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Task 1

Task 1

Analysis

For the task 1, I researched detailed and explicit data of my selected organization, Novotel hotel. Then, I wrote a brief introduction of the hotel and presented a hotel's current problem. I discussed the advantages of database implementation. I also listed entities and day-to-day functions that database can perform. However, I had to first normalize the researched data to 3rd normal form. Since the database has two high-level transactions, I had to design entity-relationship diagram for each and the whole ERD. Then, I made data dictionaries. For the task 2, I used SQL commands to create tables and selected important hotel information from the database. For the task 3, I expounded on the essence of entity-relationship modeling and how my database fills up the gap of our hotel. I also demonstrated my assumptions and the transaction flow in database.

Assumption

For the organization, I chose the Novotel to emphasize how the hotel's reservation works. I advised implementing the database which is the feasible solution to my chosen organization. I used Microsoft Office Visio 2003 for entity-relationship modeling. I also used SQL server to accomplish my database project. My database was implemented in Microsoft SQL Server Management Studio 2018 with SQL commands.

a. Introduction, outline and Initial Analysis

Novotel, the heart of Yangon, is a foreign five-star hotel which provides a myriad of recreational facilities for local as well as international organizations. The Novotel holds most of the aces in the fiercely competitive hospitality field. Yet the hotel is being confronted by human errors such as the double-booked room and mishandled reservation. Manual data collection and storing tasks are being time-consuming in the room reservation system. This erroneous system is not just our hotel's bottom line but our reputation as well. In order to fix those fallible administrations, I am willing to construct a powerful database to manage room reservations with ease as well as to handle the company's assets and liabilities effectively. I also intend to enhance the personalized marketing by emailing their customers about special discount packages and newsletters with their mailing address saved in the database. Novotel values the database as a new "CURRENCY"

Database is a computerized organization of data to operate by storing, retrieving and managing (GeeksforGeeks 2019). The room reservation database includes the following.

Entity lists

- Staff
- RoomService
- Rating
- RoomType
- Room
- Customer
- Reservation
- RoomServiceDetails
- Payment
- RoomReservationDetails

Transactions

- Adding new staff
- Recording room services and prices
- Inserting room rating

- Recording room types
- Adding room information
- Adding new customers
- Recording room reservation
- Adding room reservation details
- Adding payment information
- Updating the payment by adding the room service prices to the original reservation price
- Listing all the hotel rooms
- Summary of customers' reservation
- Showing the number of available hotel rooms
- Selecting the Room service for reserved rooms

Database creates a place where we have an advantage of more and better managed data making it possible for end-users to have a quick look and to respond fast to any changes made in their environment. Due to the database System, we have access to well managed and synchronized form of data thus it makes data handling very easy and gives integrated view of how we are working and also helps to keep a track on how one segment of our hotel affects another segment. Moreover, we have better managed and improved data accessing because of which we can generate better quality information hence on this basis better decisions can be made (GeeksforGeeks 2019).

b. Normalization and ERD

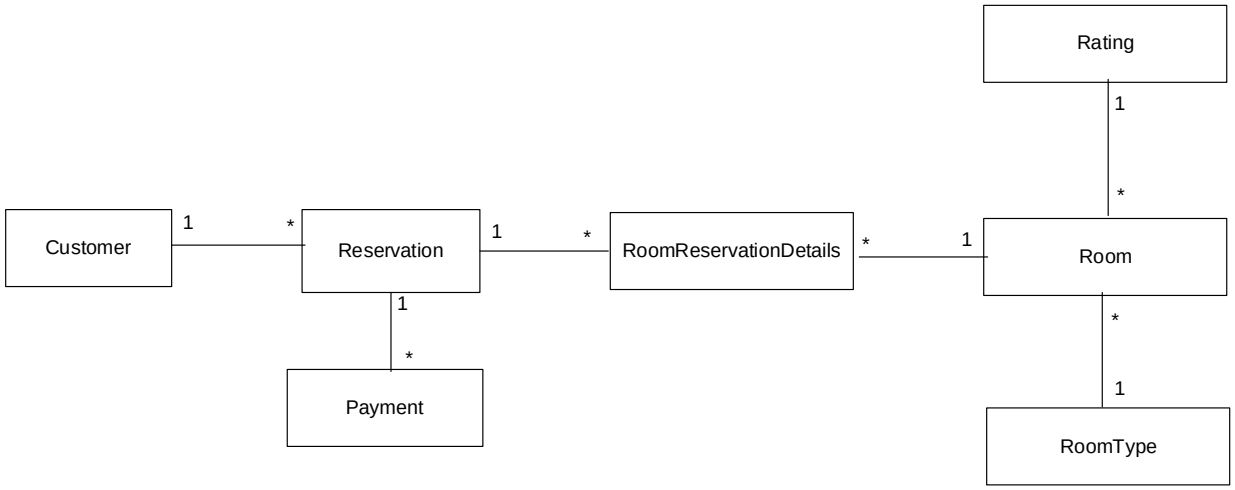
There are two high level transactions– room reservation and room service. For the former transaction, the data of hotel rooms, customers, their reservations and payments are collected and normalized to 3rd normal form. Room rating and Room type are derived from normalization of room. For the room service transaction, staff's information and their respective services are normalized to generate three entities.

Normalization for Reservation

UNF	Level	1NF	2NF	3NF	Entity
CustomerName	1	ReservationCode(PK)	CustomerID (PK)	CustomerID (PK)	
CustomerDOB	1	CustomerName	CustomerName	CustomerName	
NRC	1	ReservationDate	CustomerDOB	CustomerDOB	
Gender	1	CheckInDate	NRC	NRC	Customer
Address	1	CheckOutDate	Gender	Gender	
PhoneNumber	1	Duration	Address	Address	
ReservationDate	2	NumberOfRooms	PhoneNumber	PhoneNumber	
CheckInDate	2				
CheckOutDate	2	PaymentCode(PK)	ReservationCode(PK)	ReservationCode(PK)	
Duration	2	ReservationCode(FK)	CustomerID (FK)	CustomerID (FK)	
NumberOfRooms	2	PaymentDate	ReservationDate	ReservationDate	Reservation
PaymentDate	2	PaymentPrice	CheckInDate	CheckInDate	
PaymentPrice	2	PaymentType	CheckOutDate	CheckOutDate	
PaymentType	2	CardNum	Duration	Duration	
CardNum	2		NumberOfRooms	NumberOfRooms	
RoomAvailability	2	RoomCode(PK)			
Floor	2	RoomAvailability	ReservationCode(FK)	ReservationCode(FK)	RoomReserv
RoomType	2	Floor	RoomCode(FK)	RoomCode(FK)	ationDetails
RoomPrice	2	RatingType			
RatingType	2	RoomType	RoomCode(PK)	RoomCode(PK)	
Rating	2		RatingCode(FK)	RatingCode(FK)	Room
			RoomTypeCode(FK)	RoomTypeCode(FK)	
			RoomAvailability	RoomAvailability	
			Floor	Floor	

			RoomTypeCode(PK) RoomType RoomPrice RatingCode(PK) RatingType Rating	RoomTypeCode(PK) RoomType RoomPrice RatingCode(PK) RatingType Rating PaymentCode(PK) ReservationCode(FK) PaymentDate PaymentPrice PaymentType CardNum	RoomType Rating Payment

