



جامعة أم القرى
UMM AL-QURA UNIVERSITY

MOONLIT MARVELA

Duha Alnabati 445005974

Rana Alnefaie 445005420

Sara Almatrafi 445005027

Tahani Albariqi 445006007

Rawan Almitiri 445004277

Mehad Alahdal 445003064

Section Number: 2

supervisor name: Dr Afaf Almehmadi

REVIEWS

The database is designed to manage hotel operations efficiently by organizing rooms, reservations, services, and billing. It ensures accurate tracking of room availability, reservation scheduling, and guest information while supporting additional services and flexible payment methods. This system enhances operational efficiency and improves the overall guest experience.

BUSINESS RULES:

Moonlit Marvela, a prestigious hotel, plans to develop a database system to efficiently manage information regarding its customers, staff, rooms, and services.

1. Reservation:

- Each reservation has a unique ID, check-in and check-out dates.
- Reservations are directly linked to specific customers and include one or more rooms.

2. Customer:

- Each customer is identified by a unique ID, along with their first name, last name, and phone number.
- Each email must be unique.

3. Room:

- Each room has a unique room ID, a room type (single, double, suite), its current status (available, reserved, or under maintenance), and price.
- A room can be reserved by multiple reservations at different times.

4. Bill:

- Each bill has a unique ID and includes room charges, service charges, and the payment method (cash or credit card).
- A bill is linked to one reservation through its reservation ID.
- A bill can include charges for one or more services requested by the customer during their stay.

5. Staff:

- Each staff member has a unique staff ID, name, position, phone number, email, working hours, and salary.
- Each staff member is assigned to a specific position and can only perform tasks related to their role (e.g., spa specialist, chef, driver).
- Each email must be unique.

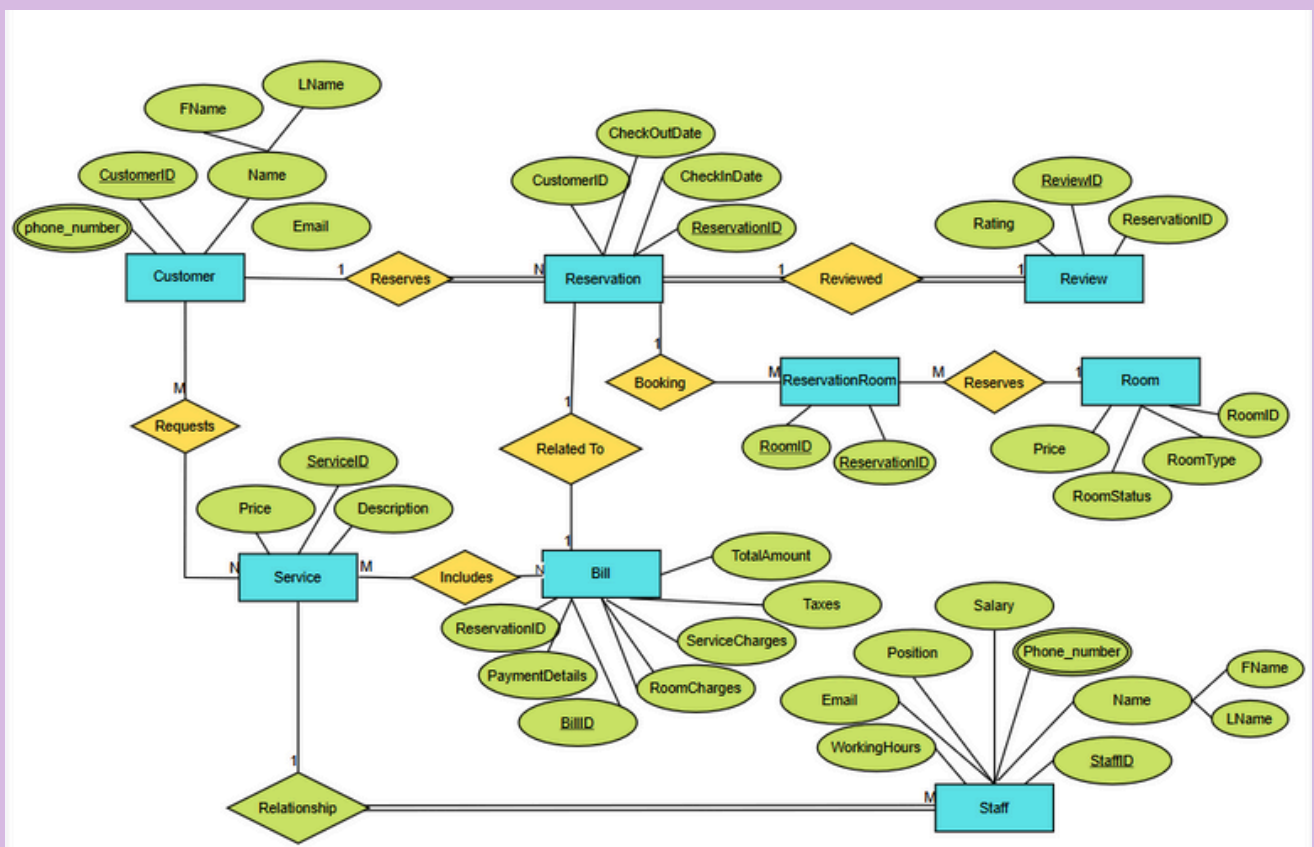
6. Service:

- Each service has a unique ID, description, and price.
- Services such as spa treatments, food delivery, and laundry are available to customers upon request.
- A service can be requested by one or more customers and is added to the customer's bill if used.

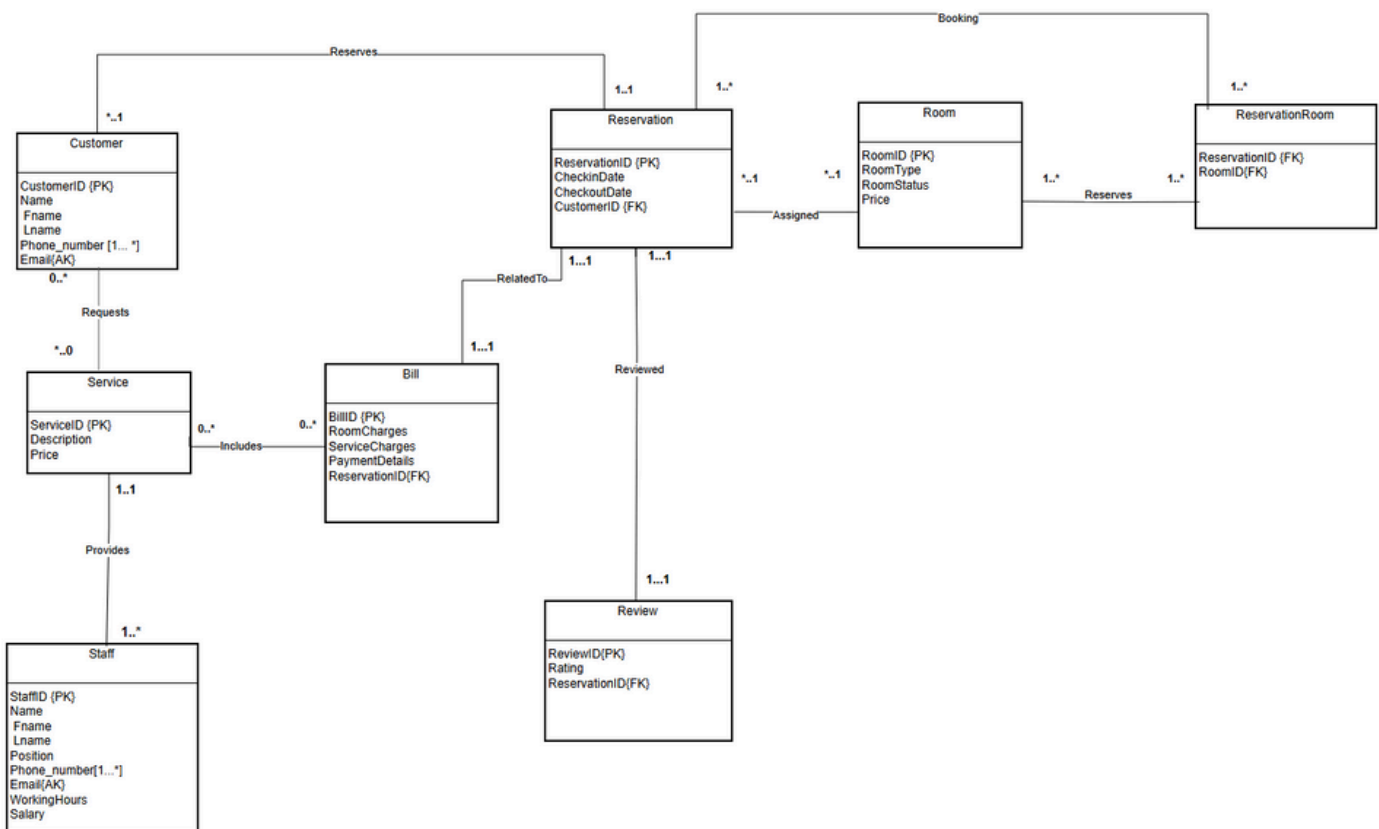
7. Review:

- Reviews have a unique review ID and a customer-provided rating.
- Every reservation must have exactly one review, and each review is tied to one specific reservation.

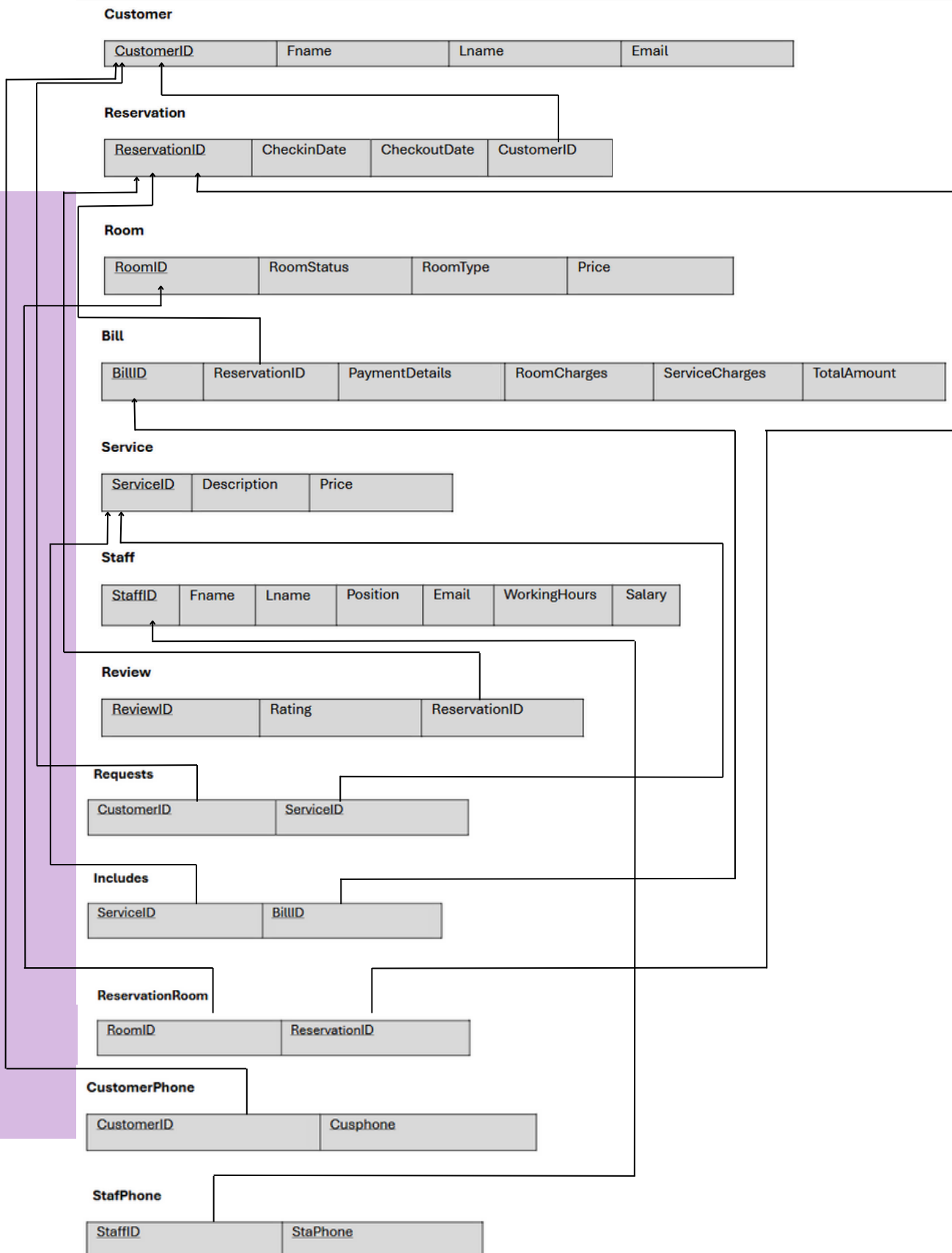
CHEN'S NOTATION :



