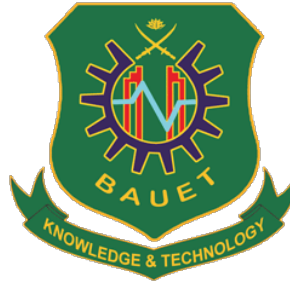


Knowledge & Technology

Bangladesh Army University of Engineering & Technology (BAUET)
Qadirabad Cantonment, Natore-6431



**Department of
COMPUTER SCIENCE AND ENGINEERING (CSE)**

LAB FINAL

Course Code : CSE-2106
Course Title : Database Systems Laboratory

Submitted By

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Batch : 17th
Year : 2nd
Semester : 1st
Section : A
Session : 2022-2023

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Bangladesh Army University of Engineering & Technology

Department of CSE

2nd Year 1st Semester (Summer-2024) Group: A

Course Code & Title: CSE-2106 & Database Systems Laboratory

Lab Test: 01

Full Marks: 15

Time: 1 hour 30 Minutes

Aviation Industry Database System

The system should keep track of the company's flights, aircraft, passengers, and bookings. You will create four tables: **Flights**, **Aircraft**, **Passengers**, and **Bookings**, with appropriate primary keys, foreign keys, and default values where necessary.

Table: Flights

FlightID	AircraftID	DepartureCity	ArrivalCity	DepartureTime	ArrivalTime
1	101	New York	Los Angeles	2024-10-25 08:00:00	2024-10-25 11:30:00
2	102	London	Paris	2024-10-25 09:00:00	2024-10-25 10:30:00
3	103	Tokyo	Seoul	2024-10-25 07:00:00	2024-10-25 09:00:00

Table: Aircraft

AircraftID	Model	Capacity	Status
101	Boeing 737	180	Active
102	Airbus A320	180	Active
103	Boeing 777	350	Inactive

Table: Passengers

PassengerID	FirstName	LastName	Email
201	John	Doe	john.doe@example.com
202	Jane	Smith	jane.smith@example.com
203	Alice	Johnson	alice.johnson@example.com

Table: Bookings

BookingID	FlightID	PassengerID	SeatNumber
301	1	201	12A
302	2	202	15B
303	3	203	10C

Questions: [CO2, PO5, C2, C3]

1. Show all flights that are not using aircraft models "Boeing 737" or "Airbus A320". 2
2. Show all flights departing between '2024-10-25 06:00:00' and '2024-10-25 10:00:00'. 2

3. Develop a SQL query to find passengers who have bookings for flights where the aircraft status is 'Active'. 2
4. Construct a SQL query to combine the results of all active flights and all inactive flights into one list. 2
5. Perform the following operations: 2
 - Add a column `FlightStatus` (`VARCHAR(20)`) to the **Flights** table with the default value 'Scheduled'.
 - Delete all bookings where the `SeatNumber` is '15B'.
6. Develop a SQL query to retrieve the details (`PassengerID`, `FirstName`, `LastName`, and `Email`) of passengers who have booked at least one flight with an arrival city of "Los Angeles." 2.5
7. Develop a SQL query to list the details (`AircraftID`, `Model`, `Capacity`, and `Status`) of all aircraft that have never been associated with any flight that has bookings. 2.5

1. Show all flights that are not using aircraft models "Boeing 737" or "Airbus A320".

Query: `SELECT * FROM Flights Natural join Aircraft where Aircraft.model not in ("Boeing 737", 'Airbus A320')`

Output

AircraftID	FlightID	DepartureCity	ArrivalCity	DepartureTime	ArrivalTime	Model	Capacity	Status
103	3	Tokyo	Seoul	2024-10-25 07:00:00	2024-10-25 09:00:00	Boeing 777	350	Inactive

2. Show all flights departing between '2024-10-25 06:00:00' and '2024-10-25 10:00:00'.

Query: `SELECT * FROM Flights Where Flights.DepartureTime between "2024-10-25 06:00:00" and "2024-10-25 10:00:00"`

Output

	FlightID	AircraftID	DepartureCity	ArrivalCity	DepartureTime	ArrivalTime
<input type="checkbox"/> Edit Copy Delete	1	101	New York	Los Angeles	2024-10-25 08:00:00	2024-10-25 11:30:00
<input type="checkbox"/> Edit Copy Delete	2	102	London	Paris	2024-10-25 09:00:00	2024-10-25 10:30:00
<input type="checkbox"/> Edit Copy Delete	3	103	Tokyo	Seoul	2024-10-25 07:00:00	2024-10-25 09:00:00

3. Develop a SQL query to find passengers who have bookings for flights where the aircraft status is 'Active'.

Query: `Select Passengers.FirstName, Passengers.LastName from Passengers Natural JOIN bookings natural join flights natural join Aircraft where Aircraft.Status = "Active";`

Output

FirstName	LastName
John	Doe
Jane	Smith

4. Construct a SQL query to combine the results of all active flights and all inactive flights into one list.

Query: `SELECT * FROM flights natural join Aircraft where Aircraft.status in ("Active","Inactive");`

Output

AircraftID	FlightID	DepartureCity	ArrivalCity	DepartureTime	ArrivalTime	Model	Capacity	Status
101	1	New York	Los Angeles	2024-10-25 08:00:00	2024-10-25 11:30:00	Boeing 737	180	Active
102	2	London	Paris	2024-10-25 09:00:00	2024-10-25 10:30:00	Airbus A320	180	Active
103	3	Tokyo	Seoul	2024-10-25 07:00:00	2024-10-25 09:00:00	Boeing 777	350	Inactive

5. Perform the following operations:

- Add a column FlightStatus (VARCHAR(20)) to the Flights table with the default value 'Scheduled'.
- Delete all bookings where the SeatNumber is '15B'

Query: **ALTER TABLE** Flights **add** FlightStatus **varchar**(20) **default** 'Scheduled';
DELETE from bookings **where** bookings.SeatNumber **in** ("15B");

Output

	BookingID	FlightID	PassengerID	SeatNumber
<input type="checkbox"/> Edit Copy Delete	301	1	201	12A
<input type="checkbox"/> Edit Copy Delete	303	3	203	10C

6. Develop a SQL query to retrieve the details (PassengerID, FirstName, LastName, and Email) of passengers who have booked at least one flight with an arrival city of "Los Angeles."

Query: **SELECT** Passengers.PassengerID, passengers.FirstName, passengers.LastName, passengers.Email **from** passengers **natural join** Flights **where** Flights.ArrivalCity = "Los Angeles";

Output

PassengerID	FirstName	LastName	Email
201	John	Doe	john.doe@example.com

7. Develop a SQL query to list the details (AircraftID, Model, Capacity, and Status) of all aircraft that have never been associated with any flight that has bookings.

Query: **Select** Aircraft.AircraftID, Aircraft.Model, Aircraft.Capacity, Aircraft.Status **from** Aircraft **left join** flights **on** flights.AircraftID = aircraft.AircraftID **left join** Bookings **on** bookings.FlightID = flights.FlightID **where** bookings.BookingID **is null**;

Query: **SELECT** Aircraft.AircraftID, Aircraft.Model, Aircraft.Capacity, Aircraft.Status **FROM** Aircraft **WHERE** Aircraft.AircraftID **NOT IN** (**SELECT DISTINCT** Flights.AircraftID **FROM** Flights **JOIN** Bookings **ON** Flights.FlightID = Bookings.FlightID);

Output

AircraftID	Model	Capacity	Status
102	Airbus A320	180	Active