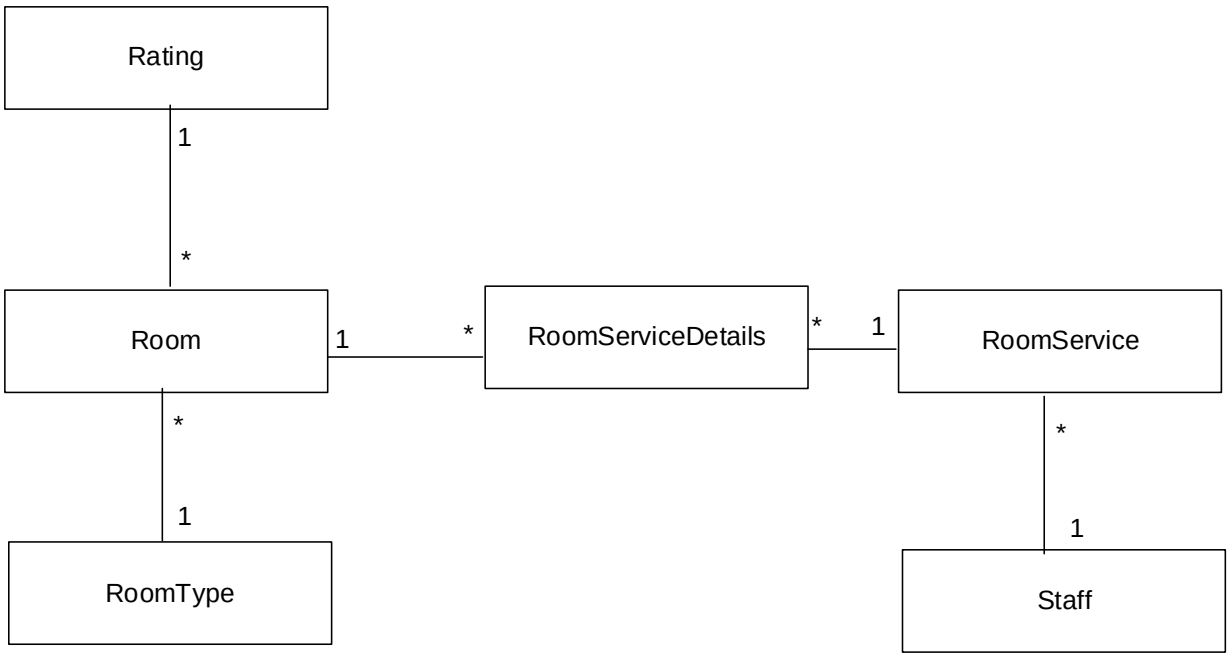
Normalized ERD for Reservation



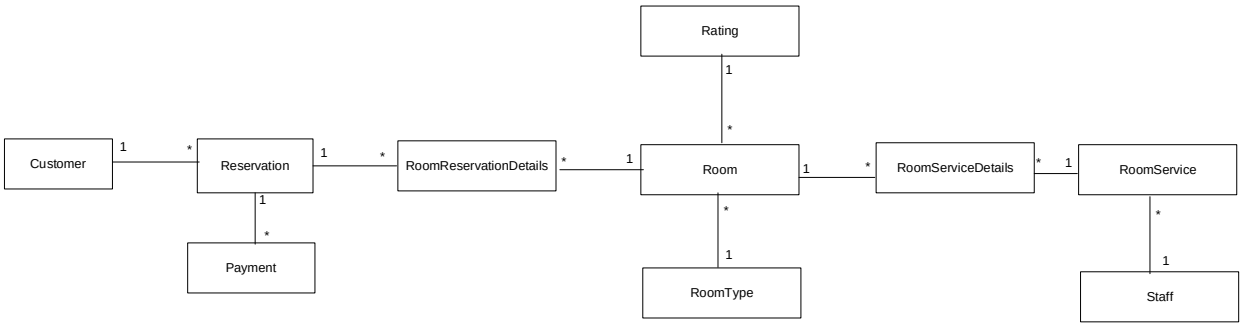
Normalization for RoomService

UNF	Level	1NF	2NF	3NF	Entity
RoomServiceType	2	RoomServiceCode(PK)	StaffID (PK)	StaffID (PK)	
RoomServicePrice	2		StaffName	StaffName	
RoomCode	2	StaffName	Position	Position	Staff
RoomAvailability	2	RoomServiceType	Gender	Gender	
Floor	2	RoomServicePrice	Address	Address	
StaffName	1	RoomCode	PhoneNumber	PhoneNumber	
Position	1	RoomAvailability			
Gender	1	Floor	RoomServiceCode(PK)	RoomServiceCode(PK)	
Address	1		StaffID (FK)	StaffID (FK)	RoomService
PhoneNumber	1		RoomServiceType	RoomServiceType	
			RoomServicePrice	RoomServicePrice	
			RoomServiceCode(FK)	RoomServiceCode(FK)	RoomServiceDetails
			RoomCode	RoomCode(FK)	
			RoomAvailability		
			Floor	RoomCode(PK)	
				RoomAvailability	Room
				Floor	

Normalized ERD for RoomService



ERD (Entity Relationship Diagram)



My database has two transactions – room reservation and room service so that I had to struggle with how to join these two components. While the Room Service transaction was in its infancy, my logical concept was fallacious because I directly linked the “Staff” table to the “Room” table. I could rectify this condition by adding a “RoomService” table for the purpose of meaningful transaction. The design has also some defects: there will be reservations in accordance with the quantity of reserved rooms whenever a customer reserves more than one room. The repercussion is to recalculate the customer’s total payment.

c. Data Dictionary

1. Customer

Entity: Customer

Primary Key: CustomerID

Foreign Key:

Name	Type	Size	Description
CustomerID	Varchar	20	Unique Identification for Customer
CustomerName	Varchar	100	Name of Customer
CustomerDOB	Date		Customer's Date of Birth
NRC	Varchar	100	Customer's National Registration Card
Gender	Varchar	50	Gender of Customer
Address	Varchar	100	Address of customer
PhoneNumber	Varchar	50	Phone number of Customer

2. Reservation

Entity: Reservation

Primary Key: ReservationCode

Foreign Key: CustomerID

Name	Type	Size	Description
ReservationCode	Varchar	20	Unique Identification for Reservation

CustomerID	Varchar	20	Unique Identification for Customer
ReservationDate	Date		Date of Reservation
CheckInDate	Date		Date of Check-in
CheckOutDate	Date		Date of Check-out
Duration	Varchar	100	Period of stay
NumberOfRooms	Integer		Number of reserved rooms

3. Payment

Entity: Payment

Primary Key: PaymentCode

Foreign Key: ReservationCode

Name	Type	Size	Description
PaymentCode	Varchar	20	Unique Identification for Payment
ReservationCode	Varchar	20	Unique Identification for Reservation
PaymentDate	Date		Date of payment
PaymentPrice	Varchar	100	Amount of payment
PaymentType	Varchar	100	Type of payment
CardNum	Varchar	100	Credit Card Number

4. Staff

Entity: Staff

Primary Key: StaffID

Foreign Key:

Name	Type	Size	Description
StaffID (PK)	Varchar	20	Unique Identification for Customer
StaffName	Varchar	100	Staff's name
Position	Varchar	100	Position of Staff
Gender	Varchar	50	Gender of Staff
Address	Varchar	100	Address of Staff
PhoneNumber	Varchar	50	Phone number of Staff

5. RoomService

Entity: RoomService

Primary Key: ServiceCode

Foreign Key: StaffID

Name	Type	Size	Description
ServiceCode	Varchar	20	Unique Identification for room service
StaffID	Varchar	20	Unique Identification for Staff
RoomServiceType	Varchar	100	Type of Room Service
RoomServicePrice	Varchar	100	Amount of Room Service

6. RoomReservationDetails

Entity: RoomReservationDetails

Primary Key:

Foreign Key: ReservationCode, RoomCode

Name	Type	Size	Description
ReservationCode	Varchar	20	Unique Identification for Reservation
RoomCode	Varchar	20	Unique Identification for Room

7. RoomServiceDetails

Entity: RoomServiceDetails

Primary Key: -

Foreign Key: ServiceCode, RoomCode

Name	Type	Size	Description
ServiceCode	Varchar	20	Unique Identification for room service
RoomCode	Varchar	20	Unique Identification for Room

8. RoomType

Entity: RoomType

Primary Key: RoomTypeCode

Foreign Key: -

Name	Type	Size	Description
RoomTypeCode	Varchar	20	Unique Identification for room type
RoomType	Varchar	100	Type of Room
RoomPrice	Varchar	100	Price of Room for renting

9. Rating

Entity: Rating

Primary Key: RatingCode

Foreign Key: -

Name	Type	Size	Description
RatingCode	Varchar	20	Unique Identification for Rating
RatingType	Varchar	100	Type of Rating
Rating	Integer		Rating

10. Room

Entity: Room

Primary Key: RoomCode

Foreign Key: RatingCode, RoomTypeCode

Name	Type	Size	Description
RoomCode	Varchar	20	Unique Identification for RoomCode
RatingCode	Varchar	20	Unique Identification for RoomCode

RoomTypeCode	Varchar	20	Unique Identification for RoomTypeCode
RoomAvailability	Varchar	20	Whether room is available or not
Floor	Varchar	100	Room location

Task 2

Task 2

a) Create statement all data tables

Create and Result for Staff table

```
Create table Staff(
    StaffID Varchar(20) Not null,
    StaffName Varchar(100),
    Position Varchar(100),
    Gender Varchar(50),
    Address Varchar(100),
    PhoneNumber Varchar(50),
    Primary Key(StaffID),
    Check (Gender in('Male', 'Female'))
);
```

110 %

Messages

Commands completed successfully.

```
Select * from Staff;
```

110 %

Results | Messages

StaffID	StaffName	Position	Gender	Address	PhoneNumber

Create and Result for Rating table

```
Create table Rating(
    RatingCode Varchar(20) Not null,
    RatingType Varchar(100),
    Rating integer,
    Primary Key(RatingCode),
);
```

121 %

Messages

```
Commands completed successfully.
```

```
Select * from Rating;
```

121 %

Results Messages

RatingCode	RatingType	Rating

Create and Result for RoomType table

```
Create table RoomType(
    RoomTypeCode Varchar(20) Not null,
    RoomType Varchar(100),
    RoomPrice Varchar(100),
    Primary Key(RoomTypeCode),
);
```

121 %

Messages

```
Commands completed successfully.
```

```
Select * from RoomType;
```

121 %

Results | Messages

RoomTypeCode	RoomType	RoomPrice

Create and Result for RoomService table

```
Create table RoomService(
    ServiceCode Varchar(20) Not null,
    StaffID Varchar(20) Not null,
    RoomServiceType Varchar(100),
    RoomServicePrice Varchar(100),
    Primary Key(ServiceCode),
    Foreign Key(StaffID) references Staff(StaffID)
);
```

121 %

Messages

```
Commands completed successfully.
```

```
Select * from RoomService;
```

121 %

Results Messages

ServiceCode	StaffID	RoomServiceType	RoomServicePrice

Create and Result for Room table

```
Create table Room(
    RoomCode Varchar(20) Not null,
    RatingCode Varchar(20) Not null,
    RoomTypeCode Varchar(20) Not null,
    RoomAvailability Varchar(20),
    Floor Varchar(100),
    Primary Key(RoomCode),
    Foreign Key(RatingCode) references Rating(RatingCode),
    Foreign Key(RoomTypeCode) references RoomType(RoomTypeCode),
    Check (RoomAvailability in ('yes', 'no')),
);
```

133 %

Messages

```
Commands completed successfully.
```

```
Select * from Room;
```

133 %

Results Messages

RoomCode	RatingCode	RoomTypeCode	RoomAvailability	Floor

Create and Result for Customer table

```
Create table Customer(
    CustomerID Varchar(20) Not null,
    CustomerName Varchar(100),
    CustomerDOB Date,
    NRC Varchar(100),
    Gender Varchar(50),
    Address Varchar(100),
    PhoneNumber Varchar(50),
    Primary Key(CustomerID),
    Check (Gender in('Male', 'Female'))
);
```

146 %

Messages

```
Commands completed successfully.
```

```
Select * from Customer;
```

110 %

Results | Messages

CustomerID	CustomerName	CustomerDOB	NRC	Gender	Address	PhoneNumber

Create and Result for Reservation table

```
Create table Reservation(
    ReservationCode Varchar(20) Not null,
    CustomerID  Varchar(20) Not null,
    ReservationDate Date,
    CheckInDate Date,
    CheckOutDate Date,
    Duration Varchar(100),
    NumberOfRooms integer,
    Primary Key(ReservationCode),
    Foreign Key(CustomerID) references Customer(CustomerID)
);
```

146 %

Messages

Commands completed successfully.

```
Select * from Reservation;
```

110 %

Results Messages

ReservationCode	CustomerID	ReservationDate	CheckInDate	CheckOutDate	Duration	NumberOfRooms

Create and Result for RoomReservationDetails table

```
Create table RoomReservationDetails(
    ReservationCode Varchar(20) Not null,
    RoomCode Varchar(20) Not null,
    Foreign Key(ReservationCode) references Reservation(ReservationCode),
    Foreign Key(RoomCode) references Room(RoomCode),
    Primary Key(ReservationCode, RoomCode)
);
```

133 %

Messages

```
Commands completed successfully.
```

```
Select * from RoomReservationDetails;
```

133 %

Results Messages

ReservationCode	RoomCode

Create and Result for Payment table

```
Create Table Payment(
    PaymentCode Varchar(20) Not null,
    ReservationCode Varchar(20) Not null,
    PaymentDate Date,
    PaymentPrice Varchar(100),
    PaymentType Varchar(100),
    CardNum Varchar(100),
    Primary Key(PaymentCode),
    Foreign Key(ReservationCode) references Reservation(ReservationCode)
);
```

121 %

Messages

```
Commands completed successfully.
```

```
Select * from Payment
```

121 %

Results Messages

PaymentCode	ReservationCode	PaymentDate	PaymentPrice	PaymentType	CardNum

Create and Result for RoomServiceDetails table

```
Create table RoomServiceDetails(
    ServiceCode Varchar(20) Not null,
    RoomCode Varchar(20) Not null,
    Foreign Key(ServiceCode) references RoomService(ServiceCode),
    Foreign Key(RoomCode) references Room(RoomCode),
    Primary Key(ServiceCode, RoomCode)
);
```

```
133 %
Messages
Commands completed successfully.
```

```
Select * from RoomServiceDetails;
```

```
133 %
Results  Messages
ServiceCode  RoomCode
```

b) Adding data into corresponding tables

Insert script and Result for Staff table

```
insert into Staff (StaffID, StaffName, Position, Gender, Address, PhoneNumber)
values('S-0001','James', 'Event Planner', 'Male', 'Yankin', '09-798232321' ),
('S-0002','Robert', 'Executive Chef', 'Male', 'Yankin', '09-178432321' ),
('S-0003','John', 'Hotel General Manager', 'Male','Bahan', '09-183232321' ),
('S-0004','Michael', 'Waiter', 'Male', 'Bahan', '09-742932321' ),
('S-0005','Mary', 'Housekeeper', 'Female', 'Latha', '09-924632321' ),
('S-0006','Patricia', 'Concierge', 'Female', 'Latha', '09-273492463' ),
('S-0007','Jennifer','Waitress', 'Female', 'Hlaing', '09-916492463' ),
('S-0008','Christopher', 'Chef', 'Male', 'Hlaing', '09-671292463' ),
('S-0009','Daniel', 'Chef', 'Male', 'Hlaing', '09-639267129' ),
('S-0010','Matthew', 'Driver', 'Male', 'Lanmadaw', '09-985267129' ),
('S-0011','Anthony', 'Driver', 'Male', 'Lanmadaw', '09-719267129' ),
('S-0012','Sandra', 'Housekeeper', 'Female', 'Pabedan', '09-857267129' ),
('S-0013','Ashley', 'Housekeeper', 'Female', 'Pabedan', '09-986285726' ),
('S-0014','Kimberly', 'Housekeeper', 'Female', 'Pabedan', '09-528185726' );
```

```
Select * from Staff;
```

