



**Daffodil**  
*International*  
**University**

## Project Report

Course Code: CSE335

Course Title: Pervasive Computing and Mobile App Development Lab

### Submitted To-

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## Title:

'Explore Ease' Hotel Reservation & Travel App Development.

## Objective:

To develop an Android application that facilitates the booking of hotel rooms by allowing users to choose room types, enter personal details, and confirm reservations. The app integrates with Firebase to store reservation data securely.

## Motivation:

The primary motivation behind this project is to streamline the hotel booking process, providing users with a simple and efficient way to book rooms directly from their mobile devices. This app aims to reduce the complexity and time associated with manual booking processes. Additionally, by leveraging cloud-based storage, the app ensures that user data is managed efficiently and securely, enhancing overall user trust and satisfaction.

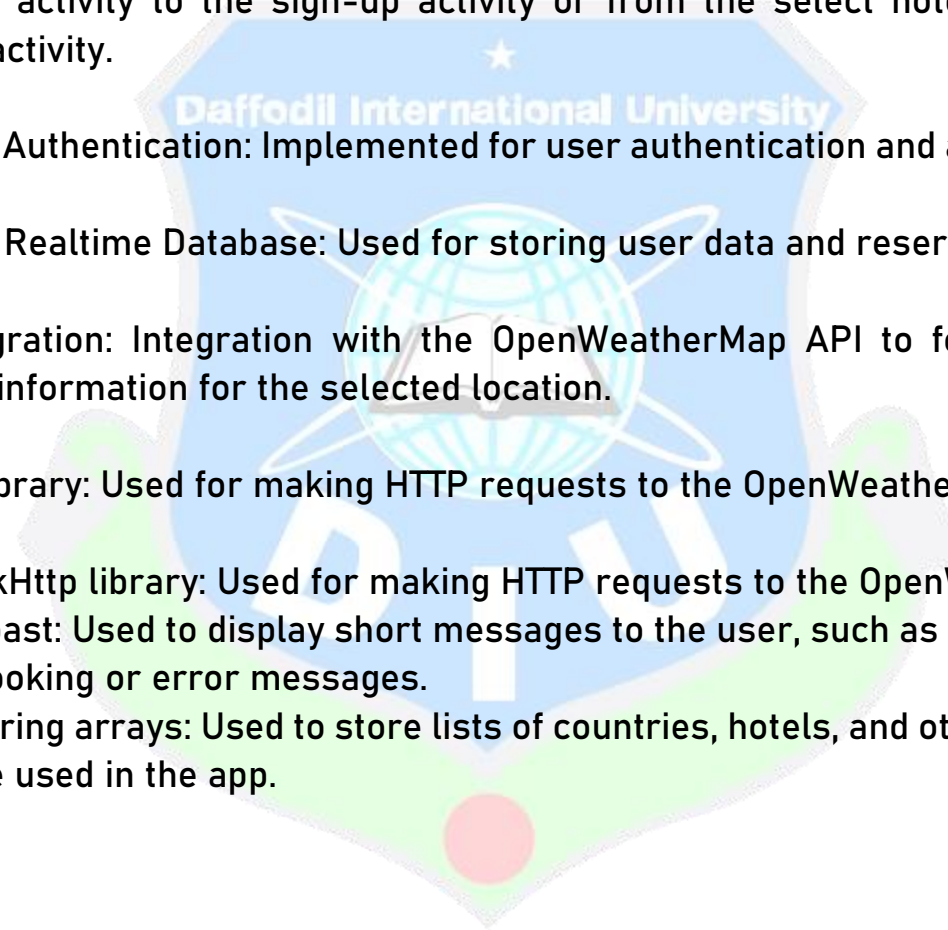
## Key Features:

- **User authentication:** Users can create an account or log in to access the app's features.
- **User Interface:** A clean, user-friendly interface with intuitive navigation. The app's design ensures that users can easily navigate through the booking process without any confusion.
- **Location search:** Users can search for countries and cities to find available hotels.
- **Hotel selection:** Users can view a list of available hotels in the selected location and choose their preferred option.
- **Room Selection:** Users can choose from different room types (Single, Double, Deluxe), each with detailed descriptions to help them make informed decisions.
- **Room details:** Users can view details about different room types, including descriptions and pricing.

