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**Course:** Database Systems

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Travel Ease Data Model

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The TravelEase platform is designed to be a centralized solution for planning, booking, and managing diverse travel experiences. It brings together travelers, tour operators, hotels, local guides, and transport providers under one unified system. To ensure smooth operations and data integrity, a well-structured and normalized relational database is essential.

This report outlines the database model developed for TravelEase, detailing its core entities, relationships, and design rationale. The model supports key functionalities such as trip customization, booking management, payment tracking, service coordination, and performance reporting. It is implemented using SQL Server and is intended to integrate seamlessly with a C#-based front-end built in Visual Studio.

## Database Model

# Users:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **RegNo** | Password\_hash | Created\_date | Last\_login | Contact\_email | Contact\_phone |

* **RegNo** – VARCHAR(20): Unique registration number that identifies each user.
* **Password\_hash** – VARCHAR(255): Securely stored hashed version of the user’s password.
* **Created\_date** – DATETIME: Timestamp of when the user account was created.
* **Contact\_email** – VARCHAR(100): Email address used for communication and login.
* **Contact\_phone** – VARCHAR(15): User’s phone number for contact or verification purposes.
* **Last\_login** – DATETIME: Timestamp of last login

# Travelers:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RegNo** | FName | LName | Nationality | CNIC | DOB |  |

* **RegNo** – VARCHAR(20): Foreign key referencing Users, uniquely identifies the traveler.
* **FName** – VARCHAR(50): Traveler’s first name.
* **LName** – VARCHAR(50): Traveler’s last name.
* **Nationality** – VARCHAR(50): Country of citizenship or origin.
* **CNIC** – VARCHAR(15): National ID or identification number for verification.
* **DOB** – DATE: Date of birth of the traveler.

# Tour Operator:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **RegNo** | Operatror\_name | Business\_address | website\_url |  |

* **RegNo** – VARCHAR(20): Foreign key referencing Users, uniquely identifies the tour operator.
* **Operator\_name** – VARCHAR(100): Official name of the tour operating business.
* **Business\_address** – VARCHAR(255): Physical address of the tour operator’s office or headquarters
* **Website\_url** – VARCHAR(100): Optional website link for users to check their tours/services..

# Service Provider:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **RegNo** | Provider\_name | Provider\_location | Provider\_type |  |

* **RegNo** – VARCHAR(20): Foreign key referencing Users, uniquely identifies the service provider.
* **Provider\_name** – VARCHAR(100): Name of the service provider (e.g., hotel, transport agency, guide service).
* **Provider\_location** – VARCHAR(100): Base location or city where the provider primarily operates.
* **Provider\_type** – VARCHAR(50): Type of service offered (e.g., hotel, guide, transport).

# Admin:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **RegNo** | Admin\_name | Assigned\_region | Last\_action\_time |  |

* **RegNo** – VARCHAR(20): Foreign key referencing Users, uniquely identifies the admin.
* **Admin\_name** – VARCHAR(100): Full name of the admin.
* **Assigned\_region** – VARCHAR(100): Region or domain the admin is responsible for (could be "Global" or city-specific).
* **Last\_action\_time** – DATETIME: Timestamp of the admin’s most recent platform activity (for audit/logs).

# Location:

|  |  |  |  |
| --- | --- | --- | --- |
| **Dest\_id** | Destination\_name | Region | Country |

* **Dest\_id** – INT (Primary Key): Unique identifier for each destination.
* **Destination\_name** – VARCHAR(100): Name of the destination (e.g., Paris, Hunza, Kyoto).
* **Region** – VARCHAR(100): Specific region within the country (e.g., "Gilgit-Baltistan", "California").
* **Country** – VARCHAR(100): Country where the destination is located.

# Trips:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **trip\_id** | Title | description | Start\_loc\_id | Start\_date | End\_date | Duration | capacity |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Status(active, cancelled, completed) | category | Price\_per\_person | Image\_url | Operator\_id |

* **trip\_id**: INT – Unique identifier for each trip (Primary Key).
* **Title**: VARCHAR(100) – Name or title of the trip.
* **description**: TEXT – Detailed description or itinerary of the trip.
* **Start\_loc\_id**: INT – Foreign Key to Location.Dest\_id, marks the trip's starting location.
* **Start\_date**: DATE – The date on which the trip starts.
* **End\_date**: DATE – The date on which the trip ends.
* **Duration**: INT – Duration of the trip in days.
* **capacity**: INT – Maximum number of travelers allowed on the trip.
* **Status**: VARCHAR(20) – Current status of the trip (e.g., active, cancelled, completed).
* **category**: VARCHAR(50) – Type/category of trip (e.g., adventure, cultural, leisure).
* **Price\_per\_person**: DECIMAL(10,2) – Cost for each traveler.
* **Image\_url**: VARCHAR(255) – Optional image or banner URL for UI display.
* **Operator\_id**: VARCHAR(20) – Foreign Key to TourOperator.RegNo, the trip creator.

