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**Department of Computer Science & Engineering**

**PROJECT TITLE : Tourism Database Project *– Tour Underrated***

***Places in Bangladesh at Low Cost.***

**COURSE TITLE :** Database Management System Lab.

**COURSE CODE :** CSE 212

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**Section : A(A2)**

**Group No : 02**

**Members are : 1.** Md. Piash Khondokar [ 23101031 ]

**2.** Shanjida [23101036 ]

**3.** Sanjid Shahriar Sajin [23101038 ]

**4.** Hamdil Hasan Partho [ 23101040 ]

**5.** Sumaya Akter Lima[23101041 ]

**Submitted To :**

Nadeem Ahmed

Assistant Professor,

Department of Computer Science and Engineering,

University Of Asia Pacific.

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**Database Name : Tour Underrated Places in Bangladesh at Low Cost**

## **Introduction :**

This project focuses on designing a comprehensive relational database system to manage and streamline information about underrated, budget-friendly tourist destinations in Bangladesh. Aimed at promoting sustainable and affordable tourism, the system offers structured data on destinations, accommodations, attractions, transportation, tour packages, and guides. By highlighting lesser known yet culturally rich locations, the database enables travelers to make informed decisions while encouraging regional tourism development and economic inclusion. The platform not only enhances trip planning efficiency but also supports the discovery of hidden treasures across the country.

## **Tables :**

* **Tourist\_Spots**
* **Tours**
* **Tour\_Guides**
* **Tour\_Guide\_Assignments**
* **Customers**
* **Bookings**
* **Reviews**
* **Transportation**
* **Spot\_Transport\_Links**
* **Discounts**
* **Local\_Shops**
* **Emergency\_Contacts**
* **Online\_Payment**
* **Accommodations**
* **Accommodation\_Bookings**

## **Table Role :**

| **Table Name** | **Role/Description** |
| --- | --- |
| Tourist\_Spots: | Stores information about tourist destinations (name, location, entry fee, etc.) |
| Tours: | Contains details of tour packages including fee, duration, and linked destinations |
| Tour\_Guides: | Stores guide information like name, contact details, language skills, and experience |
| Tour\_Guide\_Assignments | : Associates tour guides with specific tours |
| Customers: | Maintains customer data including contact info and language preference |
| Bookings: | Records bookings made by customers for specific tours |
| Reviews: | Collects reviews and ratings from customers for tourist spots |
| Transportation: | Details available transport options, their cost, and availability |
| Spot\_Transport\_Links: | Links transport methods to specific tourist spots |
| Discounts: | Holds data about available discounts for tours with applicable time frames |
| Local\_Shops: | Lists nearby shops and their offered product types |
| Emergency\_Contacts: | Stores emergency contact numbers linked to each tourist spot |
| Online\_Payment: | Manages digital payment transactions for customer bookings |
| Accommodations | Stores information about available accommodations (hotels, resorts, guest houses) for each tourist spot, including name, type, address, price per night, and contact number. |
| Accommodation\_Bookings | Links customer bookings to specific accommodations and records details such as check-in date, check-out date, total nights, and total cost of the stay. |

## **Entity Relationship :**

* **Tourist\_Spots**: Represents the tourist spots with information like name, description, location, entry fees, and best time to visit.
* **Tours**: Contains details about tours, including tour name, spot ID, tour fee, and duration.
* **Tour\_Guides**: Stores information about guides, including their names, contact info, language skills, and experience.
* **Tour\_Guide\_Assignments**: Links tours to their assigned guides.
* **Customers**: Includes customer details like name, contact info, and preferred language.
* **Bookings**: Stores booking details like booking date, cost, customer ID, and tour ID.
* **Reviews**: Allows customers to provide reviews and ratings for tourist spots.
* **Transportation**: Provides details about available transportation, costs, and availability.
* **Spot\_Transport\_Links**: Links transportation options to specific tourist spots.
* **Discounts**: Contains information about discounts available for specific tours.
* **Local\_Shops**: Lists shops near tourist spots and their offerings.
* **Emergency\_Contacts**: Stores emergency contact details for each spot.
* **Online\_Payment**: Handles payment information for bookings.
* **Accommodations**: Lists available accommodations (such as hotels, resorts, and guest houses) near each tourist spot, including details like name, type, address, price per night, and contact number.
* **Accommodation\_Bookings:** Links customer bookings to specific accommodations, recording details such as check-in and check-out dates, total nights stayed, and total accommodation cost.

