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CSC 315-01

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Part V

1. SQL data definition queries to create the tables and views

- **CREATE TABLE** STAFF_MEMBER (

 Ssn char(9) PRIMARY KEY NOT NULL,

 Fname text NOT NULL,

 Lname text NOT NULL,

 Salary integer,

 Age integer,

 Birth_date timestamp,

 Sex char(1) NOT NULL

 Dno REFERENCES DEPARTMENT(Dno)

);
- **CREATE TABLE** INVENTORY (

 Type text PRIMARY KEY NOT NULL,

 Quantity integer,

 Dno integer REFERENCES DEPARTMENT(Dno)

);
- **CREATE TABLE** ROOM (

 Number integer PRIMARY KEY NOT NULL,

Num_beds integer NOT NULL,
Rate numeric,
Ssn char(9) REFERENCES STAFF_MEMBER(Ssn)
);

- **CREATE TABLE CUSTOMER (**

CSsn char(9) PRIMARY KEY,
Credit_card_num char(16),
Sex char(1) ,
Age integer,
Fname text NOT NULL,
Lname text NOT NULL ,
Num_Guests integer
);

- **CREATE TABLE RESERVATION (**

Reservation_Number SERIAL PRIMARY KEY,
Room_Number integer REFERENCES ROOM,
CSsn char(9) REFERENCES CUSTOMER,
Start_date timestamp,
End_date timestamp
);

- **CREATE TABLE DEPARTMENT (**

Dno integer PRIMARY KEY,
Dname text,
Mssn char(9) REFERENCES STAFF_MEMBER(Ssn)

);

2. Populate the tables with valid data

- Staff_member Table

- **INSERT INTO STAFF_MEMBER**
VALUES (user input for each attribute);

| ssn | fname | lname | salary | age | birth_date | sex | dno |
|-----------|---------|------------|--------|-----|---------------------|-----|-----|
| 111223333 | Jim | Smith | 50000 | 34 | 1986-02-15 00:15:00 | M | 1 |
| 222334444 | Peyton | Reynolds | 35000 | 26 | 1994-05-01 05:34:00 | F | 2 |
| 333445555 | Anthony | Messana | 20000 | 21 | 1998-01-13 04:34:00 | M | 4 |
| 444556666 | Michael | Giordano | 60000 | 33 | 1987-04-18 10:12:00 | M | 5 |
| 555667777 | Leah | Kazenmayer | 70000 | 36 | 1984-06-30 10:10:00 | F | 3 |
| 888776666 | Bennie | Manson | 50000 | 33 | 1987-12-08 22:40:00 | M | 1 |
| 999887777 | Jessica | Parker | 45000 | 41 | 1979-05-09 06:41:00 | F | 1 |
| 777665555 | Riley | Wright | 44000 | 24 | 1996-10-15 12:29:00 | F | 1 |
| 666778888 | Nicole | Meyers | 66000 | 25 | 1995-08-04 13:34:00 | F | 2 |
| 777889999 | Damion | Jenson | 40000 | 50 | 1970-12-14 14:55:00 | M | 3 |
| 888990000 | Karen | Thompson | 38000 | 44 | 1976-01-19 19:45:00 | F | 4 |
| 999001111 | Marina | Ambers | 61000 | 39 | 1981-11-08 21:11:00 | F | 5 |
| (12 rows) | | | | | | | |

- Inventory Table

- **INSERT INTO INVENTORY**
VALUES (user input for each attribute);

| type | quantity | dno |
|---------------------|----------|-----|
| HousekeepingUniform | 20 | 1 |
| MaintenaceUniform | 15 | 2 |
| ReceptionUniform | 17 | 3 |
| BellhopUniform | 33 | 4 |
| FoodServiceUniform | 5 | 5 |
| Towel | 150 | 1 |
| Washcloth | 200 | 1 |
| PoolTowel | 300 | 1 |
| Shampoo | 300 | 1 |
| Soap | 300 | 1 |
| BedSheet | 60 | 1 |
| Pillows | 20100 | 1 |
| Windex | 30 | 2 |
| Lightbulb | 200 | 2 |
| ChlorineContainer | 50 | 2 |
| Mop | 10 | 2 |
| Pen | 50 | 3 |
| Brochure | 1000 | 3 |
| Mint | 500 | 3 |
| Trolly | 10 | 4 |
| Pizza | 50 | 5 |
| Burger | 25 | 5 |
| Fries | 200 | 5 |
| Pancake | 100 | 5 |
| Waffle | 101 | 5 |
| Cereal | 600 | 5 |
| Lobster | 10 | 5 |
| Apple | 25 | 5 |
| (28 rows) | | |

