

SAHAYAK WEB APPLICATION

Project report submitted in partial fulfillment of the requirement for the degree of

Bachelor of technology

in

Computer Science and Engineering / Information Technology

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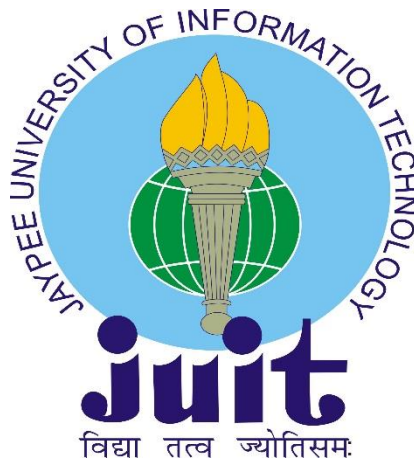
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Candidate's Declaration

I hereby declare that the work presented in this report entitled “**Sahayak Web Application**” in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering/Information Technology** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from 12 April 2018 to 21 May 2018 under the supervision of **Mrs. Smitha Madampath Sreechitra, Senior Member - Education, Training & Assessment, Infosys.**

The matter embodied in the report has not been submitted for the award of any other degree or diploma.

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This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Mrs. Smitha Madampath Sreechitra,

Senior Member - Education, Training & Assessment, Infosys

Dated: 17/05/2018

ACKNOWLEDGEMENT

We owe our intense gratitude to our Project Supervisor **Mrs. Smitha Madampath Sreechitra** who guided us in all phases under the project “**Sahayak Web Application**” by making us familiar with all the required information and specifications for the project. This thoroughly helped us in attaining in depth understanding of concepts and varied technologies. We are profoundly thankful to her for all time support and encouragement.

TABLE OF CONTENTS

LIST OF FIGURES.....	vi
LIST OF TABLES.....	viii
LIST OF GRAPHS.....	ix
LIST OF ABBREVIATIONS.....	x
ABSTRACT.....	11
1. INTRODUCTION.....	12
1.1 INTRODUCTION.....	12
1.1.1 THE MODEL VIEW CONTROLLER ARCHITECTURE.....	12
1.2 PROBLEM STATEMENT.....	13
1.3 AIMS AND OBJECTIVE.....	14
1.4 METHODOLOGY.....	14
1.5 ORGANIZATION OF PROJECT REPORT.....	15
2 LITERATURE SURVEY.....	16
3 SYSTEM DEVELOPMENT.....	20
3.1 HARDWARE AND SOFTWARE REQUIREMENT.....	20
3.2 REQUIREMENTS SPECIFICATIONS.....	20
3.2.1 FUNCTIONAL REQUIREMENTS.....	21
3.2.2 NON FUNCTIONAL REQUIREMENTS.....	22
3.2.3 ENTITY FRAMEWORK APPROACH.....	22
3.3 DATA FLOW DIAGRAM.....	23

3.4 E-R DIAGRAM.....	28
3.5 USE CASE DIAGRAM.....	29
3.6 HIGH LEVEL DESIGN ARCHITECTURE.....	30
3.7 DATABASE DESIGN.....	31
4 PERFORMANCE ANALYSIS.....	36
4.1 AGILE METHODOLOGY.....	36
4.2 OPTIMIZATION OF ALGORITHM.....	39
4.3 SCREEN FIELD VALIDATIONS	39
4.4 TEST PLAN.....	40
4.5 SCREENSHOTS.....	43
5 CONCLUSION.....	51
5.1 FUTURE SCOPE.....	51
6 REFERENCES.....	52

LIST OF FIGURES

S.No.	TITLE
1	MVC Architecture
2	MVC Work Flow
3	MVC Activity Diagram
4	MVC Work Flow Activity Diagram
5	Approaches to a Project
6	DFD – Level 0
7	DFD – Level 1
8	DFD – Level 2
9	DFD – Level 2
10	DFD – Level 2
11	DFD – Level 2
12	Entity Relationship Diagram
13	Use Case Diagram
14	Design Architecture
15	Software Development Life Cycle
16	MVC Working Approach
17	Home Page
18	Employee Page
19	Register User Page

20	Login User Page
21	Contact Us Page
22	Post/Edit/Delete Ads
23	Hobby Group Page
24	Advertisements Page
25	Post Your Advertisements
26	View Your Posted Carpools
27	Edit Your Profile
28	View all advertisements page.
29	Lost and Found
30	Find a carpool
31	View Upcoming Events

LIST OF TABLES

S.No.	TITLE
1	Hardware and Software Requirements
2	Database Design
3	Testing of a Functionality
4	Testing of a Functionality

LIST OF GRAPHS

S.No.	TITLE
1	Burn Down Chart for Sprint 1
2	Burn Down Chart for Sprint 2
3	Burn Down Chart for Sprint 3

LIST OF ABBREVIATIONS

S.No.	Abbreviation	Definition
1	MVC	Model View Controller
2	DB	Database
3	UI	User Interface
4	ER	Entity Relationship
5	IEEE	Institute of Electrical and Electronics Engineers
6	SDLC	Software Development Life Cycle
7	IIS	Internet Information Services
8	DFD	Data Flow Diagram

ABSTRACT

In this project, we are required to make a Utility Portal Website from scratch using MVC framework, which is used to separate business logic from the website frontend.

The model, view and controllers are inter-connected network where the frontend is generated by the View of the project, the business logic by Controller and the data representation task is performed by the Model of the framework.

We have performed numerous CRUD activities, which is, Create-Read-Update-Delete while developing our Enterprise Web Application.

The project in concern, is a Utility Website, used for multi-user access that can be utilized and accessed from various locations and contains the data useful to multiple campuses in a single portal.

CHAPTER 1

INTRODUCTION

1.1 Introduction

1.1.1 The Model-View-Controller Architecture

The Model-View-Controller design pattern partitions an entire responsive application into main components namely view, model and controller. The first component model consists of the core data and functionality. Views are used to display information on the front-end to the user. Controllers are used to manage the user input. Controllers and views together consists of the user interface.

Model, View, Controller splits an interactive application into three main departments i.e. input, processing, and output. Model component wraps functionality and back-end data. The model itself is non-dependent on input behavior or specific output representations.

View components are used to display content to the client. A view fetches the content from the model. There are possibly single or multiple views of one singular model. Each view is linked with controller component. Controllers get input from the user, usually as events that accepts keyboard input, clicking of mouse buttons, or mouse movement. Service requests are converted to events for the view or the model. The users communicate with the application solely through controllers.

1.2 Problem Statement

Sahayak Web Application is a web portal that would primarily integrate all the Infosys employee driven utility service offerings in one place. This would ensure more structured way of uploading data and easier navigation for relevant info through smart search filters. Also, it would ensure all employees across the various DC's are able to access relevant info at one place. These various utility info offerings could be:

- **Hobby Clubs:** It helps to look up for a hobby club across all locations of Infosys and enroll in the same. Moreover, add events of the respective hobby clubs through a user friendly UI.
- **Rentals:** It displays apartments, vehicles and other items of daily use like furniture, electrical appliances etc. available for rent purposes. Employees can also post their advertisements through this web application.
- **Car Pool:** Car Pool aims to provide a comfortable travelling experience by sharing a trip from a particular place. Employees can post relevant information about their trip. Interested individuals can directly contact the respective employee.
- **Sale and Buy:** Sale and Buy offers a wider functionality by providing a platform to post advertisements about apartments, vehicles, furniture etc. available for sale. Employees who are willing to buy can contact the person through this web application.
- **Lost and Found:** Lost and Found portal comes to the rescue when employees have either lost one of their belongings or have found one. Besides posting for unclaimed items, employees can also post a query related to their lost belongings.

1.3 Aims and Objective

The aim is to create a user friendly website that uses MVC architecture for responsive website.

1.4 Methodology

In this project, we would make use of MVC architecture for a website that can be used at multiple locations/campuses for various day-to-day utilities such as carpool, rentals, lost and found, hobby clubs etc. The project is done using C# programming language for model and controller and cshtml for view.

AGILE methodology is a practice that involves continuous iteration of project development and maintenance as well as testing and improvisation throughout the software development lifecycle of project. In this method, unlike Waterfall model, the development and testing activities are concurrent and it may change as the requirement changes. Since in any given project, the requirements are subject to change with the user's demand, or new arrival of modules etc.

In this method, the whole life cycle of the project is divided into Sprints, where you can divide the project and at the end of the respective sprint, the graph depicts the performance of that project.

1.5 Organization of Project Report

Chapter 1, highlights and underlines the MVC architecture and framework characteristics. In this chapter we discuss what is MVC and how this architecture can be made use to develop enterprise applications.

Chapter 2 consists of the collaboration and the crux of the studied literature from past few years on the topic.

Chapter 3 covers the evolution of system used and the explanation of the same through diagrams.

The test results, performance analysis are collaborated in **Chapter 4**.

Chapter 5 entails the conclusion of the project hereby proposing some more development in the future scope.

CHAPTER 2

LITERATURE SURVEY

Review of literature is a method to evaluate and understand the researches regarding a particular area. The aim in focus is to yield a calculative evaluation of the topic through various understandable methods. The main objective of our survey is to find the relevant work regarding MVC architecture and its various working methodologies.

2.1 “Assessing the Effectiveness of the Model View Controller Architecture for Creating Web Applications”, Nick Heidke, Joline Morrison, and Mike Morrison

The Model View Controller (MVC) architecture has been widely accepted as an approach for developing Web-based Enterprise Applications that contains a back-end programming component with a visual output produced.

Till now the effectiveness of the MVC architecture for developing various applications has not been addressed. The research studied here aims to fulfill this requirement by contrasting MVC to many other majorly-used site/forum development techniques in terms of maintainability, time taken to develop and the potential to improve communication amongst programmers and designers by comparing a MVC-based Web application with a non-MVC Web application and focusing the disadvantages and advantages of each approach.

