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PROJECT REPORT

Program Name: BCA

Subject Name/Code: Database Management System (23CAT-251)

Submitted by:

Name : Tshering Dhondup

UID: 23BCA10253

Section: BCA – 8 "A"

Submitted to:

Name: Mrs. Sonial

ABSTRACT

Your paragraThe Travel Agency Database Management System is designed to automate and streamline the operations of a travel agency by efficiently managing information related to customers, travel packages, bookings, payments, flights, and hotels. The system uses a relational database approach to ensure data integrity, consistency, and easy access to critical travel data.

This project implements a structured schema involving multiple interrelated entities such as Customer, Package, Booking, Payment, Flight, Hotel, and Agent. Each entity is connected through defined relationships, and the system supports a wide range of operations including booking management, secure payment processing, and agent package handling.

The database supports SQL functionalities including Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL), and Transaction Control Language (TCL), ensuring comprehensive control over data creation, manipulation, access, and transaction management.

The project not only enhances operational efficiency but also lays a scalable foundation for further integration with online platforms, providing a robust backend for a complete travel management solution.

Introduction

In today’s fast-paced and digitally-driven world, the travel industry is rapidly evolving, requiring efficient systems to manage vast amounts of data related to customer bookings, travel packages, accommodations, and transactions. Manual handling of these operations is not only time-consuming but also prone to errors and inefficiencies.

This project, Travel Agency Database Management System (DBMS), aims to address these challenges by providing a structured and automated solution using a relational database. The system is designed to store, manage, and retrieve data related to customers, agents, travel packages, flights, hotels, bookings, and payments.

The core objective is to simplify the process of managing travel services by ensuring data integrity, minimizing redundancy, and enabling seamless access to information. The database model supports scalability and can be extended to include features like user authentication, real-time availability, and online booking interfaces.

By implementing this DBMS, a travel agency can improve customer service, ensure accurate record-keeping, and efficiently manage its day-to-day operations, all while laying the foundation for future digital enhancements.

Project Planning

Proper planning is essential for the successful development and implementation of any database management system. The planning of the Travel Agency DBMS includes identifying the core modules, understanding relationships among entities, choosing the appropriate database structure, and designing an ER model that supports the travel agency's real-world operations.

📌 Key Planning Steps:

1. Requirement Analysis: Understanding the needs of a typical travel agency—customers, bookings, agents, flights, hotels, and payments.
2. Entity Identification: Defining the core entities such as Customer, Package, Booking, Payment, Flight, Hotel, and Agent.
3. ER Diagram Design: Establishing relationships among entities to ensure normalized data representation.
4. Schema Creation: Structuring tables using DDL queries with appropriate constraints and keys.
5. Data Operations: Implementing DML queries to manage records efficiently.
6. Security and Access: Applying DCL to control data access and user permissions.
7. Transaction Management: Using TCL for consistency during complex operations like booking and payment updates

Objectives

- *Automate travel package booking and management.*
- *Store and manage customer, package, flight, hotel, and payment data.*
- *Reduce data redundancy through normalization.*
- *Ensure secure access using user roles and permissions.*
- *Maintain transaction integrity with commit/rollback features.*
- *Generate useful queries and reports for business insights.*
- *Create a scalable and flexible database structure.*

Scope

✅ Includes:

- Customer, Agent, and Package Management
- Booking and Payment processing
- Flight and Hotel data storage
- Secure user access and role control
- ER Diagram, Schema Design, and SQL Queries (DDL, DML, DCL, TCL)
-

❌ Excludes:

- Frontend UI or online portal
- Integration with external APIs or payment gateways
- Advanced analytics or AI-based recommendations

Working of the Project

1 Customer Registration

→ A new customer's details (name, contact info, etc.) are added to the system.

2 Viewing Available Packages

→ Customers or agents can view all available travel packages, including destination, price, duration, and included flights/hotels.

3 Booking a Package

→ The customer selects a package and initiates a booking. This creates a record in the Booking table linked to the Customer and Package.

4 Flight & Hotel Assignment

→ Each package can be associated with specific flights and hotels, stored in separate tables and linked via foreign keys.

5 Payment Processing

→ After booking, a payment is made. Details like amount, method (credit card, UPI, etc.), and date are recorded in the Payment table.

6 Agent Management

→ Agents are responsible for creating and managing packages. Each package is linked to an Agent in the database.