- Room Table

- INSERT INTO ROOM

VALUES (user input for each attribute);

| number | num_beds | rate | ssn |
|--------|----------|------|-----------|
| 1 | 2 | 159 | 111223333 |
| 2 | 2 | 160 | 111223333 |
| 3 | 2 | 149 | 111223333 |
| 4 | 2 | 150 | 111223333 |
| 5 | 4 | 189 | 111223333 |
| 6 | 4 | 189 | 777665555 |
| 7 | 4 | 190 | 777665555 |
| 8 | 4 | 190 | 777665555 |
| 9 | 2 | 160 | 777665555 |
| 10 | 2 | 148 | 777665555 |
| 11 | 2 | 150 | 999887777 |
| 12 | 2 | 140 | 999887777 |
| 13 | 2 | 152 | 999887777 |
| 14 | 2 | 153 | 999887777 |
| 15 | 2 | 150 | 999887777 |
| 16 | 2 | 151 | 888776666 |
| 17 | 4 | 190 | 888776666 |
| 18 | 4 | 198 | 888776666 |
| 19 | 4 | 193 | 888776666 |
| 20 | 4 | 191 | 888776666 |

(20 rows)

- Customer Table

- INSERT INTO CUSTOMER

VALUES (user input for each attribute);

| cssn | credit_card_num | sex | age | fname | lname | num_guests |
|-----------|------------------|-----|-----|----------|-----------|------------|
| 456789123 | 1234567891012145 | M | 87 | Joe | Mama | 0 |
| 758799143 | 1234567891012245 | M | 42 | John | Doe | 2 |
| 964359623 | 2334556231212245 | F | 41 | Michelle | Morris | 1 |
| 251739425 | 7234527898013146 | F | 19 | Michael | Johnson | 2 |
| 78783123 | 2234557891062145 | M | 23 | Joe | Biden | 0 |
| 567891232 | 4534567891012145 | M | 31 | Luke | Farinella | 0 |
| 923412133 | 7891234591012145 | M | 29 | Kyle | Murphy | 1 |
| 556789223 | 1334467881012145 | F | 31 | Hannah | Montana | 2 |
| 156789133 | 7238567831014141 | M | 33 | Joseph | Messana | 1 |

(9 rows)

- Reservation Table

- INSERT INTO RESERVATION

VALUES (user input for each attribute);

| reservation_number | room_number | cssn | start_date | end_date |
|--------------------|-------------|-----------|---------------------|---------------------|
| 1 | 1 | 456789123 | 2020-07-10 11:00:00 | 2020-07-12 10:00:00 |
| 2 | 2 | 758799143 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 3 | 4 | 964359623 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 4 | 5 | 964359623 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 5 | 7 | 251739425 | 2020-07-15 11:00:00 | 2020-07-20 10:00:00 |
| 6 | 1 | 78783123 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 7 | 11 | 567891232 | 2020-07-12 11:00:00 | 2020-07-17 10:00:00 |
| 8 | 8 | 923412133 | 2020-07-11 11:00:00 | 2020-07-15 10:00:00 |
| 9 | 13 | 156789133 | 2020-07-14 11:00:00 | 2020-07-15 10:00:00 |
| 10 | 12 | 156789133 | 2020-07-14 11:00:00 | 2020-07-15 10:00:00 |
| 11 | 14 | 156789133 | 2020-07-14 11:00:00 | 2020-07-15 10:00:00 |

(11 rows)

- Department Table

- INSERT INTO DEPARTMENT

VALUES (user input for each attribute);

| dno | dname | mssn |
|-----|--------------|-----------|
| 1 | Housekeeping | 111223333 |
| 2 | Maintenance | 222334444 |
| 3 | Reception | 555667777 |
| 4 | Bellhop | 333445555 |
| 5 | FoodService | 444556666 |

(5 rows)

3. SQL data manipulation queries

- Modify_Staff

```
UPDATE STAFF_MEMBER
SET Age = userInput (integer)
WHERE Ssn = userInput (char(9))
```