UML DIAGRAM :



MAPPING OF ER INTO RELATIONAL SCHEMA:



TABLES :

```

-- EXISTS Customer (
PRIMARY KEY,
0) NOT NULL,
0) NOT NULL,
VARCHAR(15) NOT NULL,
0) UNIQUE NOT NULL

-- EXISTS Room (
PRIMARY KEY CHECK (RoomID BETWEEN 1 AND 500),
Single', 'Double', 'Suite') NOT NULL,
('Available', 'Reserved', 'Under Maintenance') DEFAULT 'Availa
i, 2) NOT NULL

```

```

1 • CREATE TABLE IF NOT EXISTS Bill (
2     BillID INT AUTO_INCREMENT PRIMARY KEY,
3     ReservationID INT NOT NULL,
4     RoomCharges DECIMAL(6, 2) NOT NULL,
5     ServiceCharges DECIMAL(6, 2) DEFAULT 0.00,
6     PaymentDetails VARCHAR(11) NOT NULL CHECK (PaymentDetails IN ('Cash', 'Credit Card')),
7     FOREIGN KEY (ReservationID) REFERENCES Reservation(ReservationID)
8 );

```

```

1 • CREATE TABLE IF NOT EXISTS Staff (
2     StaffID INT PRIMARY KEY,
3     fname VARCHAR(50) NOT NULL,
4     lname VARCHAR(50) NOT NULL,
5     Position VARCHAR(50) NOT NULL,
6     Phone_number VARCHAR(15) NOT NULL,
7     Email VARCHAR(50) UNIQUE NOT NULL,
8     WorkingHours INT NOT NULL,
9     Salary DECIMAL(7, 2) NOT NULL
10 );

```

```

-- CREATE TABLE IF NOT EXISTS Reservation (
ReservationID INT AUTO_INCREMENT PRIMARY KEY,
CheckinDate DATE NOT NULL,
CheckoutDate DATE NOT NULL,
CustomerID INT NOT NULL,
FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
)

```

```

-- CREATE TABLE IF NOT EXISTS ReservationRoom (
ReservationID INT NOT NULL,
RoomID INT NOT NULL,
PRIMARY KEY (ReservationID, RoomID),
FOREIGN KEY (ReservationID) REFERENCES Reservation(ReservationID),
FOREIGN KEY (RoomID) REFERENCES Room(RoomID)
)

```

```

7 • CREATE TABLE IF NOT EXISTS Services (
8     ServiceID INT AUTO_INCREMENT PRIMARY KEY,
9     Description VARCHAR(50) NOT NULL,
10    Price DECIMAL(6, 2) NOT NULL
11 );

```

```

3 • CREATE TABLE IF NOT EXISTS Includes (
4     BillID INT NOT NULL,
5     ServiceID INT NOT NULL,
6     PRIMARY KEY (BillID, ServiceID),
7     FOREIGN KEY (BillID) REFERENCES Bill(BillID),
8     FOREIGN KEY (ServiceID) REFERENCES Services(ServiceID)
9 );

```

```

1 • CREATE TABLE IF NOT EXISTS Requests (
2     CustomerID INT NOT NULL,
3     ServiceID INT NOT NULL,
4     PRIMARY KEY (CustomerID, ServiceID),
5     FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID),
6     FOREIGN KEY (ServiceID) REFERENCES Services(ServiceID)
)