## **ER Diagram :**

## **Schema Diagram :**

## **DML Code(Tables and Attributes) :**

**1. Tourist\_Spots Table**

Stores information about various tourist spots.

* **Spot\_ID** (PK): Unique identifier for each tourist spot.
* **Spot\_Name**: Name of the tourist spot.
* **Location**: Location of the tourist spot.
* **Description**: Brief description of the spot.
* **Entry\_Fee**: Entry fee for the spot (default: 0.00).
* **Best\_Time\_to\_Visit**: Recommended time to visit.

**2. Tours Table**

Stores details about tours offered for tourist spots.

* **Tour\_ID** (PK): Unique identifier for each tour.
* **Tour\_Name**: Name of the tour.
* **Spot\_ID** (FK): Associated tourist spot (linked to Tourist\_Spots).
* **Tour\_Fee**: Fee for the tour (default: 0.00).
* **Duration**: Duration of the tour.

**3. Tour\_Guides Table**

Stores information about tour guides.

* **Guide\_ID** (PK): Unique identifier for each guide.
* **Guide\_Name**: Name of the tour guide.
* **Contact\_Info**: Contact details (unique).
* **Language\_Skills**: Languages the guide can speak.
* **Experience\_Years**: Years of experience (must be ≥ 0).

**4. Tour\_Guide\_Assignments Table**

Links guides to specific tours.

* **Assignment\_ID** (PK): Unique identifier for each assignment.
* **Tour\_ID** (FK): Associated tour (linked to Tours).
* **Guide\_ID** (FK): Associated guide (linked to Tour\_Guides).

**5. Customers Table**

Stores information about customers.

* **Contact\_Info**: Contact details (unique).
* **Customer\_ID** (PK): Unique identifier for each customer.
* **Customer\_Name**: Name of the customer.
* **Preferred\_Language**: Language preferred by the customer.

**6. Bookings Table**

Stores booking details for tours.

* **Booking\_ID** (PK): Unique identifier for each booking.
* **Customer\_ID** (FK): Associated customer (linked to Customers).
* **Tour\_ID** (FK): Associated tour (linked to Tours).
* **Booking\_Date**: Date of booking.
* **Total\_Cost**: Total cost of the booking (default: 0.00).

**7. Reviews Table**

Stores reviews given by customers for tourist spots.

* **Review\_ID** (PK): Unique identifier for each review.
* **Spot\_ID** (FK): Associated tourist spot (linked to Tourist\_Spots).
* **Customer\_ID** (FK): Associated customer (linked to Customers).
* **Review\_Text**: Review content.
* **Rating**: Rating given (1 to 5).

**8. Transportation Table**

Stores details about transportation options.

* **Transport\_ID** (PK): Unique identifier for each transport option.
* **Transport\_Type**: Type of transport (e.g., Bus, Taxi).
* **Cost\_Per\_Trip**: Cost per trip (default: 0.00).
* **Availability**: Availability details.

**9. Spot\_Transport\_Links Table**

Links transportation options to tourist spots.

* **Link\_ID** (PK): Unique identifier for each link.
* **Spot\_ID** (FK): Associated tourist spot (linked to Tourist\_Spots).
* **Transport\_ID** (FK): Associated transport option (linked to Transportation).
* **Comments**: Additional details.

**10. Discounts Table**

Stores discount details for tours.

* **Discount\_ID** (PK): Unique identifier for each discount.
* **Tour\_ID** (FK): Associated tour (linked to Tours).
* **Discount\_Percentage**: Percentage discount (0 to 100).
* **Start\_Date**: Start date of the discount.
* **End\_Date**: End date of the discount.