(Set statements for each attribute that take in user input)

- Modify_Inventory

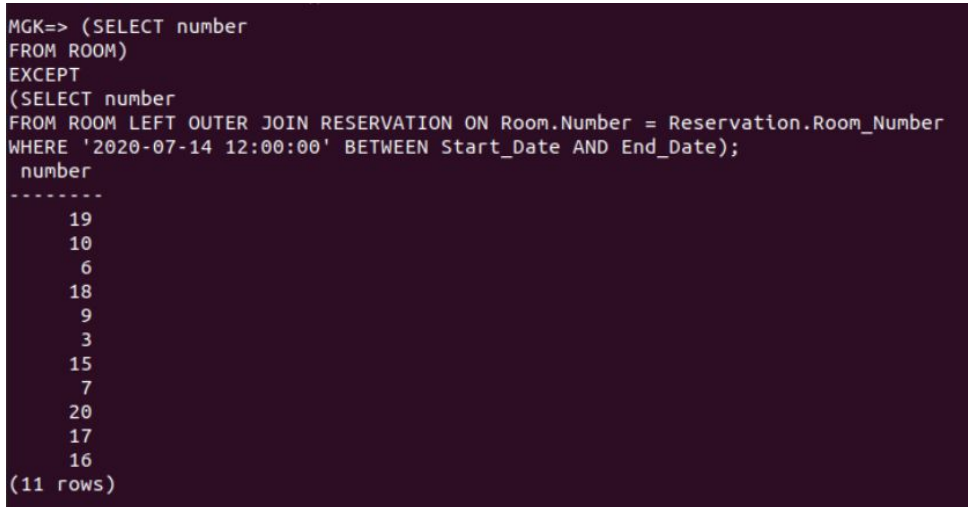
```
UPDATE INVENTORY
SET Type = userInput (text)
WHERE Type = userInput (text)
```

(Set statements for each attribute that take in user input)

- Modify_Reservations

```
UPDATE RESERVATION
SET Room_Number = userInput (integer)
WHERE Reservation_Number = userInput (integer)
```

(Set statements for each attribute that take in user input)

- (repeat modifies for all tables)
 - Delete_Staff
DELETE FROM STAFF_MEMBER
WHERE userInput (char(9)) = Ssn
 - Delete_Reservation
DELETE FROM RESERVATION
WHERE userInput (integer) = Reservation_Number
 - (repeat deletes for all tables)
 - Vacant_Room
Join room and reservation, user input taken for date, check if a specific room number as a reservation where input date is between start and end date, return room number of all rooms where this is not true
(SELECT number
FROM ROOM)
EXCEPT
(SELECT number
FROM ROOM LEFT OUTER JOIN RESERVATION ON Room.Number =
Reservation.Room_Number
WHERE userInput (timestamp) BETWEEN Start_Date AND End_Date);
- 
- The screenshot shows a SQL query execution result in a dark-themed terminal. The query is a SQL statement that selects room numbers from the ROOM table, excluding those that have a reservation between the dates 2020-07-14 12:00:00 and End_Date. The result shows 11 rows of room numbers: 19, 10, 6, 18, 9, 3, 15, 7, 20, 17, and 16.
- ```
MGK=> (SELECT number
FROM ROOM)
EXCEPT
(SELECT number
FROM ROOM LEFT OUTER JOIN RESERVATION ON Room.Number = Reservation.Room_Number
WHERE '2020-07-14 12:00:00' BETWEEN Start_Date AND End_Date);
number

19
10
6
18
9
3
15
7
20
17
16
(11 rows)
```
- - Inventory\_Summary  
**SELECT \***  
**FROM INVENTORY;**



| type                | quantity | dno |
|---------------------|----------|-----|
| HousekeepingUniform | 20       | 1   |
| MaintenaceUniform   | 15       | 2   |
| ReceptionUniform    | 17       | 3   |
| BellhopUniform      | 33       | 4   |
| FoodServiceUniform  | 5        | 5   |
| Towel               | 150      | 1   |
| Washcloth           | 200      | 1   |
| PoolTowel           | 300      | 1   |
| Shampoo             | 300      | 1   |
| Soap                | 300      | 1   |
| BedSheet            | 60       | 1   |
| Pillows             | 20100    | 1   |
| Windex              | 30       | 2   |
| Lightbulb           | 200      | 2   |
| ChlorineContainer   | 50       | 2   |
| Mop                 | 10       | 2   |
| Pen                 | 50       | 3   |
| Brochure            | 1000     | 3   |
| Mint                | 500      | 3   |
| Trolly              | 10       | 4   |
| Pizza               | 50       | 5   |
| Burger              | 25       | 5   |
| Fries               | 200      | 5   |
| Pancake             | 100      | 5   |
| Waffle              | 101      | 5   |
| Cereal              | 600      | 5   |
| Lobster             | 10       | 5   |
| Apple               | 25       | 5   |