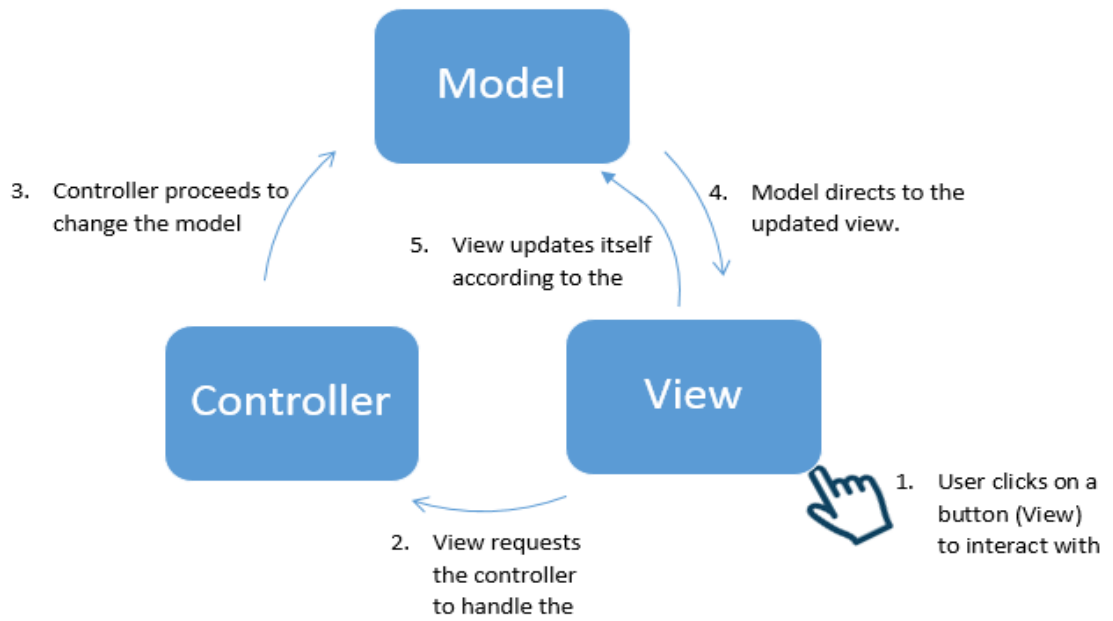


Fig. 1 MVC Architecture

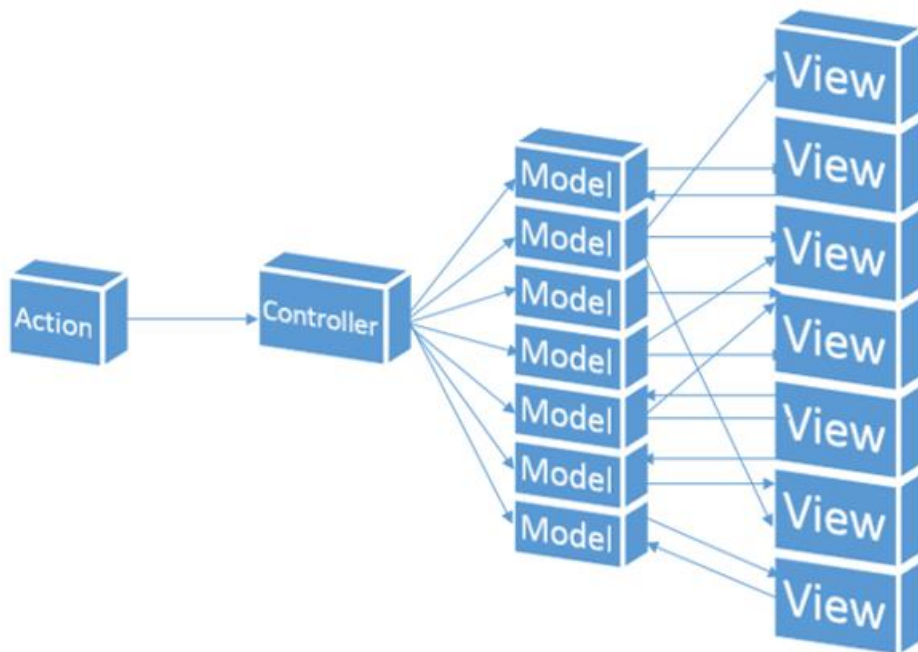


Fig. 2 MVC Work Flow

2.2 “Evaluation of the Model-View-Controller design pattern when applied to a heterogeneous application to distribute newspaper textual content to mobile devices”, Sakib Supple

The Smalltalk programming language uses few mutually cooperating classes to create, manage and operate user interfaces: Model, View and Controller.

Each object has specific responsibilities

- Model: contains the data of the application
- View: the actual representation of model
- Controller: illustrates that how the user input will impact the user interface.

The structure of such classes decodes these constituents and hence making them simple, user friendly and easy for re-utilization. Particularly, a Model is interpreted as a class that depicts the structure of a database component, which is then represented by numerous Views.

Each platform is depicted by a separate View. For instance, Model that depicts a movie story, the main features of this method are stated as,

- Any modification to the story is reflected in every specific view respectively; the state of the story is reflected by the layout which is the responsibility of each view.
- No View is dependent on any other story’s view.
- The change is reflected in the View on any change in the Model.

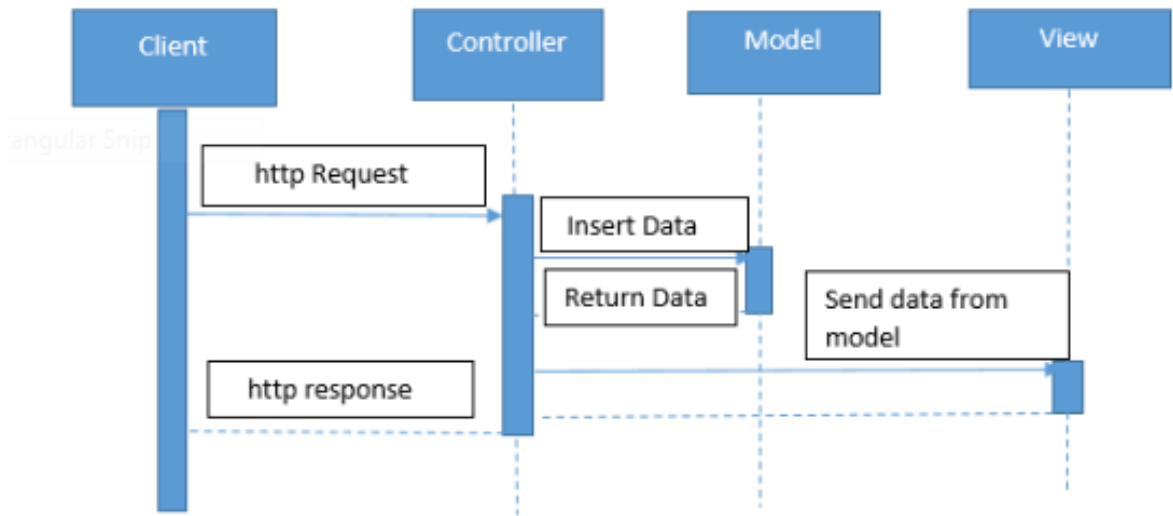


Fig. 4 MVC Work Flow Activity Diagram

CHAPTER 3

SYSTEM DEVELOPMENT

3.1 Hardware/Software requirement and platform

System Information	Configuration Details
Processor	Intel Pentium 3/5/7
RAM	2GB/4GB/8GB
Operating System	Windows7
HDD	500GB
Speed	1 GHZ and more
Language	C# and CSHTML

Table 1. Hardware and Software Requirements

3.2 Requirement Specifications

Sahayak Web Application is a web portal that would primarily integrate all the Infosys employee driven utility service offerings in one place. This would ensure more structured way of uploading data and easier navigation for relevant info through smart search filters. Also, it would ensure all employees across the various DC's are able to access relevant info at one place. These various utility info offerings could be:

- **Hobby Clubs:** It helps to look up for a hobby club across all locations of Infosys and enroll in the same. Moreover, add events of the respective hobby clubs through a user friendly UI.
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- **Lost and Found:** Lost and Found portal comes to the rescue when employees have either lost one of their belongings or have found one. Besides posting for unclaimed items, employees can also post a query related to their lost belongings.

3.2.1 Functional Requirements

Employee should be able to login with their company User Id and Password.

If authenticated, they should have access to:

1. There exists a Login portal for the admin and the employee so that they are able to login with their respective User Id and Password.
2. There exists a Logout functionality for the user to exit the application.
3. There exists a Registration page for the new user to register as a member.
4. There will be a Contact Us page where user can get in touch with the team and submit queries.
5. There will be FAQ page where user can refer answers to all the frequently asked queries.
6. There will be the option of posting the rental details and advertisements of various day to day utilities such as vehicles, apartments, furniture etc.

7. User will be able to search for property across cities.
8. There will be an option of recalling and viewing the advertisements posted earlier.
9. Employee will be able to update and delete the advertisements posted earlier.
10. User will be able filter the advertisements based on the location and category.
11. There will be an option to connect with others who enjoy same interests and hobby groups.
12. User will be able to view all the events in his/her preferred location.
13. Events will be displayed based on filtered locations.
14. User will be able to add the events if he/she wants to organize any event.
15. Employee will have an option to update and delete any added events.
16. There will be an option to access and fetch details of all lost and found items.
17. User will have an option to give details of all found and lost items.
18. There will be an option to post and share details regarding carpools.
19. User will be able to find carpool across cities.
20. Details regarding carpool can further be updated.

3.2.2 Non-Functional Requirements

System should have sufficient security measures in place to restrict unauthorized user access as the data within the application is sensitive business data.

The program should be easily maintainable, robust and portable.

Follow specific coding standards to comply with the standards of code.

3.2.3 Entity Framework Approach

There are many approaches to work with an entity framework such as:

- Code First Approach
- Database First Approach
- Model First Approach

In this project, we selected the database first approach to work with as we are making our project right from the scratch.

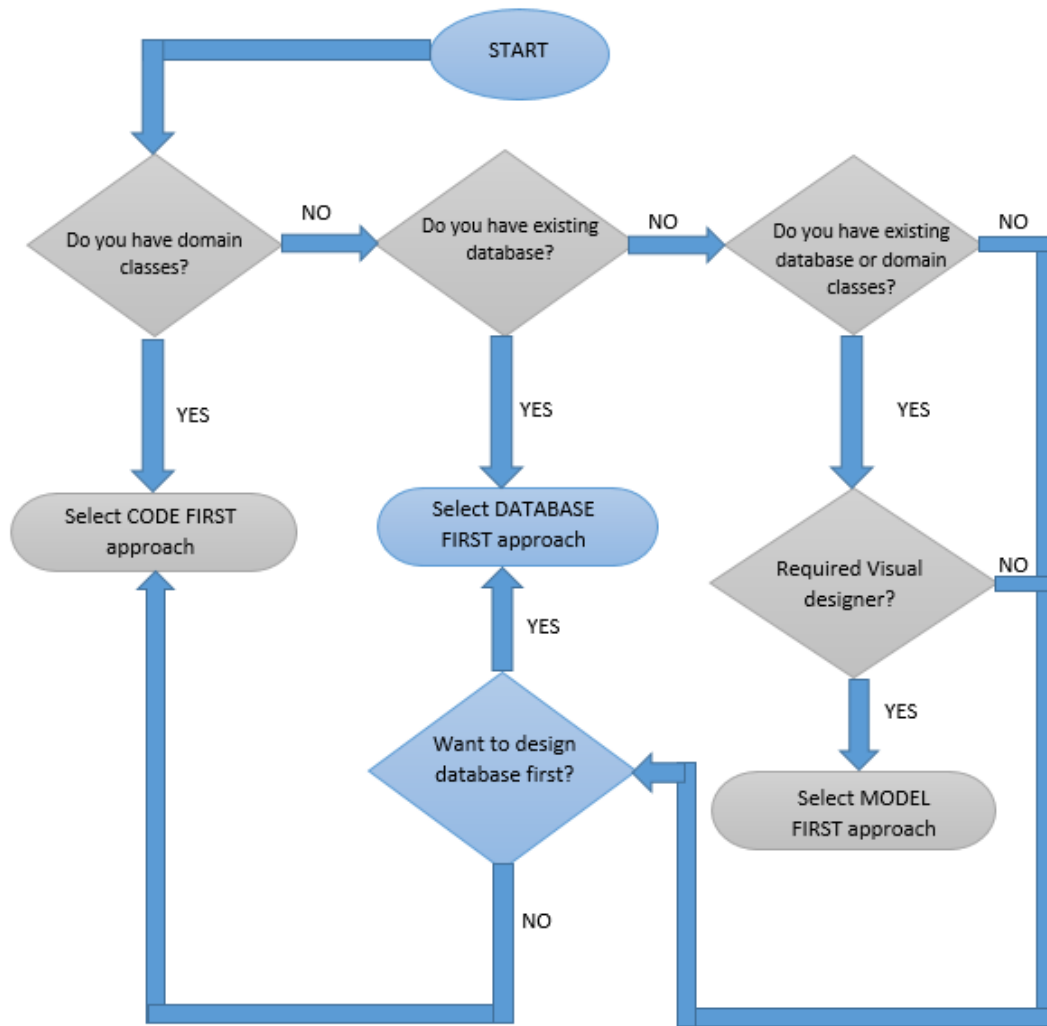


Fig. 5 Approaches to A Project

3.3 Data Flow Diagram:

This diagram illustrates the flow of the project, the working through the various components complying the DFD standards. There are multiple types of DFD levels that exist and the structure that varies accordingly.

Level-0, Level-1 and Level-3 are the major types of DFDs that exists. The main reason to use DFDs are:

- Clarifying the processes and dividing them as modules.
- Describing the flow in more detailed way.
- Sequencing the flow in a fixed and in a methodological way.
- Specifying the modules and their tasks through the data flow.
- Through the arrows direction in and out through various process, we can actually interpret the real structure of the project.