200 %

Results | Messages

	StaffID	StaffName	Position	Gender	Address	PhoneNumber
1	S-0001	James	Event Planner	Male	Yankin	09-798232321
2	S-0002	Robert	Executive C...	Male	Yankin	09-178432321
3	S-0003	John	Hotel Gener...	Male	Bahan	09-183232321
4	S-0004	Michael	Waiter	Male	Bahan	09-742932321
5	S-0005	Mary	Housekeeper	Female	Latha	09-924632321
6	S-0006	Patricia	Concierge	Female	Latha	09-273492463
7	S-0007	Jennifer	Waitress	Female	Hlaing	09-916492463
8	S-0008	Christop...	Chef	Male	Hlaing	09-671292463
9	S-0009	Daniel	Chef	Male	Hlaing	09-639267129
10	S-0010	Matthew	Driver	Male	Lanm...	09-985267129
11	S-0011	Anthony	Driver	Male	Lanm...	09-719267129
12	S-0012	Sandra	Housekeeper	Female	Pabed...	09-857267129
13	S-0013	Ashley	Housekeeper	Female	Pabed...	09-986285726
14	S-0014	Kimberly	Housekeeper	Female	Pabed...	09-528185726

Insert script and Result for Rating table

```
insert into Rating(RatingCode, RatingType, Rating)
values('RC-0001','Star', 1),
('RC-0002','Star', 2),
('RC-0003','Star', 3),
('RC-0004','Star', 4),
('RC-0005','Star', 5),
('RC-0006','Star', 6),
('RC-0007','Star', 7),
('RC-0008','Star', 8),
('RC-0009','Star', 9);
```

```
Select * from Rating;
```

200 %

Results | Messages

	RatingCode	RatingType	Rating
1	RC-0001	Star	1
2	RC-0002	Star	2
3	RC-0003	Star	3
4	RC-0004	Star	4
5	RC-0005	Star	5
6	RC-0006	Star	6
7	RC-0007	Star	7
8	RC-0008	Star	8
9	RC-0009	Star	9

Insert script and Result for RoomType table

```
insert into RoomType(RoomTypeCode, RoomType, RoomPrice)
values('RTC-0001','Single','$25' ),
('RTC-0002','Double', '$50'),
('RTC-0003','Triple', '$75'),
('RTC-0004','Quad', '$100'),
('RTC-0005','Queen', '$80'),
('RTC-0006','King', '$85'),
('RTC-0007','Twin', '$70'),
('RTC-0008','Double-double', '$90'),
('RTC-0009','Suite', '$125'),
('RTC-0010','Mini Suite', '$100'),
('RTC-0011','President Suite', '$225'),
('RTC-0012','Connecting room', '$105'),
('RTC-0013','Murphy Room', '$105'),
('RTC-0014','Smoking', '$45');
```

```
Select * from RoomType;
```

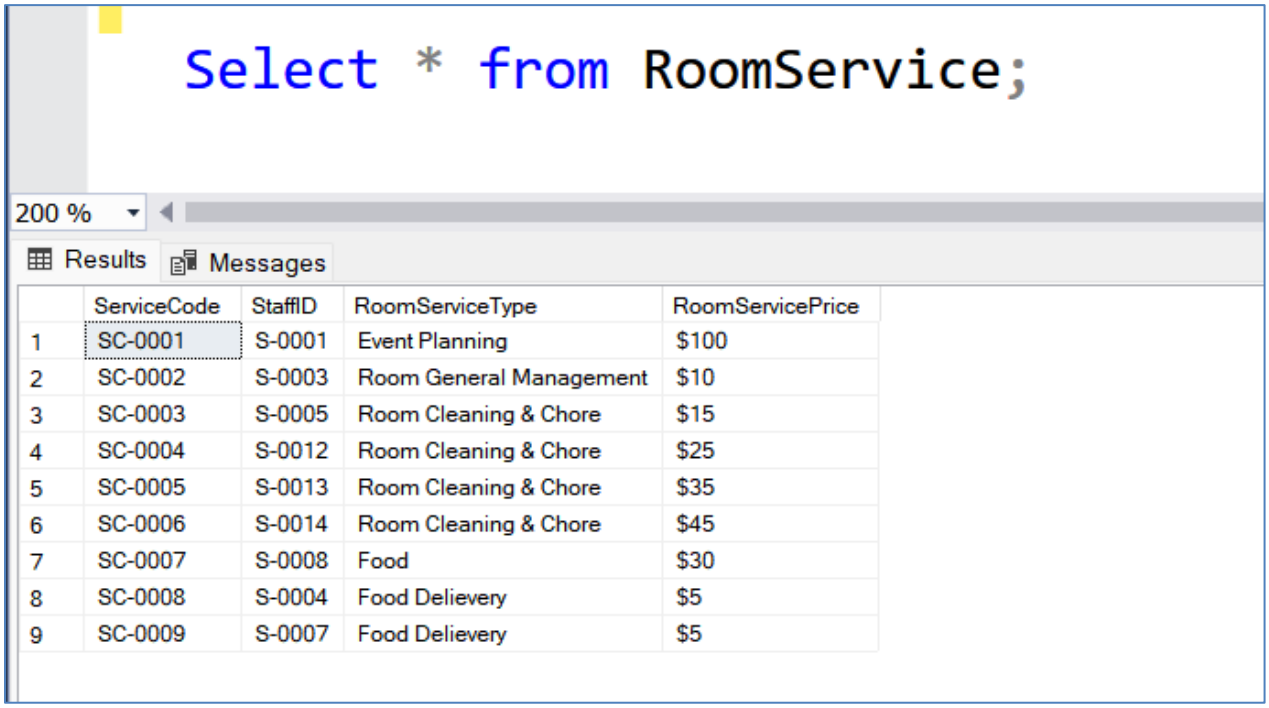
200 %

Results | Messages

	RoomTypeCode	RoomType	RoomPrice
1	RTC-0001	Single	$25
2	RTC-0002	Double	$50
3	RTC-0003	Triple	$75
4	RTC-0004	Quad	$100
5	RTC-0005	Queen	$80
6	RTC-0006	King	$85
7	RTC-0007	Twin	$70
8	RTC-0008	Double-d...	$90
9	RTC-0009	Suite	$125
10	RTC-0010	Mini Suite	$100
11	RTC-0011	President...	$225
12	RTC-0012	Connecti...	$105
13	RTC-0013	Murphy ...	$105
14	RTC-0014	Smoking	$45

Insert script and Result for RoomService table

```
insert into RoomService(ServiceCode, StaffID, RoomServiceType, RoomServicePrice)
values('SC-0001','S-0001','Event Planning', '$100' ),
('SC-0002','S-0003','Room General Management', '$10' ),
('SC-0003','S-0005','Room Cleaning & Chore', '$15' ),
('SC-0004','S-0012','Room Cleaning & Chore', '$25' ),
('SC-0005','S-0013','Room Cleaning & Chore', '$35' ),
('SC-0006','S-0014','Room Cleaning & Chore', '$45' ),
('SC-0007','S-0008','Food', '$30' ),
('SC-0008','S-0004','Food Delievery', '$5' ),
('SC-0009','S-0007','Food Delievery', '$5' );
```