(28 rows)

- 
- Reservation\_Summary  
**SELECT \***  
**FROM RESERVATION;**

```
MGK=> SELECT *
MGK-> FROM RESERVATION;
```

| reservation_number | room_number | cssn      | start_date          | end_date            |
|--------------------|-------------|-----------|---------------------|---------------------|
| 1                  | 1           | 456789123 | 2020-07-10 11:00:00 | 2020-07-12 10:00:00 |
| 2                  | 2           | 758799143 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 3                  | 4           | 964359623 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 4                  | 5           | 964359623 | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 5                  | 7           | 251739425 | 2020-07-15 11:00:00 | 2020-07-20 10:00:00 |
| 6                  | 1           | 78783123  | 2020-07-12 11:00:00 | 2020-07-16 10:00:00 |
| 7                  | 11          | 567891232 | 2020-07-12 11:00:00 | 2020-07-17 10:00:00 |
| 8                  | 8           | 923412133 | 2020-07-11 11:00:00 | 2020-07-15 10:00:00 |
| 9                  | 13          | 156789133 | 2020-07-14 11:00:00 | 2020-07-15 10:00:00 |
| 10                 | 12          | 156789133 | 2020-07-14 11:00:00 | 2020-07-15 10:00:00 |
| 11                 | 14          | 156789133 | 2020-07-14 11:00:00 | 2020-07-15 10:00:00 |

(11 rows)

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- Staff\_Department

```
SELECT Fname, Lname, Dname
FROM STAFF_MEMBER NATURAL JOIN DEPARTMENT
WHERE Dno = userInput (integer);
```

```
MGK=> SELECT Fname, Lname, Dname
MGK-> FROM STAFF_MEMBER NATURAL JOIN DEPARTMENT
MGK-> WHERE Dno = 2;
 fname | lname | dname
-----+-----+-----
 Peyton | Reynolds | Maintenance
 Nicole | Meyers | Maintenance
(2 rows)
```

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- Inventory\_Dept

```
SELECT Type, Quantity
FROM INVENTORY
WHERE Dno = userInput (integer);
```

```
MGK=> SELECT Type, Quantity FROM INVENTORY WHERE Dno = 1;
 type | quantity
-----+-----
HousekeepingUniform | 20
Towel | 150
Washcloth | 200
PoolTowel | 300
Shampoo | 300
Soap | 300
BedSheet | 60
Pillows | 20100
(8 rows)
```

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- Inventory\_Type

```
SELECT Quantity
FROM INVENTORY
WHERE Type = userInput (text)
```

```
MGK=> SELECT Quantity
MGK-> FROM INVENTORY
MGK-> WHERE Type = 'Pillows';
 quantity

 20100
(1 row)
```

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- Billing\_Information

```
SELECT Credit_card_num, Fname, Lname
```

**FROM** CUSTOMER  
**WHERE** CSsn = **userInput (char(9))**;

```
MGK=> SELECT Credit_card_num, Fname, Lname
FROM CUSTOMER
WHERE CSsn = '758799143';
 credit_card_num | fname | lname
-----+-----+-----
 1234567891012245 | John | Doe
(1 row)
```

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- Retrieve\_Manager\_Names  
**SELECT** Fname, Lname, Dname  
**FROM** DEPARTMENT, STAFF\_MEMBER  
**WHERE** Ssn = Mssn;

```
MGK=> SELECT Fname, Lname, Dname
FROM DEPARTMENT, STAFF_MEMBER
WHERE Ssn = Mssn;
 fname | lname | dname
-----+-----+-----
 Jim | Smith | Housekeeping
 Peyton | Reynolds | Maintenance
 Leah | Kazenmayer | Reception
 Anthony | Messana | Bellhop
 Michael | Giordano | FoodService
(5 rows)
```

