Software Engineering Lab
CSPC – 325

Apna Banaras App

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Contents

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Software Specification Requirement

1. Introduction

1.1 Purpose and scope

Purpose: The aim behind choosing this project is to build something that will promote tourism in Varanasi and currently no fully functional guide application exists for the city of Varanasi, holiest of the seven sacred cities, having over 300,000 foreign and **five million** domestic travellers visiting Varanasi (2017 data).

Scope: We envision to build a simple and easy to use android application that any tourist can easily use. Most of the tourist get confused because of the hundreds of roads and narrow alleys in Varanasi and a lot of amount of visiting spots, so this application will make their visit easier.

1.2 Document Convention

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1.3 Definitions, Acronyms, and Abbreviations

Android Studio: Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development.

Firebase: Firebase is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure.

Flutter: Flutter is an open-source UI software development kit created by Google. It is used to develop applications for Android, iOS, Linux, Mac, Windows, Google Fuchsia, and the web from a single codebase.

Database: Collection of all the information monitored by this system.

Tourism: Tourism is travel for pleasure or business; also the theory and practice of touring, the business of attracting, accommodating, and entertaining **tourists**, and the business of operating tours.

Backend: The part of a computer system or application that is not directly accessed by the user, typically responsible for storing and manipulating data.

Frontend: The **front end** of a website is the part that users interact with.

API: An application programming interface (**API**) is a computing interface which defines interactions between multiple software intermediaries.

UI: The **user interface** (**UI**) is the series of screens, pages, and visual elements—like buttons and icons—that enable a person to interact with a product or service.

UX: User experience design is the process of supporting user behaviour through usability, usefulness, and desirability provided in the interaction with a product.

1.4 Intended Audience and Reading Suggestions (Overview)

The intended audience will be all the tourists visiting Varanasi and all the hotel and Restaurant owners (To book Hotels and Restaurant sheets), all the developers who would be further working on the application, testers and documentation writers.

Reading Suggestions:

The next Section, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third Section, Specific Requirement section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

1.5 References

IEEE. *IEEE Std 830–1998 IEEE Recommended Practice for Software Requirements Specifications.* IEEE Computer Society, 1998.

2. Overall Description

2.1 Product Perspective

The idea for Apna Banaras App has been derived from the sole aim of increasing the convenience and ease for the tourists and persons travelling to Banaras. The Apna Banaras App is an entirely new self-contained app in the product family. It aims to provide support, reservation as well as additional information privileges to its users. The application features mainly consist of 4 functions: support system, login system, and infographics.
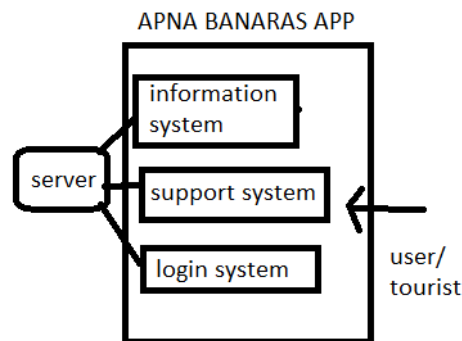
2.2 Product Functions

The major product functions can be divided into External Interface and Internal Interface. The external interface consists of UI, Login, Signup and

home screen. The Internal Interface consists of Firebase database, server using cloud firestore, and Google Maps API.

2.3 Operating Environment

The Apna Banaras App will operate on the Android Operating System. The recommended system specification is Android 9.0 SDK 23+, and the minimum requirements for the system specification is Android 4.0.4 KitKat SDK 18+, with a minimum RAM of 512 MB, and a working internet connection, preferably 4gLTE+.

2.4 User Documentation

Steps to use Apna Banaras App are:
1. New users will register and old users will login.
2. In the Home screen user can select any of the features available.
3. If user wants to search a location, he can go to Places section.
4. If user wants to book a Hotel, he can go to Hotels section.
5. If user wants to know about various events, he can go to Events Calendar.
6. If user wants to submit a review, he can go to review section.
7. Current user can obtain info. About himself, from Profile section.
All options are self-explanatory and easy to use.

2.5 General Constraints

Some general constraints, and misassumptions about dependencies that can be faced in the development are as follows:

- **Time Constraint** – There might be an issue that the time elapsed during development of the application might exceed the allotted period due to external factors, such as, pandemic, and limited accessibility to resources due to it.
- **Server Security** – There might be a potential breach in the server by hackers if server security protocols used in the server development exhibit some kind of backdoor, which might lead to loss of information or data theft.