	ServiceCode	StaffID	RoomServiceType	RoomServicePrice
1	SC-0001	S-0001	Event Planning	$100
2	SC-0002	S-0003	Room General Management	$10
3	SC-0003	S-0005	Room Cleaning & Chore	$15
4	SC-0004	S-0012	Room Cleaning & Chore	$25
5	SC-0005	S-0013	Room Cleaning & Chore	$35
6	SC-0006	S-0014	Room Cleaning & Chore	$45
7	SC-0007	S-0008	Food	$30
8	SC-0008	S-0004	Food Delievery	$5
9	SC-0009	S-0007	Food Delievery	$5

Insert script and Result for Room table

```
insert into Room(RoomCode, RatingCode, RoomTypeCode, RoomAvailability, Floor)
values('ROC-0001', 'RC-0004', 'RTC-0001', 'yes', 'First Floor'),
('ROC-0002', 'RC-0004', 'RTC-0001', 'yes', 'Second Floor'),
('ROC-0003', 'RC-0004', 'RTC-0001', 'yes', 'Third Floor'),
('ROC-0004', 'RC-0004', 'RTC-0001', 'no', 'Second Floor'),
('ROC-0005', 'RC-0005', 'RTC-0002', 'yes', 'First Floor'),
('ROC-0006', 'RC-0005', 'RTC-0002', 'yes', 'Second Floor'),
('ROC-0007', 'RC-0005', 'RTC-0002', 'no', 'Third Floor'),
('ROC-0008', 'RC-0007', 'RTC-0003', 'yes', 'Fourth Floor'),
('ROC-0009', 'RC-0007', 'RTC-0003', 'yes', 'First Floor'),
('ROC-0010', 'RC-0007', 'RTC-0003', 'no', 'Fifth Floor'),
('ROC-0011', 'RC-0007', 'RTC-0003', 'yes', 'Seventh Floor'),
('ROC-0012', 'RC-0007', 'RTC-0005', 'yes', 'Seventh Floor'),
('ROC-0013', 'RC-0007', 'RTC-0005', 'no', 'Seventh Floor'),
('ROC-0014', 'RC-0007', 'RTC-0005', 'yes', 'Seventh Floor'),
('ROC-0015', 'RC-0007', 'RTC-0006', 'no', 'Seventh Floor'),
('ROC-0016', 'RC-0007', 'RTC-0006', 'yes', 'Seventh Floor'),
('ROC-0017', 'RC-0008', 'RTC-0004', 'yes', 'Second Floor'),
('ROC-0018', 'RC-0008', 'RTC-0004', 'yes', 'Second Floor'),
('ROC-0019', 'RC-0008', 'RTC-0004', 'no', 'First Floor'),
('ROC-0020', 'RC-0008', 'RTC-0004', 'no', 'Sixth Floor'),
('ROC-0021', 'RC-0007', 'RTC-0004', 'yes', 'Seventh Floor'),
('ROC-0022', 'RC-0007', 'RTC-0007', 'yes', 'First Floor'),
('ROC-0023', 'RC-0007', 'RTC-0007', 'no', 'Second Floor'),
('ROC-0024', 'RC-0007', 'RTC-0008', 'no', 'First Floor'),
('ROC-0025', 'RC-0007', 'RTC-0008', 'yes', 'Second Floor'),
('ROC-0026', 'RC-0008', 'RTC-0009', 'yes', 'Third Floor'),
('ROC-0027', 'RC-0008', 'RTC-0009', 'yes', 'Third Floor'),
('ROC-0028', 'RC-0008', 'RTC-0012', 'yes', 'Eighth Floor'),
('ROC-0029', 'RC-0008', 'RTC-0012', 'no', 'Ninth Floor'),
('ROC-0030', 'RC-0008', 'RTC-0013', 'yes', 'Tenth Floor'),
('ROC-0031', 'RC-0008', 'RTC-0013', 'no', 'Eighth Floor'),
('ROC-0032', 'RC-0008', 'RTC-0010', 'yes', 'Tenth Floor'),
('ROC-0033', 'RC-0009', 'RTC-0011', 'yes', 'Twelfth Floor'),
('ROC-0034', 'RC-0004', 'RTC-0014', 'yes', 'Sixth Floor'),
('ROC-0035', 'RC-0004', 'RTC-0014', 'no', 'Seventh Floor'),
('ROC-0036', 'RC-0004', 'RTC-0014', 'no', 'Eighth Floor'),
('ROC-0037', 'RC-0004', 'RTC-0014', 'yes', 'Ninth Floor'),
('ROC-0038', 'RC-0004', 'RTC-0014', 'yes', 'Tenth Floor');
```

83 %

Messages

```
(38 rows affected)
```

```
Select * from Room;
```

121 %

Results | Messages

	RoomCode	RatingCode	RoomTypeCode	RoomAvailability	Floor
1	ROC-0001	RC-0004	RTC-0001	yes	First Floor
2	ROC-0002	RC-0004	RTC-0001	yes	Second Floor
3	ROC-0003	RC-0004	RTC-0001	yes	Third Floor
4	ROC-0004	RC-0004	RTC-0001	no	Second Floor
5	ROC-0005	RC-0005	RTC-0002	yes	First Floor
6	ROC-0006	RC-0005	RTC-0002	yes	Second Floor
7	ROC-0007	RC-0005	RTC-0002	no	Third Floor
8	ROC-0008	RC-0007	RTC-0003	yes	Fourth Floor
9	ROC-0009	RC-0007	RTC-0003	yes	First Floor
10	ROC-0010	RC-0007	RTC-0003	no	Fifth Floor
11	ROC-0011	RC-0007	RTC-0003	yes	Seventh Flo...
12	ROC-0012	RC-0007	RTC-0005	yes	Seventh Flo...
13	ROC-0013	RC-0007	RTC-0005	no	Seventh Flo...
14	ROC-0014	RC-0007	RTC-0005	yes	Seventh Flo...
15	ROC-0015	RC-0007	RTC-0006	no	Seventh Flo...
16	ROC-0016	RC-0007	RTC-0006	yes	Seventh Flo...
17	ROC-0017	RC-0008	RTC-0004	yes	Second Floor
18	ROC-0018	RC-0008	RTC-0004	yes	Second Floor
19	ROC-0019	RC-0008	RTC-0004	no	First Floor
20	ROC-0020	RC-0008	RTC-0004	no	Sixth Floor
21	ROC-0021	RC-0007	RTC-0004	yes	Seventh Flo...
22	ROC-0022	RC-0007	RTC-0007	yes	First Floor
23	ROC-0023	RC-0007	RTC-0007	no	Second Floor
24	ROC-0024	RC-0007	RTC-0008	no	First Floor
25	ROC-0025	RC-0007	RTC-0008	yes	Second Floor
26	ROC-0026	RC-0008	RTC-0009	yes	Third Floor
27	ROC-0027	RC-0008	RTC-0009	yes	Third Floor
28	ROC-0028	RC-0008	RTC-0012	yes	Eighth Floor
29	ROC-0029	RC-0008	RTC-0012	no	Ninth Floor
30	ROC-0030	RC-0008	RTC-0013	yes	Tenth Floor
31	ROC-0031	RC-0008	RTC-0013	no	Eighth Floor
32	ROC-0032	RC-0008	RTC-0010	yes	Tenth Floor
33	ROC-0033	RC-0009	RTC-0011	yes	Twelfth Floor
34	ROC-0034	RC-0004	RTC-0014	yes	Sixth Floor
35	ROC-0035	RC-0004	RTC-0014	no	Seventh Flo...
36	ROC-0036	RC-0004	RTC-0014	no	Eighth Floor
37	ROC-0037	RC-0004	RTC-0014	yes	Ninth Floor
38	ROC-0038	RC-0004	RTC-0014	yes	Tenth Floor

