CA Task 3

a)

1. FLIGHT_LEG.(DEPARTURE_AIRPORT) → AIRPORT.(AIRPORT_CODE)
2. FLIGHT_LEG.(ARRIVAL_AIRPORT) → AIRPORT.(AIRPORT_CODE)
3. AIRPLANE_TYPE.(COMPANY) → COMPANY.(NAME)
4. AIRPLANE.(TYPE) → AIRPLANE_TYPE.(TYPE_NAME)
5. LEG_INSTANCE.(AIRPLANE_ID) → AIRPLANE.(AIRPLANE_ID)
6. LEG_INSTANCE.(FLIGHT_LEG) → FLIGHT_LEG.(LEG_NO)
7. RESERVATION.(LEG_INSTANCE) → LEG_INSTANCE.(INSTANCE_NO)
8. SEAT.(AIRPLANE_ID) → AIRPLANE.(AIRPLANE_ID)
9. RESERVATION.(SEAT_NO, AIRPLANE_ID) → SEAT.(SEAT_NO, AIRPLANE_ID) (Composite foreign key reference)
10. FARE.(FLIGHT) → FLIGHT.(NUMBER)
11. FLIGHT_LEG.(FLIGHT_NO) → FLIGHT.(NUMBER)
12. LEG_INSTANCE.(DATE, FLIGHT_LEG) → FLIGHT_LEG.(SCHEDULED_DEP_TIME, LEG_NO)
13. FLIGHT_LEG.(FLIGHT_NUMBER) → FLIGHT.(NUMBER)

b)

CREATE TABLE AIRPORT (

   AIRPORT_CODE CHAR(3) NOT NULL,

   NAME VARCHAR(30) NOT NULL,

   CITY VARCHAR(30) NOT NULL,

   STATE VARCHAR(30),

   PRIMARY KEY (AIRPORT_CODE)

);

CREATE TABLE AIRPLANE_TYPE (

   TYPE_NAME VARCHAR(30) NOT NULL,

   MAX_SEATS INT NOT NULL,

   COMPANY VARCHAR(50),

   PRIMARY KEY (TYPE_NAME)

```sql
);


CREATE TABLE AIRPLANE (

    AIRPLANE_ID INT NOT NULL,

    TYPE_NAME VARCHAR(30) NOT NULL,

    TOTAL_NO_OF_SEATS INT NOT NULL,

    PRIMARY KEY (AIRPLANE_ID),

    FOREIGN KEY (TYPE_NAME) REFERENCES AIRPLANE_TYPE(TYPE_NAME)
);


CREATE TABLE SEAT (

    AIRPLANE_ID INT NOT NULL,

    SEAT_NO VARCHAR(10) NOT NULL,

    PRIMARY KEY (SEAT_NO, AIRPLANE_ID),

    FOREIGN KEY (AIRPLANE_ID) REFERENCES AIRPLANE(AIRPLANE_ID)
);


CREATE TABLE FLIGHT_LEG (

    LEG_NO INT NOT NULL,

    SCHEDULED_DEP_TIME TIME NOT NULL,

    SCHEDULED_ARR_TIME TIME NOT NULL,

    DEPARTURE_AIRPORT CHAR(3) NOT NULL,

    ARRIVAL_AIRPORT CHAR(3) NOT NULL,
```

```sql
    PRIMARY KEY (LEG_NO),

    FOREIGN KEY (DEPARTURE_AIRPORT) REFERENCES AIRPORT(AIRPORT_CODE),

    FOREIGN KEY (ARRIVAL_AIRPORT) REFERENCES AIRPORT(AIRPORT_CODE)
);


CREATE TABLE FLIGHT (

    NUMBER INT NOT NULL,

    AIRLINE VARCHAR(50) NOT NULL,

    WEEKDAYS VARCHAR(50),

    PRIMARY KEY (NUMBER)
);


CREATE TABLE LEG_INSTANCE (

    LEG_NO INT NOT NULL,

    DATE DATE NOT NULL,

    AIRPLANE_ID INT NOT NULL,

    NO_OF_AVAIL_SEATS INT,

    PRIMARY KEY (LEG_NO, DATE),

    FOREIGN KEY (LEG_NO) REFERENCES FLIGHT_LEG(LEG_NO),

    FOREIGN KEY (AIRPLANE_ID) REFERENCES AIRPLANE(AIRPLANE_ID)
);


CREATE TABLE RESERVATION (

    RESERVATION_NO INT NOT NULL,

    CUSTOMER_NAME VARCHAR(100) NOT NULL,
```

```sql
    CPHONE VARCHAR(15),

    SEAT_NO VARCHAR(10) NOT NULL,

    LEG_NO INT NOT NULL,

    DATE DATE NOT NULL,

    PRIMARY KEY (RESERVATION_NO),

    FOREIGN KEY (SEAT_NO) REFERENCES SEAT(SEAT_NO),

    FOREIGN KEY (LEG_NO, DATE) REFERENCES LEG_INSTANCE(LEG_NO, DATE)

);


CREATE TABLE FARE (

    CODE VARCHAR(10) NOT NULL,

    AMOUNT DECIMAL(10, 2) NOT NULL,

    RESTRICTIONS TEXT,

    PRIMARY KEY (CODE)

);


CREATE TABLE FARES (

    FLIGHT_NO INT NOT NULL,

    FARE_CODE VARCHAR(10) NOT NULL,

    PRIMARY KEY (FLIGHT_NO, FARE_CODE),

    FOREIGN KEY (FLIGHT_NO) REFERENCES FLIGHT(NUMBER),

    FOREIGN KEY (FARE_CODE) REFERENCES FARE(CODE)

);


CREATE TABLE LEGS (
```

FLIGHT_NO INT NOT NULL,

LEG_NO INT NOT NULL,

PRIMARY KEY (FLIGHT_NO, LEG_NO),

FOREIGN KEY (FLIGHT_NO) REFERENCES FLIGHT(NUMBER),

FOREIGN KEY (LEG_NO) REFERENCES FLIGHT_LEG(LEG_NO)

);

CA Task 4

a)
SELECT * FROM Hotel;

b)
SELECT * FROM Hotel WHERE hotelCity = 'New York';

c)
SELECT Guest.*
FROM Guest
JOIN Booking ON Guest.guestNo = Booking.guestNo
JOIN Hotel ON Booking.hotelNo = Hotel.hotelNo
WHERE Hotel.hotelCity = 'New York'
ORDER BY Guest.lastName DESC;