this model user can respond to each built.
- Lowers initial delivery cost.
- Software will be generated quickly during the software life cycle.
- It is flexible and less expensive to change requirements and scope.
- Thought the development stages changes can be done.
- Errors are easy to be identified.
- Generates working software quickly and early during the software life cycle

2.9 Feasibility Study

Feasibility study determines whether that solution is feasible or achievable for the organization. There are three major areas of feasibility study.

- Technical feasibility
- Economic feasibility
- Operational feasibility

2.9.1 Technical feasibility

The technical feasibility assessment is 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 evaluation of the hardware and software and how it meets the need of the proposed system

SN	Hardware Requirement	Software Requirement
1.	Computer(Desktop/ Laptop/Equivalent)	Operating System(Windows 10 or equivalent) with browser(Google Chrome/Firefox)
2.	Proper electricity Support	Php (Laravel)
3.	Adequate system memory and secondary Memory	MySQL

Communication Interface

- Client on Internet will be using HTTP/HTTPS protocol.
- Client on Internet will be using TCP/IP protocol.

2.9.2 Economic feasibility

The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. My system is economically feasible because by using the proposed system many works can be done within small time and which is not possible by man power within the same time. It also reduces the man power needed for providing the Available Tickets Information, Bus Routes Information, Booking tickets according to the date & time wise and generating report. So Bus agencies have to pay less salary where the current system needs many stuff and they are paying much salary. So I can say that, if they use proposed system they will be economical.

2.9.3 Operational feasibility

User can easily operate the proposed system because the system is user friendly. It‘s easy to get transport routes information and easily book tickets according to the demands and also cancel the booked tickets within required time by contact with the agent. If the stuff of the organization has the basic to computer knowledge they could operate and manage the software easily. Every features and the activity that I combined within the system is designed and developed belongs to previous format they had used with a more attractive user interface.

Chapter 3: Requirement Engineering

3.1 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 Requirements Engineering

Requirements engineering is, as its name suggests, the engineering discipline of establishing user requirements and specifying software systems. There are many definitions of Requirements Engineering; however, they all share the idea that **requirements** involves finding out what people want from a computer system, and understanding what their needs mean in terms of design. Requirements engineering is closely related to software engineering, which focuses more on the process of designing the system that users want.

- User requirements
- System requirements
- Functional requirements
- Non-Functional requirements
- Specification for each requirements

3.2.1 User Requirements

1. Admin can create agent/customer
2. Admin can view agent/customer information
3. Admin can update customer information
4. Admin can delete individual customer information
5. Admin can search individual customer
6. Admin can view & print the report of customer
7. Admin can add individual components information
8. Admin can register terminal for each bus
9. Admin can view register terminal information
10. Admin can add bus information
11. Admin can view & search bus information
12. Admin can update bus information
13. Admin can soft delete bus information
14. Admin can restore bus information from the trash

15. Customer need to do registration
16. Customer need to login
17. Customer can search ticket according to the demand
18. Customer can book ticket
19. Customer can give payment through online
20. Customer will get ticket invoice in his/her email
21. Admin can generate report of individual booked bus

3.2.2 System Requirements

1. Admin can create agent/customer
    - First of all, admin will login into the system.
    - Check whether it is admin or not.
    - Select **User's Information** option and add new agent/customer information
    - If the form does not fill up properly then system will show the error message –Please fill out this field.
    - If admin will give wrong input then system will show validation message.

2. Admin can view customer/agent information
    - First of all, admin will login into the system
    - Check whether it is admin or not
    - Admin can view customer/agent information by clicking on Users Information

3. Admin can update customer/agent information
    - First of all, admin will login into the system.
    - Check whether it is admin or not.
    - Admin can update customer info by click on **update** option

4. Admin can delete individual customer information
    - First of all, admin will login into the system.
    - Check whether it is admin or not.

- Admin will select the added customer information individually and click on **Delete** option.