**11. Local\_Shops Table**

Stores details about shops near tourist spots.

* **Shop\_ID** (PK): Unique identifier for each shop.
* **Shop\_Name**: Name of the shop.
* **Spot\_ID** (FK): Associated tourist spot (linked to Tourist\_Spots).
* **Product\_Type**: Type of products sold.

**12. Emergency\_Contacts Table**

Stores emergency contact details for tourist spots.

* **Contact\_ID** (PK): Unique identifier for each contact.
* **Spot\_ID** (FK): Associated tourist spot (linked to Tourist\_Spots).
* **Contact\_Type**: Type of contact (e.g., Police, Hospital).
* **Contact\_Number**: Contact number (unique).

**13. Online\_Payment Table**

Stores details about online payments for bookings.

* **Payment\_ID** (PK): Unique identifier for each payment.
* **Booking\_ID** (FK): Associated booking (linked to Bookings).
* **Payment\_Date**: Date of payment.
* **Payment\_Amount**: Amount paid.
* **Payment\_Method**: Method of payment.
* **Payment\_Status**: Status of the payment.

**14. Accommodations Table**

The Accommodations table stores information about all types of accommodations (such as hotels, resorts, and guest houses) available near tourist spots.

* **Accommodation\_ID (Primary Key): Unique ID for each accommodation.**
* **Accommodation\_Name: Name of the accommodation (e.g., Sajek Resort, Nilgiri Guest House).**
* **Spot\_ID (Foreign Key): ID of the related tourist spot (linked to the Tourist\_Spots table).**
* **Type: Type of accommodation (Hotel, Resort, Guest House, etc.).**
* **Address: Address or location of the accommodation.**
* **Price\_Per\_Night: Price for one night’s stay.**
* **Contact\_Number: Phone number for booking or inquiries.**

**15. Accommodation\_Bookings Table**

The Accommodation\_Bookings table connects customer bookings to specific accommodations and records the details of their stay.

* **Accommodation\_Booking\_ID (Primary Key): Unique ID for each accommodation booking.**
* **Booking\_ID (Foreign Key): ID of the tour booking (linked to the Bookings table).**
* **Accommodation\_ID (Foreign Key): ID of the accommodation (linked to the Accommodations table).**
* **Check\_In: Date of check-in.**
* **Check\_Out: Date of check-out.**
* **Total\_Nights: Total number of nights stayed.**
* **Total\_Cost: Total cost for the accommodation stay.**

## **Queries :**

Query 1. List all tourist spots with their entry fees

SELECT Spot\_Name, Location, Entry\_Fee

FROM Tourist\_Spots

ORDER BY Spot\_Name;

Result:



Query 2. Show all tours and their related tourist spot

SELECT T.Tour\_Name, S.Spot\_Name, T.Tour\_Fee, T.Duration

FROM Tours T

## JOIN Tourist\_Spots S ON T.Spot\_ID = S.Spot\_ID;

## Result:

A screenshot of a tour schedule

AI-generated content may be incorrect.

Query 3. Find all available guides and their experience

SELECT Guide\_Name, Language\_Skills, Experience\_Years

## FROM Tour\_Guides;

Result:

A screenshot of a computer

AI-generated content may be incorrect.

Query 4. See which guide is assigned to which tour

SELECT TG.Guide\_Name, T.Tour\_Name

FROM Tour\_Guide\_Assignments GA

JOIN Tour\_Guides TG ON GA.Guide\_ID = TG.Guide\_ID

JOIN Tours T ON GA.Tour\_ID = T.Tour\_ID

## ORDER BY TG.Guide\_Name;

## Result:



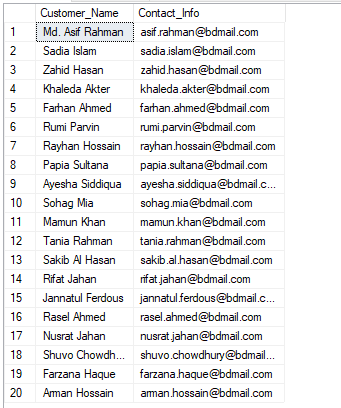
Query 5. List all customers who booked a tour

