A Major Project Final Report on

"Trip Mate" Web And Android Application

Submitted in Partial Fulfillment of the Requirements for the Degree of

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Group Members.

ABSTRACT

Trip Mate is a web and android travel guide application that helps for travelers. Nowadays mobile phone is a necessary part of the people's life. There is continuously rising number of mobile computing applications, centered on the people's daily life. Also, tourism is one of the fastest growing industries today so we propose architecture of trip guide system for Android Mobile Phone that is able to provide tourism information to the users conveniently. The ultimate goal of our paper is to explore the requirements of travelers and developed solution of android application including some basic guidance for the travelers. Based on traveler's requirement, we have come up with our online web and mobile application which can solve their problem. We will provide an interface to the tourists for viewing the different types of travel packages, destinations, booking system, weather or climate forecasting, nearby places, news, map view.

Keywords: Trip, Web, Android, Mate, Tourism, Weather, Map, Forecasting.

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LIST OF ABBREVIATIONS

API	Application Program Interface
JSON	JavaScript Object Notation
ER	Entity Relationship
DFD	Data Flow Diagram
UML	Unified Modelling Language
XML	Extensible Markup Language
SD	Sequence Diagram
SRS	System Requirements Specification
SQL	Structured Query Language
REST	Representational State Transfer
FP	Function Point
HTML	Hypertext Markup Language

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1. INTRODUCTION

“Trip Mate” is a smart travel guide application. The main idea of this project is to develop a web and android application which will help tourists to find the better place at one instant. The lengthy time which Tourists are wasting on searching the better places like Hotels, Museums, Parks etc. for their enjoyment in the new places which is totally unknown to them will get reduced, if they use this application. Hence this idea was very useful for all those who love to travel in a new city on a regular basis. The project is about tourist guide system how the tourist will get best use of the application according to his/her factor of interest. We will provide an interface to the tourists for viewing the different types of travel packages, destinations, booking system, weather or climate forecasting, trip reviews, nearby places, news, map view. etc.

1.1 PROJECT OVERVIEW

The central concept of this application is to provide an interface through web and android platform which will help for travelers to find the better unknown places easily on one click. We will provide an interface to the tourists for viewing the different types of travel packages, destinations, booking system, weather or climate forecasting, trip reviews, nearby places, news, map view. etc. Hence this idea is very useful for all those who love to travel in a new city on a regular basis. To overcome this, we have designed this application in which clients can create their own suitable traveling or tourism environment, can get information and connect to the world with ease. Also, they can book the tickets of desired transport and reserve the rooms in the hotels according to their need.

1.2 PROBLEM STATEMENT

The challenges encountered by the existing system serve as a major drawback to the realization of efficiency and customer satisfaction. Prior to the invention of the internet, the only alternative for the travelers was once to sought out travel agents. Customers have to make long queues for booking the tickets of travel packages in manual basis and lots of time spend while reserving a travel package through manual process. A tourist needs modern technologies which can serve for them. Due to unavailability of such application tourists are facing problems while traveling. They have to pay of traveling budget to local guides and agents to get information. The proper guide isn't available which could detect a current location, calculate distance and provide proper guidelines. So, the android application should be easy to use and efficient to manage the traveling activities.

A traveler wants contemporary technologies which can serves to them, so the android application needs to be handy to use and efficient to control the traveling activities. They have to pay a phase of quantity of touring price range to increase an android primarily based cellular application which can help traveler to fulfill their traveling wishes.

1.3 PROJECT OBJECTIVES

The main idea of this project is to develop a web and android application which will help tourists to find the better places for traveling at one instant.

This project is aim to reached the following goals:

- To increase efficiency and improve services provided to the customers through better application of technology in daily operations.
- To eliminate manual/paper work and increase level of accuracy.
- To increase speed of service and customer satisfaction.
- To make user friendly system so that user can easily view and book travel packages.
- To make system more Secure and Integral.
- Provide authenticated login system to enter into personal dashboard/ timeline.
- The system makes use of weather underground API for fetching the weather details which is accurate and shows the current conditions.
- This system can be used to view the location view in map that user wishes to reach.
- The usage of this application reduces the time required to search for a place.
- Since the location can be viewed in map, the user can even zoom in- zoom out to get a better view and also can show the route and calculate the distance between current to the destination places.
- Provide the interface for viewing nearby places while traveling.
- 5 days weather forecasting, search weather details city wise.

1.4 SIGNIFICANCE OF STUDY

This project on “Trip Mate” is projected to make the travel easy for the travelers. The people of the world can book the tickets of the flight and vehicles from anywhere around the world through internet. The clients can choose rooms in the hotels they desire. The clients can get information about the locations where they can visit. The clients can also create their own traveling environment and also influence by the society of travel and tourism all around them. This project helps in the management of the software to the tours and travel management system.

This project helps to serve the clients with full efficiency as it saves their time and money, smooth running of the project is advantageous to the travel system.

1.5 SCOPE AND LIMITATIONS

The scope of this project is to provide user with all the facilities related to travel through an android based navigation tool. Scope of our projects are:

- Integrating payment gateways for making online transaction easier.
- Intelligent travel and booking recommendation system can be used in extensive way.
- Can be add travel packages for different country to make a global business.
- Efficient use of digital currencies and data when possible.
- We can also integrate travel bots.

Although our projects seem to reply most of the recent problems involving the flow of the information about the service, it has certain limitations that might be quite crucial at times. Some of the limitations of our projects are:

- It required a smartphone for android application which should have installed android OS.
- It could only locate the locations which the developer marked on the map by custom markers.
- Internet, GPS (global positioning system), and cellular data required continuously.

2. LITERATURE REVIEW

This section consists of literature review which defines all possible services of application. The survey had been carried out to find out best algorithm strategy available. We had referred research journals, existing system and analyze the results of same, also take the experts opinion. Literature review is focused on a research questions, trying to identify, appraise, select any synthesize all high-quality research evidence and argument relevant to that question. This paper assumes that the application described would be a prototype that would shape the future & there still remains much to do in terms of development and improvement of the existing models. Applications created with ease of understanding and the design can be created and tailored to the travel process to make it more effective and user friendly, thus making it easier & convenient for the users to do the entire tourism process with the use of this application.

2.1 REVIEW

There has been vast improvement and development in technology, mobile application has been very essential in our day to day life. Even this kind of service has advanced; it still requires more areas for improvement. Our project defines all possible services of a travel guide process through this application.

2.2 EXISTING DEVELOPMENT

As we have reviewed many apps, software, websites and many software technologies related to travel and tourism field. We have a found rough picture of present development and scenario of related field in technology advancement. There has been vast improvement and development in technology, mobile application has been very essential in our day to day life. Even this kind of service has advanced; it still requires more areas for improvement. Our project defines all possible services application. With growth of internet and internet-based devices, most of the people are fond of things available over the internet. Facebook and online media have grown their popularity very much these days.

Some of the popular products that we have research are follows:

- **Trip Advisor**

  Trip Advisor arrived on the web as a travel opinion aggregator, where anyone who'd visited a hotel could post a review, pro or con. As such, it was a unique resource to independent travelers for planning a trip. Since it launched, Trip Advisor has grown astronomically, adding airline_reviews, vacation rentals, restaurants, activities, and more including a Trip Advisor Store.

  Pros of using this application are:

  - Trip Advisor is a unique, timely, populist resource with both reviews and photographs posted by travelers
  - Trip Advisor enables a variety of opinions to be voiced
  - Functionality has been added so users can now book hotels, flights, vacation rentals and restaurants directly from the site
  - Hotel managers have the option to respond to reviews; good and bad.

  Cons of using this application are:

  - Widely diverse opinions ("Loved it!"..."Hated it!") can make it hard to objectively evaluate a place
  - Dissatisfied guests use Trip Advisor as a venue to broadcast bad experiences
  - Trip Advisor has many poorly written trip reviews
  - Bogus positive reviews posted along with honest ones can confuse users

- **Triplt**: Travel planner:

  Triplt is a travel planner app supports Android, IOS and website that aids in planning and consists various travelling guide useful features. It organizes all travel itineraries and documents for example flight itineraries, tickets, hotel and airing booking info, rental car reservations, ferry tickets and driving directions.

  Features of this application are:

  - Login system linked with Google and Facebook
  - Multiplatform (Android and IOS)
  - Well organization of data and input/output system

- Track flights, hotel booking, train stations booking

- **Google Trips**

  This app is similar to Triplt but offers many features like customization of tours, guide maps and also shows restaurants or monuments that are close to hotel. It gathers all information from Gmail account and stores it offline also.

  Features of this application are:

  - Minimization and optimization of app memory and data.
  - Open source app and contains license
  - Good backend management system

- **Road Trippers**

  It is also similar to Google Trips and Triplt and it is packed with many additional features mostly for road trip for driving. It helps to plan for drive route and book hotels, restaurants, entertainment places, cultural place and fuel stations.

  Features of this application are:

  - Detecting places around located area or around specified route
  - Informative guide and well managed profile system
  - Rating and feedback system
  - Map style changing, sharing, traffic control system

2.3 GOOGLE MAPS API

Google Maps is a web mapping service developed by Google. It offers satellite imagery, aerial photography, street maps, 360° panoramic views of streets (Street View), real-time traffic conditions, and route planning for traveling by foot, car, bicycle and air (in beta), or public transportation. Google launched the Google Maps API in June 2005 to allow developers to integrate Google Maps into their websites. By using the Google Maps API, it is possible to embed Google Maps site into an external website, on to which site-specific data can be overlaid. Over 1,000,000 web sites use the Google Maps API, making it the most heavily used web application development API.

The Google Maps API is free for commercial use, provided that the site on which it is being used is publicly accessible and does not charge for access, and is not generating more than 25 000 map accesses a day.

2.4 SOLUTIONS OFFERED TO THE EXISTING DEFICIENCIES

Tripmate is looking forward to bring all the places, packages, destinations that are being access around in the palm of our hand to make traveling easy and handy. The app lets people to search destination, book hotels, flights and vehicles. Interactive maps let places like hotels, banks, hospitals etc. to search and display. Keeping track of nearby places and destinations is easy with the map view. The app also provides weather details,5-day weather forecasting. This app also facilitates to view news feed, destinations, packages and other information in offline with help of caching. The web admin page lets admin to manage the overall system of app like booking, packages, enquiries.

3. TEAM MEMBERS AND DIVIDED ROLES

Table 1: Team Members and Divided Roles

Name	Roles	Responsibilities
Mikal Shrestha	Android / Web Backend Developer	• Develop overall backend system • Define and execute development requirement
	Project Manager	• Review and approve all project deliverables (Initiation Plan, Detailed Plan, Testing etc.) • Manage project level risks and issues on an ongoing basis and take responsibility for a project change management
Srishti Adhikari	Android UI/UX Designer And Developer	• Develop User-friendly Interface and perform design revision • Define and execute development requirement
	End User Documentation	• Participate in testing • Develop Documentation
Anish karki	Database Administrator	• Develop, maintain and implement policies and procedures necessary to ensure the security and integrity of the corporate database Security and Authorizations
	Web UI/UX Designer and Developer	• Develop User-friendly Interface and perform design revision

		• Define and execute development requirement

4. METHODOLOGY

We have planned to work following these methodologies for application of knowledge, skills, tools and techniques to a wide range of activities and design in order to meet the requirements of our project.

4.1 SOFTWARE DEVELOPMENT LIFE CYCLE: INCREMENTAL MODEL

The framework we will be using for the developing this project is Incremental model. This is an umbrella term for several iterative and incremental software development methodologies. Each of the method is unique and share common core values. This method suits for this project as there are three increments that needs to be done separately (we development, android development, system integration). The requirements of system can be clearly understanding and well defined and backed system also needs to be integrated and implemented. In this development first we decide or plan by gathering and analyzing useful requirements of the user and also the suitable system specification to make sure it matches. After the plan we go ahead to designing system followed by component design and when design is done then we do the coding then finally check if our project meets the requirements. We follow the same process several steps until all the requirements are fulfilled.

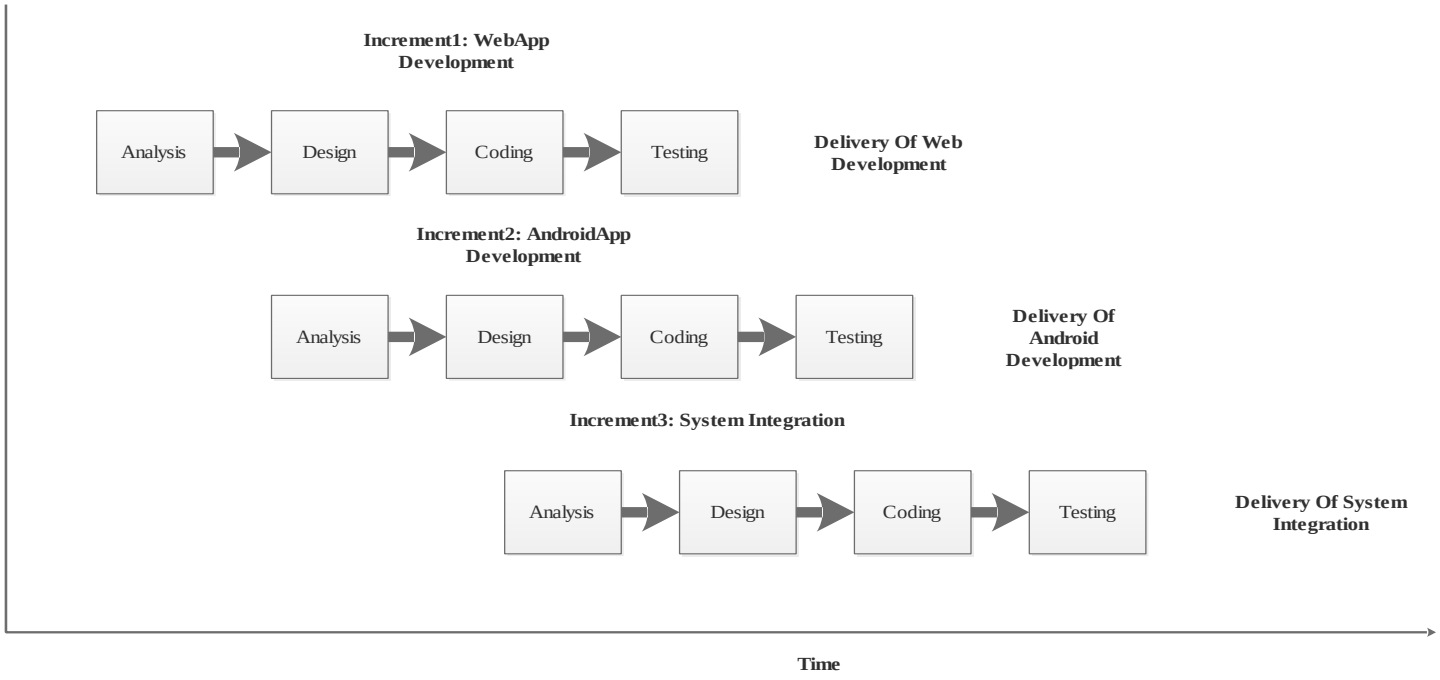


Figure 1: Incremental Model

The different phases in incremental model are:

- Analysis phase

  In this phase, analysis will be performed in order to find out the requirements of the system. The outcome of this phase would be a SRS which is an acronym for "System Requirement Specifications". First we plan to collect the requirements and analyze the system for designing the system.

- Design phase:

  In this phase the SRS would be translated into the system's design. Context Diagram, DFD, ER – Diagram, Use Case Diagram and Class Diagram will be developed. After analysis we design the system for different app modules development.

- Coding phase:

  In this phase, coding will be done according to the design and a working system will be developed by the end of this process.

- Testing phase:

  In this phase, the system will be tested. With each testing a list of changes to the system developed, is suggested and the changes will be applied to the software and the software would be delivered as a successive increment until a satisfying system is achieved.

The different increments in our incremental model are:

- INCREMENT 1: Develop Web App and Admin Panel Modules

  With the help of the objective of our project we focused on analysis, design, coding and testing phase of the web app modules of the system which helped us to figure out every aspects of the project and we took them in consideration. In this phase we will develop Full-fledged Web Application. In this phase several artifacts were produces and they are as follows:

  - ❖ Use case
  - ❖ Project Boundary
  - ❖ System Modules (Web App Modules)
  - ❖ Initial System Architecture
  - ❖ Feasibility Study
  - ❖ Risk Assessment
  - ❖ Domain model
  - ❖ ER Diagram
  - ❖ Context Diagram
  - ❖ Data Flow Diagram
  - ❖ Software Architecture Document
  - ❖ Cost and Schedule Estimates
  - ❖ Activity Diagram

  In this phase we worked on integrating API to our system as we have to create a three-tier architecture for our system. The above artifacts are produces in both web and android development phases. In this increment phase we develop full web modules as well as admin panel modules.