5. Admin can search individual customer information
   - First of all, admin will login into the system.
   - Check whether it is admin or not.
   - If admin click on **search** option, system will show individual customer info

6. Admin can view & print the report of customer
   - First of all, admin will login into the system.
   - Check whether it is admin or not.
   - Admin can view the individual or whole report of customer info
   - Admin can download/print the report by click on **download & print** option

7. Admin can add individual component information
   - First of all, admin will login into the system
   - Check whether it is admin or not
   - By clicking in **Add individual component info** admin can add all information

8. Admin can register terminal for each bus
   - First of all, admin will login into the system
   - Check whether it is admin or not
   - By clicking in **Register Terminal Information** admin can add boarding point for each bus

9. Admin can view register terminal information
   - First of all, admin will login into the system
   - Check whether it is admin or not
   - Select **Register Terminal Information** then click on **Register New.**
   - Register new terminal

10. Admin can add bus information

- First of all, admin will login into the system.
- Check whether it is admin or not.
- Select **Bus Information** option and click on **Create new**
- Add new bus information

11. Admin can view & search bus information

- First of all, admin will login into the system.
- Check whether it is admin or not.
- Select **Bus Information** option admin can view bus information
- By searching in the search field admin can find individual bus info

12. Admin can update bus information

- First of all, admin will login into the system.
- Check whether it is admin or not.
- Admin can update bus info by click on **update** option

13. Admin can soft delete bus information

- First of all, admin will login into the system.
- Check whether it is admin or not.
- Admin can soft delete bus info by click on **delete** option

14. Admin can restore deleted bus information from trash

- First of all, admin will login into the system.
- Check whether it is admin or not.
- Select **Trash,** then select **Bus Information,** then Click on **Restore**.

15. Customer need to do registration

- Customer need to click on **SignUp** option from customer login panel
- Fill up all the required filed & click on **submit** button
- System will show a message for blank field

- System will show a pop-up for successful registration

16. Customer need to login

- Customer need to click on **Login** option from the homepage for enter into the system
- Fill up all the required filed & click on **submit** button
- System will show a message for invalid data

17. Customer can search ticket according to the demand

- First of all customer will login into the system
- For new customer, registration is needed
- From the book ticket panel customer will select departure & destination according to the date
- Then click on **Search** option
- After clicking Search option system will bus information
- From the bus information customer can view seat

18. Customer can book ticket

- First of all customer will login into the system
- For new customer, registration is needed
- Need to choose an bus information and view seat for that
- Customer need to select seat and boarding point from the seat view then click on **Continue**
- Then system will show form where journey details will display, then click on **Book Ticket.**

19. Customer can give payment through online

- Whenever customer will click on Book ticket then system will redirect to him/her to the payment page
- Then customer need to fill up all field and need to click on **Payment**
- It will show a successful message if payment is done

20. Customer will get ticket invoice his/her email
    - Whenever customer will book ticket hi/she will get an invoice ticket mail in his/her email which is given when he/she done his registration
21. Customer can cancel booked ticket
    - Customer can cancel booked ticket but in a limited time

22. Admin can generate report if individual booked bus
    - Admin can generate report of individual booked bus information's

3.2.3 Functional Requirements:

- Admin can maintain whole system.
- Admin can add, view, search, update, & delete individual bus components information
- Admin can add, view, search, update and delete bus information
- Admin can create, view, search, update, & delete agent/customer information
- Admin can create, view, update, & delete register terminal information
- Admin can generate and print report of individual booked bus information
- Customer can search ticket according to the demand
- Customer can book ticket
- Customer can give payment in online
- Customer will get ticket invoice through his/her email
- Customer can print the booked ticket info

3.2.4 Non-Functional Requirements:

- Admin can log in by using email and password.
- Customer can log in by using email and password.
- Only admin can maintain the whole system.
- Admin can manage only cancellation of booking process
- This system support only Windows 7/8/10

3.2.5 Specification of Each Requirement

3.2.5.1 Admin specification

- **9Function:** Log in, add information, edit information and delete information.
- **Description:** All the access of the system.
- **Input:** Admin input his information in his criteria.
- **Output:** Information submits successfully.
- **Side effects:** None