7 Data Security & Access Control

→ Permissions are set using DCL (e.g., GRANT, REVOKE) to restrict user access (e.g., customers vs admins).

8 Transaction Handling

→ TCL (COMMIT, ROLLBACK) is used during bookings or cancellations to maintain data consistency.

9 Reporting & Queries

→ Admin or staff can run SQL queries to generate reports on bookings, revenue, popular destinations, etc.

Entities and Attributes

- Client
  - Client_ID (Primary Key)
  - First_Name
  - Last_Name
  - Email
  - Phone_Number

- Booking
  - Booking_ID (Primary Key)
  - Client_ID (Foreign Key)
  - Destination_ID (Foreign Key)
  - Booking_Date
  - Travel_Date
  - Number_of_People
  - Total_Amount

- Destination
  - Destination_ID (Primary Key)
  - Destination_Name
  - Country
  - Description
  - Price_Per_Person

- Agency
  - Agency_ID (Primary Key)
  - Agency_Name
  - Phone_Number
  - Email

- Payment
  - Payment_ID (Primary Key)
  - Booking_ID (Foreign Key)
  - Payment_Date
  - Amount
  - Payment_Method

Functionality of the Project

👥 Customer Module
- Add new customer records
- Update or delete customer information
- View available packages and booking history

🧳 Travel Package Management
- Create and manage travel packages
- Link packages with specific flights and hotels
- Assign packages to travel agents

🛫 Flight & Hotel Module
- Add flight and hotel details
- Associate flights and hotels with relevant packages
- Modify or remove travel options as needed

📝 Booking System
- Book packages for customers
- Update or cancel bookings
- Track booking status (confirmed, cancelled)

💳 Payment Module
- Record and track payments against bookings
- View payment history by customer or package
- Handle failed or refunded payments

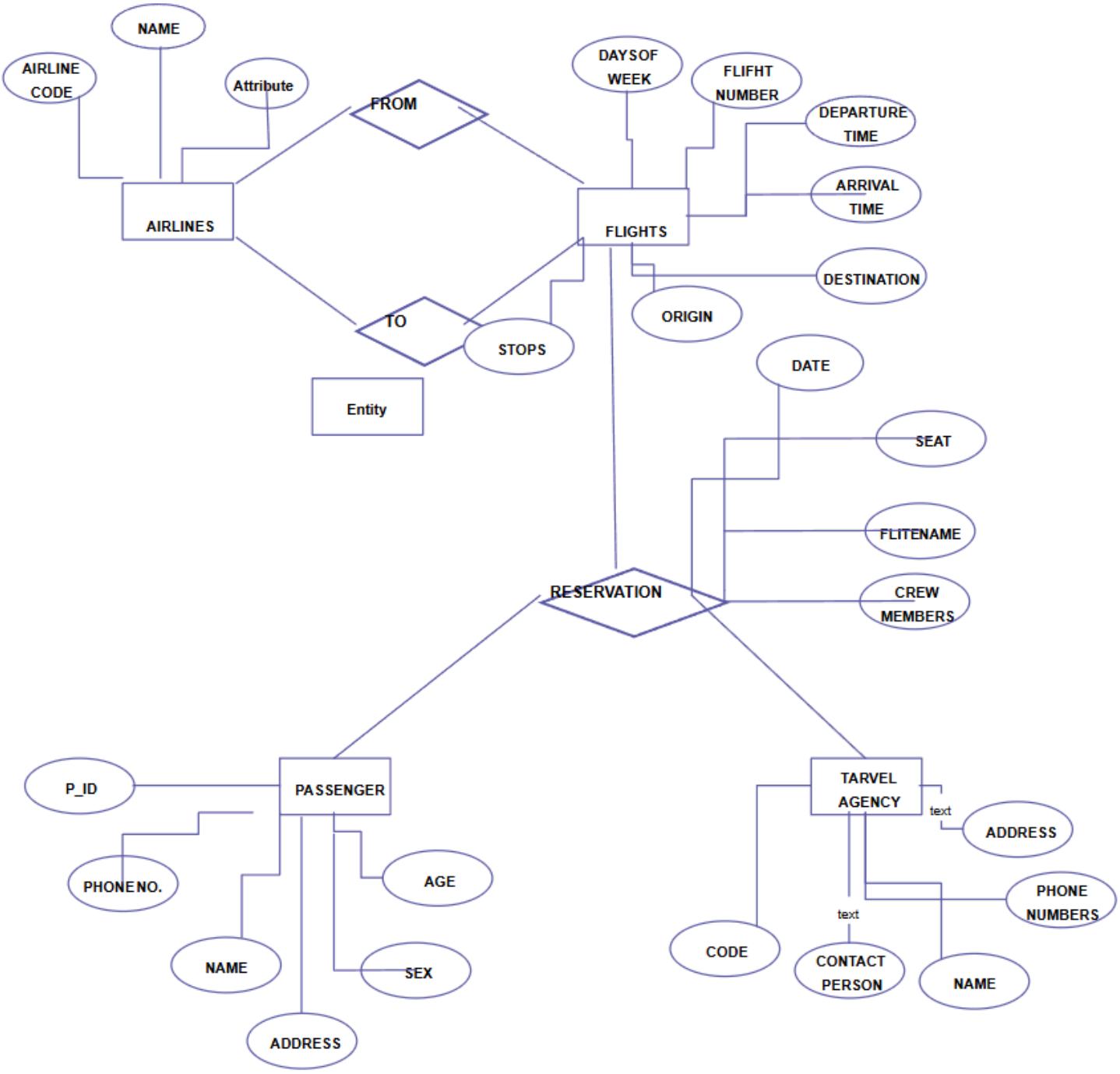
👨‍💼 Agent Module
- Add and manage agent profiles
- Assign packages to agents
- Track performance (e.g., packages sold)