- INCREMENT 2: Develop Android App System

  In this increment phase we do analysis, design, coding and testing the system for the android platform. After the development of web and admin panel module, we develop the android modules for this application. The artifacts are produced in this phase which is same as the web development.

  Some of the modules that we will make in the android application are follows:

  - ❖ Login/Signup Activity

- ❖ Main Activity
- ❖ Navigation Activity
- ❖ Weather Forecasting Modules
- ❖ Booking System Modules
- ❖ Different Types of Packages etc.

- INCREMENT 3: Develop full Integrated System

  In this phase we work on integrating the frontend system and backend system of the web and android application of the system. At initial part of this phase we analyze the frontend design and overall frontend system and as well as we did same to backend system like database system. We also focused on overall performance of the project and its architecture. The artifacts produced in this phase are:

  - ❖ Integrated module of system
  - ❖ Class diagram

4.2 INCREMENTAL MODEL ADVANTAGES

- During early SDLC it helps to create working software quickly.
- It is more flexible i.e. require less cost to change scope and requirements
- It is easier to test and debug the software.
- Easy for risk analysis at early phase.
- Each iteration can be managed easily.
- During iteration process it will be easy to handle functionality.

4.3 REASONS FOR CHOOSING INCREMENTAL MODEL

- Requirements will be defined clearly and understood.
- Easy to design and develop software.
- Easy to integrate front-end and back-end system.

4.4 TOOLS TO BE USED

In our application development we use following tools:

- Android studio- IDE for Android App Development.
- E-draw - For design purpose.

- Github- To manage source code and use third party library.
- Android Smartphone- For real-time testing.
- Postman- For checking API requests.
- Adobe Photo shop- For designing UI/UX.
- Xampp- For connecting to database.
- Sublime Text Editor- For writing server side php scripts.

4.5 TECHNOLOGIES TO BE USED

In our application development we use following technologies:

- XML- For extensive UI and layout design for front-end.
- JAVA- For native android development.
- Rest API- For requesting systems to access and manipulate textual representations of Web resources using a uniform and predefined set of stateless operations.
- JSON- To transmit data objects consisting of attribute-value pairs.
- PHP- For server-side validation.
- MySQL- For database for storing all the application data.
- Google API- For Google Maps, Places, Direction, Geocoding API
- HTML and CSS- To develop interactive user interfaces.
- JavaScript- For event handlers and behaviors to add user interaction.
- Bootstrap- A CSS framework for further styling the application.
- News API- For live news and blog articles.
- Retrofit- For handling network request in android development.
- Open Weather Map API- For getting current weather data and forecasting.

4.6 APPROACHES TO BE USED FOR THREE TIER SYNCHRONNIZATION (WEB, ANDROID, DATABASE)

Retrofit is a networking library developed by Square. Retrofit is a REST Client library (Helper Library) used in Android and Java to create an HTTP request and also to process the HTTP response from a REST API. A REST API defines a set of functions which

developers can perform requests and receive responses via HTTP protocol such as GET and POST.

Retrofit is a REST Client for Android and Java by Square. It makes it relatively easy to retrieve and upload JSON (or other structured data) via a REST based webservice. In Retrofit we configure which converter is used for the data serialization. Typically for JSON we use Gson, but we can add custom converters to process XML or other protocols. Retrofit uses the OkHttp library for HTTP requests.

5. REQUIREMENT ANALYSIS

Requirement analysis is the process of determining user expectations for a new or modified product. Requirement analysis, in software engineering encompasses those tasks that go into determining the need and conditions to meet for a new or altered product, taking account of possibly conflicting requirements of the various stakeholders, such as beneficiaries and users. It is an early stage activity of requirement engineering which encompasses all activities concerned with analyzing, documenting, validating, eliciting and managing system requirements.

5.1 SYSTEM REQUIREMENT SPECIFICATIONS

It is a document or set of documentation which describes behaviors and features of system or software application. It consists of various elements that defines functionality required by the customer. Requirement specification performs a vital part within the analysis of a system. Only when the requirement specifications are clearly given then it is possible to design a system which will fit into the required environment.

5.1.1 FUNCTIONAL REQUIREMENTS

Table 2: Store records of registered user

Function1	Store records of registered user
Input	Username, password, email, phone
Output	Database record, users are successfully registered into database, database successfully updated pop-up
Work Flow	Validate the user details entered by the user and successfully registered in the database system after clicking the register button. Toast message (user successfully registered) is displayed

Table 3: Make a booking

Function5	Make a book
Input	Email, Description, Date, package name, type
Output	Database record, successfully booked
Work Flow	Firstly, user must be logged in the system. When user wants to book then click the book button and do confirm the booking.

Table 4 : Storing the records of packages

Function2	Storing the records of book
Input	Package Name, price, type, descriptions, location, image
Output	Database record, database successfully updated pop-up, products are successfully uploaded into the database
Work Flow	Check the detail information of package and upload into the database by admin

5.1.2 NON-FUNCTIONAL REQUIREMENTS

Table 5: Table for Non-functional Requirements

S.N	REQUIREMENT	PRIORITY

1.	The system works on Android mobile (KitKat and above).	Essential
2.	Secure access of confidential data (user's details).	Essential
3.	The application should be user friendly.	Essential
4.	The application should emphasize on high performance, high reliability, good security, maintainability, resource utilization, compatibility, good scalability and good usability.	Desirable
5.	The system is implemented using tools specified (Android Studio, E-Draw, Xampp).	Essential
6.	Better component design to get better performance.	Desirable

5.1.3 SECURITY REQUIREMENTS

Users must be sign in for booking, access package list, view maps, weather and news feed and they cannot able to access any information. In this application, users have only read-access and admin have both read and write access of the system. Each user will have their own account with username and password to login. This will keep the information safe from the intruders as well as those who are authorized to manage database only

6. SYSTEM DESIGN AND UML MODELS

We have designed our system based on the system requirement specification. We have made an attempt to make sure that the system design actually meets the user requirements of the system. We have made different UML diagram which uses mostly graphical notation to describes or express the design of our software.

6.1 SYSTEM REQUIREMENT SPECIFICATIONS

The Software Architecture of our system is a Three-Tier Architecture System which have Application layer, Business layer and Data layer. The user uses a client-side application to access to our server content stored in database through certain protocol.

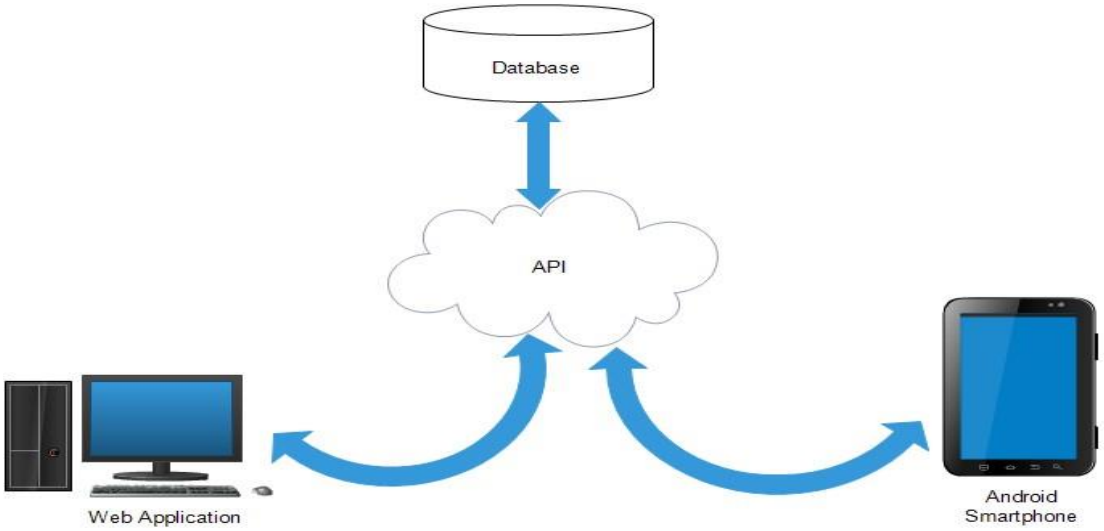


Figure 2: Software Architecture

- Application Layer
  It consists of logical operations and data access in the project application. Login or registered page, home page, book page, profile page, etc. are the application layer of our project.
- Business Layer
  It is user friendly GUI through which users are allowed to interact with our system. Sign in/ Sign up pages restrict unauthorized users to use the application and GUI for display.
- Data Layer

It is our Database where information is stored and retrieved upon user and system request. Data tier of the project also includes other third-party databases which are accessed with the call of provided API function calls.

6.2 ER DIAGRAM

The ER Diagram is a pictorial representation of system's entities and relationship between those entities. It also illustrates the overall logical structure of the system's database. It shows the relationship among the eight entities of our system. The entities are represented in the rectangle, their attributes are represented in the oval shape and the attributes that are underlined are primary keys. The ER Diagram of our system is shown below:

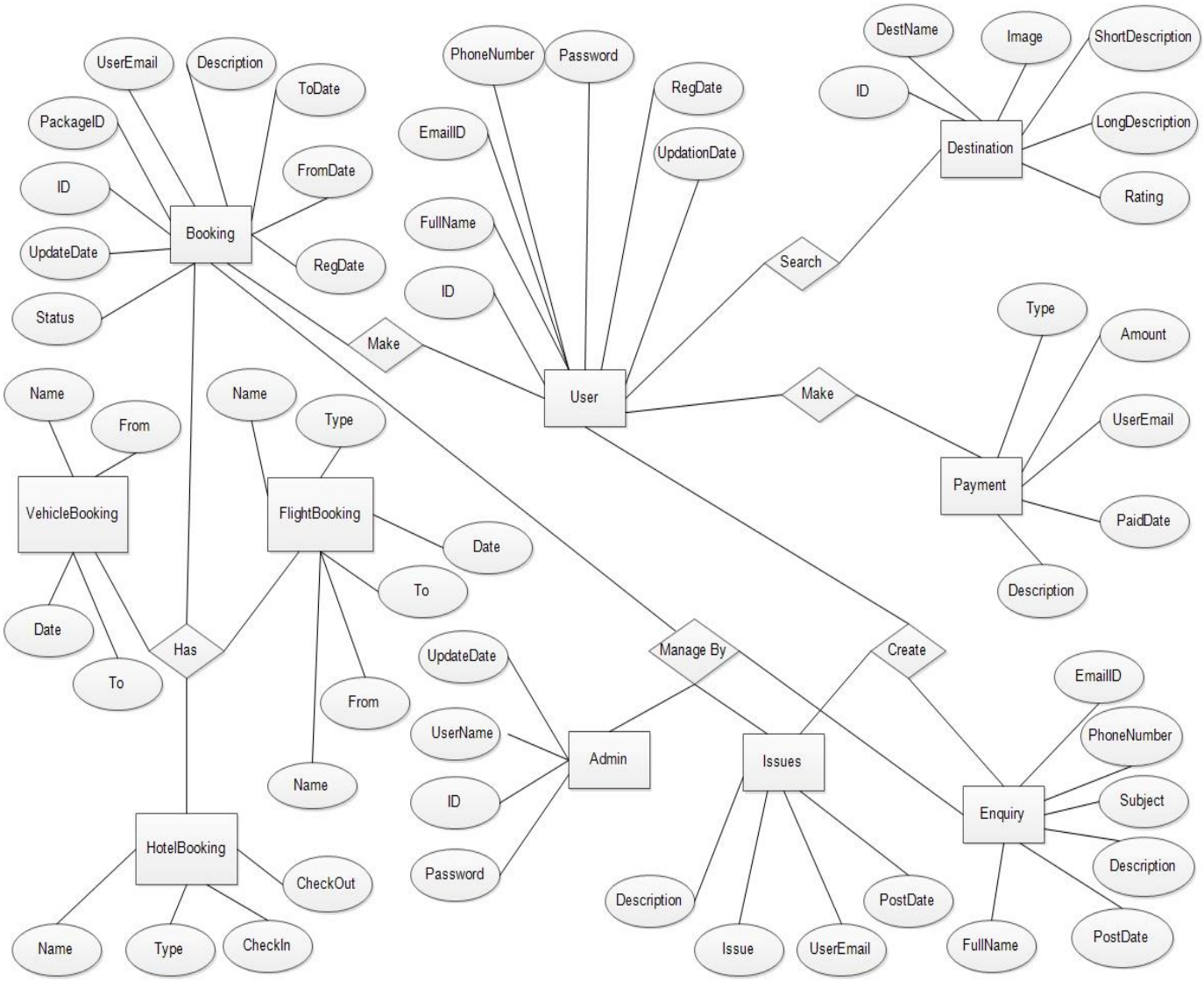


Figure 3: E-R Diagram

6.3 USE CASE DIAGRAM

A use case diagram at its simplest is an illustration of a user's interplay with the system that indicates the relationship among the user and the different use cases in which the user is concerned. The actors of our system are: User, System, and Admin. The use case diagram of our system is represented below:

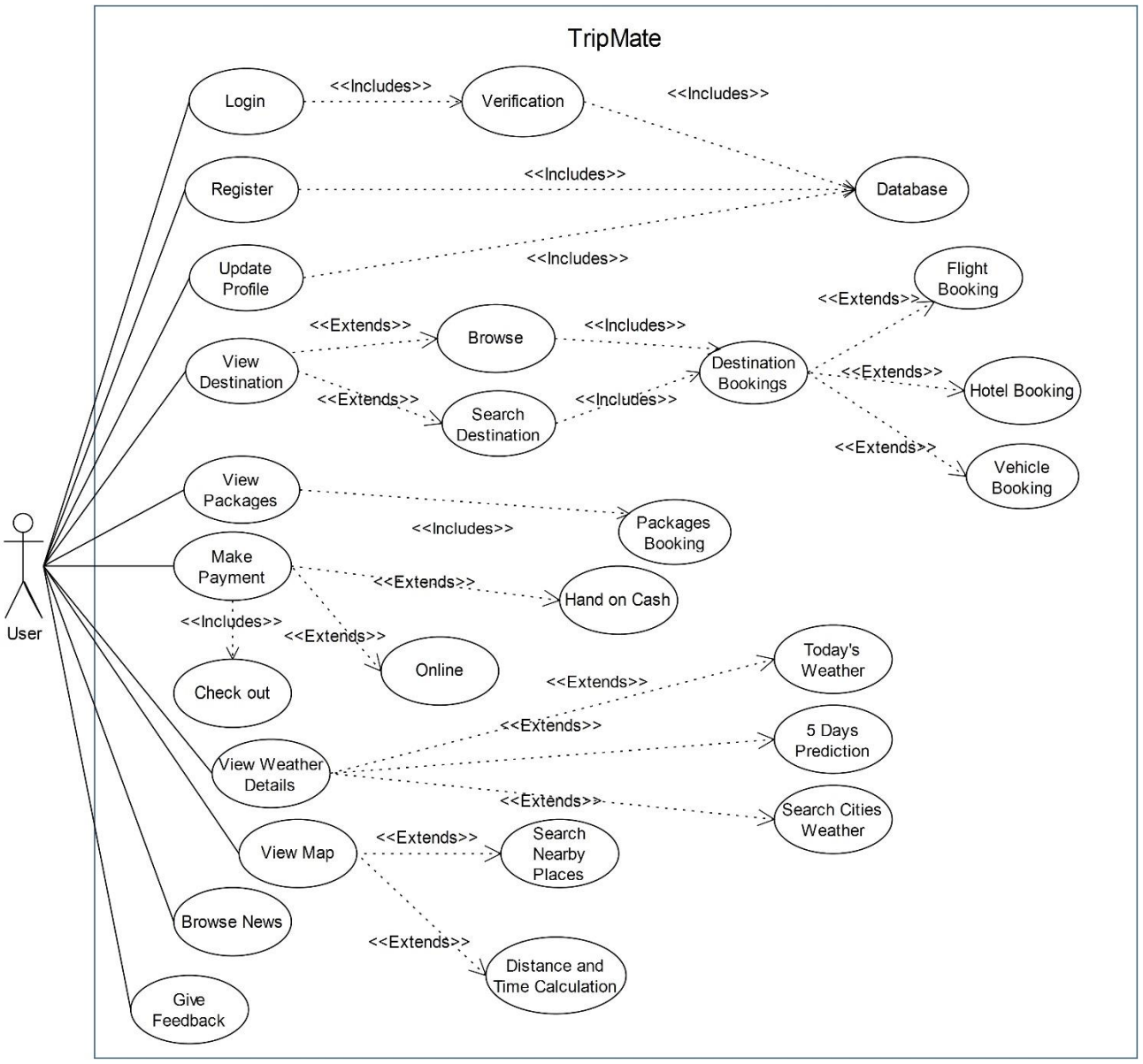


Figure 4: Use Case Diagram For User

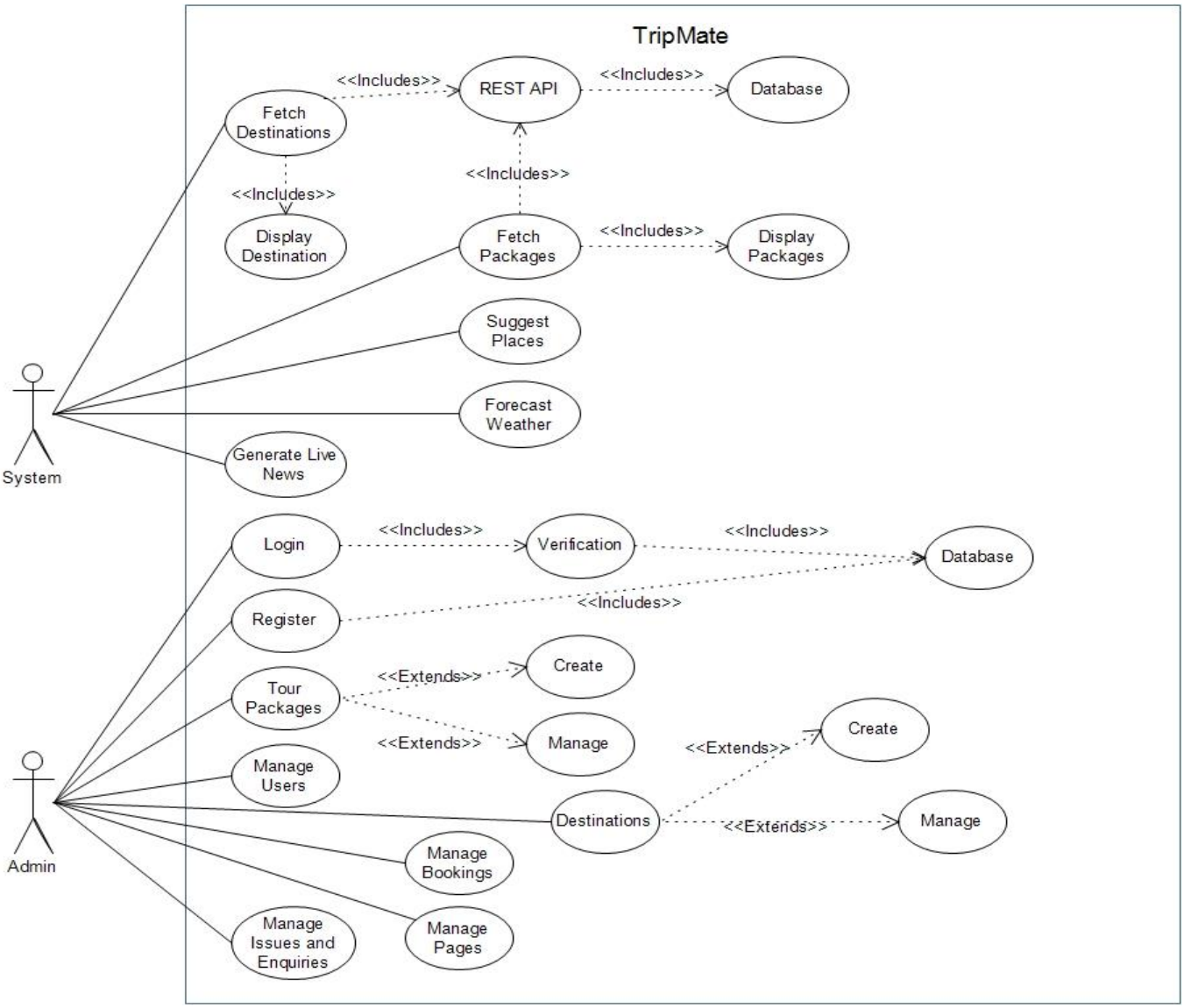


Figure 5 : Use Case Diagram For Admin And System

6.4 CONTEXT DIAGRAM

The overall explanation of a system is represented by a context diagram. Using this diagram, we define the boundary between the system, or part of a system, and its environment, showing the entities that interact with it. The diagrammatic representation of TripMate's Context Diagram is represented below:

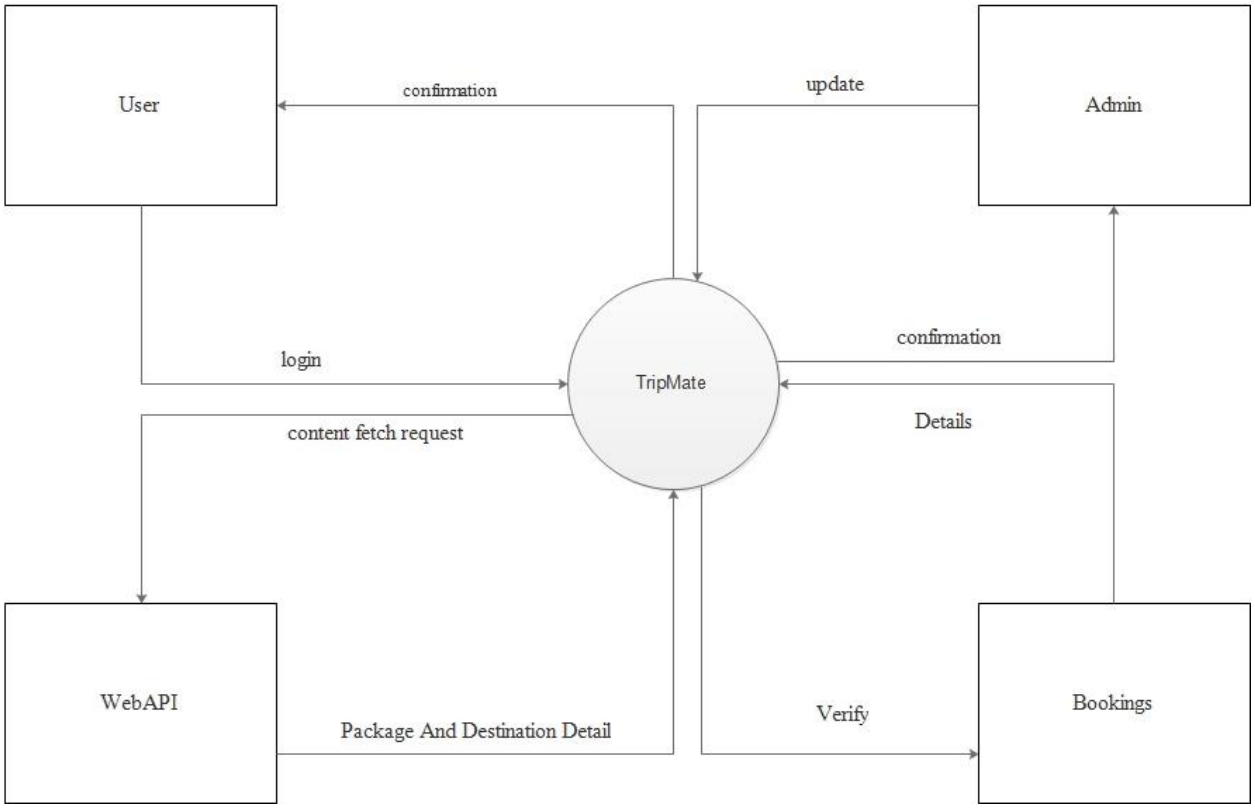
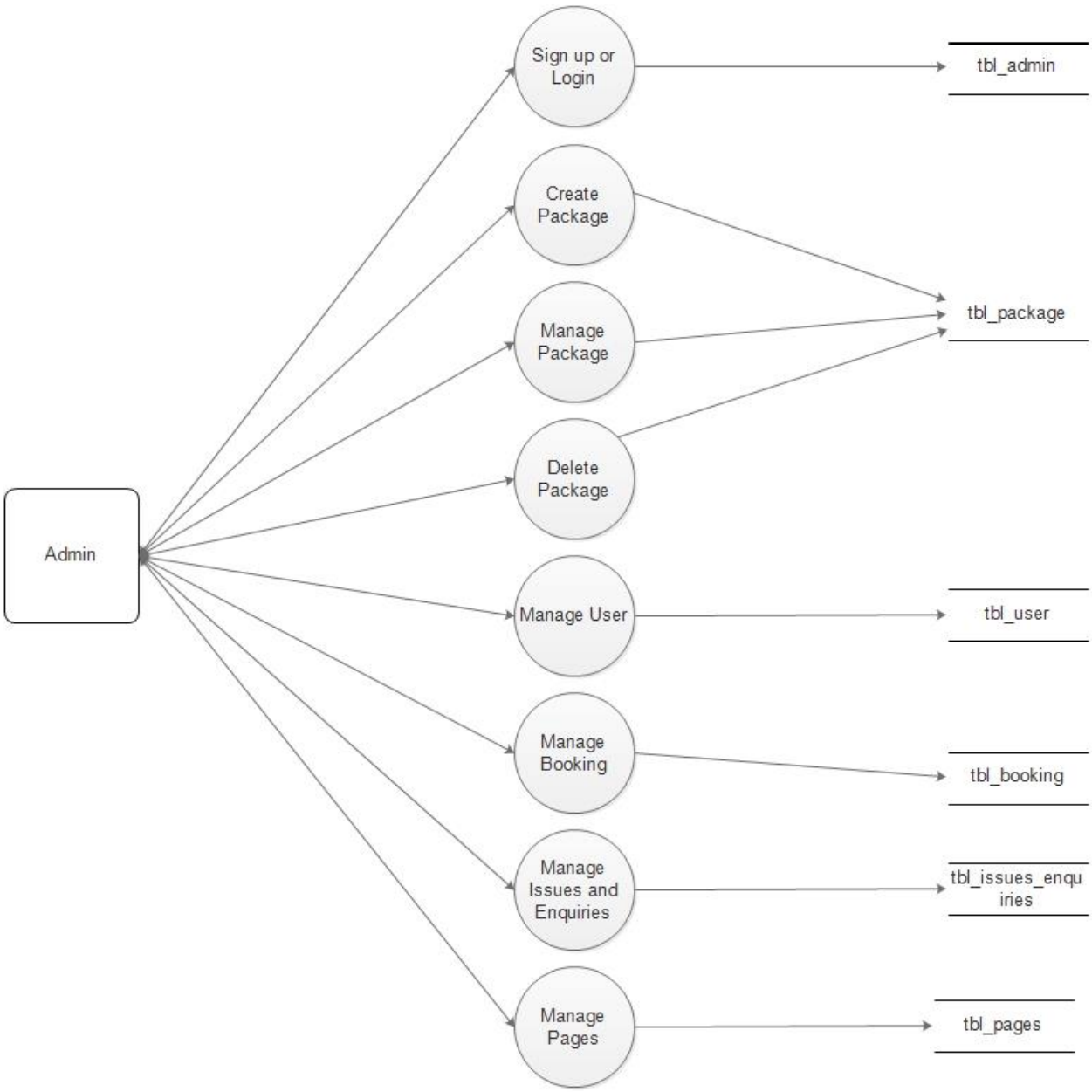


Figure 6: Context Diagram

6.5 DATA FLOW DIAGRAM

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modelling its process aspects. We used DFD as a preliminary step to create an overview of the system, which can later be elaborated also be used for the visualization of data processing (structured design). It describes the flow and exchange of information within a system. The DFD of our system is shown below:


Admin
Sign up or Login
Create Package
Manage Package
Delete Package
Manage User
Manage Booking
Manage Issues and Enquiries
Manage Pages
tbl_admin
tbl_package
tbl_user
tbl_booking
tbl_issues_enquiries
tbl_pages

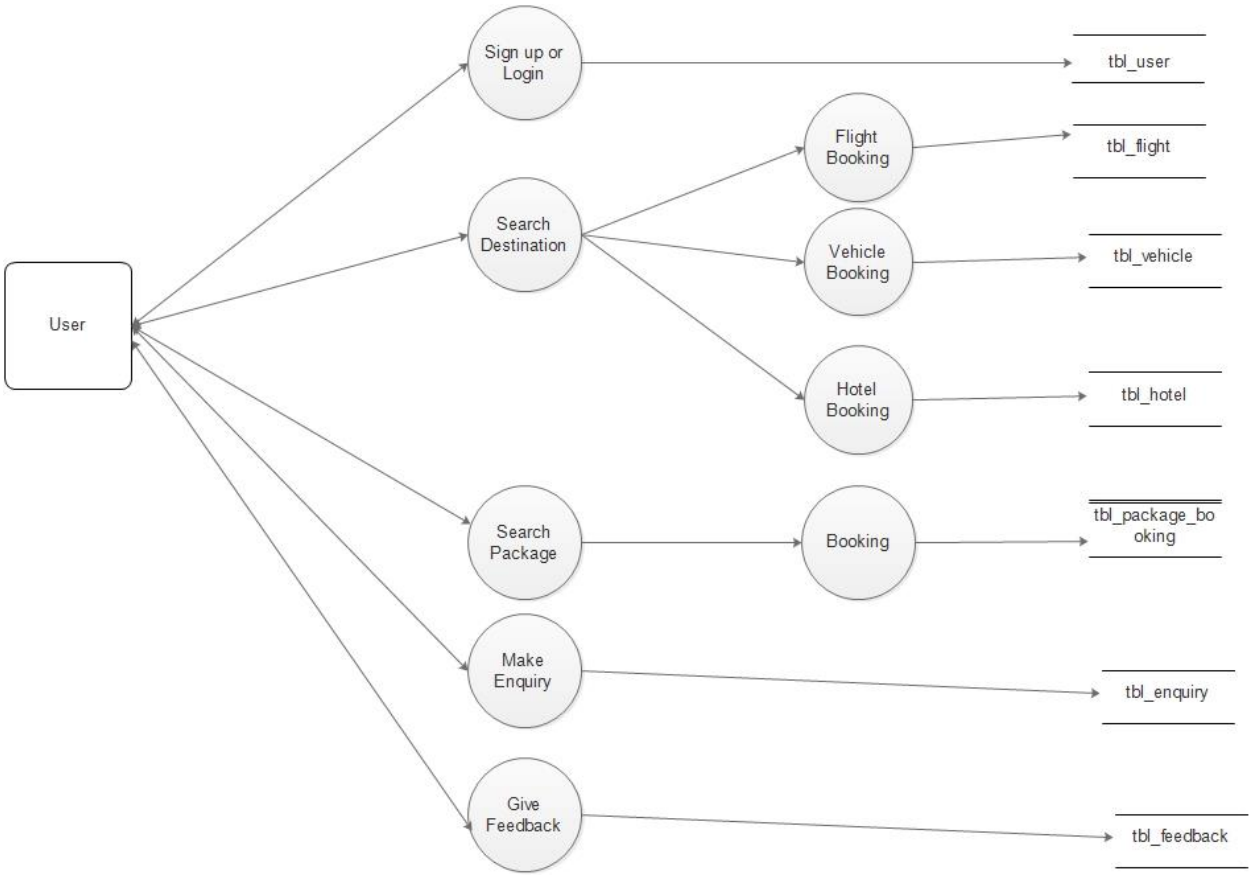


Figure 7: Data Flow Diagram

6.6 ACTIVITY DIAGRAM

Activity Diagram is a graphical representation of workflows of stepwise activities and actions with support for choice, iteration and concurrency from start point to finish point. The Activity Diagram is shown below:

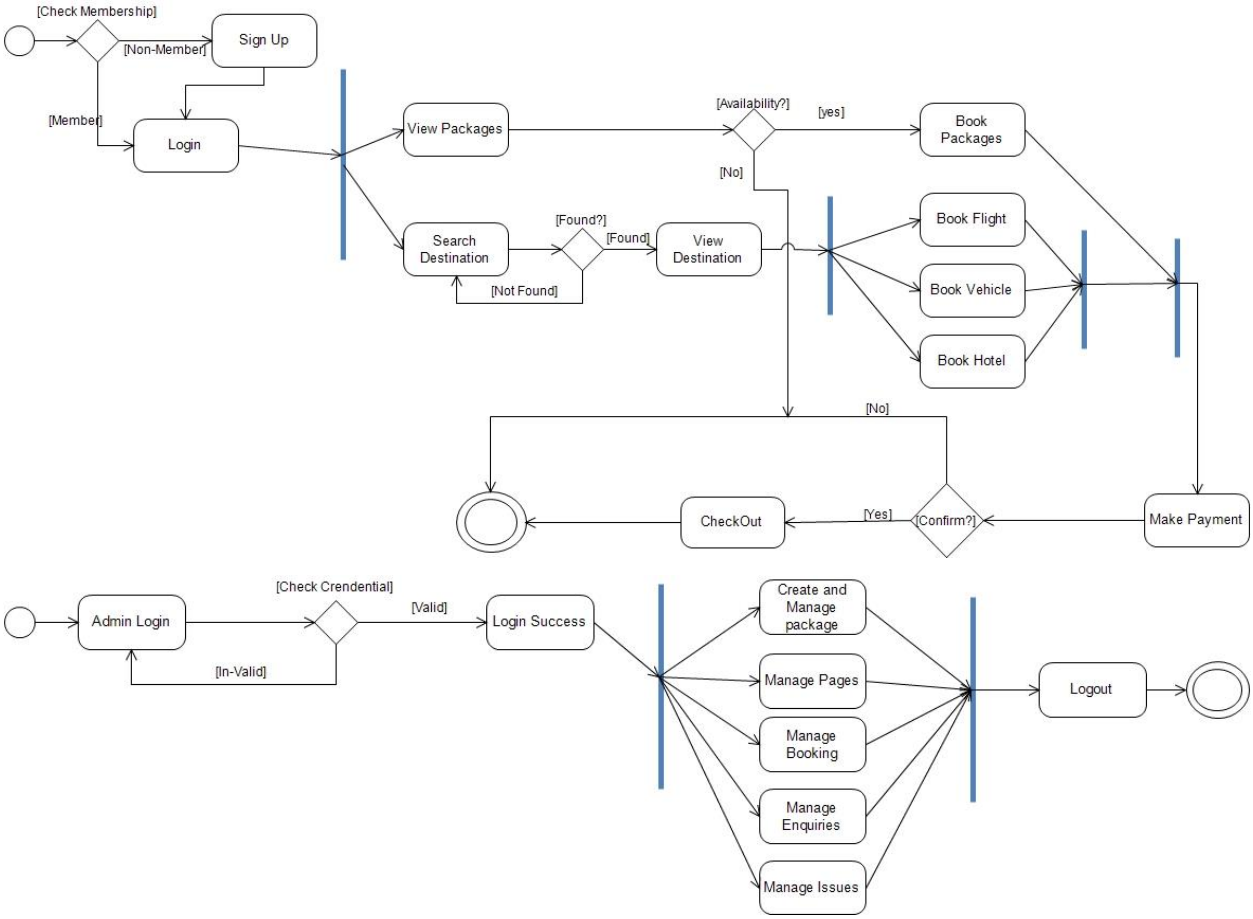


Figure 8: Activity Diagram For User And Admin

6.7 DOMAIN MODEL

A domain model is a system of abstractions that describes selected aspects of a sphere of knowledge, influence, or activity (a domain). It is also called conceptual model because it describes the concepts (conceptual classes) of the system. We identified the main conceptual classes i.e. User, Admin, Booking, Destination, Package. Then we included their attributes and the associations between these concepts were identified.

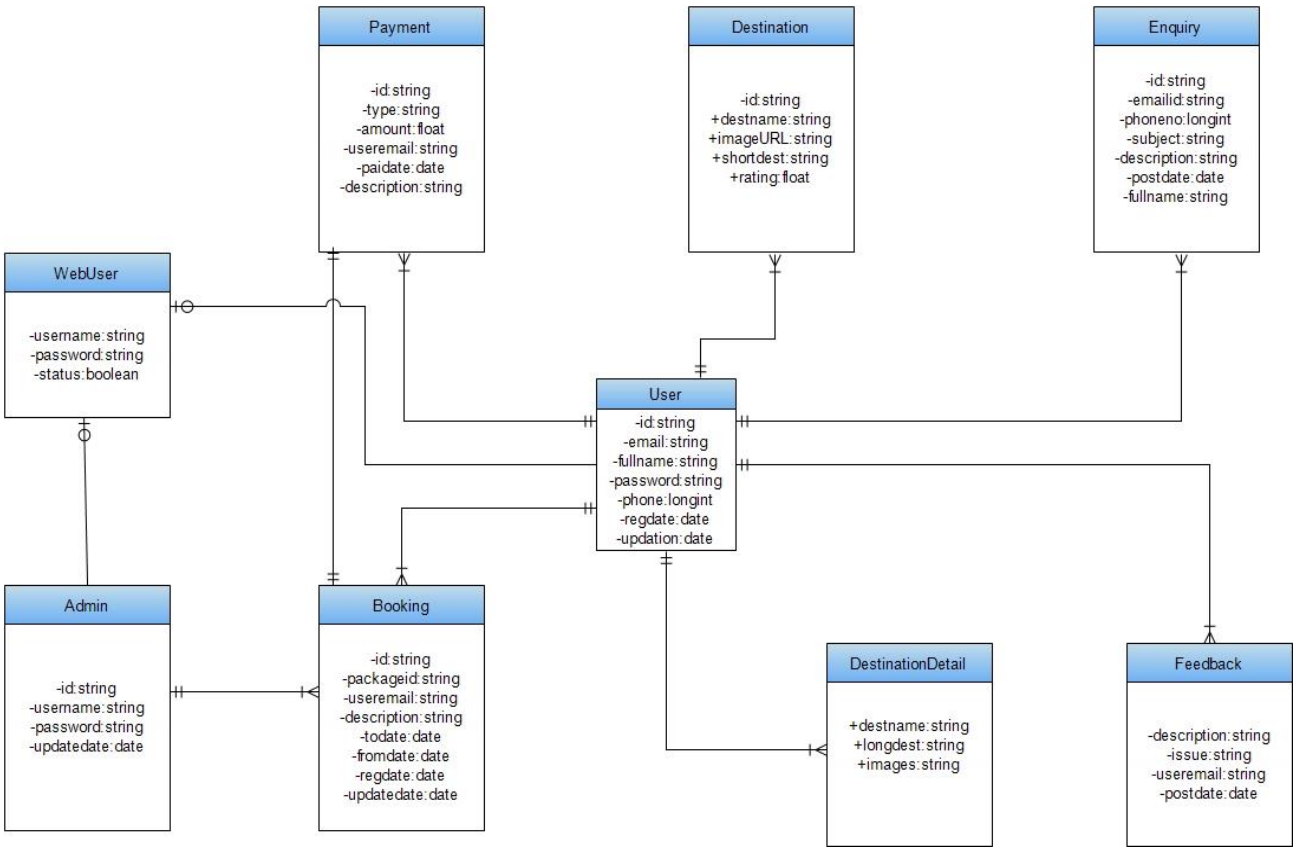


Figure 9: Domain Model

6.8 CLASS DIAGRAM

Class Diagram is a UML diagram that tells the designer about the various software classes participating in the domain. It provides specification for classes and interface in an application. We designed the following class diagram which illustrate the system's classes, their attributes, operations and relationship among them.

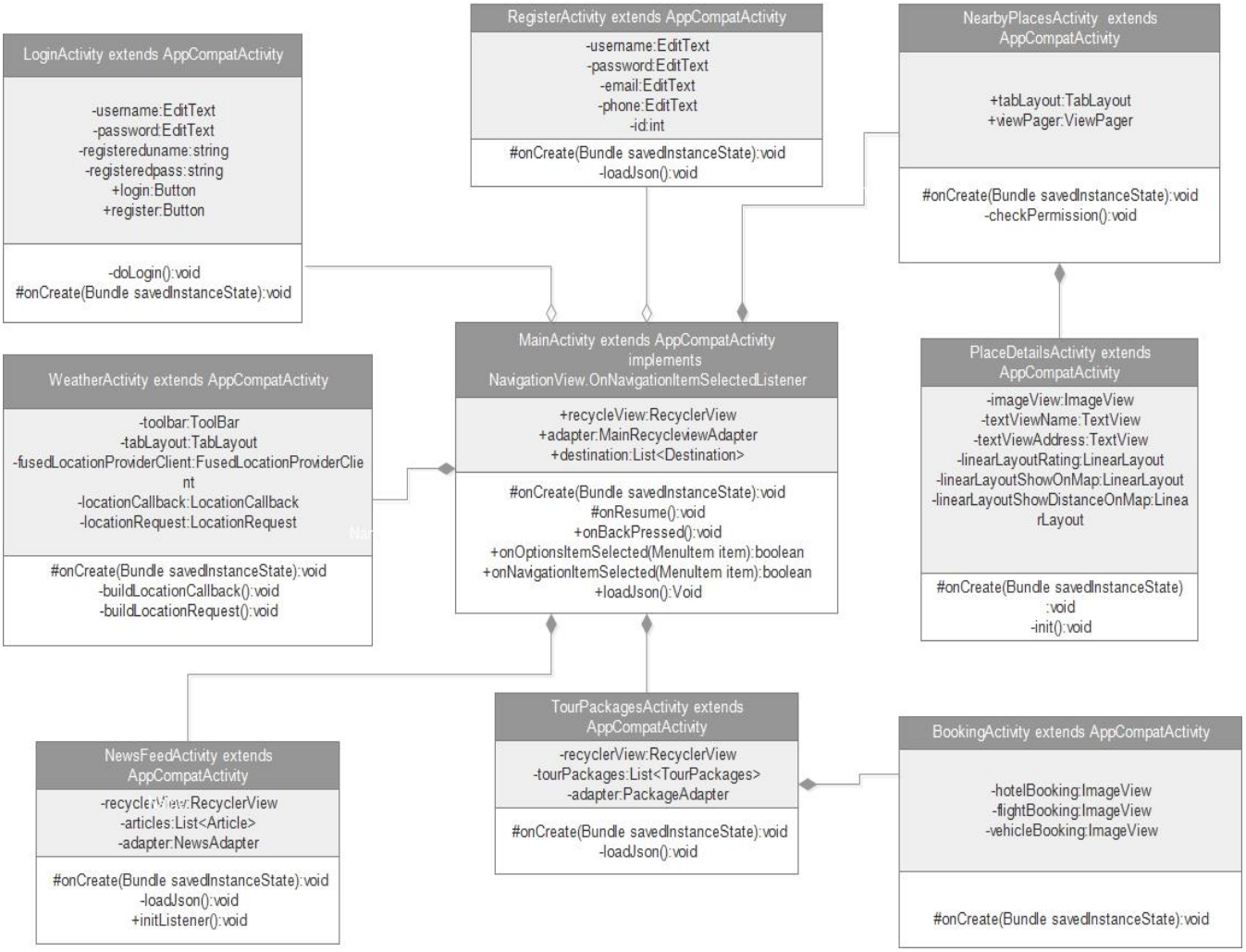


Figure 10: Class Diagram

6.9 SEQUENCE DIAGRAM

Sequence diagram (SD) is an interaction diagram that describes how operations are carried out. It shows object interactions arranged in time sequence. It also shows, as parallel vertical lines (lifelines), different processes or objects that live simultaneously. And as horizontal arrows, the messages exchanged between them, in the order in which they occur. Sequence Diagram sometimes called Event Diagram or Event Scenarios. We have designed sequence diagrams for most critical and influential activities which are shown below:

6.9.1 SEQUENCE DIAGRAM FOR SIGN UP

The sequence diagram for user registration/signup in our application is follows:

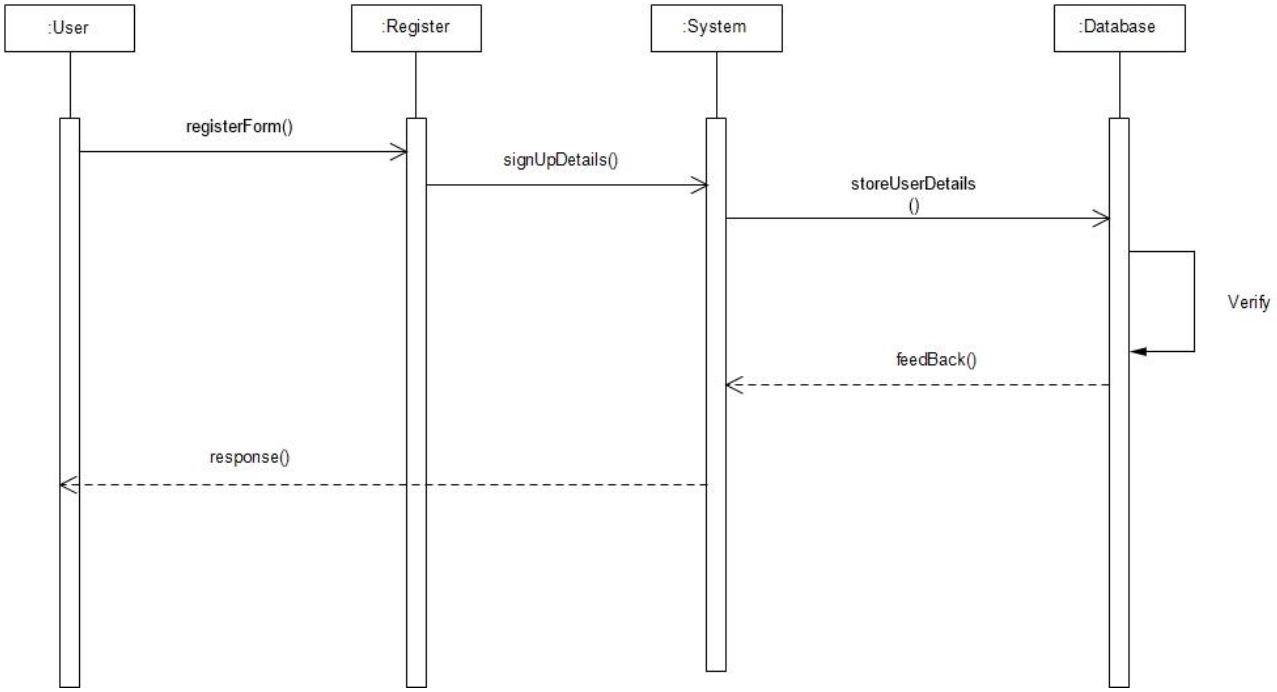


Figure 11: Sequence Diagram For Sign up

6.9.2 SEQUENCE DIAGRAM FOR LOGIN

The sequence diagram for login is shown below:

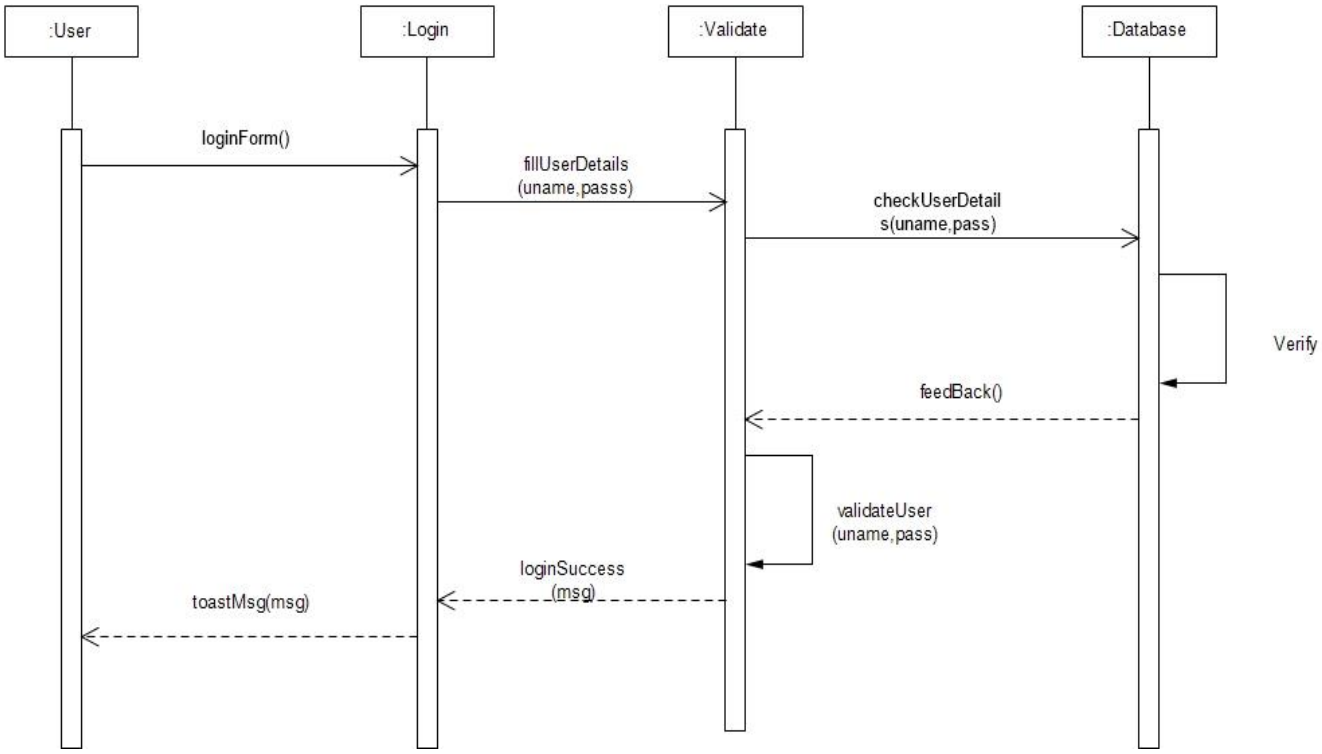


Figure 12: Sequence Diagram For Login

6.9.3 SEQUENCE DIAGRAM FOR BOOKING

The sequence diagram for booking is given below:

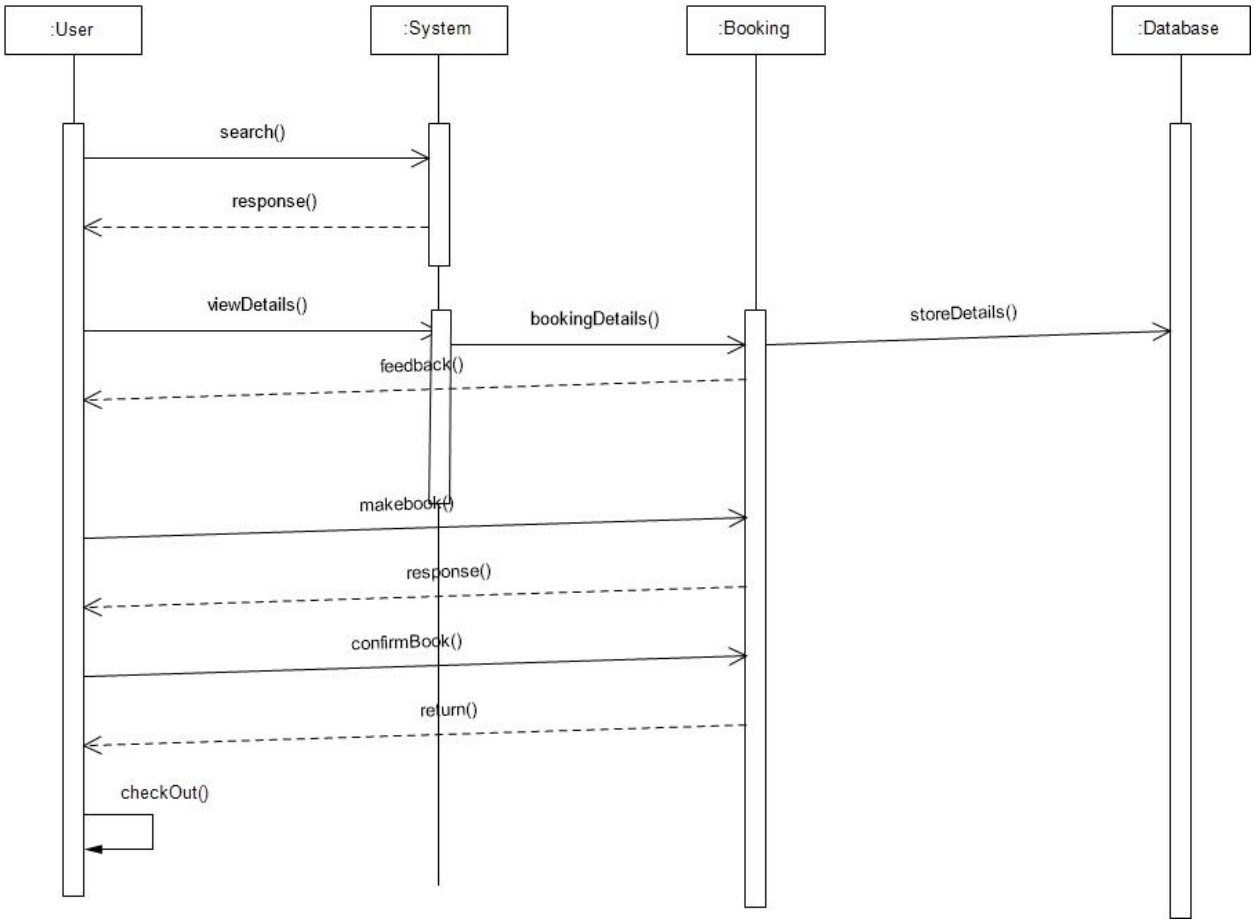


Figure 13: Sequence Diagram For Booking

6.9.4 SEQUENCE DIAGRAM FOR DISPLAYING DESTINATION

The sequence diagram for display destination is given below:

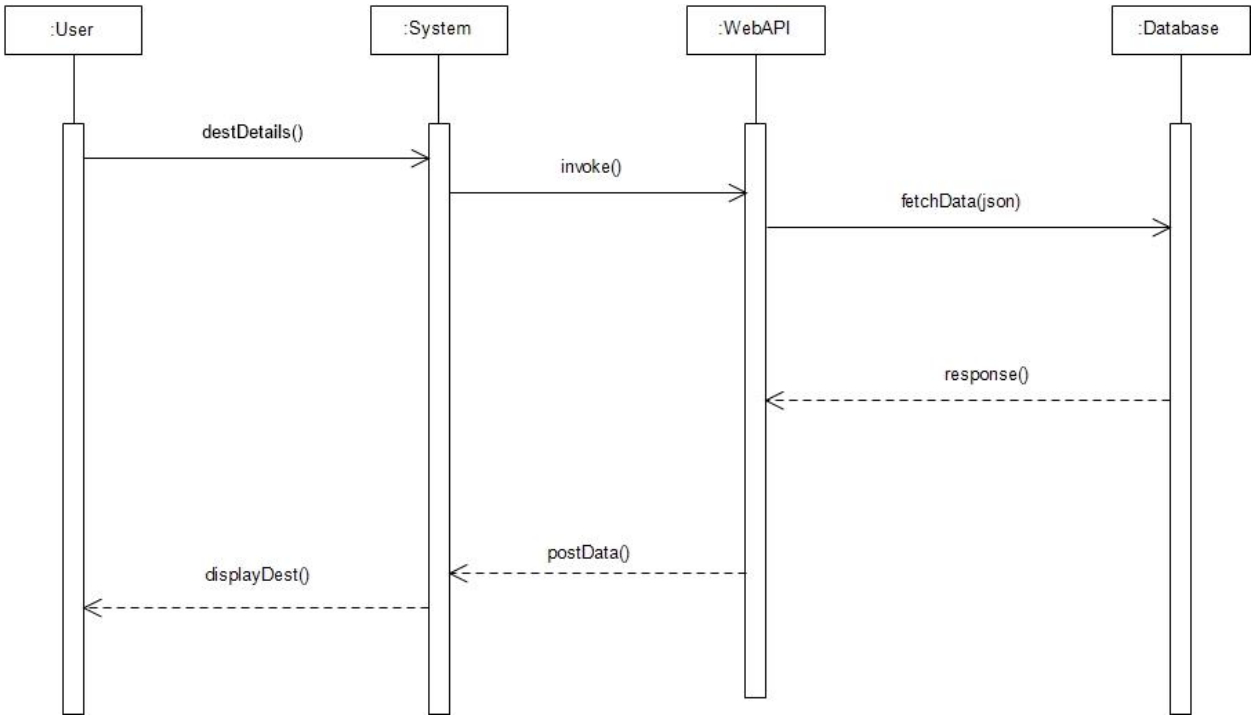


Figure 14: Sequence Diagram For Display Destination

6.9.5 SEQUENCE DIAGRAM FOR DISPLAYING PACKAGES

The sequence diagram for display package is given below:

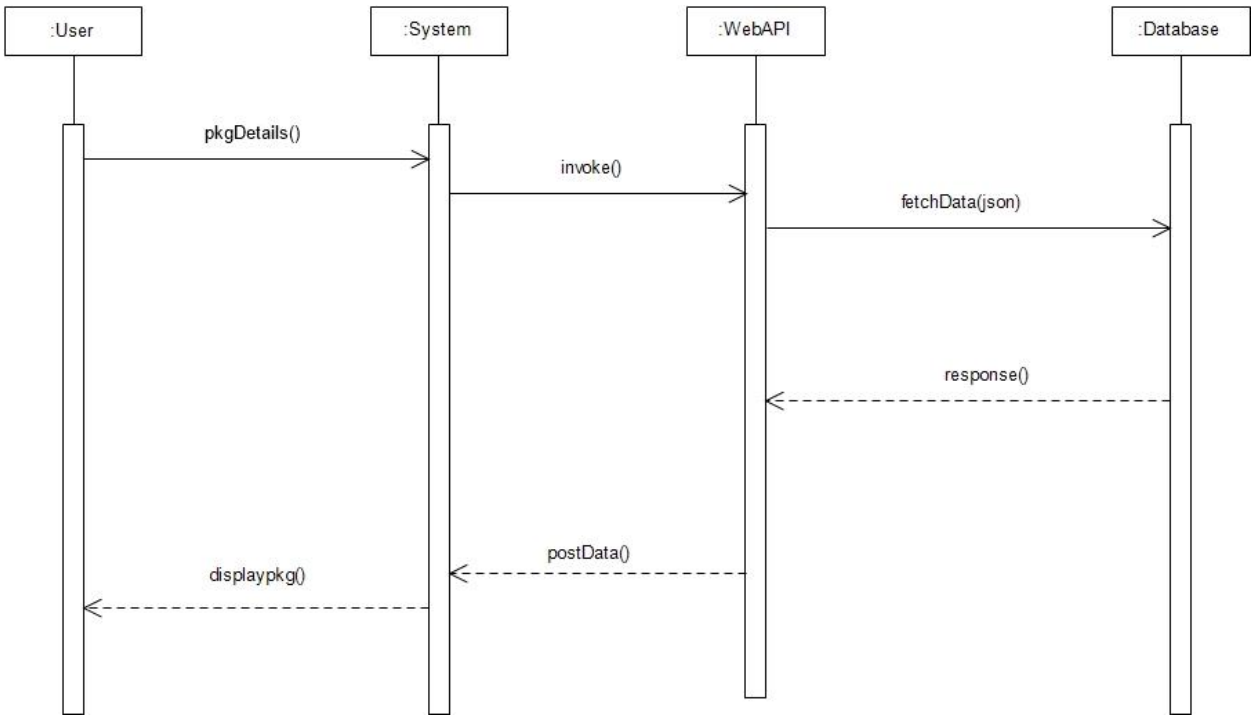


Figure 15: Sequence Diagram For Displaying Package

6.9.6 SEQUENCE DIAGRAM FOR CREATING PACKAGES

The sequence diagram for creating package is given below:

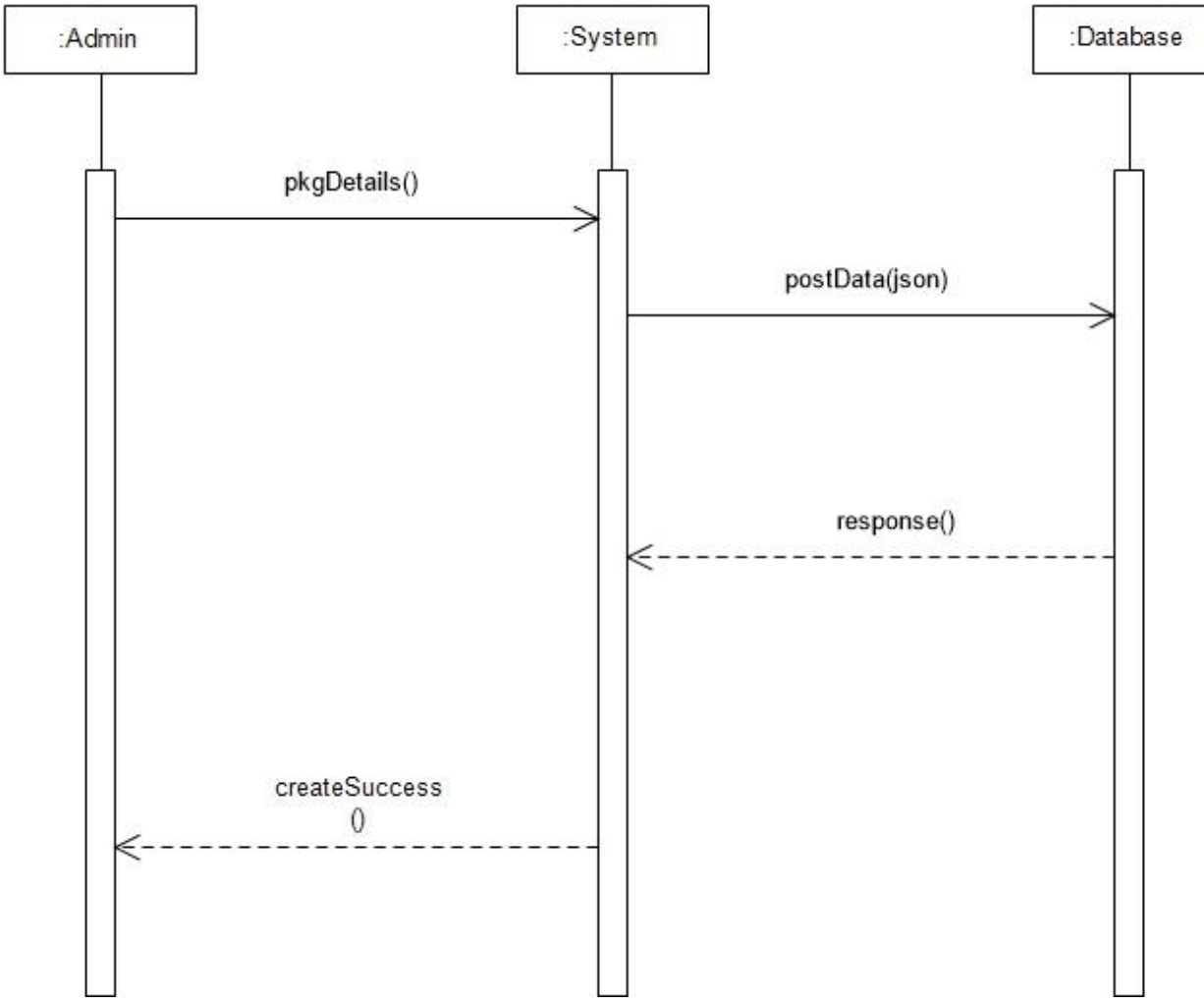


Figure 16: Sequence Diagram For Creating package

6.9.7 SEQUENCE DIAGRAM FOR LOGOUT

The sequence diagram for logout is given below:

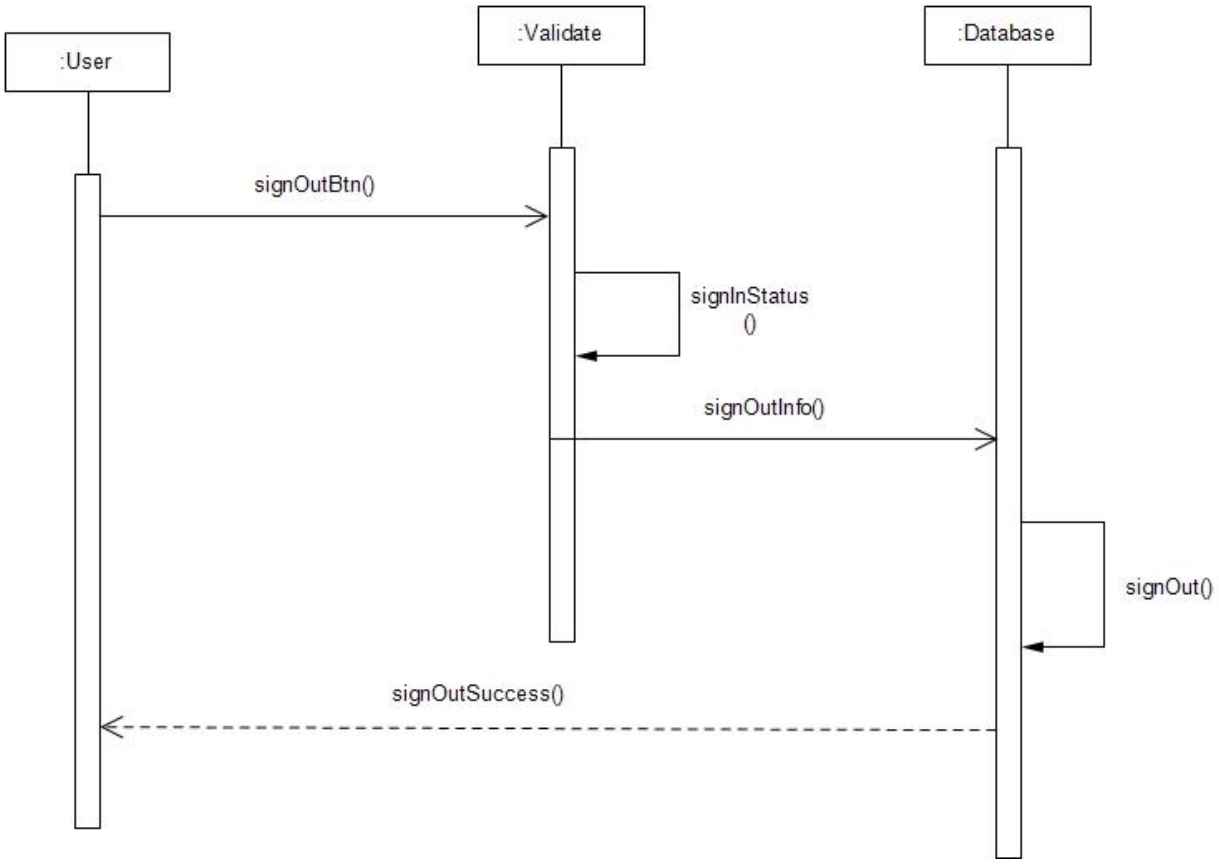


Figure 17: Sequence Diagram For Logout

7. BUDGET ESTIMATION

7.1 FUNCTION POINT

Function point metric is used to collect direct measure of software engineering not only according to size but also according to functionality. FP is derived using an empirical relationship based on countable measures and assessment of s/w complexity.