3.2.5.2 User specification

- **Function:** Log in, buy ticket, payment in online, view ticket information, get ticket invoice through email.
- **Description:** Easily use the system for his useful purpose.
- **Input:** User input his information in his criteria
- **Output:** Information submits successfully.
- **Side effects:** None

3.2.5.3 Database specification

- **Function:** Store whole information.
- **Input**: assign data
- **Output:** Progress and provide information
- **Action:** Support Data
- **Side effects**: none

3.3 Use Case Diagram

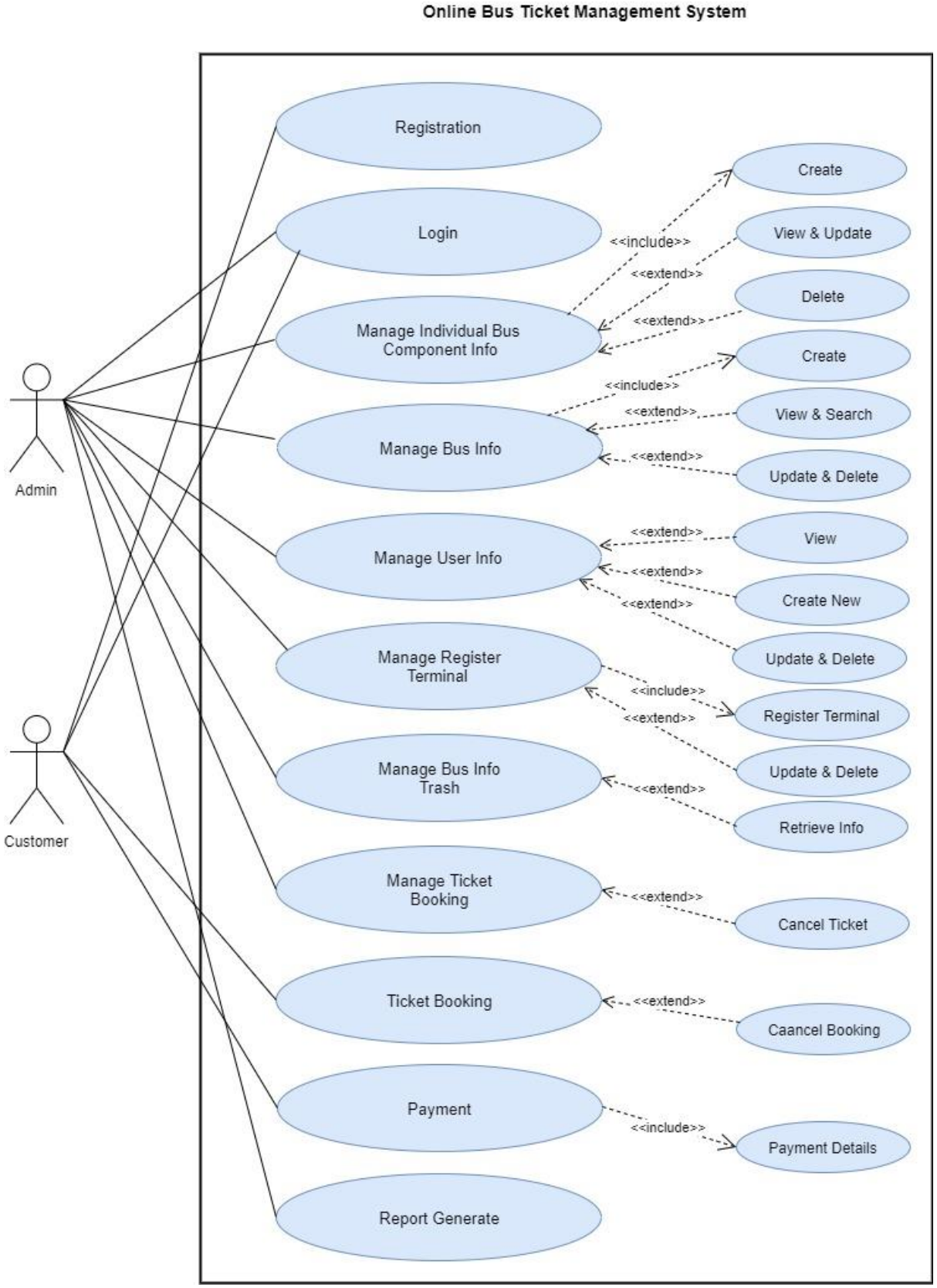

Figure 3.1: Use case diagram

3.3.1 Use Case Text

User Title: Registration Actor: Admin, Customer
Description: For being admin, I can do registration by providing valid information. If I enter wrong input then system will show an error message. As a customer, I can do registration by providing valid information. If I enter wrong information then system will show an error messages