3.3.1 Level-0 DFD of The Login Page

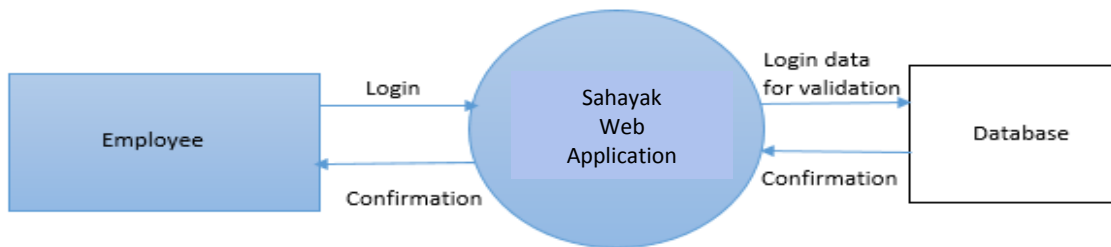


Fig. 6 DFD – Level 0

3.3.2 Level-1 DFD; Depicting The Entire Flow

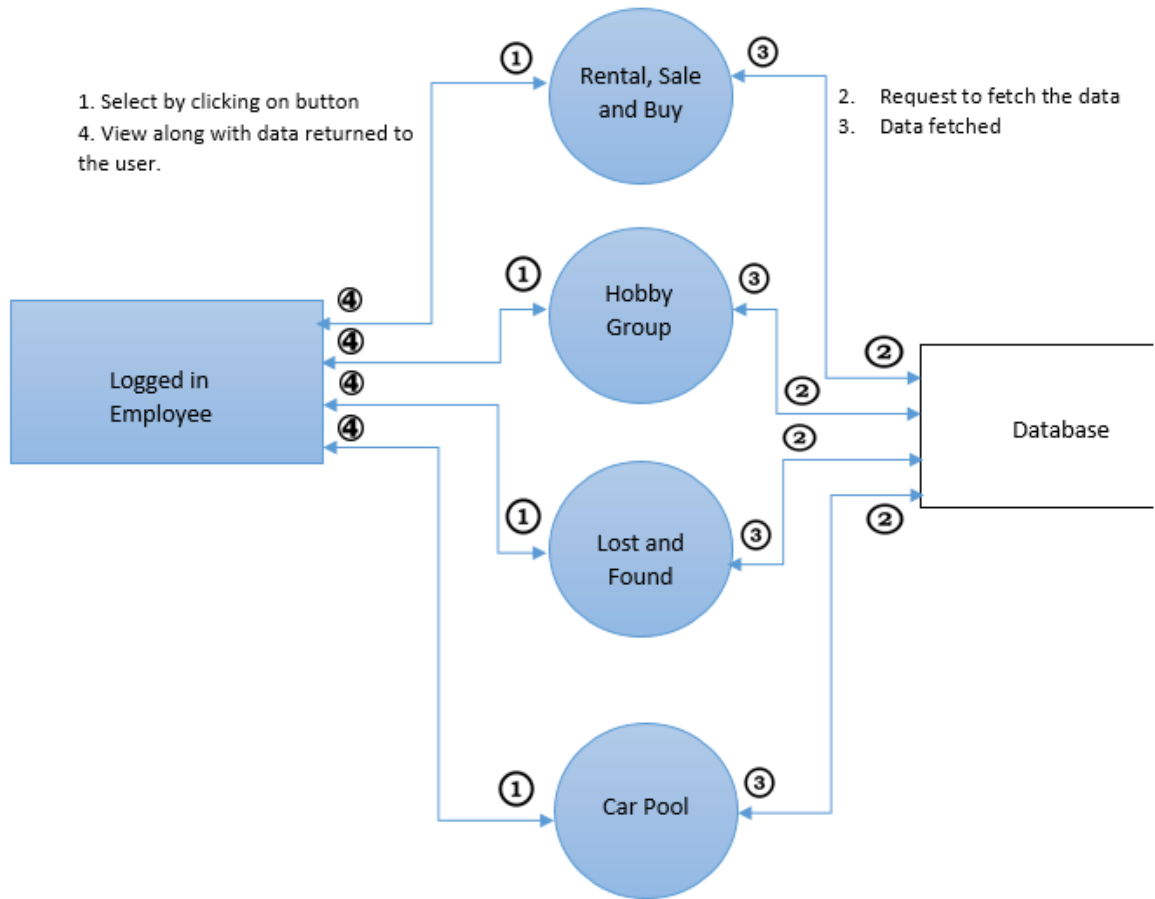


Fig. 7 DFD- Level 1

3.3.3 Level-2 DFD; Depicting The Module-wise Flow:

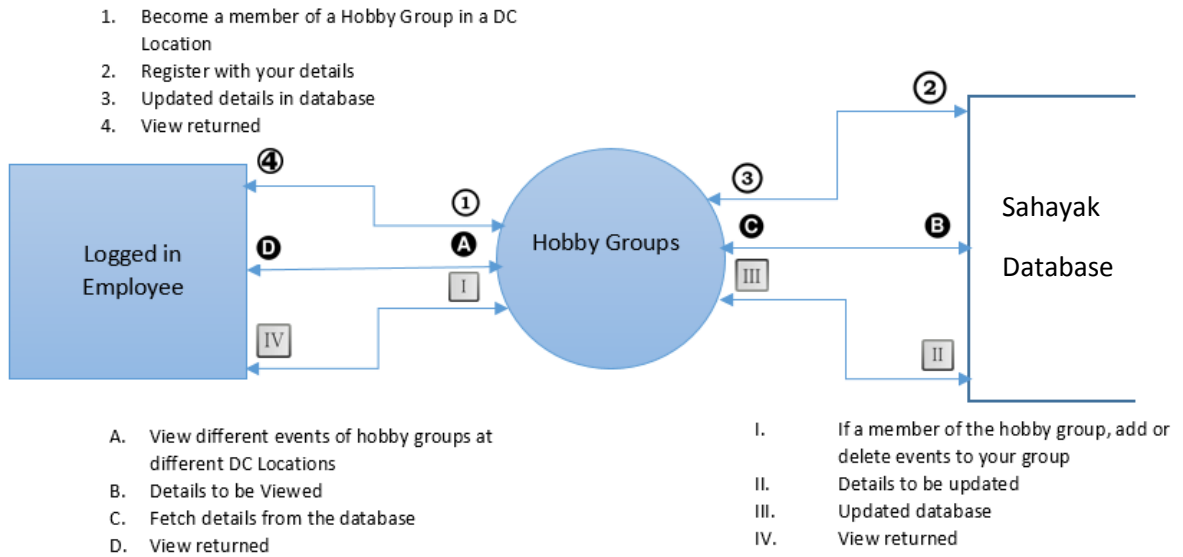


Fig. 8 DFD- Level 2

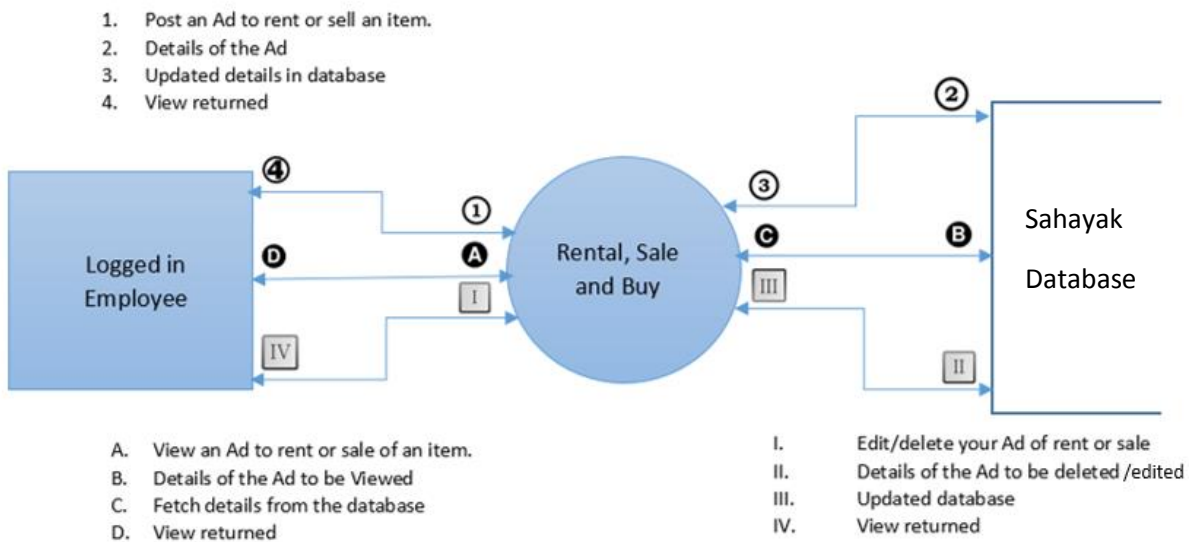


Fig. 9 DFD- Level 2

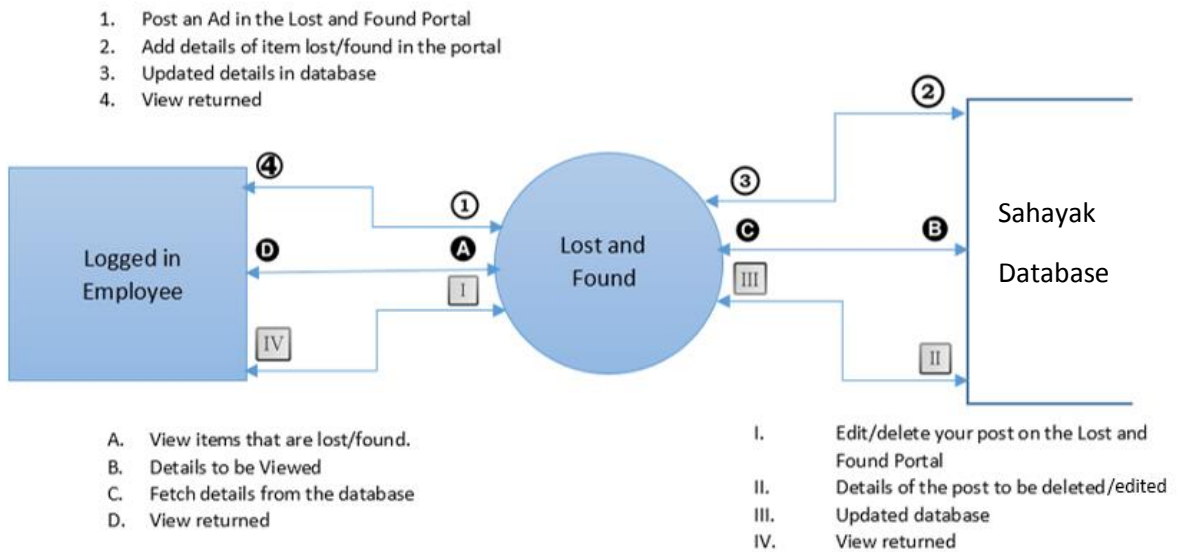


Fig. 10 DFD- Level 2

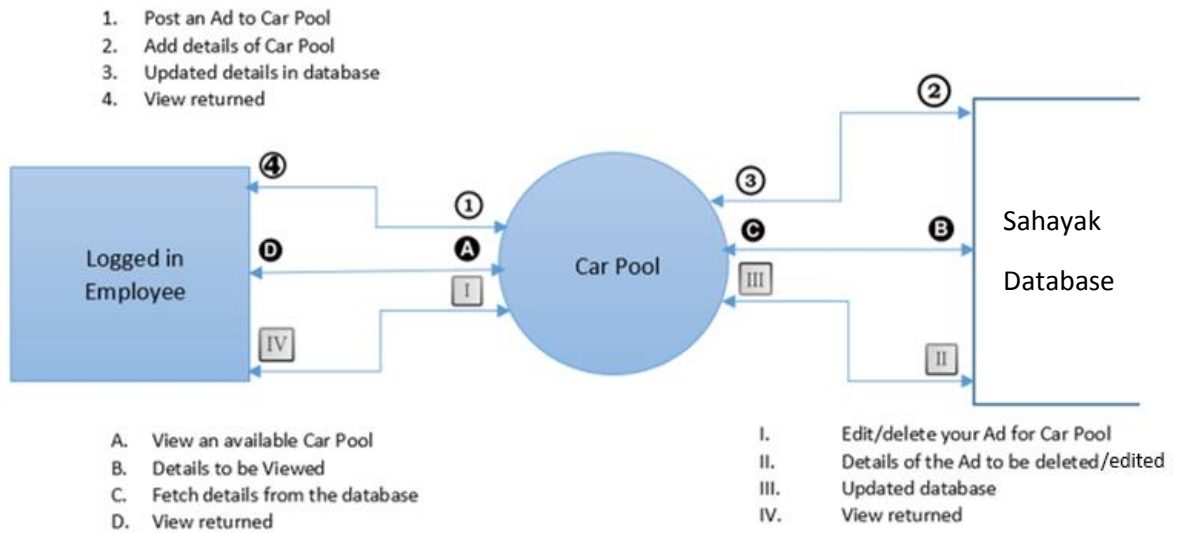


Fig. 11 DFD- Level 2

3.4 ENTITY RELATIONSHIP DIAGRAM

ER or Entity Relationship diagram tells how different entities are related to each other. The diagram depicts the relationship between different entities.

