

Journey Companion, an Android Travel and Tourism Application

Arun Krishna K V, Sabarish S

Abstract: Due to high inflow of domestic as well as international tourists, the manpower required to guide the tourists on travel landmarks is not sufficient and sometimes lack in the information that needs to be given and highlighted to the tourist. The biggest issue of regular travellers flying around the world is they want software to aid them. But there are tons of different travel apps out there today, each with their own set of interesting features. But due to limited storage capacity on smartphones and jumping across multiple applications, it's getting repetitive and mundane for the traveller. We get to know the needs of tourists by surveying the regular traveller, an app that has the features of all the other travel apps on the market today. The goal of the project is to build an android app that assists the traveller throughout his journey. The main objective of our project is to develop a state of the art mobile travel guide application with innumerable functionalities which will include integrated features of all other best travel apps in the market in a single all-in-one app. We propose the development of a mobile application which renders information about various cities or destinations and their landmarks, monuments, restaurants, picnic spots and current weather information of a chosen city. Apart from these it will also have some add-on features like currency convertor, magnetic compass, world clock, holiday details and shopping facilities.

Keywords: Android app, Currency Convertor, Top Destinations, Journey companion, Tourism, Travel guide, Weather forecast

I. INTRODUCTION

The purpose of this document is to provide a detailed description about the requirements needed to successfully complete the JOURNEY COMPANION, mobile application for the benefit of travelers flying across the globe. We will include a general overview of the project, the application's functional, interface, and performance specifications, a list of other specific application features, application use scenarios, UML class and use case diagrams, as well as an updated schedule, in this document. The aim of the project is to develop an android app that helps travelers throughout the entirety of his/her journey. The ultimate objective is to develop a state of the art mobile travel guide application with innumerable functionalities which will include all the necessary features that would aid the travellers.

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II. PROBLEM STATEMENT

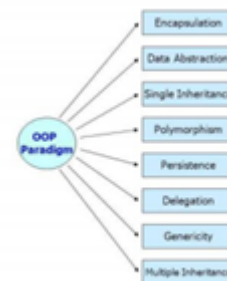
Travel and tourism is one of the largest business industries in India. India being a country of vast diversity, heritage, and cultures, there are tons of places to visit. The main objective is to develop and promote tourism, maintain competitiveness of India as an international tourist destination and improve and expand the existing tourism products to confirm employment generation and economic processes. For this, there is a need for technology, to attract the newer generation and to ease their trips. More precisely, a mobile application which they can use from the start to end of their trip, instead of depending on multiple apps for different services.

III. PROPOSED METHOD

We use the concept of **Object Oriented Paradigm** model and **Model View Presenter** architecture in our project.

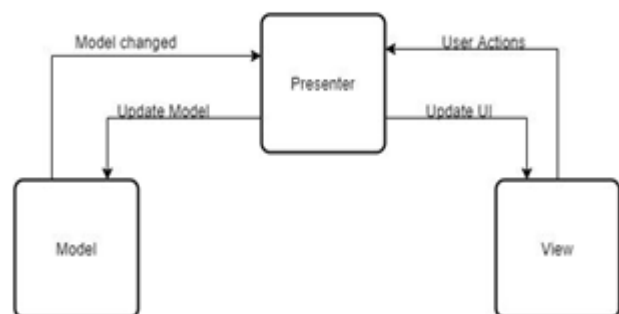
A. Object-oriented programming (OOP):

It is an object-based programming paradigm having member functions and data members; seeks to include the benefits of modularity and reusability. Objects, being instances of class are used to design applications and computer programmes to interact with each other.



(OOPS Features)

B. Model-view-presenter (MVP):



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MVP is a derivation of the model–view–controller (MVC) architectural pattern, and is used mostly for building user interfaces.

The MVP divides the application into three main logical components:

Model, View and Presenter.

- Model — the data layer Responsible for the control and communication of business logic with the network and database layers. In our application, we are using models for User, Hotel, Cities, etc.
 - View — About the UI sheet. Displays the data and notifies the User Activities Presenter. In our application we have views for CityInfo, Utilities (Compass, Weather Forecast, World Clock, Currency Converter), Monuments In City, etc.
 - Presenter — Retrieves the Model data, applies the UI logic and manages the View status, defines what to display, and responds to user input notifications from the View. In our application, we have presenters like LoginPresenter, CityInfoPresenter, MoreDetailsPresenter, etc
- Each of these components are built to handle specific development aspects of an application.