User Title: Login Actor: Admin, Customer
Description: As an admin, I can login with a valid email & password. If I enter wrong email or password then system will show an error message. As a customer, I can login with a valid email & password. If I enter wrong email or password then system will show an error messages

User Title: Manage individual Bus Component Info Actor: Admin
Description: As an admin, I can create, update, and delete individual component information. I can also view & search the information's.

User Title: Manage Bus Info Actor: Admin
Description: As an admin, I can create, update, and delete the information. I can also view & search the bus information.

User Title: Manage User Info Actor: Admin
Description: As an admin, I can create, update, and delete the information. I can also view the customer list and print the report of user list.

User Title: Manage Register Terminal Info Actor: Admin
Description: As an admin, I can create, update, and delete the information. I can also view & search the registered terminal information.

User Title: Manage Bus Info Trash Actor: Admin
Description: As an admin, I can view & search the deleted bus information and also can restore the information's.

User Title: Manage Ticket Booking Actor: Admin
Description: As an admin, I can view booked bus ticket information with departure location and destination location. I can also manage payment.

User Title: Ticket Booking Actor: Customer
Description: As a customer, I can view the train information with departure location and destination location. I can also select seat for booking and payment in online. I can also cancel booked ticket. I can print journey details.

User Title: Generate report Actor: Admin
Description: As an admin, I generate report of individual booked bus info detail and can print report.

Chapter 4: System Planning

4.1 Functions of Proposed System:

Table 4.1: Functional Points

Customer Registration	F1
Login into the system	F2
Search bus	F3
Ticket Booking	F4
Add individual component info	F5
Update individual component info	F6
Delete individual component info	F7
Add user	F8
Update user	F9
Delete user	F10
Add bus Info	F11
Update Bus Info	F12
Delete bus Info	F13
Register Terminal	F14
Update register terminal	F15
Delete register terminal	F16
Restore bus info from trash	F17
Cancel Bus ticket	F18
Report generate	F19

4.2 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.

The following activities of software project planning that have followed in this project are:

- System Project Estimation

- Function Oriented Metrics
- Process Based Estimation
- Effort Distribution
- Task Scheduling
- Project Schedule Chart
- Cost Estimation

4.2.1 System Project Estimation

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

- Properly estimated the size of the product to build.
- The ability to translate the size estimation into human effort, calendar time and money.
- 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 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.

4.2.3 Function Point Estimation

This table shows the functionality with input and output of Admin.

Table 4.2: Functional point Estimation (Admin)

Functionality	Input	Output
Login	Email, Password	Enter the Admin Dashboard
Add individual components info	Operator_name, destination, date, time, departure, destination, total_seat, ticket_price, terminal	Added into Database table
View individual component info	Click on individual component info	Display all components info
Update individual info	Click on Edit button	Updated successfully
Delete individual component info	Click on the Delete button	Record has been removed
Add bus Info	Operator_name, jdate, bus_route, departure, destination, departure_time	Added into Database Table
View bus info	Click on Bus Information	Display Bus Information
Update bus info	Click on the update button	Data has been updated successfully
Delete bus info	Click on delete button of info	Data has been deleted
Register terminal info	Operator_name, terminal	Added into database table
View register terminal info	Click on Register Terminal Info	Display Register Terminal Info
Update Register terminal info	Click on Update button of info	Data has been updated successfully
View user info	Click on Users Information	Display users information
Add user/agent	Click on the Create User button of info	Added into Database Table
Update user info	Click on update button of info	Data has been updated successfully
Delete user info	Click on Delete button of info	Data has been deleted
View Booked ticket info	Click on Booked ticket info Button	Display booked ticket information
Generate report	Chassis_no(with bus name)	Generate report of booked bus info