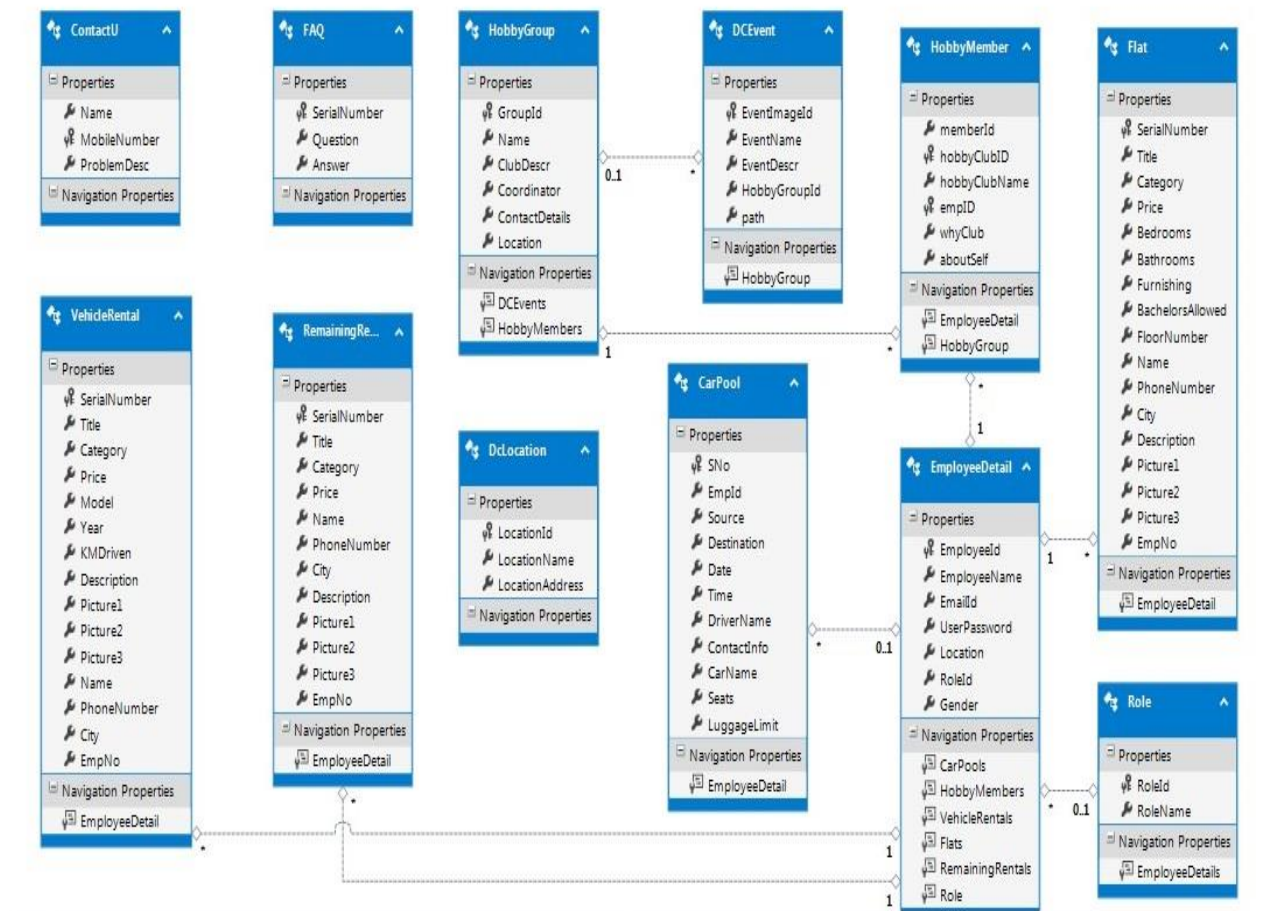


Fig. 12 Entity Relationship Diagram

3.5 Use Case Diagram

These are the type of diagrams that depicts the interaction and relationship of the person using the system as a user with the entire system and/or its modules. In another words, it also highlights the relation among the user and use cases that are right away used by the user.

Following is the Use Case Diagram of our system:

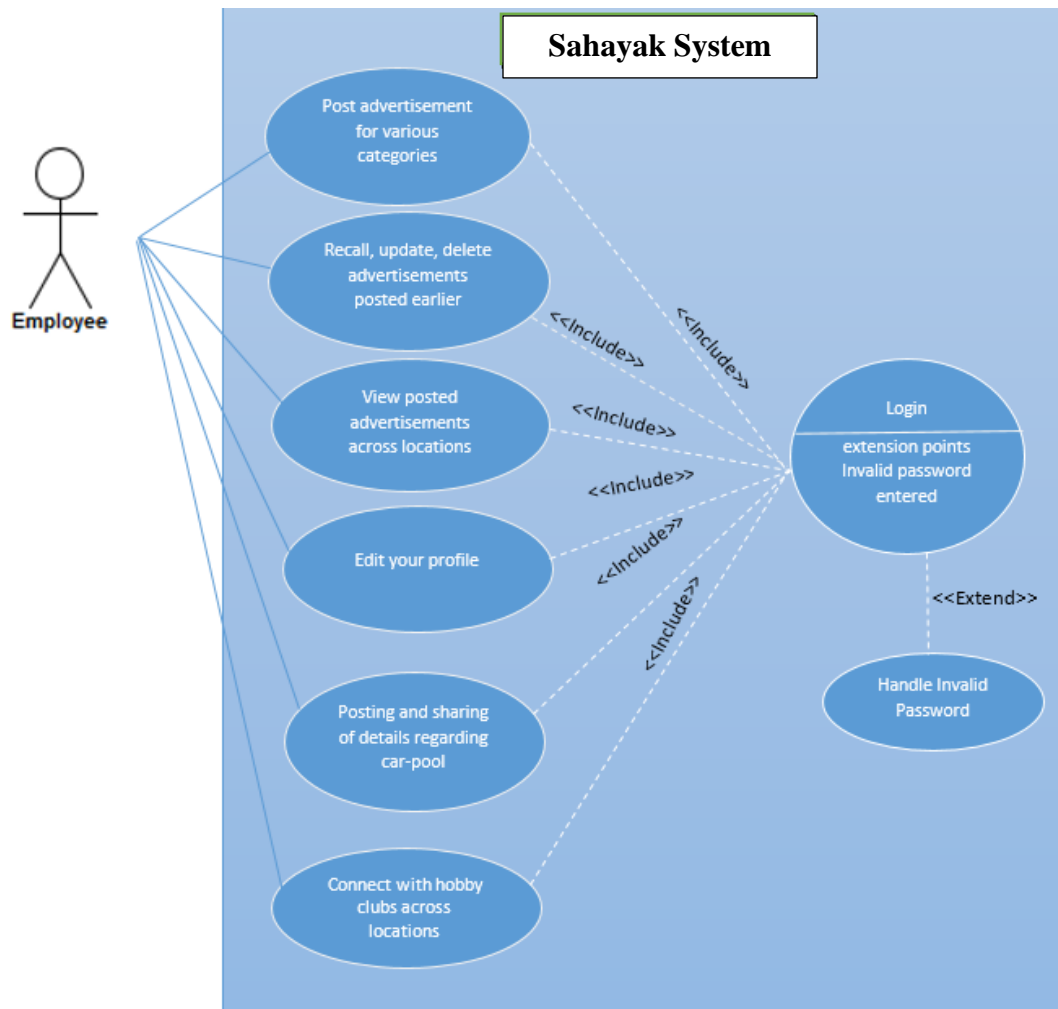


Fig. 13 Use Case Diagram

3.6 HIGH LEVEL DESIGN ARCHITECTURE

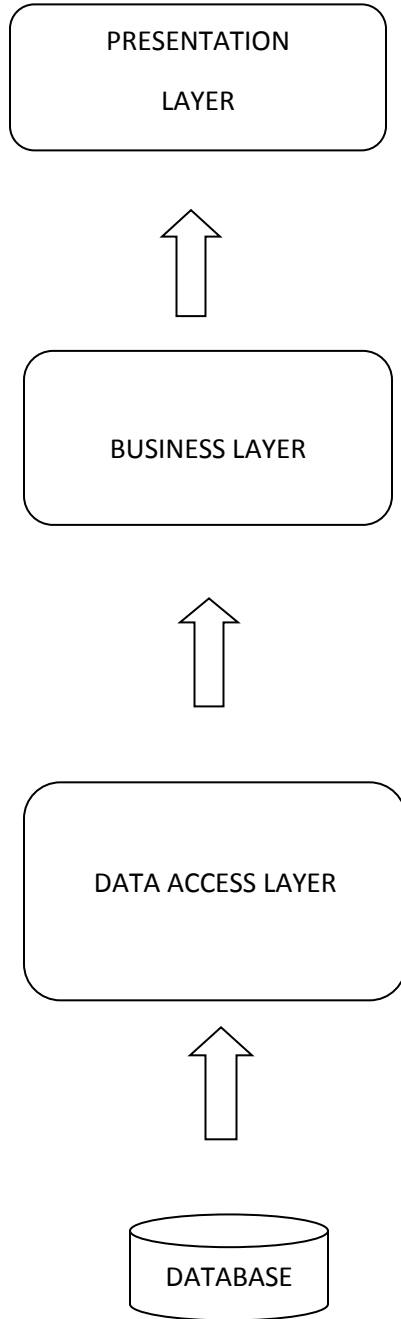


Fig. 14 Design Architecture

3.7 Database design

S. No.	Table Name	Description	Field Name	
1	EmployeeDetails	Contains the details of all the employees.	EmployeeId	INT
			EmployeeName	VARCHAR
			EmailId	VARCHAR
			UserPassword	VARCHAR
			Location	VARCHAR
			RoleId	TINYINT
			Gender	CHAR
2	Roles	Contains the details of all the roles of the employee.	RoleId	TINYINT
			RoleName	VARCHAR
3	DcLocations	Contains the details of all the DC Locations of Infosys.	LoctaionId	TINYINT
			LocationName	VARCHAR
			LocationAddress	VARCHAR
4	ContactUs	Contains the details of all the users who have a query for the admin.	Name	VARCHAR
			MobileNumber	BIGINT
			ProblemDesc	VARCHAR
5	FAQ	Contains the details of all the FAQs available on the site.	SerialNumber	INT
			Question	VARCHAR
			Answer	VARCHAR
6	Flat	Contains the details of the flats for rent.	SerialNumber	INT
			Title	VARCHAR
			Category	VARCHAR
			Price	DECIMAL