Table 6: Function Point

Information Domain Values	**Count**	**Weighted Value**	**Total count= [Weight * Count]**
No of User Inputs	9	4	36
No of User Outputs	9	5	45
Number of User Inquiries	4	4	16
No of Logical Files	6	10	60
No of External Interfaces	3	7	21
Count Total			178

Function Point (FP) = Count Total * Complexity Multiplier

$$= 178 * [0.65 + 0.01 * \sum_{i=1}^{9} f_i]$$

$$= 178 * 1.17$$

$$= 208.26$$

Average Productivity = 10 FP / pm

Labor Rate = Rs. 16,000 per month

Effort = FP/ (Average Productivity)

= 208.26/10

=20.82

Total Project Cost=FP * Labor Rate/ (Average Productivity)

= 208.26 * 16,000/10

=Rs. 3,33,216

The value of the count and the count multiplier used is average.

7.2 LINE OF CODE

LOC (Lines of Code) is a simple and straight forward way of counting the productivity of a programmer in a given time period.

Using Lines of Code metric, the project size is estimated by counting the number of source instructions in the developed program.

Estimated LOC = 4120

Average Productivity = 180 LOC/pm

Labor Rate = Rs 16,000 per month

Estimated Project Cost = Estimated LOC * Cost per LOC

= 4120 * Labor Rate/Average Productivity

= 4120 * 16000/180

= Rs. 3,66,222.22

8. TESTING

After the design and implementation of system and its integration. We used many taste cases to all our modules in which we have tested performance, process, output, security and reliability in our project.

8.1 TEST TABLE

Each unit of the system was tested for its correct and proper functionality. The unit testing of each components is illustrated in the table below.

Table 7: Unit Testing Table for Android

TEST NO.	UNIT	TEST	EXPECTED RESULT	TEST OUTCOME
1.	Login/Register Activity	Check for login and register	Successfully login and register	Successful.
2.	Booking Activity	Check whether the packages and its details are added into database	Packages are Successfully booked	Successful.
3.	Map Activity	Check whether the Map tab is opened and contents are accessed	Map activities are Successfully performed	Successful.
4.	Nearby Place Activity	Check whether the nearby place details are fetched	Nearby place details are fetched successfully	Successful.
5.	Distance and time calculation	Calculate and display distance and time taken to reach the destination	Distance and time is not displayed	Failed

6.	Navigation Drawer Activity	Check for the navigation bar open or not.	Successfully opened.	Successful.
7.	Weather activity	Display current weather and weather forecasting	Current weather and 5 day weather forecast is displayed	Successful
8.	News activity	Check whether the news data are fetched	Successfully fetched	Successful
10.	Destination Detail Activity	Provide details of destination.	Successfully provide.	Successful.

Table 8: Unit Testing Table for Web

TEST NO.	**UNIT**	**TEST**	**EXPECTED RESULT**	**TEST OUTCOME**
1.	Login/Register	Check for login and register	Successfully login and register	Successful.
2.	Package Booking	Check whether the packages and its details are added into database	Packages are Successfully booked	Successful.
3.	Navigation	Check for the navigation bar open or not.	Successfully opened.	Successful.
4.	Edit package	Check whether package are created, deleted and edited.	Packages are successfully edited.	Successful.

5.	Edit Pages	Check whether pages are created, deleted and edited.	Pages are successfully edited	Successful
7.	View user profile/account	Open and view user account/profile	Opened successfully	Successful
9.	Session management	Check for session management	Session managed	Successful
10.	Package Detail	Provide details of packages.	Successfully provide.	Successful.

9. TASK AND TIME SCHEDULE

The project schedule has been designed as per requirements and constraints involved. This project is scheduled to be completed in about 2 months. Analysis, design and documentation have been given more emphasis. Debugging and testing is to be done prior to the completion of the project.

TASK	1st Increment Period	2nd Increment Period	3rd Increment Period	APPROX. DURATION(Days)
Requirement Analysis and Specification	3	3	4	10
Undertake Analysis of The System	4	4	4	12
Design System	4	6	5	15
Develop Application Modules	15	21	5	41
Overall System Testing	3	5	4	12
Develop Documentation	23	31	24	78

Table 9 : Project Task and Time Schedule

9.1 INCREMENT 1: DEVELOP WEB APP SYSTEM

ID	Task Name	Start	Finish	Duration
1	Requirement Analysis and Specification	2019/8/1	2019/8/5	3.0 d.
2	Update Analysis of System	2019/8/5	2019/8/8	4.0 d.
3	Design System	2019/8/8	2019/8/13	4.0 d.
4	Develop Web Application with Admin Panel Modules	2019/8/9	2019/8/29	15.0 d.
5	Module Integration and Overall Testing	2019/8/29	2019/9/2	3.0 d.
6	Prepare Prilminary Documentation	2019/8/1	2019/9/2	23.0 d.

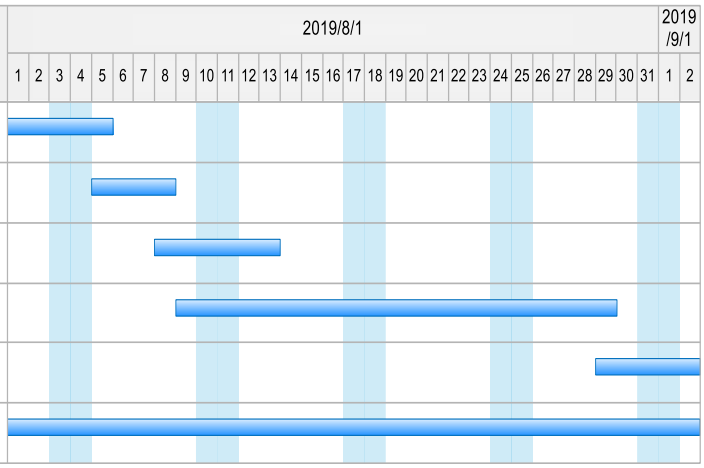


Figure 18: Gantt Chart For Increment-I

9.2 INCREMENT 2: DEVELOP ANDROID APP SYSTEM

ID	Task Name	Start	Finish	Duration
1	Analysis for Android App Modules	2019/9/3	2019/9/5	3.0 d.
2	Update Analysis of System	2019/9/5	2019/9/10	4.0 d.
3	Design System	2019/9/6	2019/9/13	6.0 d.
4	Develop Full Android Application Modules	2019/9/12	2019/10/10	21.0 d.
5	Module Integration and Overall Testing	2019/10/10	2019/10/14	3.0 d.
6	Risk Assessment	2019/10/14	2019/10/15	2.0 d.
7	Update Documentation	2019/9/3	2019/10/15	31.0 d.

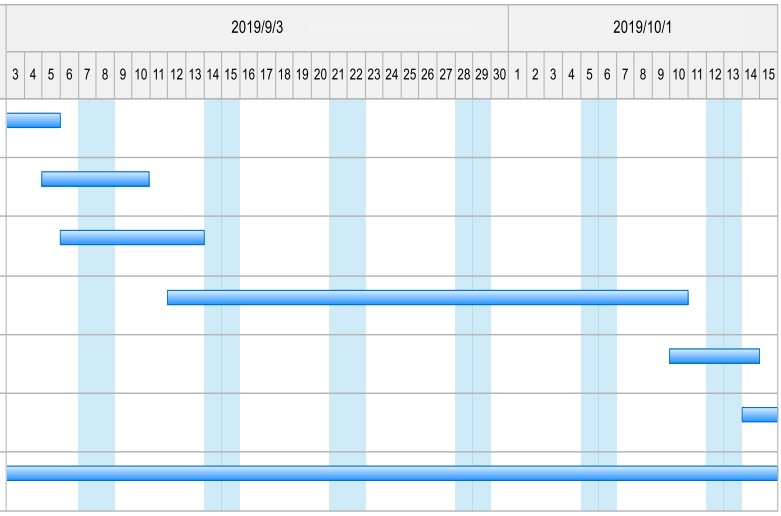


Figure 19: Gantt Chart For Increment-II

9.3 INCREMENT 3: SYSTEM INTEGRATION

ID	Task Name	Start	Finish	Duration
1	Analysis of system development and integration	2019/10/15	2019/10/18	4.0 d.
2	Update overall system analysis	2019/10/22	2019/10/25	4.0 d.
3	Design system integration	2019/10/25	2019/10/31	5.0 d.
4	Develop system integration	2019/11/1	2019/11/7	5.0 d.
5	Test and debug system module	2019/11/8	2019/11/12	3.0 d.
6	Update Documentation	2019/10/15	2019/11/15	24.0 d.

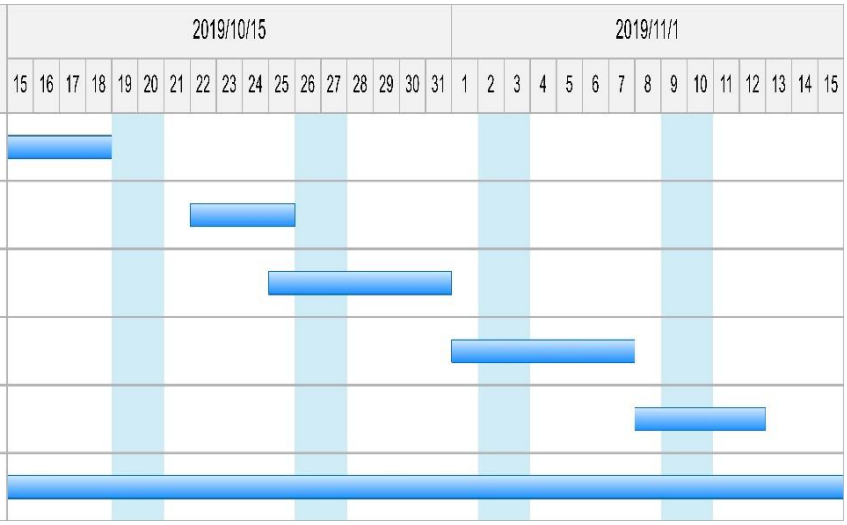


Figure 20: Gantt Chart For Increment-III

10. CONCLUSION AND FUTURE EXTENSIONS

The TripMate app is now at the initial phase with its beta version having most of the basic functionalities discussed before. Almost All the modules have been working after integrating and are ready for the demo. As the features adding up the level of complexity has been increasing as well. However, it is not complete with the ideas we have put through and might need more improvisation in the coming days as well. This makes us think about the future extensions that we are going to implement in this application. Some of the extensions we have planned of are:

- Integrating payment gateways for making online transaction easier.
- Intelligent travel and booking recommendation system can be used in extensive way.
- Destination rating via app.
- Integrating travel bots for easier to travel.

11. REFERENCES

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[11] “Retrofit”. [Online]. Available https://square.github.io/retrofit [Accessed: 26-Sept-2019].