Table 4.3: Functional Point Estimation (Customer)

Functionality	Input	Output
Registration	name, email, phone, gender, password,	Added into Database Table
Login	Email, Password	Enter the customer pannel
Search bus info	Departure, destination, journey_date	Display bus info
Ticket booking	Select seat and boarding point then continue and then Confirm Booking	Added into the database and get an invoice ticket mail
Payment	Card_name, card_no, expiration_month, expiration_year	Payment status will updated
Ticket Detail view	id, customer_name, phone, bus_name, bus_route, departure, destination, journey_date, departure_time, seat_no, total_seat, terminal, ticket_price, total_price	Display booked ticket detail
Cancel booked ticket	Click on Cancel Booked ticket	Ticket canceled successfully

Table 4.4: Identify Complexity (Admin)

Transition function	Field/ file involve	FTRs	DETs
Login (EI)	**Fields-** email, password **File-** users	1	2
Add Individual component info (EI)	**Fields-** id, operator_name, id, chassis_no, id, bus_route, id, date, id, destination, destination_scenario, id, departure, departure_time, id, total_seat, id, ticket_price, id, terminal **File-** operators, chassises, destinations, departure_infos, terminals, total_seats, ticket_prices, dates	8	20
View Individual component info (EO)	**Fields-** id, operator_name, id, chassis_no, id, bus_route, id, date, id, destination, destination_scenario, id, departure, departure_time, id, total_seat, id, ticket_price, id, terminal **File-** operators, chassises, destinations, departure_infos, terminals, total_seats, ticket_prices, dates	8	20

Update Individual component info (EI)	**Fields-** operator_name, chassis_no, bus_route, date, destination, destination_scenario, departure, departure_time, total_seat, ticket_price, terminal **File-** operators, chassises, destinations, departure_infos, terminals, total_seats, ticket_prices, dates	8	11
Delete Individual component info (EI)	**Fields-** id, operator_name, id, chassis_no, id, bus_route, id, date, id, destination, destination_scenario, id, departure, departure_time, id, total_seat, id, ticket_price, id, terminal **File-** operators, chassises, destinations, departure_infos, terminals, total_seats, ticket_prices, dates	8	20
Add Bus info (EI)	**Fields-** id, date_id, operator_name_id, chassis_no_id, bus_type_id, bus_route_id, departure_id, departure_time_id, destination_id, total_seat_id, ticket_price_id **File-** dates, operators, chassises, bus_routes, bus_types, departure_infos, destinations, total_seats, ticket_prices	9	11
View Bus info (EO)	**Fields-** id, date_id, operator_name_id, chassis_no_id, bus_type_id, bus_route_id, departure_id, departure_time_id, destination_id, total_seat_id, ticket_price_id **File-** dates, operators, chassises, bus_routes, bus_types, departure_infos, destinations, total_seats, ticket_prices	9	11
Update Bus info (EI)	**Fields-** date_id, operator_name_id, chassis_no_id, bus_type_id, bus_route_id, departure_id, departure_time_id, destination_id, total_seat_id, ticket_price_id **File-** dates, operators, chassises, bus_routes, bus_types, departure_infos, destinations, total_seats, ticket_prices	9	10
Delete Bus info (EI)	**Fields-** id, date_id, operator_name_id, chassis_no_id, bus_type_id, bus_route_id, departure_id, departure_time_id, destination_id, total_seat_id, ticket_price_id **File-** dates, operators, chassises, bus_routes, bus_types, departure_infos, destinations, total_seats, ticket_prices	9	11
Register Terminal (EI)	**Fields-** id, boarding_point_id, terminal_id **File-** buses, terminal	2	3