- **Third Party Services** – Firebase might not continue to provide its free services for free, since being a third-party service, its reliability cannot always be assured.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

This application interacts with user through G.U.I. The Interface is simple easy to handle and self-explanatory.

This app will contain following main screens:

Login – This is the first screen where a user will land if he is not already signed in. This screen contains an easy to fill-in form that allows users to login the app.

Signup – The users who are not already registered will be directed to this screen. This screen also contains an easy to fill-in form that allows, users to register and start using the app.

Home Screen – This is the Main screen where a logged in user will land. This screen contains a card-like menu containing various options like City Map, Places, Restaurants, Accommodations, Event Calendar and Profile. Clicking any of the option will take the user to the screen which provides that specific features.
Home screen will also contain a search box at top to search any location.

UI standards:
- All the buttons will have rounded corners, except the floating buttons.
- Font Family will be Roboto.
- Hero and Lotté animations will be used at specific places.
- Any kind of error like No connection, location not found, wrong Email, wrong password, etc. will be displayed on the bottom of screen using a toast.

3.1.2 Software Interfaces

Following Software components are used for building 'Apna Banaras App'

Software Used	Description
Operating System	We have chosen Android operating system for its best performance and user friendliness.
Database	To save the user and app related information Firebase Cloud Storage has been used.
Server	For authenticating users and communicating with app Cloud Firestore has been used.
Map	To view the city map Google Map API is used.

3.1.3 Hardware Interfaces

This app requires:
- At least 512 mb RAM
- Internet Connection
- Touch Screen Android Device (minimum SDK 23)

3.1.4 Communication Interfaces

This app uses various electronic forms for the purposes like Authenticating users, booking Accommodations, Submitting Review. For payment purposes this app will be connected to razorpay API.
For Navigation purposes this app will be connected to Google Map API.
Communication between Server and app will take place using HTTP request-responses.

3.2 Functional Requirements
3.2.1 Sign up

Purpose: To register a user, so that he/she can access App features.
Input: Name, Email and new Password of user.
Output: Snackbar showing confirmation of registration, and user will be sent to Home Screen.

3.2.2 Login

Purpose: To provide access to App features to already registered users.
Input: Email and Password of user

Output: Snackbar showing login success, and user will will be sent to Home Screen.

3.2.3 Retrieve Password

Purpose: To allow an already registered user to retrieve his/her password.
Input: Email of user
Output: An email containing password of the user sent to the user's email.

3.2.4 Search Location

Purpose: To allow user search various locations.
Input: Location name entered in search box
Output: List of places matching the search key, and location of matching place will be displayed on Google Map.

3.2.5 Submit Reviews

Purpose: To rate various places based on user experience
Input: Star rating and text description about the experience
Output: Overall star rating of Place will be updated, and user experience added to the list of user reviews.

3.2.6 Book Hotel Rooms

Purpose: To allow user to book a particular hotel
Input: user name, age, and phone number, of each customer, then From date, To date, Type and number of Rooms (hotel specific), and other hotel specific information.
Output: After confirmation of the user info, he will be directed to razoprpay API page for payments, after successful payment, user will be displayed a snackbar showing success message, booking info. Will be visible in user profile section, and an email regarding the booking will be sent to the user.

3.2.7 View and Search Events

Purpose: To allow users get information about various events happening in Varanasi within one Year.
Input: user need to tap on Events calendar option in menu, or user can enter the event name in search box
Output: A dialog displaying the Date and Description about the event.

3.3 Non-Functional Requirements

3.3.1 Availability

The system is available 100% for the user and operational 24X7.

3.3.2 Efficiency

Mean Time to Repair (MTTR) – Even if the system fails, the system will be recovered back up within an hour or less.

3.3.3 Accuracy

The system should accurately provide real time information taking into consideration various concurrency issues. The system shall provide 100% access reliability.

3.3.4 Performance

The information is refreshed depending upon whether some updates have occurred or not in the application. The system shall respond to the user in not less than two seconds from the time of the request submitted.

3.3.5 Security

The data of user is stored in databases protected by Google

3.4 Design and Implementation Constraints

- The information of all users, places and events must be stored in a database that is accessible by the application.
- Cloud Firestore will be used as database and server.
- The app must be running 24X7
- Users can access app from any Android device having minimum SDK 23
- The development is constrained to only one programming language Dart.
- The application is further constrained to work only in Online mode

3.5 Other Requirements

NA

4. To Be Determined List
　NA