A logo for a company

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**A Project Report On**

**Airline Management System (AMS)**

**Course Name: Database**

**Batch No:1**

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**Step 1-**

**Entities:**

* Flights
* Fares
* Airports
* Route Network
* Crew Members
* Crew Scheduling
* Passengers
* Reservations
* Payment
* Cancellations
* Frequent Flyer Program
* Customer Relationship Management (CRM)
* In-Flight Services
* Baggage Handling
* Passenger Feedback
* Mechanic
* Maintenance Logs
* Audit Logs

**Step 2-**

**Attributes details :**

* Flights - (id (INT PRIMARY KEY), flight\_number (VARCHAR(20) UNIQUE), departure\_airport (VARCHAR(255)), arrival\_airport (VARCHAR(255)), departure\_datetime (DATETIME), arrival\_datetime (DATETIME), aircraft\_type (VARCHAR(50)), capacity (INT), status (VARCHAR(50))
* Fares - (id (INT PRIMARY KEY), flight\_id (INT FOREIGN KEY REFERENCES Flights(id)), fare\_class (VARCHAR(50)), base\_price (DECIMAL), currency (VARCHAR(10)), taxes\_and\_fees (DECIMAL), availability (INT))
* Airports- (id (INT PRIMARY KEY), iata\_code (VARCHAR(3) UNIQUE), icao\_code (VARCHAR(4) UNIQUE), name (VARCHAR(255)), city (VARCHAR(255)), country (VARCHAR(255)), terminals (INT))
* Route Network - (id (INT PRIMARY KEY), origin\_airport\_id (INT FOREIGN KEY REFERENCES Airports(id)), destination\_airport\_id (INT FOREIGN KEY REFERENCES Airports(id)), distance (DECIMAL), travel\_time (DECIMAL), frequency (VARCHAR(50)))
* Crew Members - (id (INT PRIMARY KEY), name (VARCHAR(255)), job\_title (VARCHAR(50)), license\_number (VARCHAR(50)), contact\_information (VARCHAR))
* Crew Scheduling - (id (INT PRIMARY KEY), flight\_id (INT FOREIGN KEY REFERENCES Flights(id)), crew\_member\_id (INT FOREIGN KEY REFERENCES Crew\_Members(id)), role (VARCHAR(50)))
* Passengers - (id (INT PRIMARY KEY), first\_name (VARCHAR(50)), last\_name (VARCHAR(50)), email (VARCHAR(255) UNIQUE), phone\_number (VARCHAR(20)), passport\_number (VARCHAR(50)))
* Reservations - (id (INT PRIMARY KEY), passenger\_id (INT FOREIGN KEY REFERENCES Passengers(id)), flight\_id (INT FOREIGN KEY REFERENCES Flights(id)), fare\_id (INT FOREIGN KEY REFERENCES Fares(id)), booking\_date (DATETIME), confirmation\_code (VARCHAR(50)), number\_of\_passengers (INT), special\_requests (VARCHAR))
* Payment - (id (INT PRIMARY KEY), reservation\_id (INT FOREIGN KEY REFERENCES Reservations(id)), payment\_method (VARCHAR(50)), payment\_reference (VARCHAR(50)), amount\_paid (DECIMAL), payment\_date (DATETIME), currency (VARCHAR(10)))
* Cancellations - (id (INT PRIMARY KEY), reservation\_id (INT FOREIGN KEY REFERENCES Reservations(id)), cancellation\_date (DATETIME), cancellation\_reason (VARCHAR(255)), cancellation\_fee (DECIMAL))
* Frequent Flyer Program - (id (INT PRIMARY KEY), passenger\_id (INT FOREIGN KEY REFERENCES Passengers(id)), membership\_tier (VARCHAR(50)), miles\_balance (INT), status\_expiry\_date (DATETIME))
* Customer Relationship Management - (CRM) - (customer\_id (INT PRIMARY KEY), contact\_information (TEXT), communication\_preferences (VARCHAR(50)), booking\_history (JSON), frequent\_flyer\_id (INT FOREIGN KEY REFERENCES Frequent\_Flyer\_Program(id)))
* In-Flight Services - (id (INT PRIMARY KEY), service\_type (VARCHAR(50)), description (TEXT), price (DECIMAL), availability (INT))
* Baggage Handling - (id (INT PRIMARY KEY), reservation\_id (INT FOREIGN KEY REFERENCES Reservations(id)), passenger\_id (INT FOREIGN KEY REFERENCES Passengers(id)), tag\_number (VARCHAR(50) UNIQUE), weight (DECIMAL), status (VARCHAR(50)), last\_known\_location (VARCHAR(255)))
* Passenger Feedback - (id (INT PRIMARY KEY), reservation\_id (INT FOREIGN KEY REFERENCES Reservations(id)), passenger\_id (INT FOREIGN KEY REFERENCES Passengers(id) - Optional), feedback\_type (VARCHAR(50)), feedback\_text (TEXT), rating (INT))
* Mechanic - (id (INT PRIMARY KEY), name (VARCHAR(100)), designation (VARCHAR(100)), salary (DECIMAL (10,2)))
* Maintenance Logs - (id (INT PRIMARY KEY), aircraft\_id (INT), date (DATETIME), work\_performed (TEXT), mechanic\_id (INT FOREIGN KEY REFERENCES Mechanics(id) - Optional), next\_maintenance\_due (DATETIME))
* Audit Logs - (id (INT PRIMARY KEY), action (VARCHAR), time stamp ( datetime), data affected(text))

**Step 3&4-**

**Relationships:**

* One Flight can have many Fares (One-to-Many)
* A Route Network connects Airports (Many-to-Many)
* A Crew Member can be assigned to many Flights through Crew Scheduling (Many-to-Many)
* One Flight can have many Crew Members assigned through Crew Scheduling (Many-to-Many)
* A Reservation is for one Passenger (One-to-One)
* A Passenger can have many Reservations (One-to-Many)
* A Reservation is for one Flight (One-to-One)
* A Reservation can have one Fare (One-to-One)
* A Reservation can have one Payment (One-to-One)
* A Reservation can have one Cancellation (One-to-One)
* A Passenger can be a member of the Frequent Flyer Program (One-to-One)
* A CRM record is for one Passenger (One-to-One)
* One Flight can have many In-Flight Services (One-to-Many)
* A Reservation can have many Baggage Items (One-to-Many)
* One Passenger can have many Baggage Items (One-to-Many)
* A Reservation can have one Passenger Feedback record (One-to-One)
* One Passenger can have many Passenger Feedback records (One-to-Many)
* A Mechanic can be linked to many Maintenance Logs (One-to-Many)

**Step 5-**

**ERD diagram:**

A diagram of a flowchart

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