Insert script and Result for Customer table

```
insert into Customer(CustomerID, CustomerName, CustomerDOB, NRC, Gender, Address, PhoneNumber)
values('C-0001','AungAung', '12-10-1982', '12/yakan(naing)087770', 'Male', 'Yankin', '09-798232321'
('C-0002','TunTun', '12-10-1952', '12/yakan(naing)087770', 'Male', 'Yankin', '09-794192321' ),
('C-0003','HlaHla', '10-3-1992', '12/yakan(naing)083470', 'Female', 'Yankin', '09-793422321' ),
('C-0004','MyaMya', '4-4-1999', '12/yakan(naing)081230', 'Female', 'Yankin', '09-458251321' ),
('C-0005','MaungMaung', '7-12-1978', '12/yakan(naing)047670', 'Male', 'Yankin', '09-718255291' ),
('C-0006','AyeAye', '3-25-2000', '12/yakan(naing)097270', 'Female', 'Yankin', '09-538250081' ),
('C-0007','KaungKaung', '9-18-2001', '12/yakan(naing)453770', 'Male', 'Yankin', '09-198541321' ),
('C-0008','SeinSein', '1-10-1992', '12/yakan(naing)083100', 'Female', 'Yankin', '09-928622321' );
```

```
Select * from Customer
```

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Results | Messages

	CustomerID	CustomerName	CustomerDOB	NRC	Gender	Address	PhoneNumber
1	C-0001	AungAung	1982-12-10	12/yakan(naing)087770	Male	Yankin	09-798232321
2	C-0002	TunTun	1952-12-10	12/yakan(naing)087770	Male	Yankin	09-794192321
3	C-0003	HlaHla	1992-10-03	12/yakan(naing)083470	Female	Yankin	09-793422321
4	C-0004	MyaMya	1999-04-04	12/yakan(naing)081230	Female	Yankin	09-458251321
5	C-0005	MaungMaung	1978-07-12	12/yakan(naing)047670	Male	Yankin	09-718255291
6	C-0006	AyeAye	2000-03-25	12/yakan(naing)097270	Female	Yankin	09-538250081
7	C-0007	KaungKaung	2001-09-18	12/yakan(naing)453770	Male	Yankin	09-198541321
8	C-0008	SeinSein	1992-01-10	12/yakan(naing)083100	Female	Yankin	09-928622321

Insert script and Result for Reservation table

```
insert into Reservation(ReservationCode, CustomerID, ReservationDate, CheckInDate, CheckOutDate, Duration, NumberOfRooms)
values('REC-0001', 'C-0001', '12-1-2021', '12-5-2021', '12-6-2021','2days',1),
('REC-0002', 'C-0001', '12-1-2021', '12-5-2021', '12-6-2021','2days',1),
('REC-0003', 'C-0003', '12-2-2021', '12-7-2021', '12-8-2021','2days',1),
('REC-0004', 'C-0004', '12-3-2021', '12-9-2021', '12-9-2021','1day',1),
('REC-0005', 'C-0005', '12-4-2021', '12-13-2021', '12-14-2021','2days',1),
('REC-0006', 'C-0006', '12-5-2021', '12-16-2021', '12-19-2021','4days',1),
('REC-0007', 'C-0006', '12-5-2021', '12-16-2021', '12-19-2021','4days',1),
('REC-0008', 'C-0006', '12-5-2021', '12-16-2021', '12-19-2021','4days',1),
('REC-0009', 'C-0006', '12-5-2021', '12-16-2021', '12-19-2021','4days',1),
('REC-0010', 'C-0007', '12-6-2021', '12-14-2021', '12-15-2021','2days',1),
('REC-0011', 'C-0008', '12-9-2021', '12-20-2021', '12-25-2021','6days',1),
('REC-0012', 'C-0008', '12-9-2021', '12-20-2021', '12-25-2021','6days',1),
('REC-0013', 'C-0001', '12-10-2021', '12-25-2021', '12-27-2021','2days',1),
('REC-0014', 'C-0002', '12-15-2021', '12-27-2021', '12-29-2021','3days',1),
('REC-0015', 'C-0003', '12-14-2021', '12-28-2021', '12-29-2021','2days',1),
('REC-0016', 'C-0004', '12-18-2021', '12-29-2021', '12-29-2021','1day',1),
('REC-0017', 'C-0005', '12-20-2021', '12-30-2021', '12-31-2021','2days',1);
```

```
Select * from Reservation;
```

165 %

Results | Messages

	ReservationCode	CustomerID	ReservationDate	CheckInDate	CheckOutDate	Duration	NumberOfRooms
1	REC-0001	C-0001	2021-12-01	2021-12-05	2021-12-06	2days	1
2	REC-0002	C-0001	2021-12-01	2021-12-05	2021-12-06	2days	1
3	REC-0003	C-0003	2021-12-02	2021-12-07	2021-12-08	2days	1
4	REC-0004	C-0004	2021-12-03	2021-12-09	2021-12-09	1day	1
5	REC-0005	C-0005	2021-12-04	2021-12-13	2021-12-14	2days	1
6	REC-0006	C-0006	2021-12-05	2021-12-16	2021-12-19	4days	1
7	REC-0007	C-0006	2021-12-05	2021-12-16	2021-12-19	4days	1
8	REC-0008	C-0006	2021-12-05	2021-12-16	2021-12-19	4days	1
9	REC-0009	C-0006	2021-12-05	2021-12-16	2021-12-19	4days	1
10	REC-0010	C-0007	2021-12-06	2021-12-14	2021-12-15	2days	1
11	REC-0011	C-0008	2021-12-09	2021-12-20	2021-12-25	6days	1
12	REC-0012	C-0008	2021-12-09	2021-12-20	2021-12-25	6days	1
13	REC-0013	C-0001	2021-12-10	2021-12-25	2021-12-27	2days	1
14	REC-0014	C-0002	2021-12-15	2021-12-27	2021-12-29	3days	1
15	REC-0015	C-0003	2021-12-14	2021-12-28	2021-12-29	2days	1
16	REC-0016	C-0004	2021-12-18	2021-12-29	2021-12-29	1day	1
17	REC-0017	C-0005	2021-12-20	2021-12-30	2021-12-31	2days	1

Insert script and Result for RoomReservationDetails table

```
insert into RoomReservationDetails(ReservationCode, RoomCode)
values('REC-0001', 'ROC-0001'),
('REC-0002', 'ROC-0002'),
('REC-0003', 'ROC-0003'),
('REC-0004', 'ROC-0009'),
('REC-0005', 'ROC-0012'),
('REC-0006', 'ROC-0016'),
('REC-0007', 'ROC-0018'),
('REC-0008', 'ROC-0025'),
('REC-0009', 'ROC-0027'),
('REC-0010', 'ROC-0028'),
('REC-0011', 'ROC-0033'),
('REC-0012', 'ROC-0037'),
('REC-0013', 'ROC-0038'),
('REC-0014', 'ROC-0028'),
('REC-0015', 'ROC-0033'),
('REC-0016', 'ROC-0037'),
('REC-0017', 'ROC-0038');
```

```
Select * from RoomReservationDetails;
```