SELECT DISTINCT C.Customer\_Name, C.Contact\_Info

FROM Bookings B

## JOIN Customers C ON B.Customer\_ID = C.Customer\_ID;

## Result :



Query 6. Show bookings with customer, tour name and booking date

SELECT C.Customer\_Name, T.Tour\_Name, B.Booking\_Date, B.Total\_Cost

FROM Bookings B

JOIN Customers C ON B.Customer\_ID = C.Customer\_ID

JOIN Tours T ON B.Tour\_ID = T.Tour\_ID

## ORDER BY B.Booking\_Date DESC;

## Result:

A screenshot of a computer

AI-generated content may be incorrect.

Query 7. Display reviews for any spot (example: Sajek Valley)

SELECT C.Customer\_Name, R.Review\_Text, R.Rating

FROM Reviews R

JOIN Customers C ON R.Customer\_ID = C.Customer\_ID

JOIN Tourist\_Spots S ON R.Spot\_ID = S.Spot\_ID

## WHERE S.Spot\_Name = 'Sajek Valley';

Result:

A screenshot of a computer

AI-generated content may be incorrect.

Query 8. List all transport types available for a spot (example: Cox's Bazar)

SELECT S.Spot\_Name, T.Transport\_Type, T.Cost\_Per\_Trip

FROM Spot\_Transport\_Links STL

JOIN Tourist\_Spots S ON STL.Spot\_ID = S.Spot\_ID

JOIN Transportation T ON STL.Transport\_ID = T.Transport\_ID

## WHERE S.Spot\_Name = 'Cox''s Bazar';

## Result:

A screenshot of a computer

AI-generated content may be incorrect.

Query 9. Show current discounts for tours (if any)

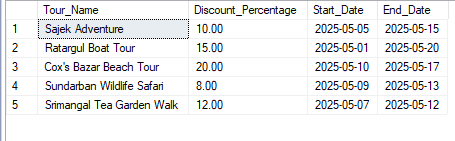
SELECT T.Tour\_Name, D.Discount\_Percentage, D.Start\_Date, D.End\_Date

FROM Discounts D

JOIN Tours T ON D.Tour\_ID = T.Tour\_ID

## WHERE GETDATE() BETWEEN D.Start\_Date AND D.End\_Date;

## Result:

****

Query 10. List all accommodations available at a spot (example: Srimangal)

SELECT S.Spot\_Name, A.Accommodation\_Name, A.Type, A.Price\_Per\_Night

FROM Accommodations A

JOIN Tourist\_Spots S ON A.Spot\_ID = S.Spot\_ID

## WHERE S.Spot\_Name = 'Srimangal';

## Result:

A screenshot of a computer

AI-generated content may be incorrect.

Query 11. Show all emergency contacts for a spot (example: Sundarbans)

SELECT S.Spot\_Name, E.Contact\_Type, E.Contact\_Number

FROM Emergency\_Contacts E

JOIN Tourist\_Spots S ON E.Spot\_ID = S.Spot\_ID

WHERE S.Spot\_Name = 'Sundarbans';

Result:

A screenshot of a computer

AI-generated content may be incorrect.