View Register Terminal info (EO)	**Fields-** id, boarding_point_id, terminal_id **File-** buses, terminal	2	3
Update Register terminal info (EI)	**Fields-** boarding_point_id, terminal_id **File-** buses, terminal	2	2
Add user/agent (EI)	**Fields-** id, name, email, phone, gender, password **File-** users	1	6
View user (EO)	**Fields-** id**,** name, email, phone, gender **File-** users	1	5
Update User (EI)	**Fields-** name, email, phone, gender **File-** users	1	4
Delete User (EI)	**Fields-** id, name, email, phone, gender, password **File-** users	1	6
View booked ticket info (EO)	**Fields-** id, customer_name, phone, bus_name, bus_route, departure, destination, journey_date, departure_time, seat_no, total_seat, terminal, ticket_price, total_price **File-** ticket_bookings	1	14
Report Generate (ILF)	**Fields-** chassis_no, bus_name **File-** ticket_bookings	1	2

Table 4.5: Identify Complexity (Customer)

Transition function	Field/ file involve	FTRs	DETs
Registration (EI)	**Fields-** id, name, email, phone, gender, password **File-** users	1	6
Login (EI)	**Fields-** email, password **File-** users	1	2
Search bus info (EQ)	**Fields-** departure_id, destination_id, date_id **File-** buses	1	3
Ticket Booking (EI)	**Fields :** id, customer_name, phone, bus_name, bus_chassis, destination, journey_date, departure_time, seat_no, total_seat, terminal, ticket_price, total_price **File –** ticket_bookings	1	13
Ticket payment (EI)	**Fields :** payment_status **File –** ticket_bookings	1	1

4.2.3.1 Identify Complexity of Data Function

Table 4.6 shows the identify complexity of Data Function

Table 4.6: Identify Compexity (DF)

Data function	Field/ file involve	RETs	DETs
Departure info (ILF)	**Fields-** id, departure, departure_time **File-** departures	1	3
Boarding Point (ILF)	**Fields-** id , terminal_name **File-** boarding_points	1	2
Ticket price (ILF)	**Fields-** id, ticket_price **File-** ticket_prices	1	2
Date (ILF)	**Fields** – id, date **File-** dates	1	2
Total seat (ILF)	**Fields-** id, total_seat **File-** total_seats	1	2
Chassis (ILF)	**Fields-** id, chassis_no **File-** chassises	1	2
Customer (ILF)	**Fields-** id, name, email, phone, gender, password **File-**users	1	6
Admin (ILF)	**Fields-** id, name, email, phone, gender, password **File-**users	1	6
Operator (ILF)	**Fields-** id, operator_name **File-** operators	1	2
Bus Type (ILF)	**Fields-** id, bus_type **File-** bus_types	1	2
Bus Route (ILF)	**Fields-** id, bus_route **File-** bus_routes	1	2
Destinaiton infos (ILF)	**Fields-** id, destination, destination_scenario **File-** destination_infos	1	3

4.2.3.2 Unadjusted function point contribution

Table 4.7 show the Unadjusted function Point Contribution for Transaction Function

Table 4.7: Unadjusted Function Point Contribution for Transaction Function

#	Transition Function	FTRs	DETs	Complexity	UFP
1	Registration (EI)	1	6	Low	3
2	Login (EI)	1	2	Low	3
3	Add individual component info (EI)	8	20	High	6
4	View individual component info (EO)	8	20	High	7
5	Update individual component info (EI)	8	11	High	6
6	Delete individual component info (EI)	8	20	High	6
7	Add bus info (EI)	9	11	High	6
8	View bus info (EO)	9	11	High	7
9	Update bus Info (EI)	9	10	High	6
10	Delete bus info (EI)	9	11	High	6
11	Register Terminal (EI)	2	3	Low	3
12	View Register terminal (EO)	2	3	Low	3
13	Update Register terminal info (EI)	2	2	Low	3
14	Add user/agent (EI)	1	6	Low	3
15	View User (EO)	1	5	Low	4
16	Update user info (EI)	1	4	Low	3
17	Delete user info (EI)	1	6	Low	3
18	View booked ticket info (EO)	1	14	Low	4
19	Search bus info (EQ)	1	3	Low	3
20	Ticket booking (EI)	1	13	Low	3
TOTAL					**88**