165 %

Results | Messages

	ReservationCode	RoomCode
1	REC-0001	ROC-0001
2	REC-0002	ROC-0002
3	REC-0003	ROC-0003
4	REC-0004	ROC-0009
5	REC-0005	ROC-0012
6	REC-0006	ROC-0016
7	REC-0007	ROC-0018
8	REC-0008	ROC-0025
9	REC-0009	ROC-0027
10	REC-0010	ROC-0028
11	REC-0011	ROC-0033
12	REC-0012	ROC-0037
13	REC-0013	ROC-0038
14	REC-0014	ROC-0028
15	REC-0015	ROC-0033
16	REC-0016	ROC-0037
17	REC-0017	ROC-0038

Insert script and Result for Payment table

```
insert into Payment(PaymentCode, ReservationCode, PaymentDate, PaymentPrice, PaymentType, CardNum )
values( 'P-0001','REC-0001','12-6-2021', '$25', 'Cash', '-'),
( 'P-0002','REC-0002','12-6-2021', '$25', 'Cash', '-'),
( 'P-0003','REC-0003','12-8-2021', '$25', 'Cash', '-'),
( 'P-0004','REC-0004','12-9-2021', '$75', 'Cash', '-'),
( 'P-0005','REC-0005','12-14-2021', '$80', 'Cash', '-'),
( 'P-0006','REC-0006','12-19-2021', '$85', 'Credit cards', '23123'),
( 'P-0007','REC-0007','12-19-2021', '$100', 'Credit cards', '23233'),
( 'P-0008','REC-0008','12-19-2021', '$90', 'Credit cards', '25940'),
( 'P-0009','REC-0009','12-19-2021', '$125', 'Credit cards', '27314'),
( 'P-0010','REC-0010','12-15-2021', '$105', 'Credit cards', '84268'),
( 'P-0011','REC-0011','12-25-2021', '$225', 'Mobile payments', '09-793422321'),
( 'P-0012','REC-0012','12-25-2021', '$45', 'Mobile payments', '09-458251321'),
( 'P-0013','REC-0013','12-27-2021', '$45', 'Mobile payments', '09-718255291'),
( 'P-0014','REC-0014','12-29-2021', '$105', 'Credit cards', '45568'),
( 'P-0015','REC-0015','12-29-2021', '$225', 'Mobile payments', '09-814522321'),
( 'P-0016','REC-0016','12-29-2021', '$45', 'Mobile payments', '09-197251321'),
( 'P-0017','REC-0017','12-31-2021', '$45', 'Mobile payments', '09-824255291');
```

```
Select * from Payment;
```

165 %

Results | Messages

	PaymentCode	ReservationCode	PaymentDate	PaymentPrice	PaymentType	CardNum
1	P-0001	REC-0001	2021-12-06	$25	Cash	-
2	P-0002	REC-0002	2021-12-06	$25	Cash	-
3	P-0003	REC-0003	2021-12-08	$25	Cash	-
4	P-0004	REC-0004	2021-12-09	$75	Cash	-
5	P-0005	REC-0005	2021-12-14	$80	Cash	-
6	P-0006	REC-0006	2021-12-19	$85	Credit cards	23123
7	P-0007	REC-0007	2021-12-19	$100	Credit cards	23233
8	P-0008	REC-0008	2021-12-19	$90	Credit cards	25940
9	P-0009	REC-0009	2021-12-19	$125	Credit cards	27314
10	P-0010	REC-0010	2021-12-15	$105	Credit cards	84268
11	P-0011	REC-0011	2021-12-25	$225	Mobile pay...	09-793...
12	P-0012	REC-0012	2021-12-25	$45	Mobile pay...	09-458...
13	P-0013	REC-0013	2021-12-27	$45	Mobile pay...	09-718...
14	P-0014	REC-0014	2021-12-29	$105	Credit cards	45568
15	P-0015	REC-0015	2021-12-29	$225	Mobile pay...	09-814...
16	P-0016	REC-0016	2021-12-29	$45	Mobile pay...	09-197...
17	P-0017	REC-0017	2021-12-31	$45	Mobile pay...	09-824...

Insert script and Result for RoomServiceDetails table

```
insert into RoomServiceDetails(ServiceCode, RoomCode)
values('SC-0001', 'ROC-0001'),
('SC-0002', 'ROC-0002'),
('SC-0003', 'ROC-0003'),
('SC-0004', 'ROC-0009'),
('SC-0005', 'ROC-0012'),
('SC-0006', 'ROC-0016'),
('SC-0007', 'ROC-0018'),
('SC-0008', 'ROC-0025'),
('SC-0009', 'ROC-0017');
```

```
Select * from RoomServiceDetails;
```

165 %

Results | Messages

	ServiceCode	RoomCode
1	SC-0001	ROC-0001
2	SC-0002	ROC-0002
3	SC-0003	ROC-0003
4	SC-0004	ROC-0009
5	SC-0005	ROC-0012
6	SC-0006	ROC-0016
7	SC-0007	ROC-0018
8	SC-0008	ROC-0025
9	SC-0009	ROC-0017

c) Queries that select data from room reservation database

Listing all the hotel rooms in descending order of rating

```
Select rm.RoomCode, rm.RoomAvailability, rm.Floor, rat.Rating, rt.RoomType, rt.RoomPrice
from Room rm, Rating rat, RoomType rt
Where rat.RatingCode = rm.RatingCode
AND rt.RoomTypeCode = rm.RoomTypeCode
AND rm.RoomAvailability = 'yes'
Order by Rating Desc
```

Results Messages

	RoomCode	RoomAvailability	Floor	Rating	RoomType	RoomPrice
1	ROC-0033	yes	Twelfth Floor	9	President Suite	$225
2	ROC-0017	yes	Second Floor	8	Quad	$100
3	ROC-0018	yes	Second Floor	8	Quad	$100
4	ROC-0026	yes	Third Floor	8	Suite	$125
5	ROC-0027	yes	Third Floor	8	Suite	$125
6	ROC-0028	yes	Eighth Floor	8	Connecting room	$105
7	ROC-0030	yes	Tenth Floor	8	Murphy Room	$105
8	ROC-0032	yes	Tenth Floor	8	Mini Suite	$100
9	ROC-0008	yes	Fourth Floor	7	Triple	$75
10	ROC-0009	yes	First Floor	7	Triple	$75
11	ROC-0011	yes	Seventh Floor	7	Triple	$75
12	ROC-0012	yes	Seventh Floor	7	Queen	$80
13	ROC-0014	yes	Seventh Floor	7	Queen	$80
14	ROC-0016	yes	Seventh Floor	7	King	$85
15	ROC-0021	yes	Seventh Floor	7	Quad	$100
16	ROC-0022	yes	First Floor	7	Twin	$70
17	ROC-0025	yes	Second Floor	7	Double-double	$90
18	ROC-0005	yes	First Floor	5	Double	$50
19	ROC-0006	yes	Second Floor	5	Double	$50
20	ROC-0001	yes	First Floor	4	Single	$25
21	ROC-0002	yes	Second Floor	4	Single	$25
22	ROC-0003	yes	Third Floor	4	Single	$25
23	ROC-0034	yes	Sixth Floor	4	Smoking	$45
24	ROC-0037	yes	Ninth Floor	4	Smoking	$45
25	ROC-0038	yes	Tenth Floor	4	Smoking	$45