○

- Room\_Assignments  
**SELECT** Number, Ssn  
**FROM** STAFF\_MEMBER NATURAL JOIN ROOM;

```

MGK=> SELECT Number, Ssn
MGK-> FROM STAFF_MEMBER NATURAL JOIN ROOM;

```

| number | ssn       |
|--------|-----------|
| 1      | 111223333 |
| 2      | 111223333 |
| 3      | 111223333 |
| 4      | 111223333 |
| 5      | 111223333 |
| 6      | 777665555 |
| 7      | 777665555 |
| 8      | 777665555 |
| 9      | 777665555 |
| 10     | 777665555 |
| 11     | 999887777 |
| 12     | 999887777 |
| 13     | 999887777 |
| 14     | 999887777 |
| 15     | 999887777 |
| 16     | 888776666 |
| 17     | 888776666 |
| 18     | 888776666 |
| 19     | 888776666 |
| 20     | 888776666 |

(20 rows)

○

- Customer\_in\_Room

```

SELECT Fname, Lname, Room_Number
FROM RESERVATION NATURAL JOIN CUSTOMER
WHERE userInput (timestamp) BETWEEN Start_Date AND End_Date;

```

```

MGK=> SELECT Fname, Lname, Room_Number
MGK-> FROM RESERVATION NATURAL JOIN CUSTOMER
MGK-> WHERE '2020-07-14 12:00:00' BETWEEN Start_Date AND End_Date;

```

| fname    | lname     | room_number |
|----------|-----------|-------------|
| John     | Doe       | 2           |
| Michelle | Morris    | 4           |
| Michelle | Morris    | 5           |
| Joe      | Biden     | 1           |
| Luke     | Farinella | 11          |
| Kyle     | Murphy    | 8           |
| Joseph   | Messana   | 13          |
| Joseph   | Messana   | 12          |
| Joseph   | Messana   | 14          |

(9 rows)

○

- Num\_Reservation (returns number of reservations for a specific date)

```

SELECT COUNT(*)
FROM RESERVATION
WHERE userInput (timestamp) BETWEEN Start_Date AND End_Date;

```

```

MGK=> SELECT COUNT(*)
MGK-> FROM RESERVATION
MGK-> WHERE '2020-07-14 12:00:00' BETWEEN Start_Date AND End_Date;
count

 9
(1 row)

```

- Average\_Dept\_Salary  
**SELECT** Dno, **ROUND**(**AVG**(Salary), 2)  
**FROM** STAFF\_MEMBER  
**GROUP BY** Dno

```

MGK=> SELECT Dno, ROUND(AVG(Salary), 2)
FROM STAFF_MEMBER
GROUP BY Dno;
dno | round
-----+-----
 3 | 55000.00
 5 | 60500.00
 4 | 29000.00
 2 | 50500.00
 1 | 47250.00
(5 rows)

```

- Cheapest\_room  
**SELECT** Number, Rate  
**FROM** ROOM  
**WHERE** Rate =  
 (SELECT MIN(Rate)  
**FROM** ROOM NATURAL JOIN RESERVATION  
**WHERE** **userInput (timestamp)** NOT BETWEEN Start\_Date AND End\_Date)  
 ;

```

MGK=> SELECT Number, Rate
MGK-> FROM ROOM
MGK-> WHERE Rate = (SELECT MIN(Rate)
MGK(> FROM ROOM NATURAL JOIN RESERVATION
MGK(> WHERE '2020-07-14 12:00:00' NOT BETWEEN Start_Date AND End_Date);
number | rate
-----+-----
 12 | 140
(1 row)

```

- Most\_expensive\_room  
**SELECT** Number, Rate  
**FROM** ROOM  
**WHERE** Rate =  
 (SELECT MAX(Rate)  
**FROM** ROOM NATURAL JOIN RESERVATION

WHERE **userInput (timestamp)** NOT **BETWEEN** Start\_Date AND End\_Date)

;

```
MGK=> SELECT Number, Rate
FROM ROOM
WHERE Rate = (SELECT MAX(Rate)
FROM ROOM NATURAL JOIN RESERVATION
WHERE '2020-07-14 12:00:00' NOT BETWEEN Start_Date AND End_Date);
 number | rate
-----+-----
 18 | 198
(1 row)
```

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