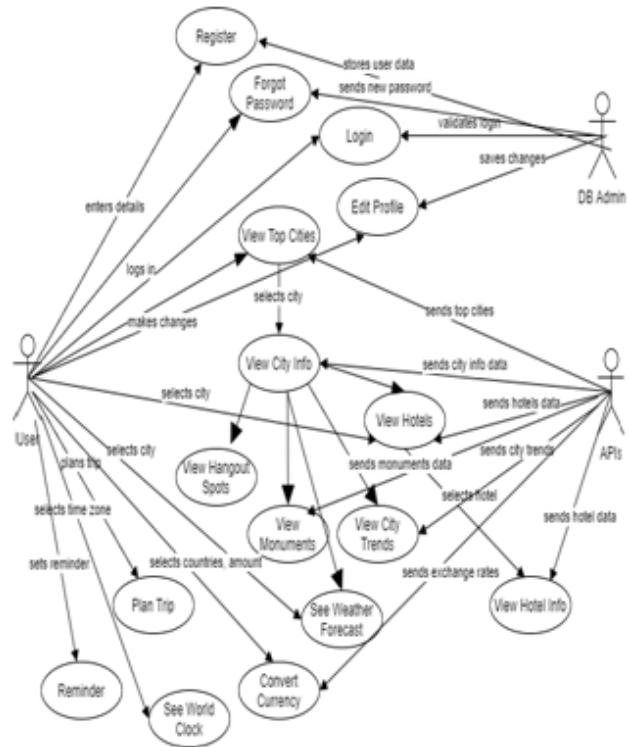
IV. FEATURE LIST

1. **LOGIN AND SIGN-UP:** To authenticate a user of the app and help the user to store his/her tour plan.
2. **TOP CITIES:** Gives a list of Top Tourist Destinations in India, based on popularity.
3. **CITY INFO:** Displays the essential details of a city like weather forecast details, landmarks, monuments, city trends, Shopping, Hotels available, and Hangout spots.
4. **GEOLOCATION:** This will give information about the landmarks, monuments and hangout spots near the location of the user.
5. **MONUMENTS:** Lists the must-visit monuments of a city along with few essential details like Open Time, Entry Fee, Ratings, Distance from Railway Station, etc.
6. **HOTELS:** Displays a list of all hotels in the selected city, starting from those which are closest to the user.
7. **WEATHER FORECASTING:** With the current user location, or for any world city, a weather forecast will be provided to the user.
8. **WORLD CLOCK:** With the user's current location, the time in that location will be displayed to the user. The user can also see the time across various time zones.
9. **COMPASS:** Displays compass for the user to navigate easily.
10. **CURRENCY CONVERTER:** This will help international travelers to convert the currency with real-time exchange rate.
11. **RESTAURANT FINDER:** This will show the restaurants nearby the user and their reviews.
12. **PLAN TRIP:** This allows users to plan trip with the help of long weekend lists and destination city details.

13. **USER PROFILE:** This is an activity where the user can update his profile details, cities visited..

V. USE CASE DIAGRAM

ACTORS:



A. TRAVELLER:

Traveller is the end user of this application. He/she can use the app to plan for a trip, to get useful information regarding their desired travel spots, and for some ancillary functions like compass, currency converter, etc.

(Use Case Diagram)