APPENDIX

SNAPSHOTS

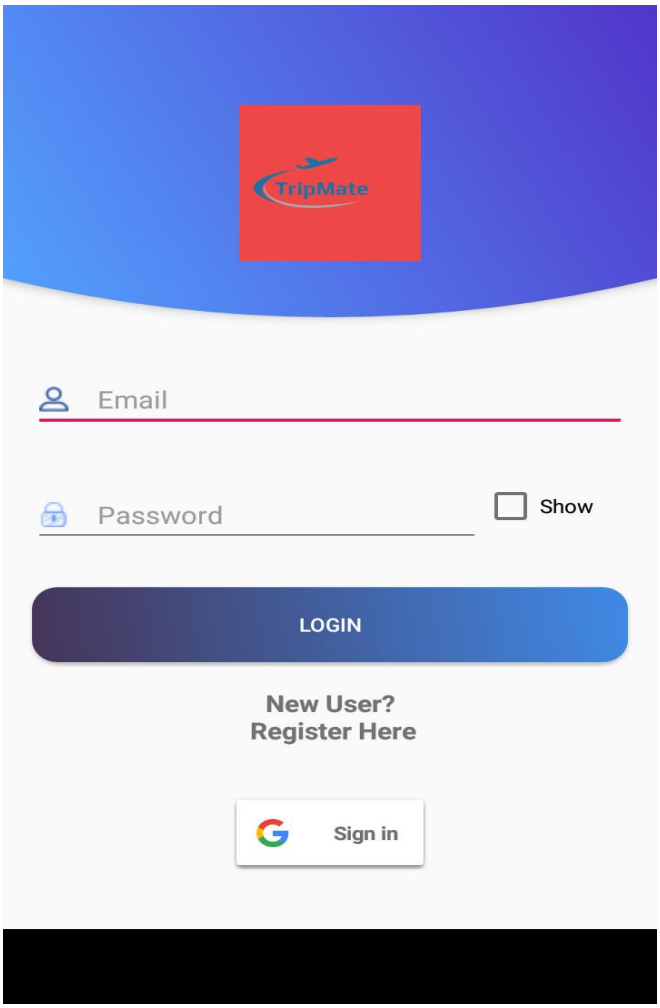


Figure 21: Login Activity

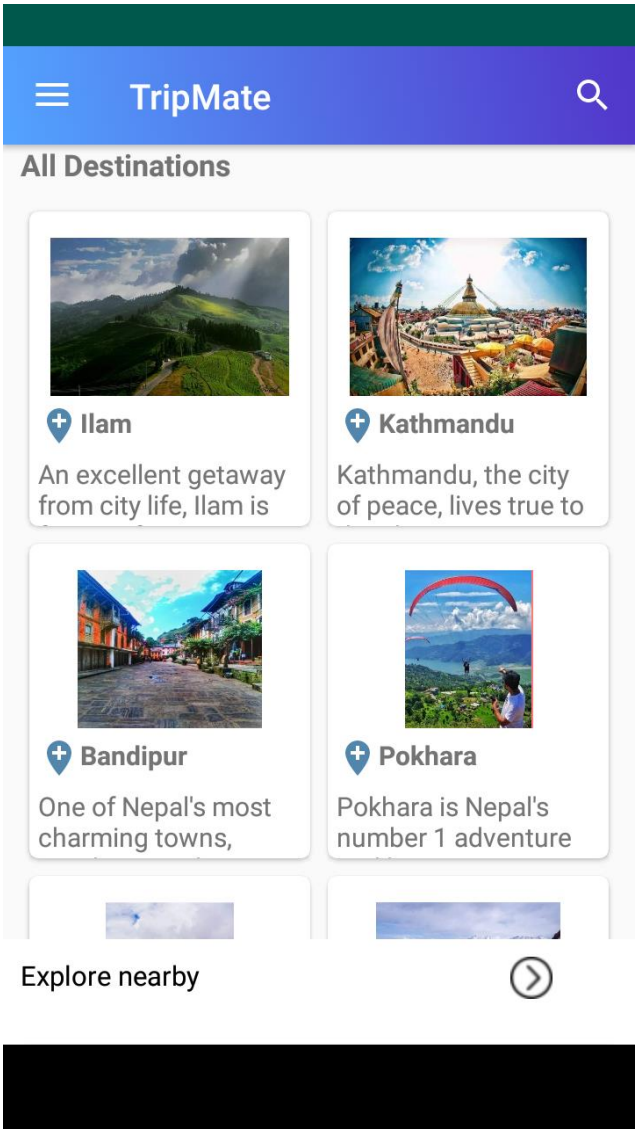


Figure 22: Main Page Of Mobile App

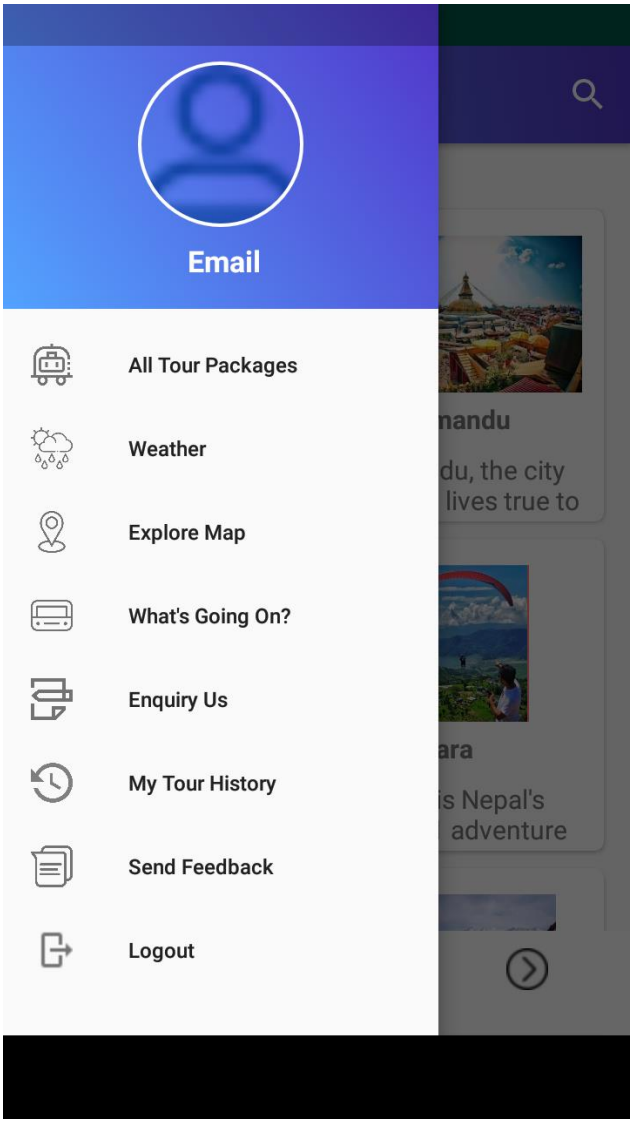


Figure 23: Navigation Drawer Page

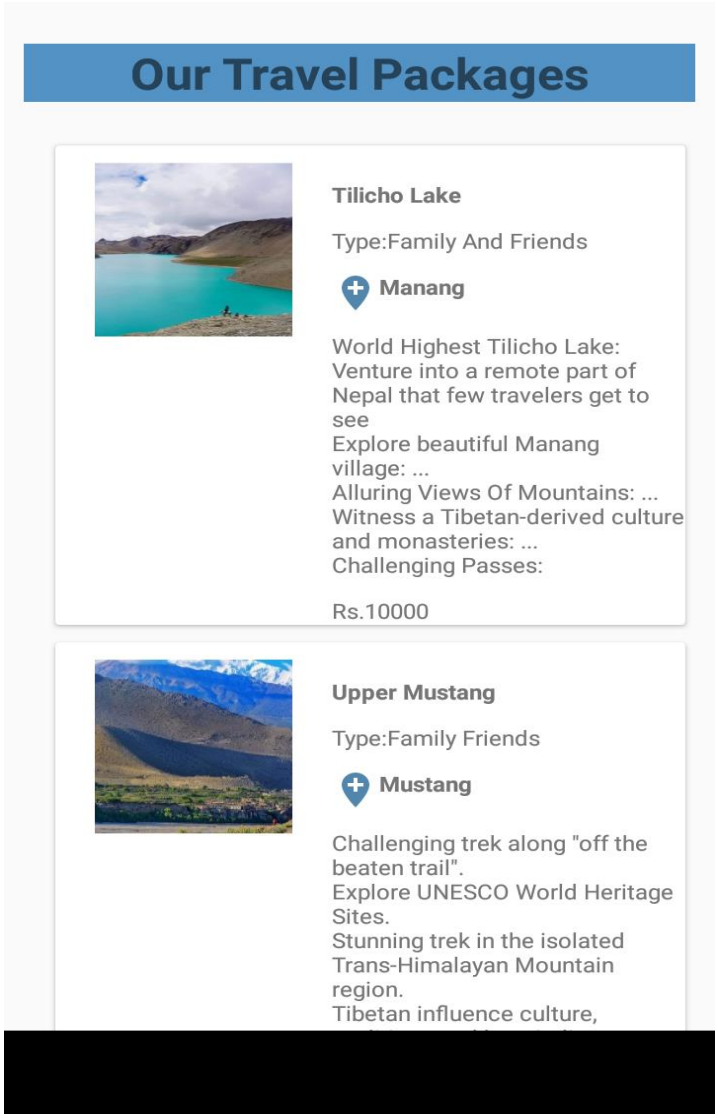


Figure 24: Tour Packages Activity

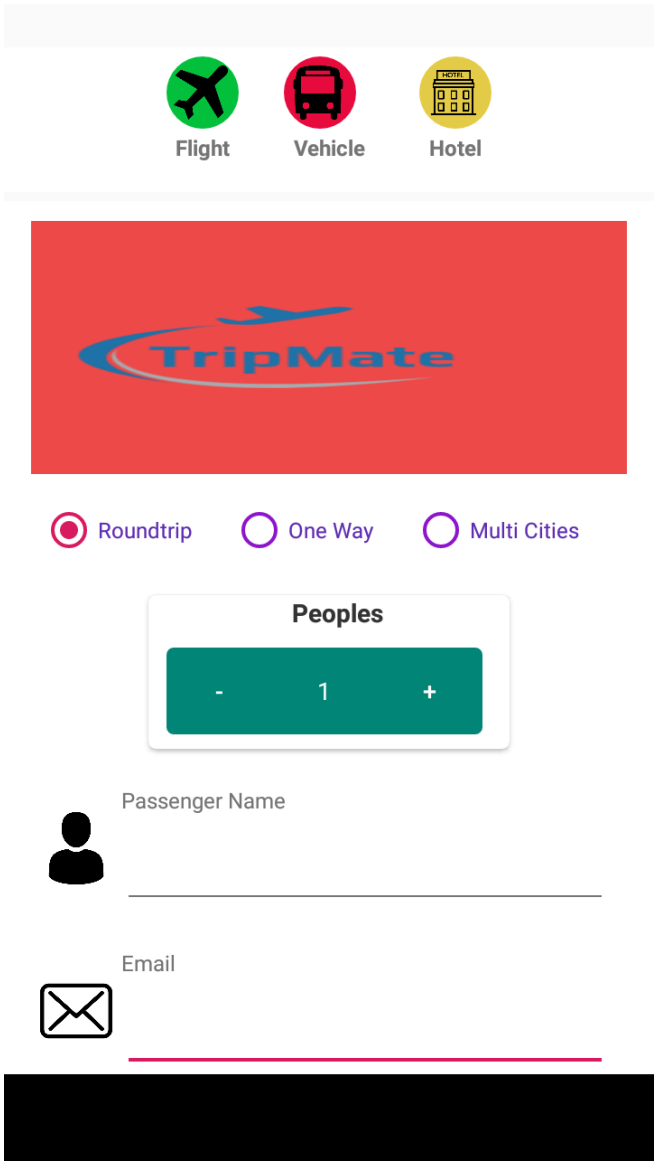


Figure 25:Manual Booking Page

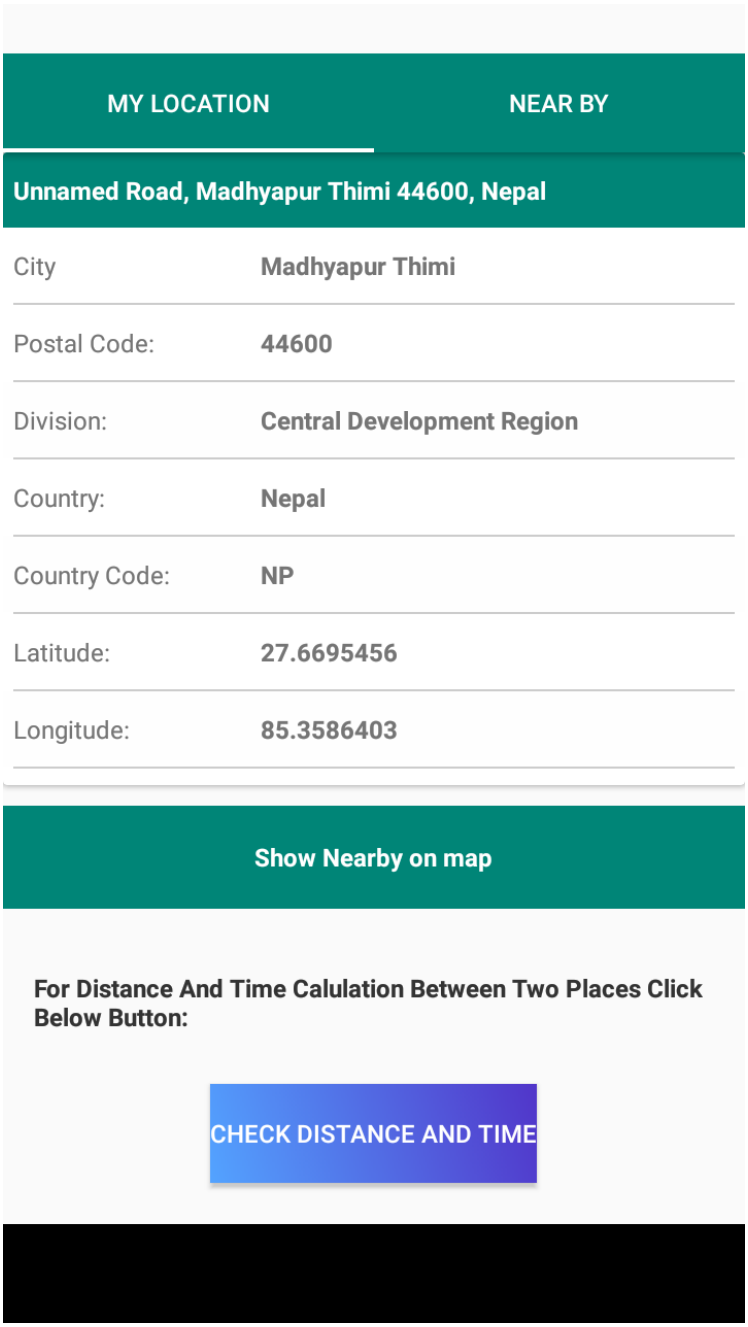


Figure 26: Nearby Places Activity

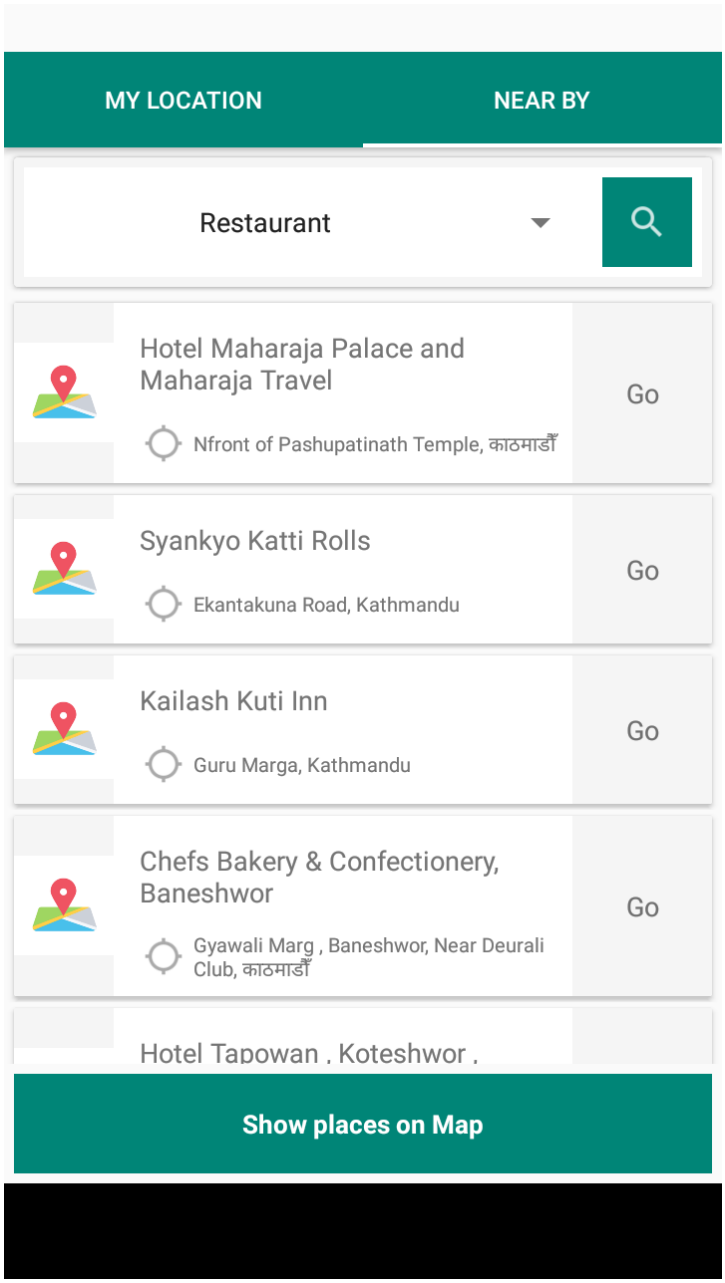


Figure 27: Nearby Places Details Activity

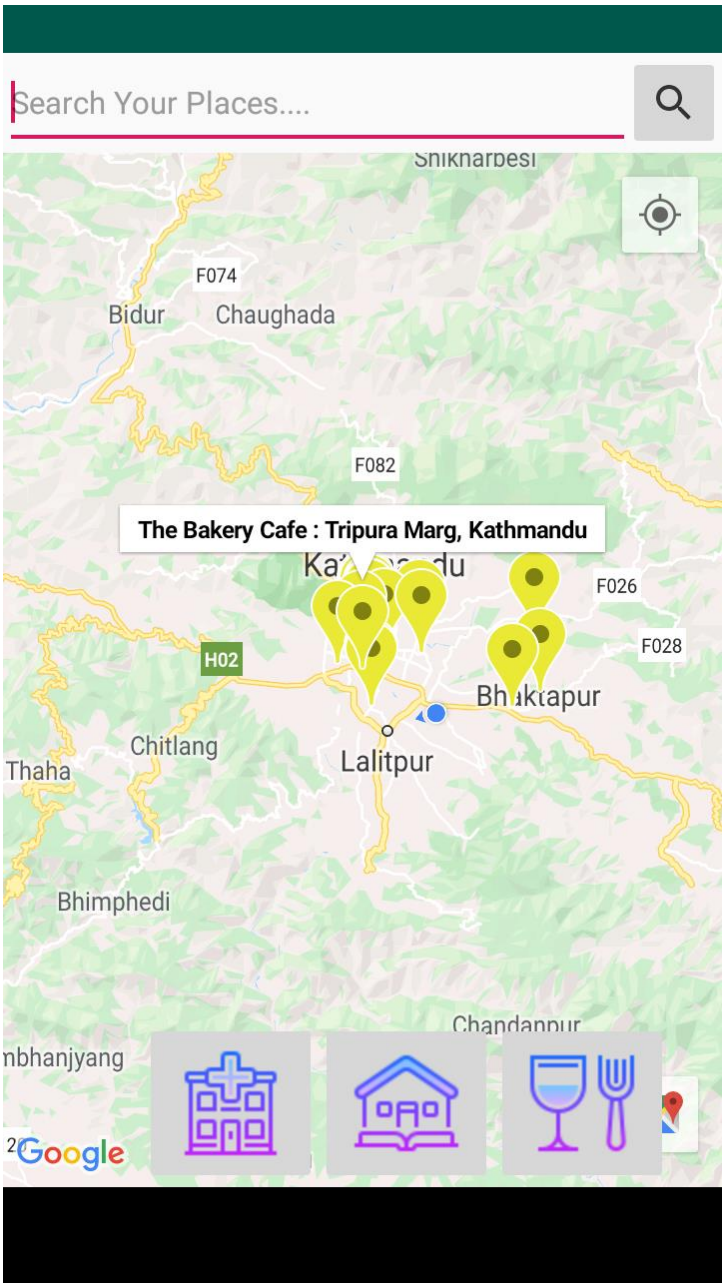


