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MOBILE COMPUTING REPORT

**Project Title:** Flight Management System

**Project Description:**

This Flutter application, integrated with Firebase, provides a user-friendly platform for flight booking, hotel reservations, and travel planning. Key features include user authentication, flight search and booking, hotel information, and basic passenger and visa details.

**Key Features:**

1. **User Authentication:**
   * **Firebase Authentication:** Securely handles user registration and login using email/password, Google, or other supported providers.
   * **User Data Storage:** Stores user profiles (name, email, phone, etc.) in Firebase Firestore for personalized experiences.
2. **Flight Booking:**
   * **Flight Search:** Allows users to search for flights based on origin, destination, travel dates, and number of passengers.
   * **Flight Availability:** Retrieves real-time flight availability data from a suitable flight API (e.g., Amadeus, Skyscanner) and displays it in a user-friendly format.
   * **Booking Engine:** Enables users to select flights, choose seats (if available), and proceed to payment integration (e.g., using a payment gateway like Stripe).
   * **Booking Confirmation:** Generates and displays booking confirmations with flight details, passenger information, and payment summary.
3. **Hotel Information:**
   * **Hotel Search:** Allows users to search for hotels based on destination, check-in/check-out dates, and preferred amenities.
   * **Hotel Details:** Displays hotel information, including images, descriptions, amenities, and guest reviews.
   * **Hotel Booking (Optional):** Integrates with a hotel booking API or allows users to book directly through the hotel's website.
4. **Passenger Details:**
   * **Passenger Information:** Collects essential passenger details such as name, age, nationality, and passport information.
   * **Visa Information (Optional):** Provides a section for users to input visa requirements and relevant information.

**Firebase Integration:**

* **Firestore:** Used to store user profiles, booking history, and potentially hotel information if fetched from an external API.
* **Authentication:** Handles user authentication and authorization.
* **Cloud Functions (Optional):** Can be used for backend logic, such as sending email confirmations, processing payments, or handling real-time updates.

**Technical Implementation:**

* **Flutter Framework:** Utilizes Flutter's rich set of widgets and cross-platform capabilities for building the user interface.
* **Dart Programming Language:** Used to develop the application logic and interact with Firebase.
* **State Management:** Implements a suitable state management solution (e.g., Provider, BLoC) to manage application state and data flow.
* **API Integration:** Integrates with external APIs for flight availability, hotel information, and potentially payment processing.
* **User Interface (UI) Design:** Focuses on creating a clean, intuitive, and visually appealing user interface.

**Additional Considerations:**

* **Error Handling and User Feedback:** Implement robust error handling and provide informative messages to users.
* **Data Security:** Ensure secure storage and transmission of user data, especially sensitive information.
* **Testing:** Conduct thorough testing to identify and fix bugs before release.
* **Maintenance and Updates:** Regularly update the application with new features, bug fixes, and security enhancements.