			Bedrooms	INT
			Bathrooms	INT
			Furnishing	VARCHAR
			BachelorsAllowed	VARCHAR
			FloorNumber	INT
			Name	VARCHAR
			PhoneNumber	BIGINT
			City	VARCHAR
			Description	VARCHAR
			Picture1	VARCHAR
			Picture2	VARCHAR
			Picture3	VARCHAR
			EmpNo	INT
7.	VehicleRental	Contains the details of the vehicle for rent.	SerialNumber	INT
			Title	VARCHAR
			Category	VARCHAR
			Price	DECIMAL
			Model	VARCHAR
			Year	INT
			KMDriven	DECIMAL
			Description	VARCHAR
			Picture1	VARCHAR
			Picture2	VARCHAR

			Picture3	VARCHAR
			Name	VARCHAR
			PhoneNumber	BIGINT
			City	VARCHAR
			Empno	INT
8	RemainingRental	Contains the details of the other stuff for rent.	SerialNumber	INT
			Title	VARCHAR
			Category	VARCHAR
			Price	DECIMAL
			Name	VARCHAR
			PhoneNumber	BIGINT
			City	VARCHAR
			Description	VARCHAR
			Picture1	VARCHAR
			Picture2	VARCHAR
			Picture3	VARCHAR
			EmpNo	INT
9	HobbyGroup	Contains the details of the different Hobby Groups available at various DC Locations.	GroupId	INT
			Name	VARCHAR
			ClubDescr	VARCHAR
			Coordinator	VARCHAR
			ContactDetails	VARCHAR

			Location	NVARCHAR
10.	DCEvents	Contains the details of the events organized by various Hobby Groups at distinct DC Locations	EventImageId	INT
			EventName	VARCHAR
			EventDescr	VARCHAR
			HobbyGroupId	INT
			path	VARCHAR
11.	HobbyMembers	Contains the details of the members belonging to different hobby groups at various DCs.	memberId	INT
			hobbyClubId	INT
			hobbyClubName	VARCHAR
			empID	INT
			whyClub	VARCHAR
			aboutSelf	VARCHAR
12	CarPool	Contains the details of ads people post for carpooling	SNo	INT
			EmpId	INT
			Source	VARCHAR
			Destination	VARCHAR
			Date	DATE
			Time	TIME
			DriverName	VARCHAR
			ContactInfo	VARCHAR
			CarName	VARCHAR
			Seats	INT

			LuggageLimit	INT
13	Found	Contains the details of any unclaimed item that was found by the user and the details were uploaded on the portal.	SNo	INT
			Category	VARCHAR
			ItemName	VARCHAR
			Description	VARCHAR
			Date	DATETIME
			ContactInfo	VARCHAR
			EmpName	VARCHAR
			EmpId	INT

Table 2. Database Design

CHAPTER 4

PERFORMANCE ANALYSIS

4.1 Agile Methodology

AGILE methodology is a practice that involves continuous iteration of project development and maintenance as well as testing and improvisation throughout the software development lifecycle of project. In this method, unlike Waterfall model, the development and testing activities are concurrent and it may change as the requirement changes. Since in any given project, the requirements are subject to change with the user's demand, or new arrival of modules etc.

In this method, the whole life cycle of the project is divided into Sprints, where you can divide the project and at the end of the respective sprint, the graph depicts the performance of that project.

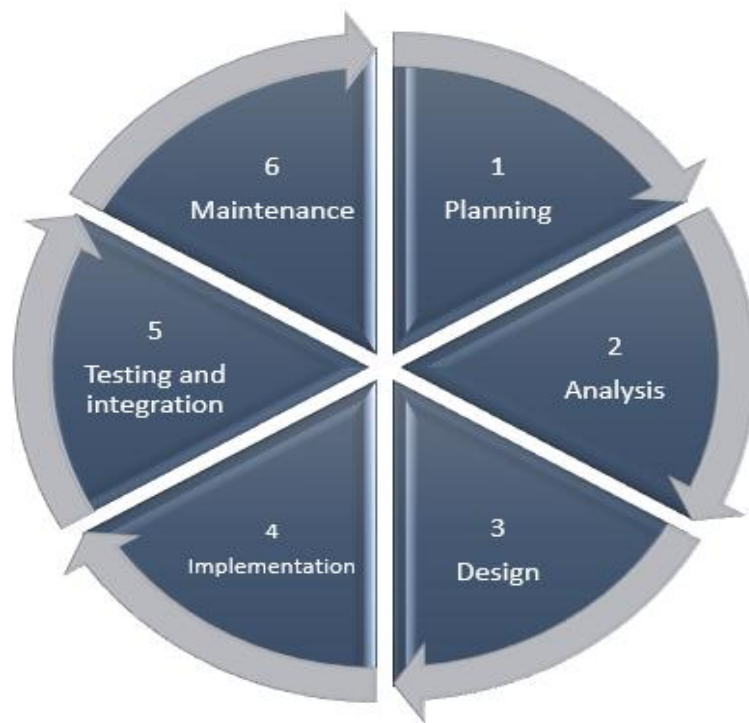
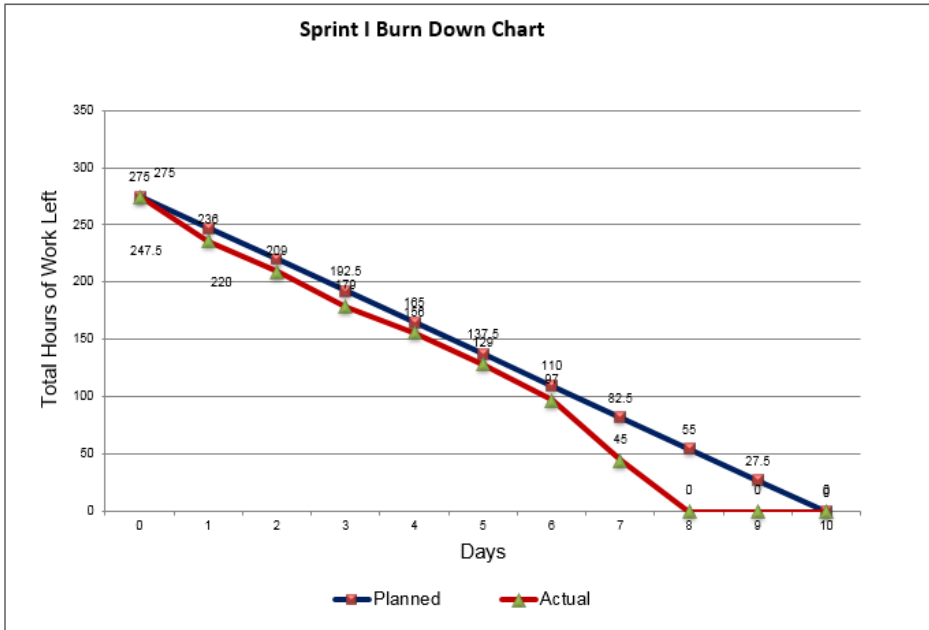
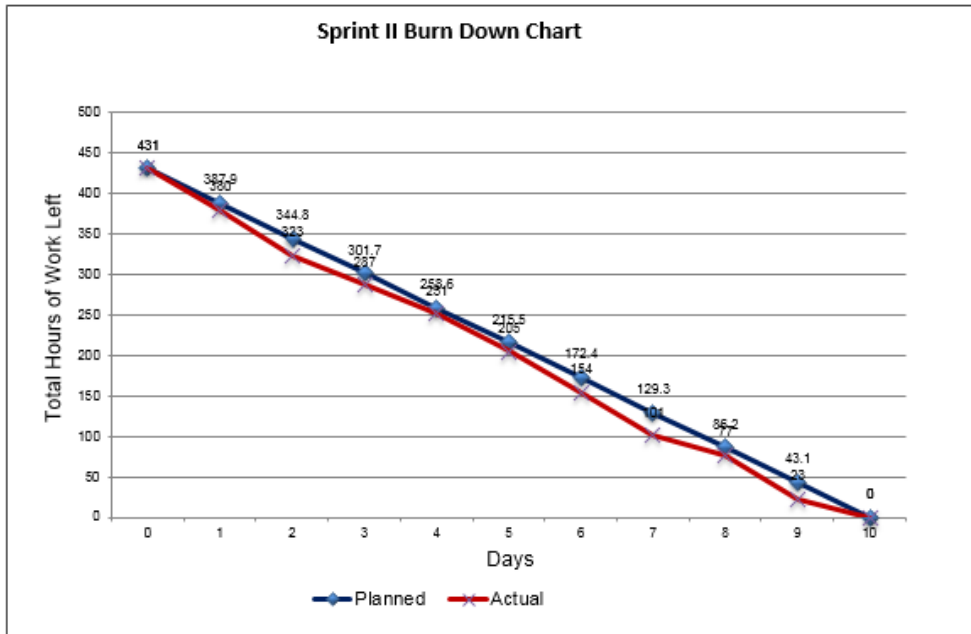


Fig. 15 Software Development Life Cycle



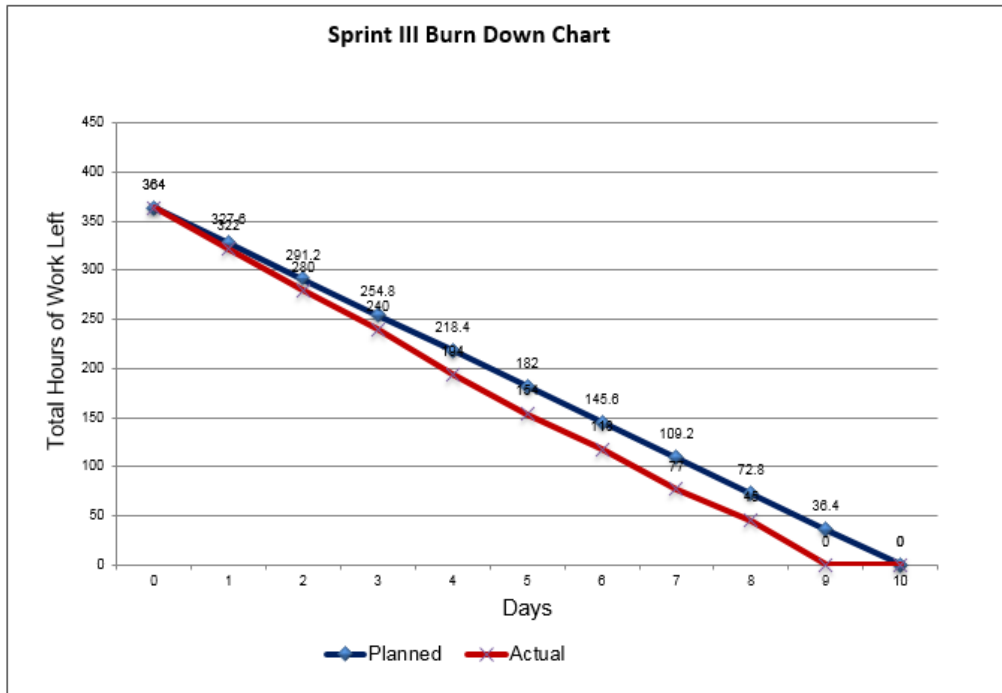
Sprint 1 Progress
COMPLETED

Graph 1. Sprint 1 – Burn Down Chart



Sprint 2 Progress
COMPLETED

Graph 2. Sprint 2 – Burn Down Chart



Sprint 3 Progress

COMPLETED

Graph 3. Sprint 3 – Burn Down Chart

4.2 Optimization of algorithms and data access

Normalization techniques have been implemented to optimize the data access from database.

4.3 Screen field validations, defaults and attribute tables

Proper data annotations have been used for each and every text field.

Identity has been used for unique identification.

Appropriate table constraints have been used to design this portal.

