

DBMS Deadline 1
Business requirements
Traveling Website
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Chapter 1

Project Overview

1.1 Objective

Our application is a travel management system that provides different travel packages, transportation options, and accommodation choices. Appropriately, different prices will be calculated for various combinations of these components. Our application will provide a smooth experience to travelers when booking packages for tourist locations. We will also provide interfaces to travel agencies and accommodation providers so that they can list their services efficiently.

1.2 Problem Statement

Travelers in today's hectic world face many challenges when planning their trip, which includes the time-consuming process of comparing prices and finding the best modes of transportation and accommodation through different providers.

With a wide range of transportation options alongside different accommodation choices, it's hard for users to find deals that match their preferences, especially their budgets.

Most existing travel platforms focus on a specific service, such as flight booking or hotel reservations. However, they fail to provide a one-stop solution that provides an efficient way to plan their journey. As a result, travelers are forced to navigate between multiple websites.

1.3 Stakeholders

The most important stakeholders for our application are:

1. **Customers:** Customers want a one-stop solution for their travel needs instead of visiting various sites. Our site will provide an extensive selection of travel and accommodation options.
2. **Tourism Agencies:** Tourism agencies will provide itineraries for tourism locations. These will be detailed day-wise plans for tourist locations and the best ways to explore them. However, they won't include travel or accommodation options.
3. **Transportation Providers:** Transportation providers like airlines and train agencies will list their travel options for different departure and destination locations and timings. Appropriately, the prices will vary. Users can select the ones that suit their preferences.
4. **Accommodation Providers:** Accommodation providers, such as hotels, resorts, etc., will provide travelers with places to stay. They will have different locations, prices, and distances to tourist locations. Users can select the ones that suit their preferences. They will have a separate interface on the site to list their services.

1.4 Functional Requirements

1. **User Management:** Users can sign up with details like name, contact number, email, and password. They can also update their details later as they feel fit.
2. **Packages:** The travel agencies will provide only an itinerary. This itinerary will contain details about the most popular tourist attractions at that location and the best way to visit them. The user cannot change these.
3. **Travel and Accommodation:** As mentioned above, tourism packages do not include travel or accommodations. So, users can choose their transport and accommodations according to their budget and preferences. For the same, we will provide an extensive database of flights, trains, and accommodation options.

4. **Bookings Management:** We will keep track of user bookings, including the package they choose, their travel choices, and their accommodation options.
5. **Payment Management:** The system will include a dummy payment feature allowing users to complete transactions online using various means of online payment, such as credit/debit cards.
6. **Tourism Agencies Management:** Tourism agencies can create travel itineraries for different destinations with different travel days and user preferences.
7. **Search:** Provide users with search functionality, enabling them to search different travel packages and itineraries according to their preferences for duration, expenses, travel locations, etc.
8. **Recommendation:** Our system would provide recommendations to users based on different metrics like most popular, most rated, most booked, etc.
9. **Administrator Management:** The administrator can handle user inquiries and remove packages and hotels based on user feedback and responses. Administrators can manage the website's data, cancellation and refund requests, and keep track of payments.
10. **Reviews / Feedback and Report:** Users can rate and review their travel experience, which will help other users book the best hotels/transport/packages. Users can also report issues like fraud or poor service, based on which administrators can take appropriate action.
11. **Package Comparisons:** Users can compare travel packages for a destination from different agencies based on their reviews, prices, and activities, which helps users book the best package.
12. **Filters:** Users can fine-tune their search results based on criteria such as location, price, travel dates and timing, transport type, accommodation type, ratings, and reviews.
13. **Dynamic Pricing:** The system adjusts booking prices based on demand and availability. For example, popular/high-demand tour package prices increase due to limited availability and season.

14. **Coupons:** Users can apply promotional codes to take advantage of offers and discounts when booking.
15. **Trip Cancellation and Refund Policies:** Users can cancel bookings based on specific guidelines. Refund eligibility depends on factors such as cancellation time and fare type (refundable/non-refundable) and might include cancellation fees.

1.5 Assumptions

1. We have a ternary relationship "Makes" between Customer, Coupon and Booking. There is an arrow from "Makes" to Customer and from "Makes" to Coupon. It means that for a given Booking, a Customer can only avail one Coupon. Furthermore, each booking is associated with exactly one customer.
2. The Customer will "Make" a Booking. This Booking has three components - accommodation (Hotel entity), transport (Train or Airplane route) and travel package (Itinerary). There are corresponding attributes - Room ID, Transport ID and Itinerary ID. It is possible for one of these attributes to be NULL in case the user chooses not to avail our options.
3. The Admin Entity is not related to other entities. Instead, it is a management role that overlooks the maintenance and upkeep of the website.
4. Booking is a weak entity because it only exists when a customer creates it. It is not a stand-alone entity. Similarly, Payment is a weak entity because it only exists when a booking is created.
5. Reviews will be associated with Booking but will also contain a Item ID attribute to specify which of the three components (Accommodation, Transport, Itinerary) they're unsatisfied with.
6. The Description of the itinerary provided by the Tourism Agency will have a specific day-wise format. But this is not enforced by the database. It will be done in the front-end at the time of data entry.