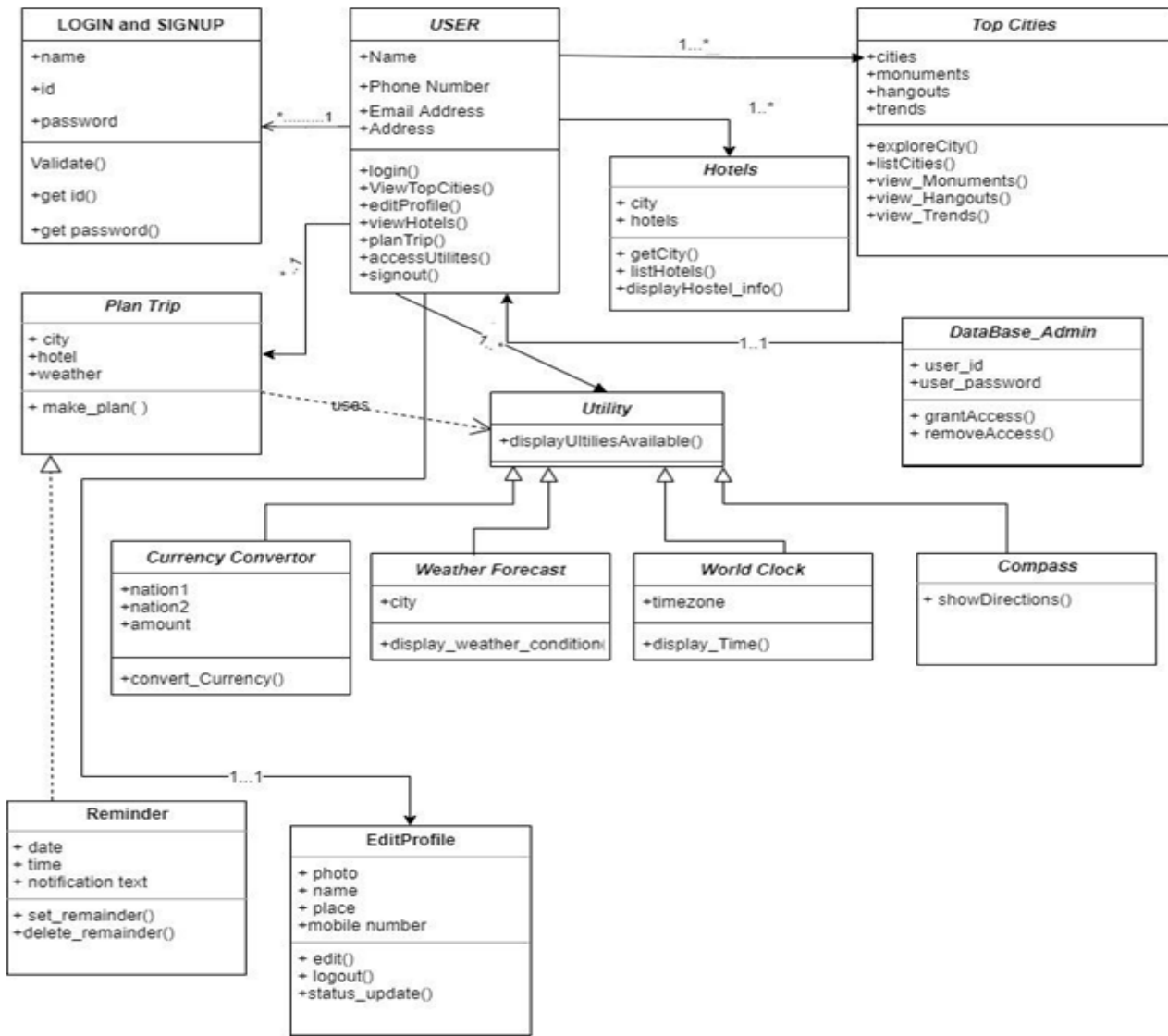
B. DB Admin:

The users' data is stored in the database automatically by the application's Database Manager, which acts like a DB Administrator.

C. APIs:

Different APIs are called for getting the various information displayed by the application. For example, CityInfo, Weather Info, Currency Exchange rates, etc.

VI. CLASS DIAGRAM



(Class Diagram)

VII. REQUIREMENTS CONSTRAINTS

A. Operating Environment

The application runs on Android Platform with minimum SDK version 22 (Android v5.1, Lollipop) while the target SDK version is 28 (Android 9, Pie).

B. Platform and Operating System

1. The application must run on the Android mobile operating system.
2. A user's Android device must provide network connectivity in order for the application to fully function.
3. Language supported by the App is English. Because inclusion of multiple languages into the application slows down the performance of the application.