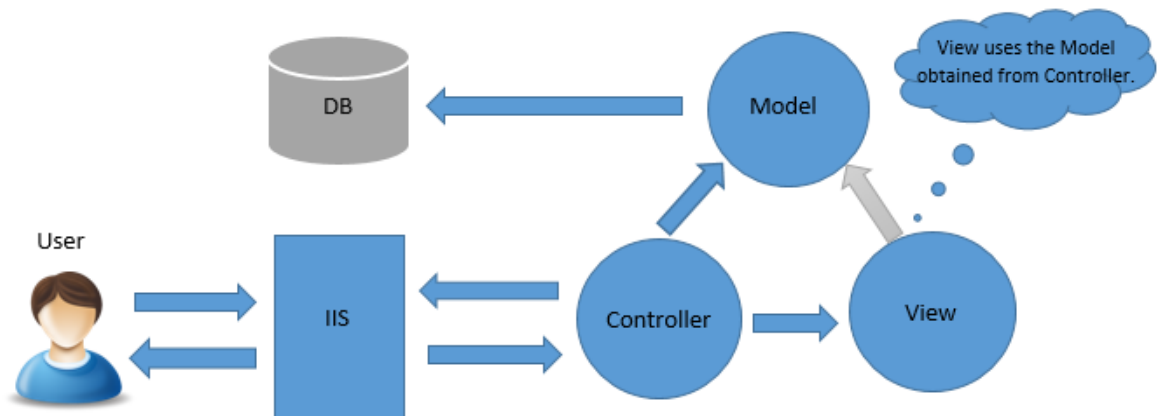


Fig. 16 MVC Working Approach

4.4 Test Plan

Software testing is the procedure done to test the modules at various levels and check whether the actual output matches with the expected/planned results. There are various methods to conduct a test plan and in this particular project, we are conducting a White Box Testing for all the modules.

4.4.1 Login Functionality Testing

S.No.	Test Condition	Expected Result	Test Cycle			
			S	1	2	3
1.	Username : <u>Frank@gmail.com</u> Password : frank@1234	Successful Login. Redirect to Employee Home Page.	S	Start Page	“Already a User?” If yes, then Login Page	Redirected to Employee Home Page
2	Username : <u>Anzio@yahoo.com</u> ; Password : don@123	Successful Login. Redirect to Admin Home Page.	S	Start Page	“Already a User?” If yes, then Login Page	Redirected to Employee Home Page
3	Username: Frank ; Password : frank@1234	Invalid details. Redirect to Login Page with message.	S	Start Page	“Already a User?” If yes, then Login Page	Redirect to Login Page with message.
4	Username : <u>Frank@yahoo.com</u> ; Password : frank@1234	Invalid details. Redirect to Login Page with message.	S	Start Page	“Already a User?” If yes, then Login Page	Redirect to Login Page with message.
5	Username: <u>Frank@gmail.com</u> ; Password : frank234	Invalid details. Redirect to Login Page with message.	S	Start Page	“Already a User?” If yes, then Login Page	Redirect to Login Page with message.

Table 3. Testing of a Functionality

4.4.2 Register Functionality Testing

S.No.	Condition to be tested	Expected Result	Test Cycle			
			S	1	2	3
1.	Employee ID: 147578 Employee Name: Roger Email ID: roger@gmail.com Password: rog213@er Location: Delhi	Successful registration. Redirected to success page with a link to go to Login page.	S	Start Page	“Already a User?” If no, then Register Page	Redirected to success page with a link to go to Login page
2	Employee ID: 1 Employee Name: Roger Email ID: roger@gmail.com Password: rog213@er Location: Delhi	Unsuccessful. Display Register Page with Employee ID showing error.	S	Start Page	“Already a User?” If no, then Register Page	Display Register Page with error message
3	Employee ID: 147578 Employee Name: 12 Email ID: roger@gmail.com Password: rog213@er Location: Delhi	Unsuccessful. Display Register Page with error message “Employee name should contain only alphabets”	S	Start Page	“Already a User?” If no, then Register Page	Display Register Page with error message
4	Employee ID: 147578 Employee Name: Roger Email ID: roger	Unsuccessful. Display Register Page with error message “Email Id is not valid”	S	Start Page	“Already a User?” If no, then Register Page	Display Register Page with error message

	Password: rog213@er Location: Delhi					
5	Employee ID: 147578 Employee Name: Roger Email ID: roger Password: rog213@er Location: --Select--	Unsuccessful. Display Register Page with error message "You must choose a location"	S	Start Page	"Already a User?" If no, then Register Page	Display Register Page with error message
6	Employee ID: 147578 Employee Name: Roger Email ID: roger Password: rog Location: Delhi	Unsuccessful. Display Register Page with error message "Password length must be of at least 6 characters"	S	Start Page	"Already a User?" If no, then Register Page	Display Register Page with error message

Table 4. Testing of a Functionality

4.5 Output at various stages

4.5.1 The Home Page

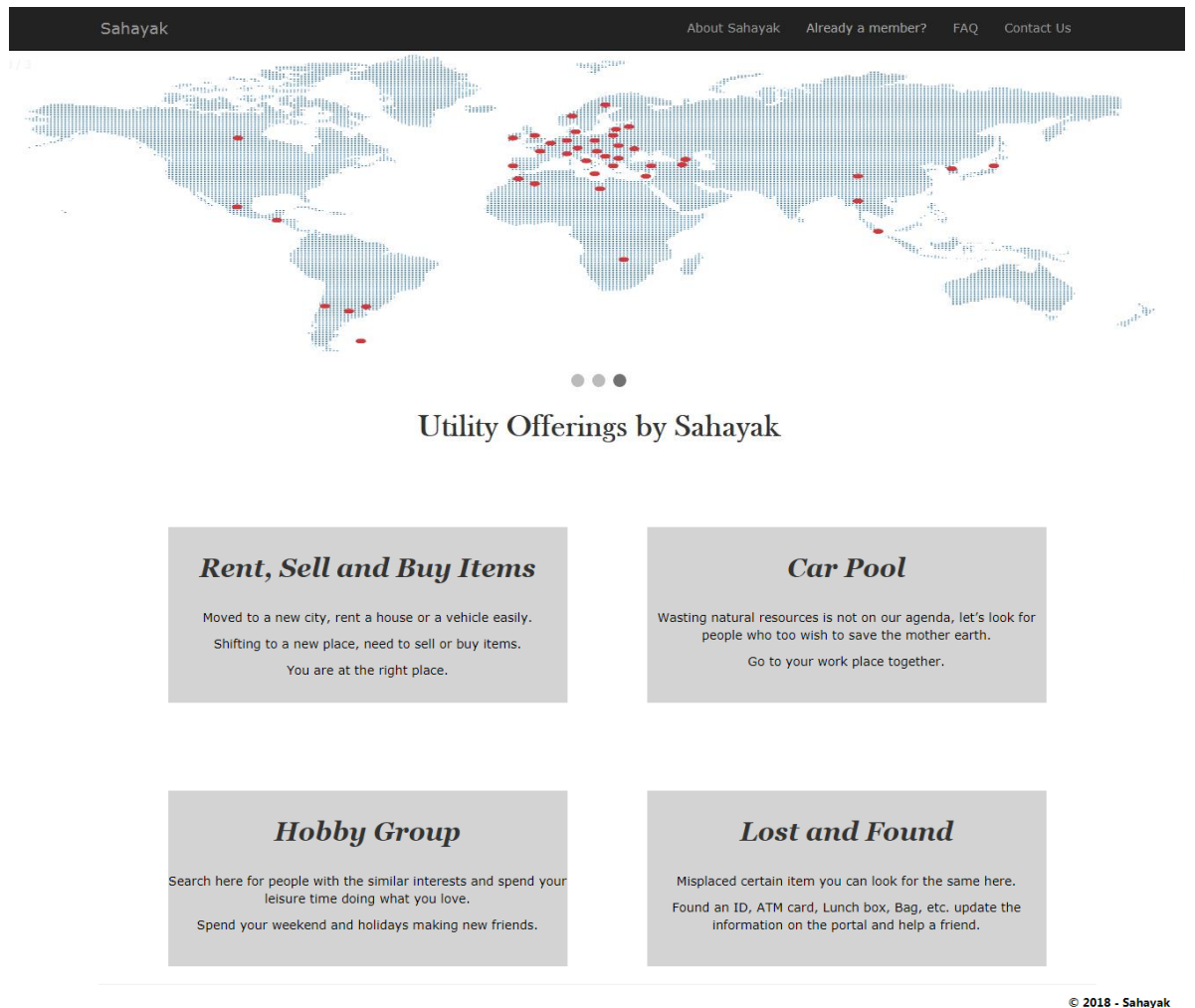



Fig. 17 The website Home Page

4.5.2 Login Page

Sahayak About Sahayak Already a member? FAQ Contact Us



sanchit04.trn@infosys.com

.....

Login Remember Me
[Forgot Password?](#)

New User? [Register Now](#)

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Fig. 18 The User Login Page

4.5.3 The Register Page

Sahayak About Sahayak Already a member? FAQ Contact Us

Create your Sahayak Account

Employee ID

Employee Name

Email ID

Password

Location
--Select--

Gender
 Male Female

Register

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Fig. 19 The New User Register Page