Figure 28: Nearby Places on Map

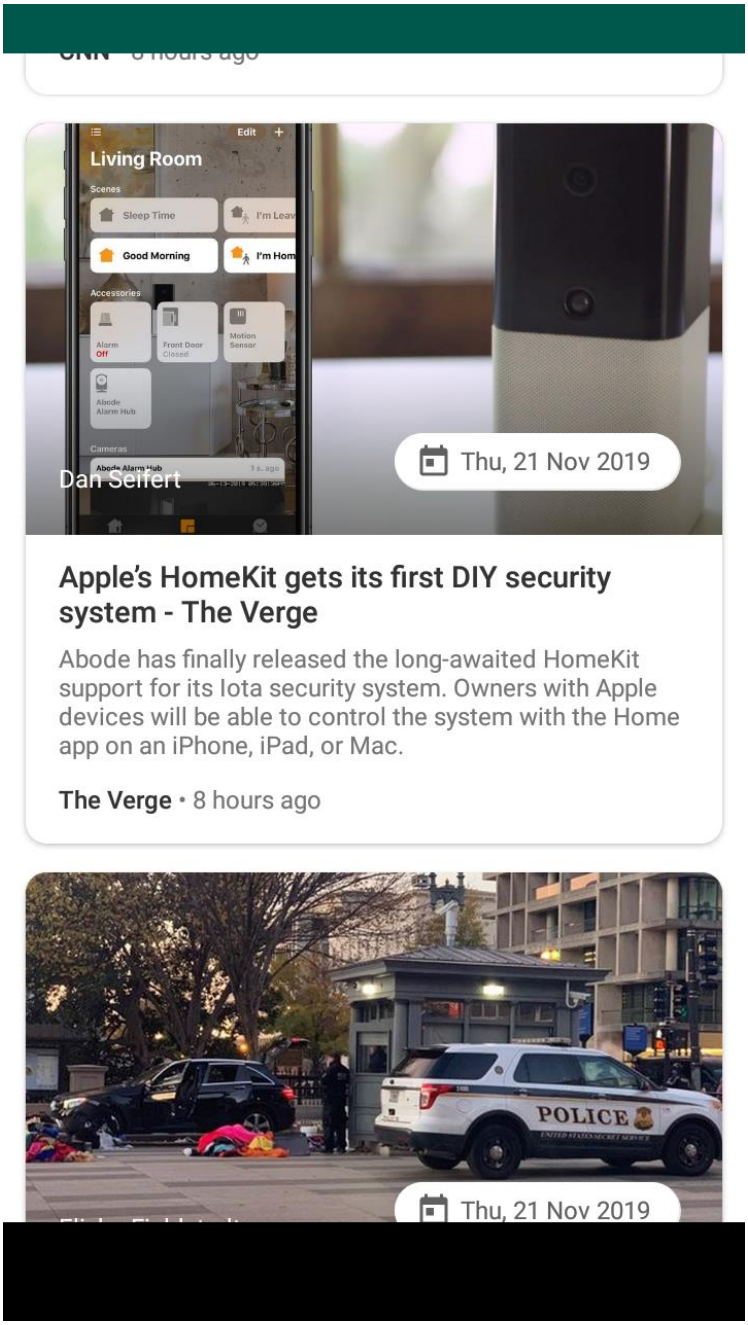


Figure 29: News Activity

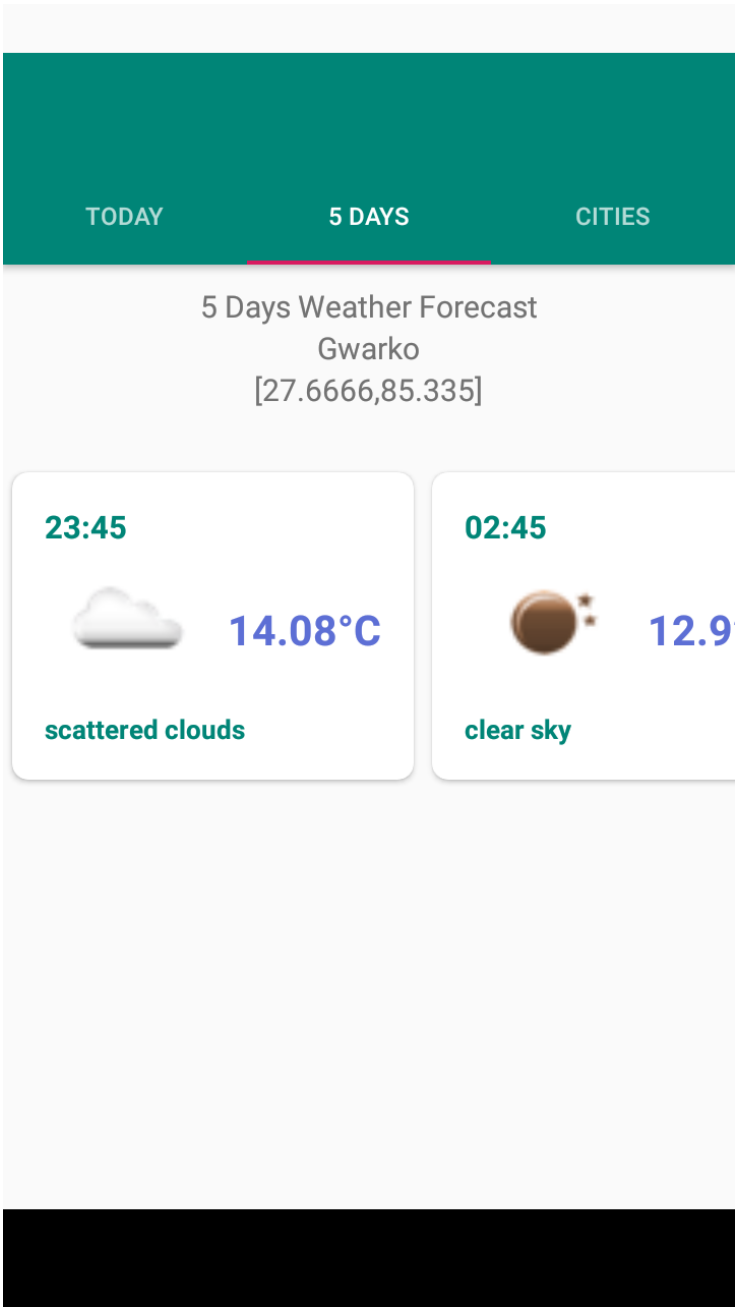


Figure 30: Weather Activity

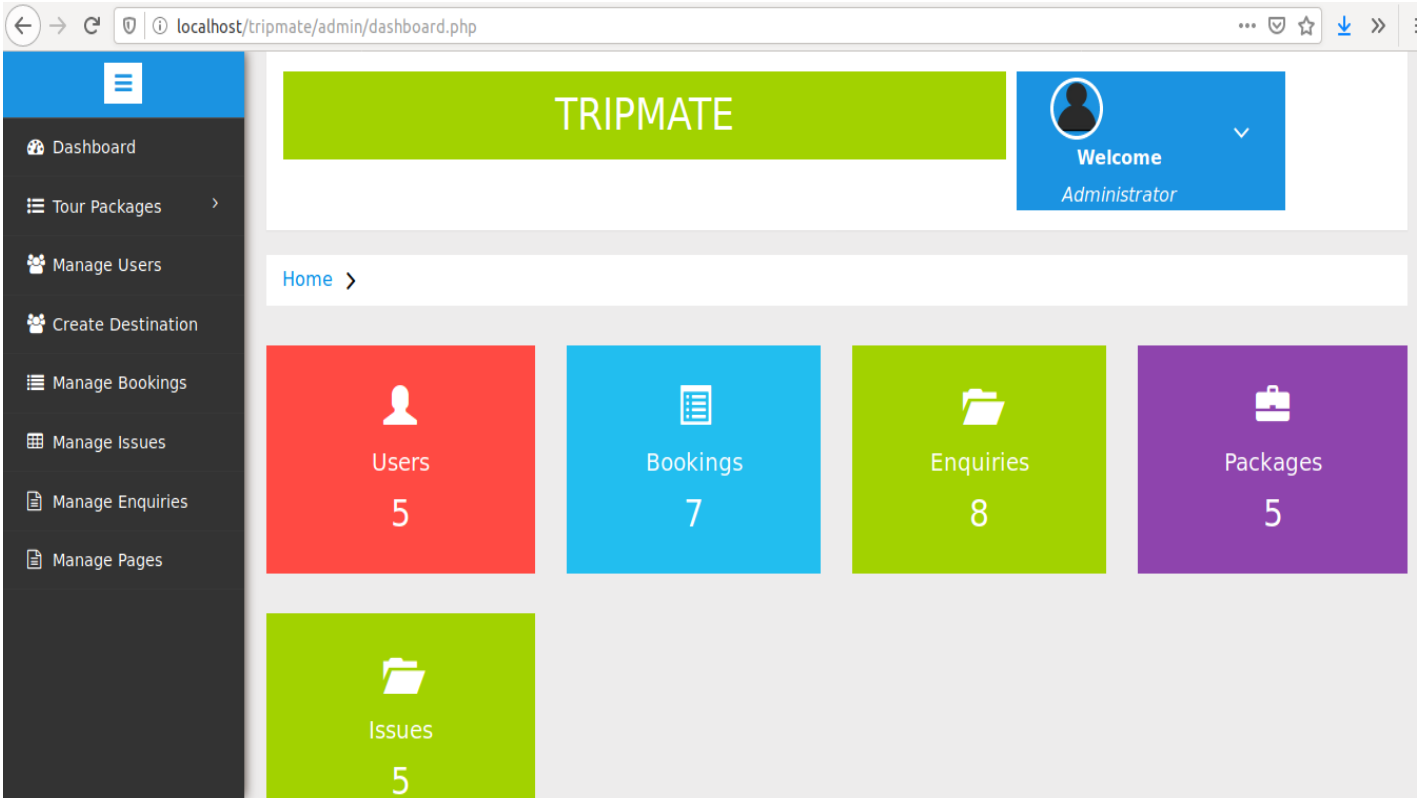
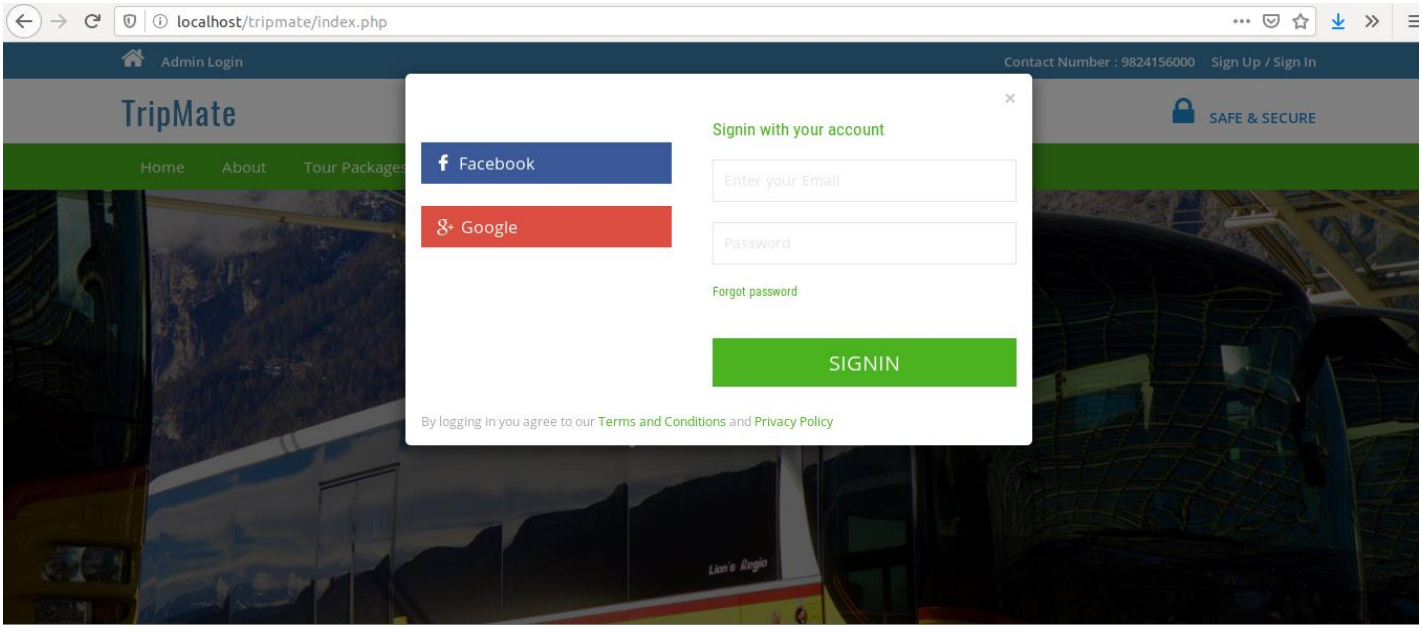
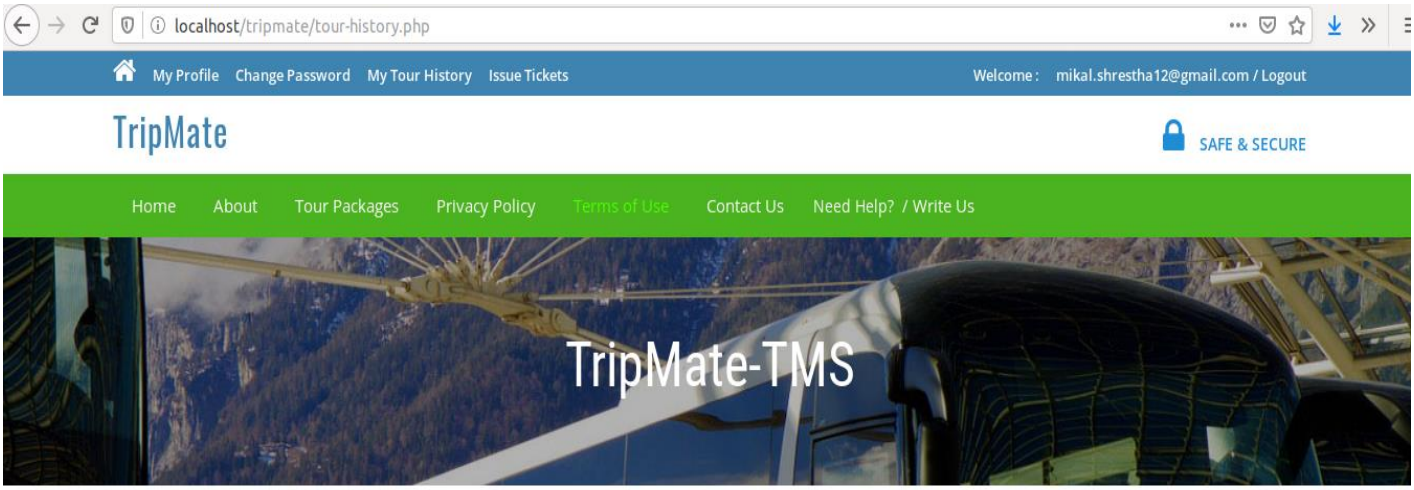


Figure 31: Admin Panel Web App





My Tour History

#	Booking Id	Package Name	From	To	Comment	Status	Booking Date	Action
1	#BK15	Demo Demo Demo Demo test	2019-10-17	2019-10-18	hhhhh	Confirmed	2019-10-17 15:50:22	Cancel

localhost/tripmate/page.php?type=terms

Figure 32: Home Page Of Web App