C. Hardware Requirements

1. Mobile devices must have at Least 2GB of total RAM and 300MB of free RAM.

2. Users should have at least 50MB of space to install the app.
3. Location service must be enabled
4. Touch Screen: The app will access the touch screen of the device for taking inputs.
5. System Clock: For world clock and the time calculations, the app will use the system clock.
6. GPS: Will be used for locating the user.
7. Magnetometer: Used for compass functionality

D. Software Requirements

1. Internet: App will use internet data, for sending and receiving API calls, and may cost the user for the same.
2. Sqlite Database: Keeps track of user profile, visited/favourite places, reminders added by the traveler.

E. Performance Requirements

The expected performance requirements are described in this section. This is a system estimation, and depending on how large the final application is, all the numerical values may vary.



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• System

All Android devices running 5.1 (Lollipop) or later will run the application. The size will be around 30 MB. The application responds to the screen size and/or the window in which the application is running.

• Response Time

When running on an Android phone, the application should take less than 5 seconds and less than 10 seconds when running on an emulator or tablet. Until the user begins to multi-task between 3 or more processes, the application will run fine.

F. Safety Requirements

In case of network fluctuations there are slight possibilities of not getting response from the app as some of the key features are reliant on APIs. So relying on the app without a network connection may cause distress at the last moment.