4.5.4 The Employee Home Page

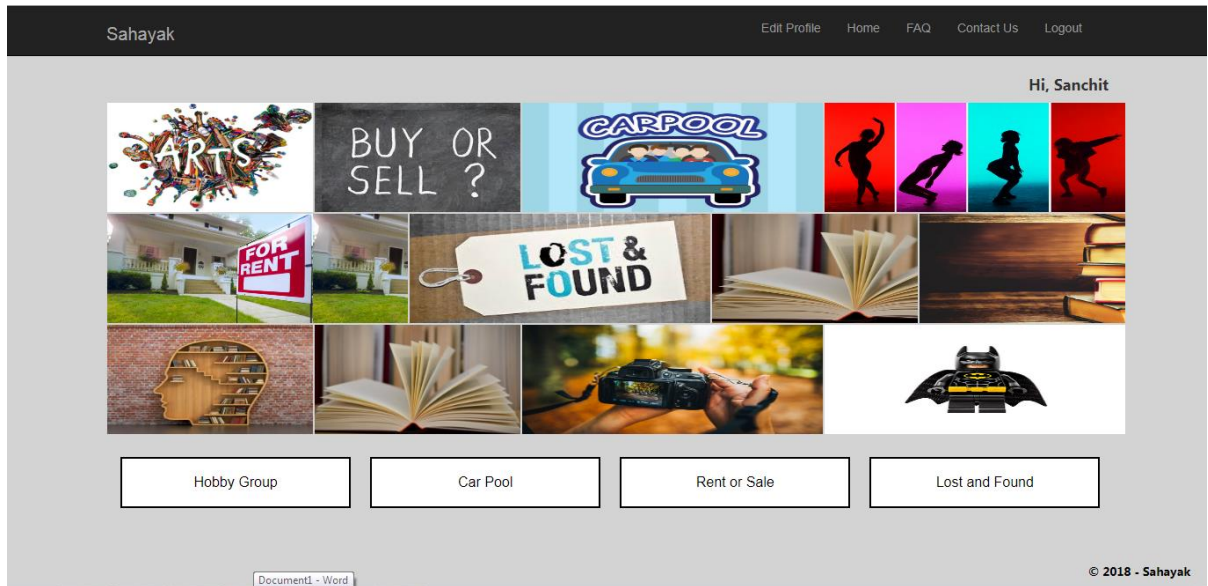


Fig. 20 The Employee Home Page

4.5.5 The Contact Us Page

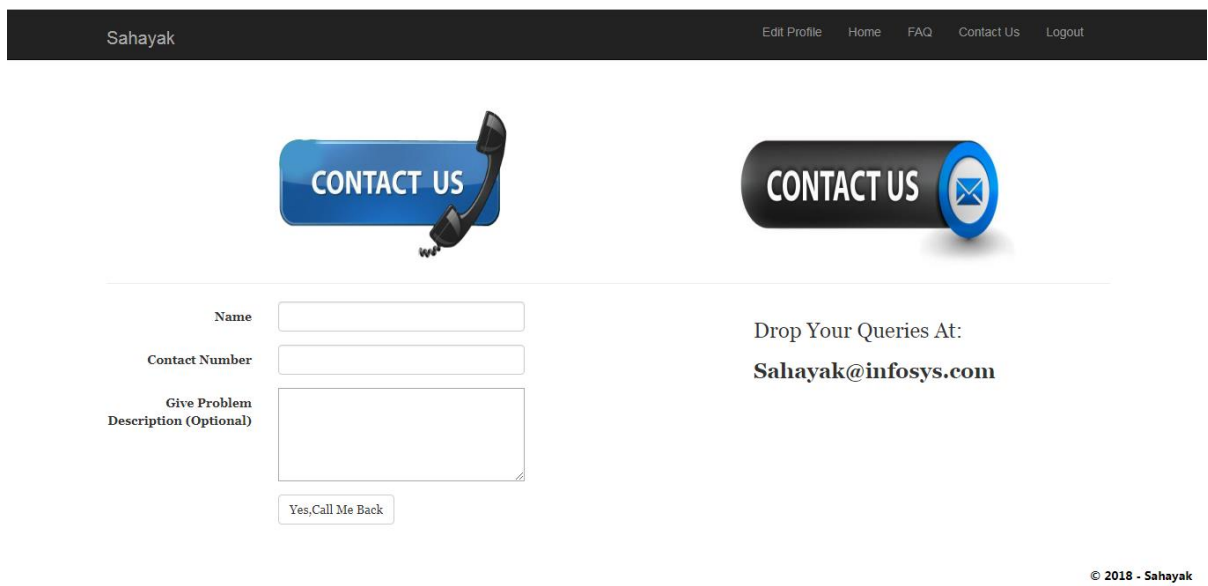


Fig. 21 The Contact Us Page

4.5.6 To Post/Edit/Delete Your Ad Page

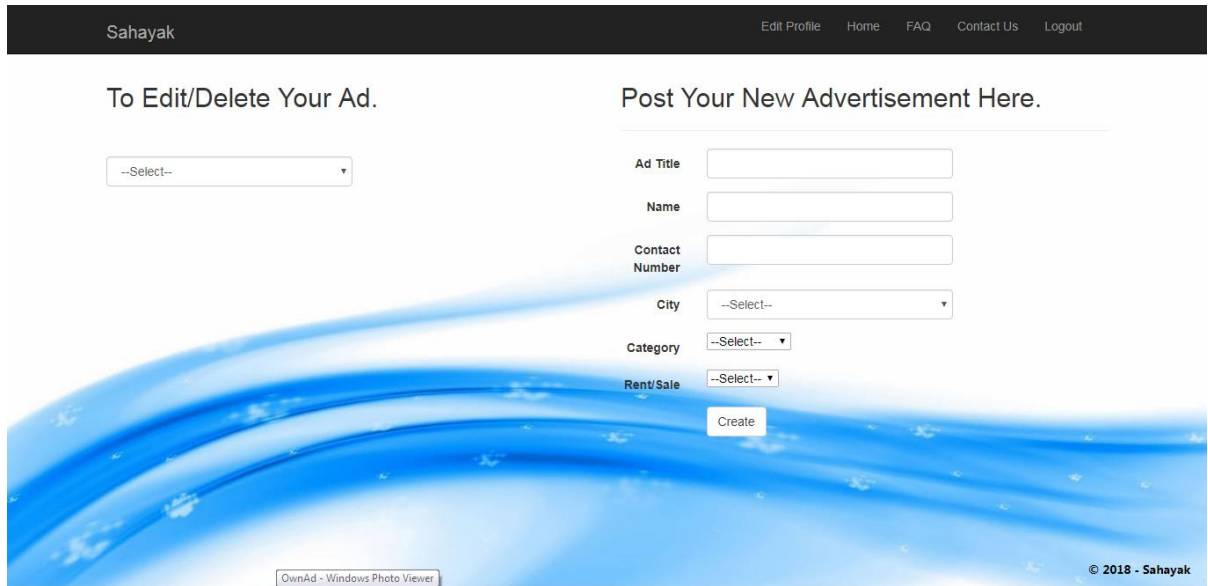


Fig. 22 The Update Ad and Add a new Ad Page

4.5.7 Find Your Hobby Group Page

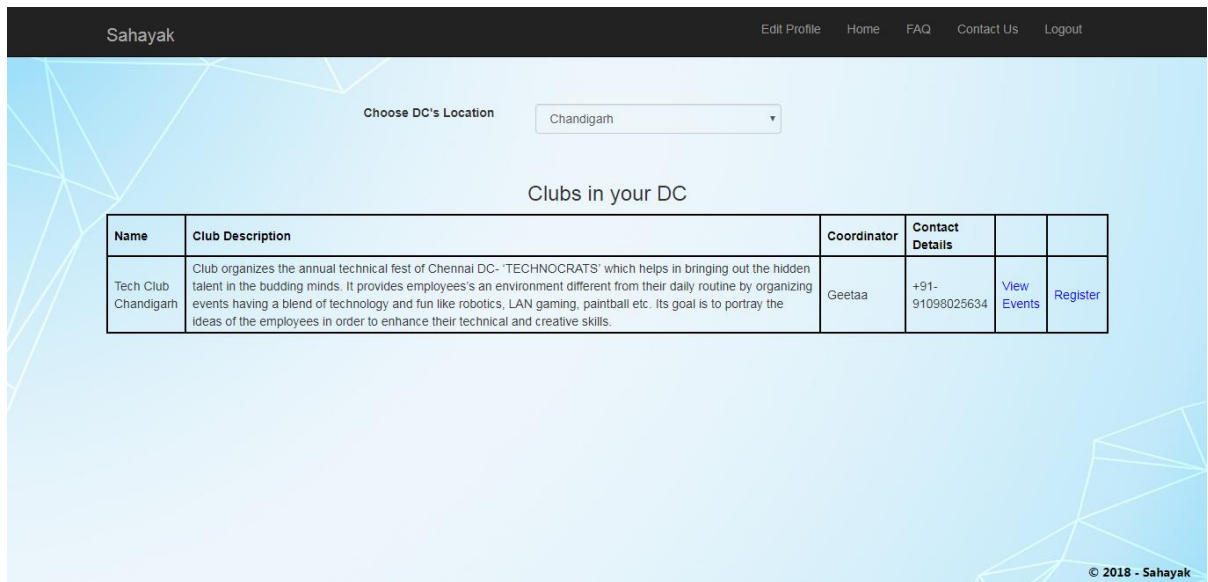


Fig. 23 View for various Hobby Groups Page

4.5.8 Advertisements

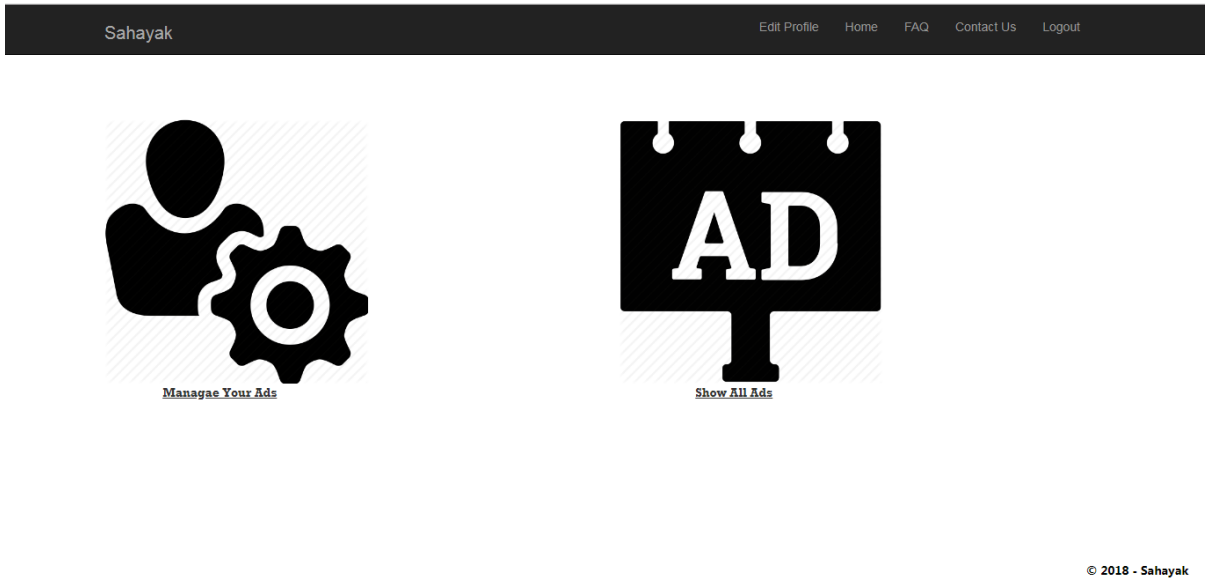


Fig. 24 Manage and View Advertisements Page

4.5.9 Post Your Own Advertisement

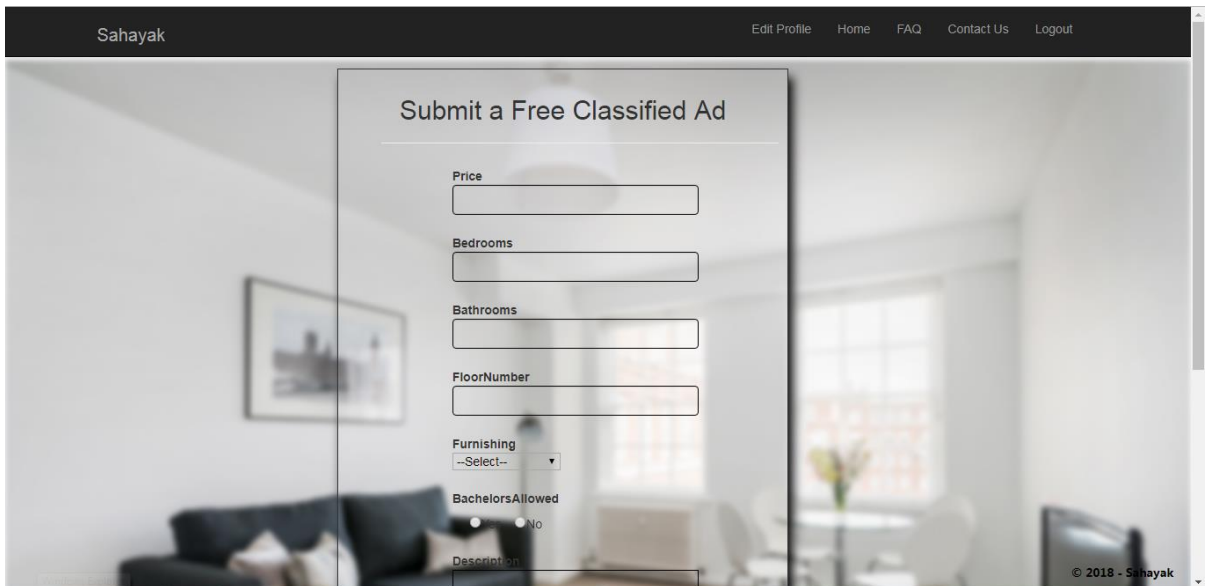


Fig. 25 Post New Advertisement Page

4.4.10 View your posted Carpools

View your pool

Source	Destination	Contact information	Car Name	Total number of seats	Luggage Limit per head	Date(DD/MM/YYYY)	Time	
Infosys gate2	bangalore	Infosys gate2	sumo	3	1	2018-05-28	00:00:00	Edit Delete

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Fig. 26 View your posted Carpools

4.4.11 Edit Your Profile

Upload a picture No file chosen

Employee Id

Name

Email Id

Location

Gender Male Female

To change your current password, click [here](#)

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Fig. 27 Edit the User Profile Page