# Bookings:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Booking\_id** | Book\_date | Booking\_status | Traveler\_id | Trip\_id | Transaction\_id |

* **Booking\_id**: INT – Unique identifier for each booking (Primary Key).
* **Book\_date**: DATE – Date when the booking was made.
* **Booking\_status**: VARCHAR(20) – Status of the booking (e.g., confirmed, cancelled, pending).
* **Traveler\_id**: VARCHAR(20) – Foreign Key to Travelers.RegNo, identifies who made the booking.
* **Trip\_id**: INT – Foreign Key to Trips.trip\_id, the trip being booked.
* **Transaction\_id**: INT – Foreign Key to Transactions.Transaction\_id, links to payment details.

# Transactions:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Transaction\_id** | Amount | datetime | Payment\_method | Booking\_id |  |

* **Transaction\_id**: INT – Primary Key, unique identifier for each transaction.
* **Amount**: DECIMAL(10, 2) – Total amount paid in the transaction.
* **datetime**: DATETIME – Timestamp of when the transaction was made.
* **Payment\_method**: VARCHAR(50) – Payment mode used (e.g., Credit Card, PayPal, Bank Transfer).
* **Booking\_id**: INT – Foreign Key referencing the Bookings table, links the transaction to a specific booking.

# Preferences:

|  |  |  |
| --- | --- | --- |
| **Traveler\_id** | **Destination\_id** | Preference\_level |

* **Traveler\_id**: INT – Foreign Key referencing the Travelers table, indicating the traveler.
* **Destination\_id**: INT – Foreign Key referencing the Location table, indicating preferred destination.
* **NOTE**: Composite Key (traveler\_id , destination\_id)
* **Preference\_level**: TINYINT – A scale (e.g., 1 to 5) indicating how strongly the traveler prefers this destination.

# Trip\_location:

|  |  |  |  |
| --- | --- | --- | --- |
| **Trip\_id** | **Dest\_id** | **Destination\_order** |  |

* **Trip\_id**: INT – Foreign Key referencing the Trips table. Identifies which trip this location is part of.
* **Dest\_id**: INT – Foreign Key referencing the Location table. Represents a destination included in the trip.
* **Destination\_order**: INT – Indicates the sequence/order of this destination in the trip itinerary (e.g., 1 for starting point, 2 for next stop).

# Services:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Service\_id** | Service\_type | Service\_description | Price\_per\_person | Provider\_id |

* **Service\_id**: INT – Primary Key. Uniquely identifies each service.
* **Service\_type**: VARCHAR(50) – Type of service (e.g., Hotel, Guide, Transport).
* **Provider\_id**: INT – Foreign Key referencing the Service\_Provider table. Indicates which provider offers this service.
* **Service\_description**: TEXT – Additional details about the service.
* **Price**: DECIMAL(10,2) – price that each person has to pay for each service.

# Trip\_Services:

|  |  |  |
| --- | --- | --- |
| **Trid\_id** | **Service\_id** |  |

* **Trip\_id**: INT – Foreign Key referencing the Trips table.
* **Service\_id**: INT – Foreign Key referencing the Services table.
* **Composite Primary Key**: (Trip\_id, Service\_id)

# Digitlal\_passes:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Pass\_id** | Date\_generated | Valid\_till | Document\_type | File\_url | Booking\_id | Service\_id |

* **Pass\_id**: INT – Primary Key. Unique identifier for each digital pass.
* **Date\_generated**: DATETIME – The date and time when the digital pass was issued.
* **Valid\_till**: DATETIME – The expiration date of the pass.
* **Document\_type**: VARCHAR – Type of document (e.g., e-ticket, hotel voucher, activity pass).
* **Booking\_id**: INT – Foreign Key referencing the Bookings table. Identifies the booking associated with this pass.
* **Service\_id**: INT – Foreign Key referencing the Services table. Links the pass to a specific service.