🔐 User Access & Security
- Use DCL commands (GRANT, REVOKE) for access control
- Restrict access to sensitive modules (e.g., payments, admin data)

🔄 Transaction Management
- Use TCL (COMMIT, ROLLBACK, SAVEPOINT) to maintain database consistency during complex operations like bookings and cancellations

📊 Reports & Queries
- Run SQL queries to generate reports:
  - Total bookings
  - Payment summaries
  - Customer histories
  - Package popularity

ER diagram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CONTACT PERSON
NAME
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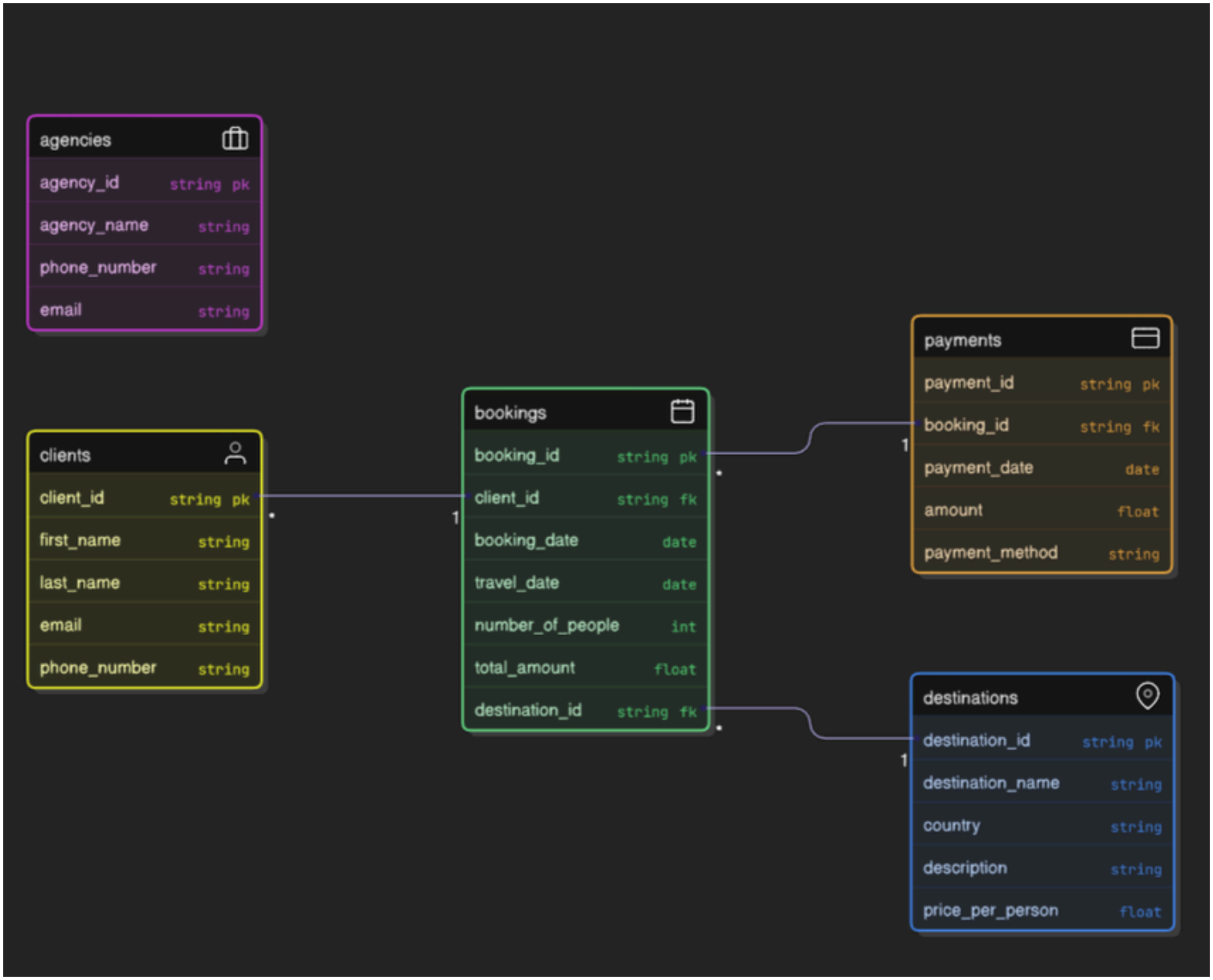
Relational diagram