```

INSERTION & THEIR RESULTS:

```
INSERT INTO Room (RoomID, RoomType, RoomStatus, Price)
VALUES
```

```
(101, 'Single', 'Reserved', 350.00),
(102, 'Double', 'Reserved', 500.00),
(103, 'Suite', 'Reserved', 750.00),
(104, 'Single', 'Reserved', 350.00),
(105, 'Double', 'Reserved', 500.00),
(106, 'Suite', 'Reserved', 750.00),
(107, 'Single', 'Reserved', 350.00),
(108, 'Double', 'Reserved', 500.00),
(201, 'Single', 'Reserved', 350.00),
(202, 'Double', 'Reserved', 500.00),
(203, 'Suite', 'Available', 750.00),
(204, 'Suite', 'Available', 750.00),
(301, 'Single', 'Under Maintenance', 350.00),
(302, 'Double', 'Under Maintenance', 500.00),
(303, 'Suite', 'Under Maintenance', 750.00),
(304, 'Suite', 'Under Maintenance', 750.00);
```

```
INSERT INTO Bill (ReservationID, RoomCharges, ServiceCharges, PaymentDetails)
```

```
VALUES
```

```
(1, 850.00, 350.00, 'Credit Card'),
(2, 850.00, 150.00, 'Cash'),
(3, 350.00, 50.00, 'Credit Card'),
(4, 1250.00, 145.00, 'Cash'),
(5, 350.00, 200.00, 'Credit Card'),
(6, 500.00, 50.00, 'Cash'),
(7, 750.00, 0.00, 'Credit Card');
```

```
INSERT INTO Staff (StaffID, fname, lname, Position, Phone_number, Email, WorkingHours, Salary)
```

```
VALUES
```

```
(2000000001, 'Lama', 'Alghamdi', 'Receptionist', '0591234567', 'lama.alghamdi@gmail.com', 40, 4000.00),
(2000000002, 'Noura', 'Alotaibi', 'Housekeeping', '0592345678', 'noura.alotaibi@hotmail.com', 38, 1500.00),
(2000000003, 'Reem', 'Alzahrani', 'Gyn coach', '0593456789', 'reem.alzahrani@yahoo.com', 45, 5000.00),
(2000000004, 'Aseel', 'Alqahtani', 'Chef', '0594567890', 'aseel.alqahtani@outlook.com', 40, 8000.00),
(2000000005, 'Raghad', 'Alshahrani', 'Driver', '0595678901', 'raghad.alshahrani@gmail.com', 35, 3500.00),
(2000000006, 'Sarah', 'Alshehri', 'Spa Specialist', '0596789012', 'sarah.alshehri@hotmail.com', 30, 2500.00);
```

```
• INSERT INTO Reservation (CheckinDate, CheckoutDate, CustomerID)
```

```
VALUES
```

```
('2025-02-01', '2025-02-05', 1000000001),
('2025-03-05', '2025-03-10', 1000000001),
('2025-02-10', '2025-02-15', 1000000002),
('2025-03-01', '2025-03-05', 1000000003),
('2025-03-10', '2025-03-12', 1000000004),
('2025-04-01', '2025-04-03', 1000000005),
('2025-04-05', '2025-04-08', 1000000006);
```

```
• INSERT INTO ReservationRoom (ReservationID, RoomID)
```

```
VALUES
```

```
(1, 101),
(1, 102),
(2, 201),
(2, 202),
(3, 104),
(4, 105),
(4, 106),
(5, 107),
(6, 108),
(7, 103);
```

INSERTION & THEIR RESULTS:

```
INSERT INTO Services (Description, Price)
VALUES
('Spa treatment', 200.00),
('Buffet', 150.00),
('Buffet for kids', 50.00),
('Laundry', 50.00),
('Gym', 75.00),
('Food Delivery', 70.00);
```

```
INSERT INTO Includes (BillID, ServiceID)
VALUES
(1, 1),
(1, 2),
(2, 3),
(4, 4),
(4, 5),
(5, 6);
```

- INSERT INTO Requests (CustomerID, ServiceID)

```
VALUES
(1000000001, 1),
(1000000001, 2),
(1000000002, 3),
(1000000003, 4),
(1000000003, 5),
(1000000004, 5),
(1000000005, 6);
```

- INSERT INTO Review (ReservationID, Rating)

```
VALUES
(1, 5),
(2, 4),
(3, 5),
(4, 3),
(5, 4),
(6, 5);
```

- 33 • UPDATE Room

```
34 SET Price = 550
35 WHERE RoomID = 105;
```

```
36
```

```
37
```

- 38 • UPDATE staff

```
39 SET Salary = Salary * 1.10
40 WHERE StaffID = 2000000005;
```

```
41
```