4.2.3.3 Unadjusted function point contribution

Table 4.8 show the Unadjusted function Point Contribution for Data Function

Table 4.8: Unadjusted Function Point Contribution for Data Function

Data function	RETs	DETs	Complexity	UFP
Departure info (ILF)	1	3	Low	7
Boarding Point(ILF)	1	2	Low	7
Ticket price(ILF)	1	2	Low	7
Date (ILF)	1	2	Low	7
Total seat (ILF)	1	2	Low	7
Chassis (ILF)	1	2	Low	7
Customer (ILF)	1	6	Low	7
Admin (ILF)	1	6	Low	7
Operator (ILF)	1	2	Low	7
Bus Type (ILF)	1	2	Low	7
Bus Route (ILF)	1	2	Low	7
Destinaiton (ILF)	1	3	Low	7
Total				**84**

4.2.4 Performance and Environmental Impact

Table 4.9 shows the Performance and environmental impact here.

Table 4.9: Performance and Environmental Impact

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

Value adjustment factor (VAF) = (0.65+ (0.01* TDI))

= (0.65+ (0.01* 32))

= 0.97

UFP= UFP (Data function) + UFP (Transaction function)

Language	Hours Per Function Point
ASP*	06.1
Visual Basic	08.50
Java	10.6
SQL	10.8
C++	12.4
C	13.0
C#	15.5
PHP	15.5

= 88 + 84 = 172

AFP= UFP * VAF = 172 * 0.97 = 167 Approx.

Total time calculation frame = 167 * 15.5 [Productivity of PHP is 15.5] = 2588.5 per hour

= 2589 person hours / 7.5 hours

= 345 person days / 3 [person in a group]

= 115 days

= 3 months 25 days for three persons

Approximately 4 months required for three persons to finish the project.

4.2.5 Project Schedule Chart

First Increment :(Month wise**)**

Category	1st Week	2nd Week	3rd Week	4th Week
Analysis				
Design				
Code				
Test				

Second Increment: (Month wise**)**

Category	1st	2nd	3rd	4th
Analysis				
Design				
Code				
Test				

Third Increment: (Month wise**)**

Category	1st	2nd	3rd	4th
Analysis				
Design				
Code				
Test				

Figure 4.1: Project Schedule Chart

4.2.6 Cost Estimation

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

- ✓ Personnel cost
- ✓ Software cost
- ✓ Hardware cost
- ✓ Other cost

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 = 7.5 hours
- Organization working hours per month=24.083*7.5= 180.623 hours

Table 4.10: Personnel Cost

Type	No. of Members	Months	Salary
System Analyst	1	1	40,000.00
Designer	1	1	25,000.00
Coder	1	1	28,000.00
Total			**93,000.00**

Hardware Cost

Cost of the computer that used to complete the project.

Table 4.11: Hardware cost

Name	Number	Price	Description	Total
Computer	2	45,000	45,000 / 24 * 4	7,500

Total Hardware Cost = 7,500.00 TK

Software Cost

It is the cost of the software is which used in this project.

Table 4.12: Software Cost

SL	Software	Number	Amount	Total
1	OS (Windows 10)	1	100 Tk.	280tk
2	MS Office 2013	1	80 Tk.	
3	Atom	1	100 Tk.	
4	XAMP	1	Free	

Other Cost

Table 4.13: Other cost

Name	Price
Pen and paper	300 Tk.
Mobile	200 Tk.
Transport	500 Tk.
Total	**1000 Tk.**

Accounts Table

Table 4.14: Total cost

Particulars	**TK**
Salary-	
• System Analyst	33,000.00
• Designer	25,000.00
• Coder	28,000.00
	93,000.00 /=
Hardware Cost – • Computer	7,500.00
	7,500.00/=
Software Cost –	
• OS (Windows 10)	100.00
• MS Office 2013	80.00
• Atom	100.00
• Xamp	Free
	280.00/=
Other Costs-	
• Pen and paper	300.00
• Mobile	200.00
• Transport	500.00
	1,000.00 /=
Total cost	**101,780.00 /=**