sql code

queries.sql

```sql
CREATE TABLE Client (
    Client_ID INT PRIMARY KEY AUTO_INCREMENT,
    First_Name VARCHAR(50),
    Last_Name VARCHAR(50),
    Email VARCHAR(100),
    Phone_Number VARCHAR(15)
);

CREATE TABLE Destination (
    Destination_ID INT PRIMARY KEY AUTO_INCREMENT,
    Destination_Name VARCHAR(100),
    Country VARCHAR(50),
    Description TEXT,
    Price_Per_Person DECIMAL(10, 2)
);

CREATE TABLE Booking (
    Booking_ID INT PRIMARY KEY AUTO_INCREMENT,
    Client_ID INT,
    Destination_ID INT,
    Booking_Date DATE,
    Travel_Date DATE,
    Number_of_People INT,
    Total_Amount DECIMAL(10, 2),
    FOREIGN KEY (Client_ID) REFERENCES Client(Client_ID),
    FOREIGN KEY (Destination_ID) REFERENCES Destination(Destination_ID)
);

CREATE TABLE Agency (
    Agency_ID INT PRIMARY KEY AUTO_INCREMENT,
    Agency_Name VARCHAR(100),
    Phone_Number VARCHAR(15),
    Email VARCHAR(100)
);

CREATE TABLE Payment (
    Payment_ID INT PRIMARY KEY AUTO_INCREMENT,
    Booking_ID INT,
    Payment_Date DATE,
    Amount DECIMAL(10, 2),
    Payment_Method VARCHAR(50),
    FOREIGN KEY (Booking_ID) REFERENCES Booking(Booking_ID)
);
```

Data Manipulation Language (DML)

```
INSERT INTO Client (First_Name, Last_Name, Email, Phone_Number)
VALUES ('John', 'Doe', 'john.doe@example.com', '1234567890');

INSERT INTO Destination (Destination_Name, Country, Description,
Price_Per_Person)
VALUES ('Bali', 'Indonesia', 'Beautiful beaches and culture', 500.00);
```

Data Control Language (DCL)

```
GRANT SELECT, INSERT, UPDATE, DELETE ON Client TO 'travel_agent'@'localho
```

Transaction Control Language (TCL)

```
START TRANSACTION;

INSERT INTO Booking (Client_ID, Destination_ID, Booking_Date, Travel_Date,
Number_of_People, Total_Amount)
VALUES (1, 1, CURDATE(), '2023-12-01', 2, 1000.00);
```

Conclusion

The Travel Agency Database project successfully establishes a structured database that supports the travel agency's operations. The designed database facilitates effective data management, ensuring accessibility, security, and real-time data processing. Future enhancements may include integrating a web interface for client bookings and an automated reporting system to further streamline agency operations.