INSERTION & THEIR RESULTS:

```

17 • SELECT * FROM Room
18 WHERE RoomStatus = 'Available'
19 OR RoomStatus = 'Under Maintenance';
20
21 • SELECT
22     RoomStatus, COUNT(RoomID) AS TotalRooms
23 FROM Room
24 GROUP BY RoomStatus;
25
26 • SELECT
27     StaffID,
28     CONCAT (s.fname , ' ', s.lname) as Full_Name,
29     WorkingHours
30 FROM
31     Staff as s
32 HAVING
33     WorkingHours >= 35
34 ORDER BY WorkingHours DESC;
35
36
37 • SELECT -- Select (Order BY)
38     CONCAT (s.fname , ' ', s.lname) as Full_Name,
39     StaffID,
40     Salary,
41     Position
42 FROM Staff as s
43 ORDER BY Salary DESC;
44
45

```

The outputs

RoomID	RoomType	RoomStatus	Price
203	Suite	Available	750.00
204	Suite	Available	750.00
301	Single	Under Maintenance	350.00
302	Double	Under Maintenance	500.00
303	Suite	Under Maintenance	750.00
304	Suite	Under Maintenance	750.00
NULL	NULL	NULL	NULL

RoomStatus	TotalRooms
Reserved	10
Available	2
Under Maintenance	4

StaffID	Full_Name	WorkingHours
2000000003	Reem Alzahrani	45
2000000001	Lama Alghamdi	40
2000000004	Aseel Alqahtani	40
2000000002	Noura Alotabi	38
2000000005	Raghad Alshahrani	35

FullName	PhoneNumber	ReservationID	DurationInDays	FinalAmount
Rana Alnefaie	0501234567	1	4	3400.00
Rana Alnefaie	0501234567	2	5	4250.00
Sarah Almatrafi	0512345678	3	5	1750.00
Tahani Albarqi	0523456789	4	4	5200.00
Rawan Almitri	0534567890	5	2	700.00
Doha Alnabati	0545678901	6	2	1000.00
Mihad Alahdal	0556789012	7	3	2250.00

BillID	RoomCharges	ServiceCharges	TotalCharges	Taxes	Price
1	850.00	350.00	1200.00	180.0000	1380.0000
2	850.00	150.00	1000.00	150.0000	1150.0000
3	350.00	50.00	400.00	60.0000	460.0000
4	1250.00	145.00	1395.00	209.2500	1604.2500
5	350.00	200.00	550.00	82.5000	632.5000
6	500.00	50.00	550.00	82.5000	632.5000
7	750.00	0.00	750.00	112.5000	862.5000

Full_Name	StaffID	Salary	Position
Aseel Alqahtani	2000000004	8000.00	Chef
Reem Alzahrani	2000000003	5000.00	Gyn coach
Lama Alghamdi	2000000001	4000.00	Receptionist
Raghad Alshahrani	2000000005	3850.00	Driver
Sarah Alshehri	2000000006	2500.00	Spa Specialist
Noura Alotabi	2000000002	1500.00	Housekeeping

Full_Name	PhoneNumber
Rana Alnefaie	0501234567

INSERTION & THEIR RESULTS:

```

100
101 • INSERT INTO Staff (StaffID, fname, lname, Position, Phone_number, Email, WorkingHours, Salary)
102 VALUES
103 (2000000001, 'Lama', 'Alghamdi', 'Receptionist', '0591234567', 'lama.alghamdi@gmail.com', 40, 4000.00),
104 (2000000002, 'Noura', 'Alotaibi', 'Housekeeping', '0592345678', 'noura.alotaibi@hotmail.com', 38, 1500.00),
105 (2000000003, 'Reem', 'Alzahrani', 'Manager', '0593456789', 'reem.alzahrani@yahoo.com', 45, 10000.00),
106 (2000000004, 'Aseel', 'Alqahtani', 'Chef', '0594567890', 'aseel.alqahtani@outlook.com', 40, 8000.00),
107 (2000000005, 'Raghad', 'Alshahrani', 'Driver', '0595678901', 'raghad.alshahrani@gmail.com', 35, 2500.00),
108 (2000000006, 'Sarah', 'Alshehri', 'Spa Specialist', '0596789012', 'sarah.alshehri@hotmail.com', 30, 3000.00);
109
110
111 • INSERT INTO Service (Description, Price)
112 VALUES
113 ('Spa treatment', 200.00),
114 ('Buffet', 150.00),
115 ('Room Cleaning', 0.00),
116 ('Laundry', 50.00),
117 ('Gym', 75.00),
118 ('Food Delivery', 70.00);
119
120

```

Staff:

StaffID	fname	lname	Position	Phone_number	Email	WorkingHours	Salary
2000000001	Lama	Alghamdi	Receptionist	0591234567	lama.alghamdi@gmail.com	40	4000.00
2000000002	Noura	Alotaibi	Housekeeping	0592345678	noura.alotaibi@hotmail.com	38	1500.00
2000000003	Reem	Alzahrani	Manager	0593456789	reem.alzahrani@yahoo.com	45	10000.00
2000000004	Aseel	Alqahtani	Chef	0594567890	aseel.alqahtani@outlook.com	40	8000.00
2000000005	Raghad	Alshahrani	Driver	0595678901	raghad.alshahrani@gmail.com	35	2500.00
2000000006	Sarah	Alshehri	Spa Specialist	0596789012	sarah.alshehri@hotmail.com	30	3000.00
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Services:

ServiceID	Description	Price
1	Spa treatment	200.00
2	Buffet	150.00
3	Room Cleaning	0.00
4	Laundry	50.00
5	Gym	75.00
6	Food Delivery	70.00

20

21 • INSERT INTO Review (ReservationID, Rating)

22 VALUES

23 (1, 5),

24 (2, 4),

25 (3, 5),

26 (4, 3),

27 (5, 4),

28 (6, 2);

29

ReviewID	ReservationID	Rating
1	1	5
2	2	4
3	3	5
4	4	3
5	5	4
6	6	2
NULL	NULL	NULL

UPDATE AND DELETE :

```

132 • SELECT * FROM Room;
133 • SELECT * FROM Reservation;
134 • SELECT * FROM Bill;
135 • SELECT * FROM Staff;
136 • SELECT * FROM Service;
137 • SELECT * FROM Review;
138

```

```

UPDATE Room
SET RoomStatus = 'Under maintenance'
WHERE RoomID = 102;

```

```

UPDATE staff
SET Salary = Salary * 1.10
WHERE StaffID = 2000000005;

```

```

DELETE FROM Review
WHERE ReviewID = 6;

```

Update room

StaffID	fname	Iname	Position	Phone_number	Email	WorkingHours	Salary
2000000001	Lama	Alghamdi	Receptionist	0591234567	lama.alghamdi@gmail.com	40	4000.00
2000000002	Noura	Alotabi	Housekeeping	0592345678	noura.alotabi@hotmail.com	38	1500.00
2000000003	Reem	Alzahrani	Manager	0593456789	reem.alzahrani@yahoo.com	45	10000.00
2000000004	Aseel	Alqahtani	Chef	0594567890	aseel.alqahtani@outlook.com	40	8000.00
2000000005	Raghad	Alshahrani	Driver	0595678901	raghad.alshahrani@gmail.com	35	2750.00
2000000006	Sarah	Raghad	Spa Specialist	0596789012	sarah.alshehri@hotmail.com	30	3000.00
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Update staff

RoomID	RoomType	RoomStatus	Price
101	Single	Available	350.00
102	Double	Under Maintenance	500.00
103	Suite	Available	750.00
104	Single	Under Maintenance	350.00
105	Double	Available	500.00
106	Suite	Available	750.00
204	Single	Under Maintenance	350.00
205	Double	Under Maintenance	500.00
206	Suite	Under Maintenance	750.00
207	Single	Under Maintenance	350.00
208	Double	Reserved	500.00
209	Suite	Available	750.00
NULL	NULL	NULL	NULL

Delete review

ReviewID	ReservationID	Rating
1	1	5
2	2	4
3	3	5
4	4	3
5	5	4
NULL	NULL	NULL

SELECT COMMANDS:

```

151 • SELECT * FROM Room
152 WHERE RoomStatus = 'Available'
153 OR RoomStatus = 'Under Maintenance';
154
155 • SELECT
156     RoomStatus, COUNT(RoomID) AS TotalRooms
157 FROM Room
158 GROUP BY RoomStatus;
159

```

Result Grid Filter Rows: Edit:				
	RoomID	RoomType	RoomStatus	Price
▶	101	Single	Available	350.00
	102	Double	Under Maintenance	500.00
	103	Suite	Available	750.00
	104	Single	Under Maintenance	350.00
	105	Double	Available	500.00
	106	Suite	Available	750.00
	204	Single	Under Maintenance	350.00
	205	Double	Under Maintenance	500.00
	206	Suite	Under Maintenance	750.00
	207	Single	Under Maintenance	350.00
	209	Suite	Available	750.00
*	NULL	NULL	NULL	NULL