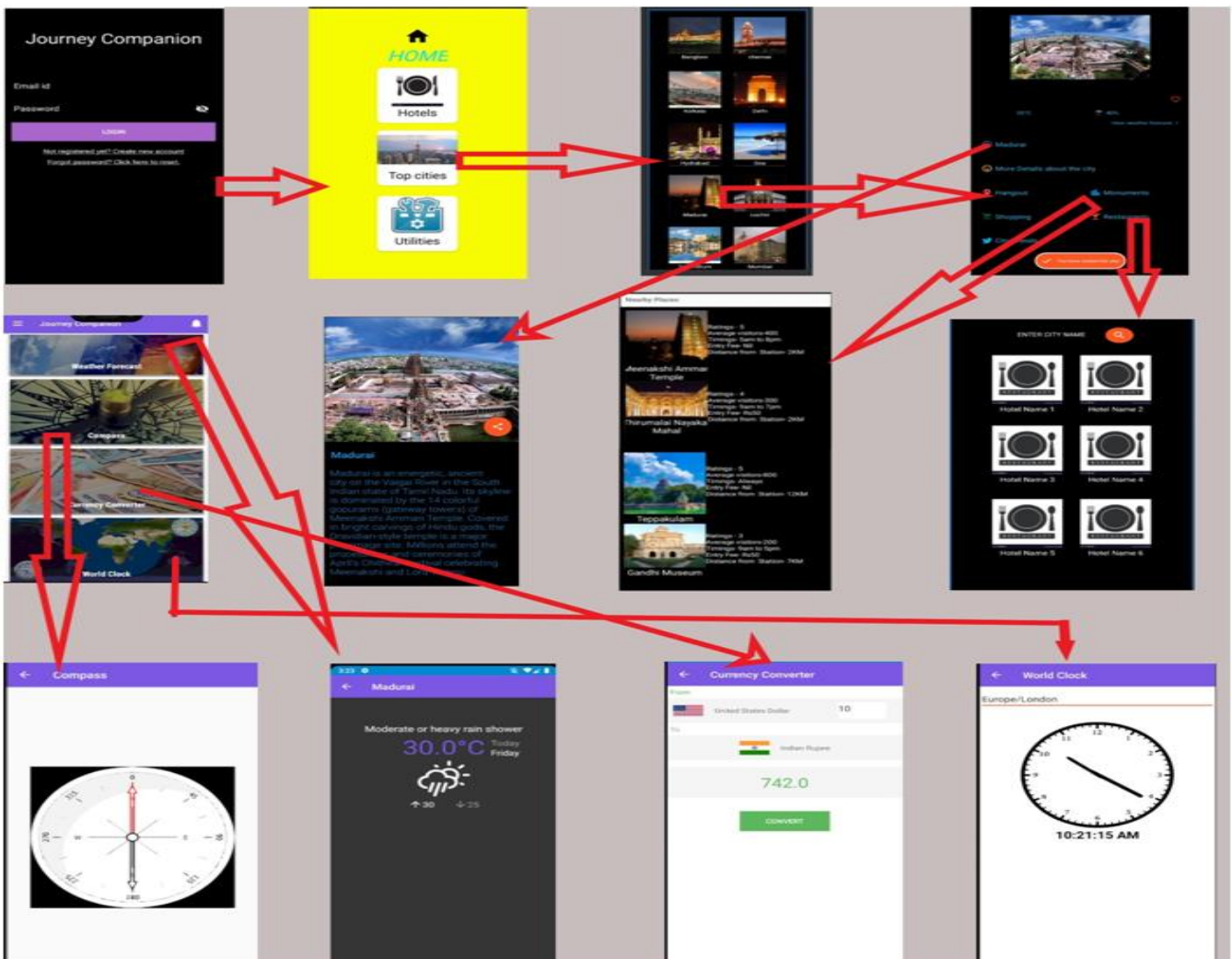
G. Security Requirements

The user's password is hashed before storing in the database. Hashing technique used is MD5.No personal details apart from name and email id is collected throughout the entire application so there won't be any serious repercussion in case of a data breach

H. Communications Interfaces

1. Https services are used to Request and get Response from APIs for various purposes:
 - a. Getting Top Tourist Cities
 - b. Getting list of Hotels in a city
 - c. Getting information of hotels
 - d. Getting details of a city
 - e. Obtaining details of monuments present in a city
 - f. Obtaining weather details
 - g. Exchange rates of selected currencies

VIII. RESULTS AND DISCUSSIONS:



(Usage Flow Diagram)

This application provides more flexibility to travelers as all the essential features which the traveler expects at any point in time is readily available without switching over to GOOGLE or any other applications.

Reliability: The system will not crash normally since the amount of user input needed is very minimal and even the input collected is of the form of selecting from a list of

options, making it very rare for the app to encounter ill-formatted input.

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Availability: Only infrequently will the system run. After a crash, the system will let the user restart the application. All information beyond the last point of saving will be lost. After the system has been restarted, the user should start afresh.

Maintainability: The product does not need much handling of data to work since most of the features work on live API calls and fetching the data from the internet. So there won't be the need to maintain databases. The application will be built using components that are as independent as possible to make the system easily modifiable. All the components of the system will be modular and be made as independent as possible.

Portability: The product will be able to run on android versions 5.1 (Lollipop) and above, making it work on roughly 92.3% of android devices in use right now.

ANDROID PLATFORM VERSION	API LEVEL	CUMULATIVE DISTRIBUTION
4.0 Ice Cream Sandwich	15	
4.1 Jelly Bean	16	99.8%
4.2 Jelly Bean	17	99.2%
4.3 Jelly Bean	18	98.4%
4.4 KitKat	19	98.1%
5.0 Lollipop	21	94.1%
5.1 Lollipop	22	92.3%
6.0 Marshmallow	23	84.9%
7.0 Nougat	24	73.7%
7.1 Nougat	25	66.2%
8.0 Oreo	26	60.8%
8.1 Oreo	27	53.5%
9.0 Pie	28	39.5%
10. Android 10	29	8.2%

(Percent of supported Devices)

IX. CONCLUSION

After analysing the smartphone applications market, we came to know of the void in the space of travel and tourism applications for the end user in today's world. So we have managed to develop a state of the art android application named 'Journey Companion' that has all the features an ideal travel app needs to have without asking much from the user, in terms of data or money.

From the outcome of the study, we can conclude that our 'Journey Companion' app can fulfil the traveller's requirement for a great travel experience. In conclusion, the design of the Journey Companion is capable of performing as expected and can be further analysed for future enhancement in order to focus on new features to create a better solution by improving the app's efficiency. It allows free, safe, quick and simple usage. We may also infer that the use of smart technologies saves the user's storage and

time, which in turn makes this software user-friendly and realistic, the user would surely benefit.

X. APPENDIX

Appendix A: Glossary

LIST OF ABBREVIATIONS

- Journey companion - Proposed application
- APIs - software intermediary that allows two applications to talk to each other.
- UML – Unified Modeling Language. Refer to <http://www.uml.org>
- MVP - Model-View-Presenter Android Architecture
- OOPS - Object Oriented Programming Paradigm
- MD5 - Message Digest version5
- SDK - Software Development Kit
- OS - Operating System

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