4.4.12 View all advertisements

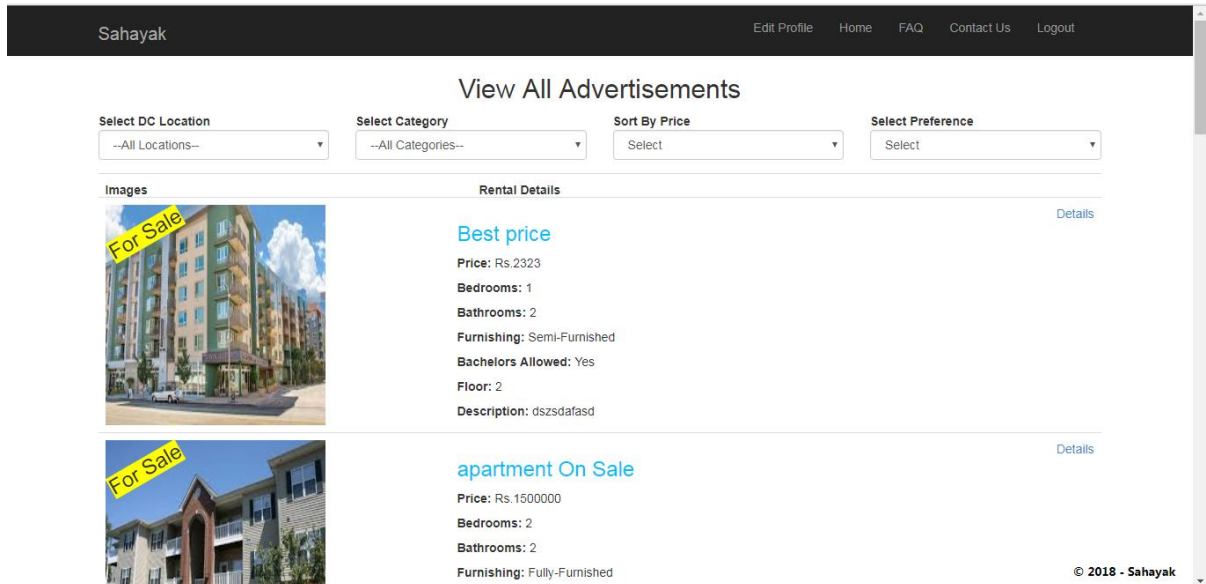


Fig. 28 View for all posted advertisements

4.4.13 Lost and Found

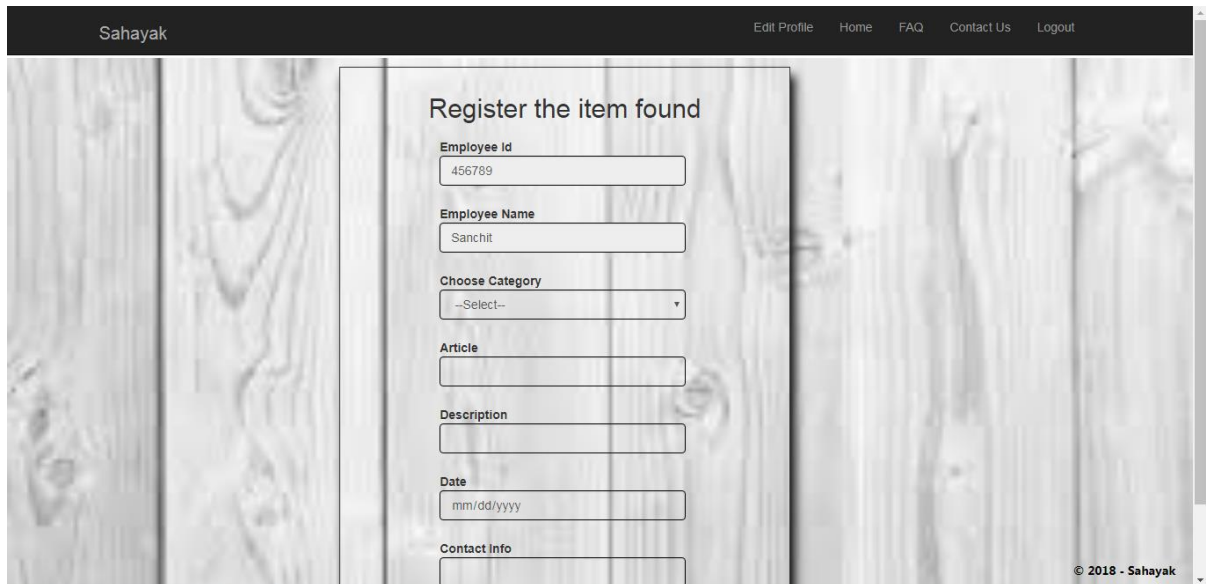
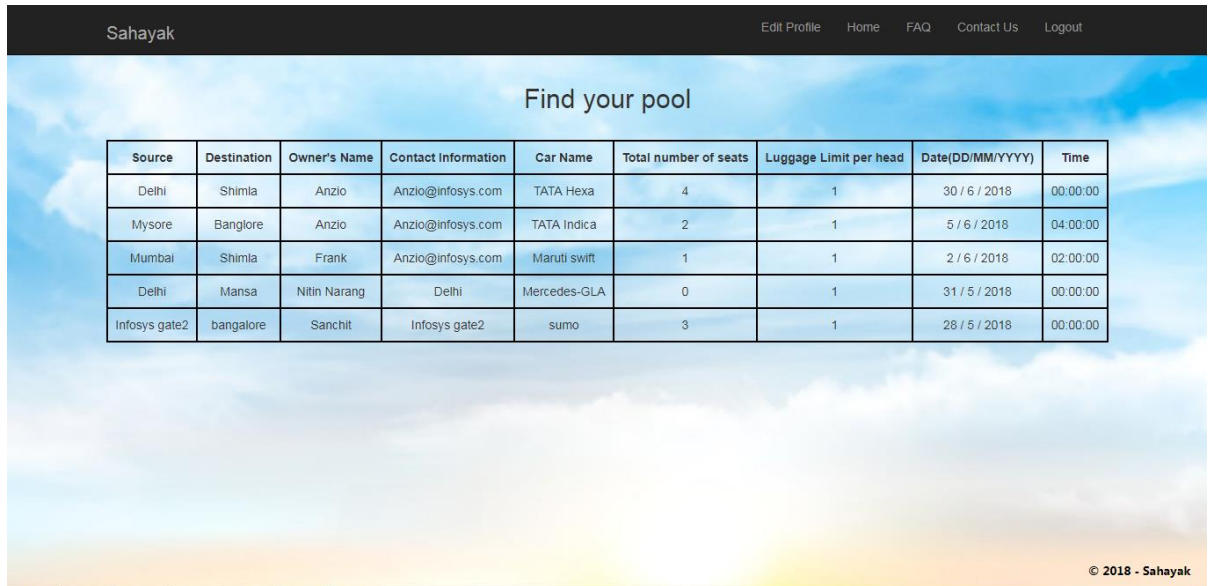


Fig. 29 Form for Lost and Found Portal

4.4.14 Find an available Car Pool



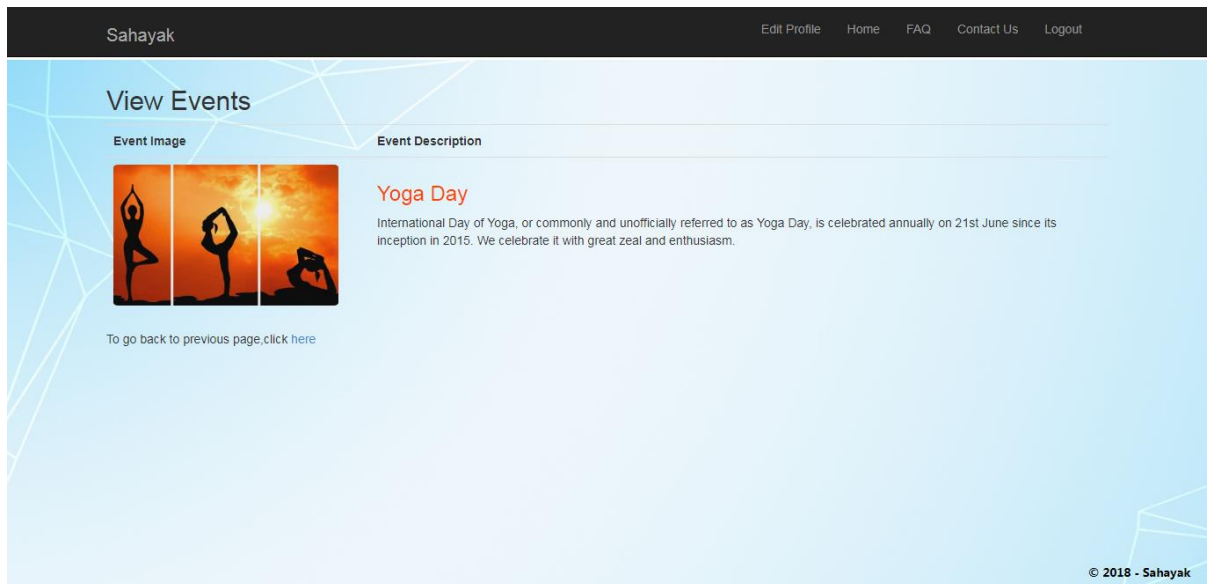
The screenshot shows a web interface for finding car pools. At the top, there is a navigation bar with the user name 'Sahayak' and links for 'Edit Profile', 'Home', 'FAQ', 'Contact Us', and 'Logout'. Below the navigation bar, the heading 'Find your pool' is centered. A table lists several car pool options with columns for Source, Destination, Owner's Name, Contact Information, Car Name, Total number of seats, Luggage Limit per head, Date, and Time.

Source	Destination	Owner's Name	Contact Information	Car Name	Total number of seats	Luggage Limit per head	Date(DD/MM/YYYY)	Time
Delhi	Shimla	Anzio	Anzio@infosys.com	TATA Hexa	4	1	30 / 6 / 2018	00:00:00
Mysore	Banglore	Anzio	Anzio@infosys.com	TATA Indica	2	1	5 / 6 / 2018	04:00:00
Mumbai	Shimla	Frank	Anzio@infosys.com	Maruti swift	1	1	2 / 6 / 2018	02:00:00
Delhi	Mansa	Nitin Narang	Delhi	Mercedes-GLA	0	1	31 / 5 / 2018	00:00:00
Infosys gate2	bangalore	Sanchit	Infosys gate2	sumo	3	1	28 / 5 / 2018	00:00:00

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Fig. 30 View to find an available Car Pool

4.4.15 View Upcoming events in your Hobby Group



The screenshot shows a web interface for viewing upcoming events. At the top, there is a navigation bar with the user name 'Sahayak' and links for 'Edit Profile', 'Home', 'FAQ', 'Contact Us', and 'Logout'. Below the navigation bar, the heading 'View Events' is centered. The event details are displayed in a grid format with columns for 'Event Image' and 'Event Description'. The event shown is 'Yoga Day'.

Event Image



Event Description

Yoga Day

International Day of Yoga, or commonly and unofficially referred to as Yoga Day, is celebrated annually on 21st June since its inception in 2015. We celebrate it with great zeal and enthusiasm.

[To go back to previous page,click here](#)

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Fig. 31 View Upcoming events in your Hobby Group

CHAPTER 5

CONCLUSION

We have come to this conclusion that the application works as per the expectation of the client and exhibits user friendly attributes. The application is debugged properly and all errors are tested thoroughly. The application successfully integrates all the user driven utility services at one place. The application displays good mechanism of using the Model, View, Controller architecture to develop and deploy the kind of web applications needed in the current times.

5.1 FUTURE SCOPE

Every project always has scope for more enhancement. The created project abided by the provided software requirement specification document, is not complete in itself, it can always be improved and made better.

The application can be further improved by:

- 1.The user interface can be enhanced to make it more user friendly and responsive.
- 2.Account unlock –functionality can be implemented extending forgot password functionality.
- 3.Employee Resolution Hub and dashboard functional modules can be integrated.
- 4.Email all useful notifications to the employees.
- 5.Report any attempted breaches of security to the admin.

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