Query 12. Find all bookings with accommodation details (customer, hotel, check-in, check-out)

SELECT C.Customer\_Name, A.Accommodation\_Name, AB.Check\_In, AB.Check\_Out, AB.Total\_Cost

FROM Accommodation\_Bookings AB

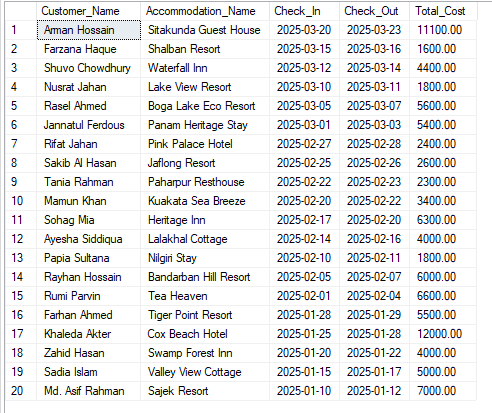
JOIN Bookings B ON AB.Booking\_ID = B.Booking\_ID

JOIN Customers C ON B.Customer\_ID = C.Customer\_ID

JOIN Accommodations A ON AB.Accommodation\_ID = A.Accommodation\_ID

ORDER BY AB.Check\_In DESC;

## Result:



Complex Engineering Problems (CEP) Mapping:

**Knowledge Profile(K) (CEP Attributes)**

| **Attribute** | **Description** |
| --- | --- |
| K1 | A systematic, theory-based understanding of the natural sciences applicable to the discipline |
| K2 | Conceptually based mathematics, numerical analysis, statistics and the formal aspects of computer science |
| K3 | A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline |
| K4 | Specialist knowledge that provides theoretical frameworks and bodies of knowledge for accepted practice |
| K5 | Knowledge that supports engineering design in a practice area |
| K6 | Knowledge of engineering practice (technology) in the practice areas in the engineering discipline |
| K7 | Role of engineering in society, issues in practice, ethics, social, economic, cultural, environmental impact |
| K8 | Engagement with selected knowledge in the research literature of the discipline |

**Mapping CEP Attributes to Project :**

**K1: Theory-based Understanding of Natural Sciences**

* Recognizing the geographical, environmental, and seasonal factors (e.g., **Best\_Time\_to\_Visit** for each spot).
* Ensures tourists receive information relevant to nature, climate, and local conditions.

**K2: Mathematics, Analysis, Computer Science**

* Database design (tables, keys, constraints), SQL query formulation, and data integrity.
* Analysis of tourist flows, pricing, reviews, and optimization of discounts using stored data.

**K3: Engineering Fundamentals**

* Relational schema design (primary/foreign keys, normalization) ensures robust, error-free data management.
* Logical connections between entities: Tours, Spots, Bookings, Guides, Transportation, etc.

**K4: Specialist Knowledge**

* Applying tourism domain expertise to structure data (e.g., linking shops, accommodations, transport to spots).
* Integrating best practices from both software and tourism fields.

**K5: Design Knowledge**

* Schema supports real-world operations: managing bookings, assigning guides, handling payments and reviews.
* Enables efficient, low-cost tour management and customer service.

**K6: Engineering Practice (Technology)**

* Implementation of online booking, payment, and guide assignment systems.
* Use of technology for seamless integration of information and services.

**K7: Engineering in Society, Ethics, Professionalism**

* Promotes tourism in lesser-known regions, supporting local businesses and communities.
* Includes safety (emergency contacts), privacy (unique customer info), and sustainability (eco-friendly options).

**K8: Engagement with Research**

* Incorporates research on tourism trends, customer needs, and cost-effective solutions.
* Schema evolves based on new findings and user feedback.

**Example Table Mapping**

| **CEP** | **Example Table/Feature** | **Explanation** |
| --- | --- | --- |
| K1 | Tourist\_Spots (Best\_Time\_to\_Visit, Location) | Scientific/geographical information for tourists |
| K2 | SQL Queries, Discounts, Reviews | Data analytics, optimization, computer science application |
| K3 | Primary/Foreign Keys, Constraints | Systematic, logical database design |
| K4 | All normalized tables | Applied tourism and IT knowledge |
| K5 | Bookings, Assignments, Transport | Practical tour management functions |
| K6 | Online\_Payment, Accommodations | Technology solutions in practice |
| K7 | Emergency\_Contacts, Shops, Reviews | Societal, safety, sustainability and ethics |
| K8 | Discounts, evolving schema | Based on research and industry best practices |