Result Grid Filter Rows: Edit:	
RoomStatus	TotalRooms
▶ Available	5
Under Maintenance	6
Reserved	1

```

160 • SELECT
161     StaffID,
162     fname AS FirstName,
163     lname AS LastName,
164     WorkingHours
165 FROM
166     Staff
167 HAVING
168     WorkingHours >= 35
169 ORDER BY WorkingHours DESC;
170

```

Result Grid Filter Rows: Edit:				
	StaffID	FirstName	LastName	WorkingHours
▶	2000000003	Reem	Alzahrani	45
	2000000001	Lama	Alghamdi	40
	2000000004	Aseel	Alqahtani	40
	2000000002	Noura	Alotaibi	38
	2000000005	Raghad	Alshahrani	35
*	NULL	NULL	NULL	NULL

SELECT COMMANDS:

```

171
172 • SELECT
173     StaffID,
174     fname,
175     lname,
176     Salary,
177     Position
178 FROM Staff
179 ORDER BY Salary DESC;
180

```

StaffID	fname	lname	Salary	Position
2000000003	Reem	Alzahrani	10000.00	Manager
2000000004	Aseel	Alqahtani	4000.00	Chef
2000000001	Lama	Alghamdi	3000.00	Receptionist
2000000006	Sarah	Alshehri	2750.00	Spa Specialist
2000000005	Raghad	Alshahrani	1500.00	Driver
2000000002	Noura	Alotaibi	1500.00	Housekeeping
NULL	NULL	NULL	NULL	NULL

```

182 • SELECT -- Subquerie
183     fname AS FirstName,
184     lname AS LastName,
185     Phone_number AS PhoneNumber
186 FROM
187     Customer
188 WHERE
189     CustomerID IN (
190         SELECT
191             CustomerID
192         FROM
193             Reservation
194         WHERE
195             RoomID = 102
196     );
197

```

FirstName	LastName	PhoneNumber
Sarah	Almatrafi	0512345678

SELECT COMMANDS:

```

199 • SELECT -- join
200     fname AS FirstName,
201     lname AS LastName,
202     Phone_number AS PhoneNumber,
203     DATEDIFF(r.CheckoutDate, r.CheckinDate) AS DurationInDays,
204     (DATEDIFF(r.CheckoutDate, r.CheckinDate) * (SELECT Price FROM Room WHERE RoomID = r.RoomID)) AS FinalAmount
205 FROM
206     Customer AS c
207 JOIN
208     Reservation AS r ON c.CustomerID = r.CustomerID;
209
210 • SELECT
211     BillID,
212     RoomCharges,
213     ServiceCharges,
214
215     (RoomCharges + ServiceCharges) AS TotalCharges,
216     (RoomCharges + ServiceCharges) * 0.15 AS Taxes,
217     (RoomCharges + ServiceCharges) + ((RoomCharges + ServiceCharges) * 0.15) AS Price
218 FROM Bill;

```

Join command

Result Grid

Filter Rows:

Export:

Wrap Cell Content

	FirstName	LastName	PhoneNumber	DurationInDays	FinalAmount
▶	Rana	Alnefaie	0501234567	4	1400.00
	Sarah	Almatrafi	0512345678	5	2500.00
	Tahani	Albarqi	0523456789	4	3000.00
	Rawan	Almitiri	0534567890	2	700.00
	Doha	Alnabati	0545678901	2	1000.00
	Mihad	Alahdal	0556789012	3	2250.00

Result Grid							Filter Rows:	Export:	Wrap Cell Content:
	BillID	RoomCharges	ServiceCharges	TotalCharges	Taxes	Price			
▶	1	1400.00	200.00	1600.00	240.0000	1840.0000			
	2	2500.00	150.00	2650.00	397.5000	3047.5000			
	3	3000.00	0.00	3000.00	450.0000	3450.0000			
	4	700.00	300.00	1000.00	150.0000	1150.0000			
	5	1000.00	100.00	1100.00	165.0000	1265.0000			
	6	2250.00	50.00	2300.00	345.0000	2645.0000			

THE ALLOCATION OF TASKS AND CLASSES :

14

Tasks	student name
Mapping the ER into Relational Schema and reviewing the diagrams.	Duha
Coding and some commands.	Sara
Coding , Business roles, Prepared the report.	Rana
Chin's notation and help in UML.	Mehad
UML diagram , Prepared the report.	Tahani
Business roles and description of project	Rawan