- **Reservation process:** Users can select their desired check-in and check-out dates, room type, and complete the reservation process.
- **Reservation confirmation:** Users receive a confirmation of their hotel booking with all the relevant details.
- **Form Entry:** Users are prompted to enter essential details such as their name, address, check-in, and check-out dates to ensure the booking is tailored to their requirements.
- **Firestore Integration:** The app utilizes Firestore for real-time database storage, ensuring that reservation data is stored securely and can be accessed instantly.
- **Dynamic Updates:** Room details are dynamically updated based on user selection, providing real-time feedback and enhancing the user experience.
- **Weather Overview:** The Weather Overview key feature for a hotel reservation app involves integrating real-time weather information for the location of the hotel. The app integrates with the OpenWeatherMap API to display weather information for the selected location.
- **Confirmation and Error Handling:** The app provides immediate feedback to users on the success or failure of their reservation, ensuring that any errors are communicated clearly and can be corrected promptly.

### Project Components:

- 1) **User interface components:** Buttons, text fields, spinners, radio buttons, and layouts for displaying information and accepting user input.
  - **Buttons:** Used for navigation between activities and for performing actions such as booking a hotel.
  - **Text Fields:** Used for user input, such as entering email and password for sign-up or selecting dates for the reservation.
  - **Spinners:** Used for selecting options like countries, hotels, and room types.
  - **Radio Buttons:** Used for selecting gender during sign-up.
  - **TextViews:** Used for displaying information, such as hotel details, reservation confirmation, and weather information.
  - **ImageViews:** Used for displaying icons and images.

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- 2) Listeners and event handlers: `OnClickListeners` for handling button clicks and other user interactions.
- `OnClickListeners`: Used to handle button clicks and other user interactions, such as navigating to the next activity or performing actions like booking a hotel.
  - `View.OnClickListener`: Used to handle clicks on specific views, such as buttons or text fields.
- 3) Intents: Used for navigating between different activities within the app such as from the login activity to the sign-up activity or from the select hotel activity to the confirm activity.
- 4) Firebase Authentication: Implemented for user authentication and account creation.
- 5) Firebase Realtime Database: Used for storing user data and reservation details.
- 6) API integration: Integration with the OpenWeatherMap API to fetch and display weather information for the selected location.
- 7) `OkHttp` library: Used for making HTTP requests to the OpenWeatherMap API.
- `OkHttp` library: Used for making HTTP requests to the OpenWeatherMap API.
  - `Toast`: Used to display short messages to the user, such as confirmation of a booking or error messages.
  - String arrays: Used to store lists of countries, hotels, and other data that can be used in the app.

### Challenges:

1. Implementing a user-friendly and intuitive interface for the reservation process.
2. Integrating Firebase Authentication and Real-time Database for secure user authentication and data storage.
3. Handling various edge cases and validating user input to ensure a smooth user experience.

4. Optimizing the app's performance and responsiveness, especially when dealing with network requests and data retrieval.
5. Implementing error handling and displaying appropriate error messages to the user.
6. Ensuring data persistence and maintaining user sessions across app launches.

### Conclusion:

The Hotel Reservation App project successfully demonstrates the development of an Android application that allows users to book hotel reservations in different locations. The app incorporates various components and features, including user authentication, location search, hotel selection, room details, reservation confirmation, and weather information display. By leveraging Firebase Authentication and Real-time Database, the app ensures secure user authentication and efficient data storage. The integration of the OpenWeatherMap API enhances the user experience by providing weather information for the selected location. The project showcases the implementation of essential Android development concepts, such as user interface design, event handling, activity navigation, data storage, and API integration. Overall, this project provides a practical and user-friendly solution for travelers to easily book hotel accommodations.