Complex Engineering Problem (CEP) Problem Solving Mapping(P) :

**Table: Mapping Project to CEP Problem Solving Attributes**

| **Attribute** | **Medium Connection to Project** |
| --- | --- |
| P1: Depth of knowledge required | The project needs solid expertise in database design, normalization, and integrating tourism-specific requirements. Understanding relational modeling, data integrity, and secure payment processing is essential for building the system. |
| P2: Range of conflicting requirements | There are competing needs: providing low-cost options for tourists while supporting local business profits, ensuring usability, maintaining privacy, and delivering reliable technical solutions. Trade-offs are required between cost, comfort, sustainability, and convenience. |
| P3: Depth of analysis required | The system design is not straightforward—it requires innovative approaches for handling discounts, dynamic bookings, seasonal tourism patterns, and emergency scenarios. Solutions must be tailored to Bangladesh’s unique tourism context. |
| P4: Familiarity of issues | The project addresses uncommon problems: promoting underrated destinations, connecting local businesses, and boosting rural economic activity—all less familiar in typical tourism apps. |
| P5: Extent of applicable codes | It must adhere to standards for data security, payment methods, and possibly comply with local regulations for tourism and commerce. Online payment integration especially demands attention to industry practices. |
| P6: Stakeholder involvement & conflicts | Many different stakeholders are involved: tourists, guides, shopkeepers, transport services, hotels, and local authorities. Their interests often conflict, and the system must accommodate and balance these varied needs. |
| P7: Interdependence | The platform consists of multiple interconnected modules—tours, bookings, guides, payments, reviews, accommodations, shops, transport, and discounts. Each part depends on others for smooth operation and complete service. |

**Summary Table**

| **CEP Attribute** | **Project Connection Example** |
| --- | --- |
| P1 | Complex relational schema, advanced SQL, payment integration (requires deep knowledge) |
| P2 | Balancing low-cost, comfort, business needs, privacy, and technical feasibility |
| P3 | Creative solutions for dynamic discounts, local economic engagement, new spot promotion |
| P4 | Integration of local shops, emergency contacts, and lesser-known spots |
| P5 | Payment security, data privacy, tourism regulations |
| P6 | Tourists, guides, shopkeepers, transport, authorities—diverse, sometimes conflicting needs |
| P7 | Integrated system: bookings, payments, reviews, transport, discounts, accommodations |

Complex Engineering Activities (A) Mapping

| **Attribute** | **Connection to Project** |
| --- | --- |
| **A1: Range of resources** | The project uses diverse resources: people (tourists, guides, shop owners), money (tour fees, payments, discounts), technology (database, online bookings/payments), materials (accommodations, transport), and information (tourist spot data, reviews, emergency contacts). |
| **A2: Level of interaction** | Significant interactions must be resolved between different technical, organizational, and real-world issues: conflicting needs of tourists, local businesses, transport providers, and authorities (e.g., cost vs. quality, privacy vs. accessibility, business vs. service). |
| **A3: Innovation** | The project applies database and tourism management principles in creative ways: integrating local businesses, offering dynamic discounts, and connecting lesser-known spots using novel, research-informed approaches. |
| **A4: Consequences for society and the environment** | The system impacts local economies by promoting rural tourism and supporting local businesses, and also addresses sustainability (eco-tourism, low-cost travel, safety). Decisions in the database design influence economic opportunity and environmental outcomes. |
| **A5: Familiarity** | The project goes beyond standard travel apps by applying engineering/database principles to new problems, like boosting rural tourism, integrating local shops, and managing complex, interdependent travel logistics unique to Bangladesh. |

**Summary**

The project "Tour Underrated Places in Bangladesh at Low Cost" exemplifies complex engineering in every dimension. It integrates advanced theoretical and practical knowledge (K), tackles multifaceted and original problem-solving challenges (P), and orchestrates diverse resources and innovation in its activities (A). The system not only addresses technical and organizational needs but also promotes social, economic, and environmental benefits, demonstrating engineering excellence in a real-world context.