Chapter 2

Entities and Relationships

2.1 Entities

- (a) Customer
 - i. Customer ID: Primary key
 - ii. Name: Composite
 - A. First Name
 - B. Last Name
 - iii. Contact Details: Composite
 - A. Email Address
 - B. Mobile Number
 - iv. Password
- (b) Admin
 - i. Admin ID: Primary key
 - ii. Name: Composite
 - A. First Name
 - B. Last Name
 - iii. Contact Details: Composite
 - A. Email Address
 - B. Mobile Number
 - iv. Password

- (c) Tourism Agency
 - i. Agency ID: Primary key
 - ii. Name
 - iii. Location
 - iv. Contact Details: Composite
 - A. Email Address
 - B. Mobile Number
- (d) Itinerary
 - i. Itinerary ID: Primary key
 - ii. Agency ID: Foreign Key (references Tourism Agency)
 - iii. Description
 - iv. Duration
 - v. Price
 - vi. Destination
- (e) Transport Provider
 - i. Provider ID: Primary key
 - ii. Name
 - iii. Contact Details: Composite
 - A. Email Address
 - B. Mobile Number
 - iv. Service Type
- (f) Booking (Weak entity)
 - i. Booking ID: Primary key
 - ii. Customer ID: Foreign Key (references Customer)
 - iii. Itinerary ID: Foreign Key (references Itinerary)
 - iv. Payment ID: Foreign Key (references Payment)
 - v. Transport ID: Foreign Key (references Airplane Route or Train Route)
 - vi. Room ID: Foreign Key (references Hotel)
 - vii. Transport Type
 - viii. Status
 - ix. Booking Date

- (g) Payment (Weak entity)
 - i. Payment ID: Primary key
 - ii. Amount
 - iii. Payment Method
 - iv. Payment Status
 - v. Booking ID: Foreign Key (references Booking)
- (h) Train
 - i. Train ID: Primary key
 - ii. Name
 - iii. Capacity
 - iv. Provider ID: Foreign Key (references Transport Provider)
- (i) Train Route
 - i. Route ID: Primary Key
 - ii. Price
 - iii. Available Seats
 - iv. Travel Time: Derived attribute
 - v. Arrival Details
 - A. Location
 - B. Time
 - C. Date
 - vi. Departure Details
 - A. Location
 - B. Time
 - C. Date
 - vii. Train ID: Foreign Key (references Train)
- (j) Airplane
 - i. Airplane ID: Primary key
 - ii. Name
 - iii. Capacity
 - iv. Provider ID: Foreign Key (references Transport Provider)
- (k) Airplane Route

- i. Route ID: Primary Key
 - ii. Price
 - iii. Available Seats
 - iv. Travel Time: Derived attribute
 - v. Arrival Details
 - A. Location
 - B. Time
 - C. Date
 - vi. Departure Details
 - A. Location
 - B. Time
 - C. Date
 - vii. Airplane ID: Foreign Key (references Airplane)
- (l) Accommodation Provider
 - i. Provider ID: Primary key
 - ii. Name
 - iii. Contact Details: Composite
 - A. Email Address
 - B. Mobile Number
- (m) Hotel
 - i. Hotel ID: Primary key
 - ii. Name
 - iii. Location
 - iv. Price per Night
 - v. Contact Details: Composite
 - A. Email Address
 - B. Mobile Number
 - vi. Total Rooms
 - vii. Available Rooms
 - viii. Hotel Description
 - ix. Provider ID: Foreign Key (references Accommodation Provider)
- (n) Coupon

- i. Code: Primary key
 - ii. Discount Percentage
 - iii. Expiry Date
- (o) Review
 - i. Review ID: Primary key
 - ii. Comment
 - iii. Rating
 - iv. Booking ID: Foreign Key (references Booking)
 - v. Item ID: Foreign Key (references Hotel, Airplane, Train, Itinerary, Booking)

2.2 Relationships

- (a) Makes (Ternary)
 - i. Customer makes Booking with a specific Coupon (may be NULL)
- (b) Has
 - i. Booking has Payment
- (c) Includes
 - i. Booking includes Itinerary
 - ii. Booking includes Hotel
 - iii. Booking includes Train Route
 - iv. Booking includes Airplane Route
- (d) Provides
 - i. Customer provides Review for a Booking (ternary)
 - ii. Transport Provider provides Train
 - iii. Transport Provider provides Airplane
 - iv. Accommodation Provider provides Hotel
- (e) Follows
 - i. Train follows Train Route
 - ii. Airplane follows Airplane Route

- (f) Creates
 - i. Tourism Agency creates Itinerary

Chapter 3

Sources

1. ChatGPT - We took some help for LaTeX syntax. We also used it to clarify the relationships between some of our entities.
2. Publicly available past-year GitHub Projects