Summary of customers' reservation data with exact check-in-date

```
create view ReservationReport
as
Select r.ReservationCode, c.CustomerID, r.CheckinDate, rt.RoomType, rt.RoomPrice, r.NumberOfRooms, p.PaymentPrice
from Customer c, Reservation r, Payment p, RoomReservationDetails rrd, Room rm, RoomType rt
where c.CustomerID = r.CustomerID
AND r.ReservationCode = rrd.ReservationCode
AND rrd.RoomCode = rm.RoomCode
AND r.ReservationCode = p.ReservationCode
AND rm.RoomTypeCode = rt.RoomTypeCode
AND r.CheckInDate = '12-20-2021'
Select * from ReservationReport;
```

Results Messages

	ReservationCode	CustomerID	CheckinDate	RoomType	RoomPrice	NumberOfRooms	PaymentPrice
1	REC-0011	C-0008	2021-12-20	President Suite	$225	1	$225
2	REC-0012	C-0008	2021-12-20	Smoking	$45	1	$45

Showing the number of available hotel rooms

```
create view AvailableRoomReport
as
Select RoomAvailability, COUNT(RoomAvailability) as [Count Available Room] from Room
Group By RoomAvailability
Having RoomAvailability = 'yes';
Select * from AvailableRoomReport;
```

Results Messages

	RoomAvailability	Count Available Room
1	yes	25

Selecting the data of “Room Cleaning & Chore” Service for reserved rooms

```
create view RoomServiceReport
as
Select rsd.ServiceCode, rsd.RoomCode, s.StaffID, rs.RoomServiceType, rs.RoomServicePrice
from RoomServiceDetails rsd, RoomService rs, Staff s
Where rsd.ServiceCode = rs.ServiceCode
AND rs.StaffID = s.StaffID
AND rs.RoomServiceType = 'Room Cleaning & Chore'
Select * from RoomServiceReport;
```

Results Messages

	ServiceCode	RoomCode	StaffID	RoomServiceType	RoomServicePrice
1	SC-0003	ROC-0003	S-0005	Room Cleaning & Chore	$15
2	SC-0004	ROC-0009	S-0012	Room Cleaning & Chore	$25
3	SC-0005	ROC-0012	S-0013	Room Cleaning & Chore	$35
4	SC-0006	ROC-0016	S-0014	Room Cleaning & Chore	$45

Updating payment by adding the room service prices to the original reservation price

```
Update Payment set PaymentPrice = '123' where PaymentCode = 'P-0001';
Update Payment set PaymentPrice = '45' where PaymentCode = 'P-0002';
Update Payment set PaymentPrice = '40' where PaymentCode = 'P-0003';
Update Payment set PaymentPrice = '100' where PaymentCode = 'P-0004';
Update Payment set PaymentPrice = '125' where PaymentCode = 'P-0005';
Update Payment set PaymentPrice = '130' where PaymentCode = 'P-0006';
Update Payment set PaymentPrice = '130'  where PaymentCode = 'P-0007';
Update Payment set PaymentPrice = '95' where PaymentCode = 'P-0008';
Update Payment set PaymentPrice = '130'  where PaymentCode = 'P-0009';
Delete Payment where PaymentCode > 'P-0009'
Select * from Payment
```

Results Messages

	PaymentCode	ReservationCode	PaymentDate	PaymentPrice	PaymentType	CardNum
1	P-0001	REC-0001	2021-12-06	123	Cash	-
2	P-0002	REC-0002	2021-12-06	45	Cash	-
3	P-0003	REC-0003	2021-12-08	40	Cash	-
4	P-0004	REC-0004	2021-12-09	100	Cash	-
5	P-0005	REC-0005	2021-12-14	125	Cash	-
6	P-0006	REC-0006	2021-12-19	130	Credit cards	23123
7	P-0007	REC-0007	2021-12-19	130	Credit cards	23233
8	P-0008	REC-0008	2021-12-19	95	Credit cards	25940
9	P-0009	REC-0009	2021-12-19	130	Credit cards	27314

Task 3

Task 3

3.1 Evaluation

3.1.1 Your database meets the data and information requirements of your chosen organization.

The accumulated data play a crucial role in implementing our business strategy and targets. My room reservation database incorporates all necessary transactional data as well as personal data. The comprehensive data collection enables the Novotel to analyze budgets, and to create surveys and development programs. Since the database even records the smoking room type so that we can assign smokers to specific room type. What is more, the database always updates the room availability information after check out. Consequently, we can communicate with customers more quickly in room reservation.

3.1.2 How the use of ER modelling is important in the design of a database solution.

An entity-relationship diagram is essential for modeling the data stored in a database. It is the basic design upon which a database is built. ER diagrams specify what data we will store: the entities and their attributes. They also show how entities relate to other entities (Vertabelo Team, 2021).

ER Modeling is rudimentary to analyze data requirements to generate a well-designed database. It demonstrates a preview of how database tables are mutually connected to each other. With the help of an ER diagram, we can consider the basic three concepts - entities, attributes, relationships. Since ER diagrams, blueprints of implementing data, give a smooth transition to relational tables, the database implementation is no longer a time-consuming task (Peterson, 2020).

Based on ER modeling, I managed to continue on making data dictionaries. Since ER diagrams are the entity framework infrastructure, I could effortlessly alter the entities into practical database tables with the logical structure of ER modeling. I found some difficulty in conceptual relationships at the outset of my room reservation project. I resolved this conundrum with entity relationship modeling.

3.1.2 Assumptions

Firstly, I scrutinized the required data of the Novotel Hotel and analyzed which sector needs database implementation. I figured out that the room reservation system showed defects among the systems. Then I started to normalize the processed data to 3rd Normal form. When I got the organized entity and attributes altogether, I constructed the whole entity relationship diagram. In the design process, I had to take some time to consider which entities should be deployed whether the one-to-one or one-to-many or many-to-many relationships. I used diagramming and vector graphics application (Microsoft Visio) for the entity-relationship modeling process. I made Data dictionaries to provide detailed information about the contents of a dataset. When I reached the database implementation step, I installed the Microsoft SQL server 2019 including the SQL Server Management Studio. In the Microsoft DBMS, I had to utilize some SQL commands – creating and modifying tables; inserting, updating and deleting unwanted data; identifying table columns whether they are primary or foreign keys constraint.

I created “Staff” and “RoomService” tables which are foundational to the room-service transaction. In the latter table, each staff member is added together with their respective service. The attribute “RoomServicePrice” aids in figuring the hotel’s net earnings. “RoomServiceDetails” dummy table is also constructed to connect with “Room” to provide room-service. Then, I had to insert the staff’s personal information and positions to the staff table first. Afterwards, I recorded the service-type each staff member can perform and service-price in the room-service table. The intention of creating this transaction is to record how much income we accumulated from room service which is the additional income except for reservation. Moreover, these data are essential to calculate the net income of our hotel.

For the room-reservation transaction, I constructed “Room”, “Rating” and “RoomType”. There are fourteen types for room whilst only star type for rating. “RoomType” and “Rating” tables are linked to the “Room” table containing a particular attribute which checks for room availability. “Room” table is a major component in our database system as it is incorporated in both transactions. “RoomReservationDetails” dummy table was created in order that the “RoomReservation” table can connect with the “Room”. In this table, available rooms are bonded with customers’ reservations.

For the sake of email-marketing of our hotel, I built a “Customer” table to save their data especially email-address. Additionally, each customer is given ID to facilitate our room

reservation system. “Reservation” and “Payment” tables are imperative in this transaction. Once a customer books an available room, it is counted as one reservation in the “Reservation” table. In this table, duration of stay is the subtraction of the check-in-date from the check-out-date. “Payment” and “RoomServieDetails” tables function together to work out the hotel’s revenue.

The reason I listed out all the hotel rooms in descending order of rating was to expound on what special types of rooms we offer. I also selected the customers’ reservation data with exact check-in-date to examine how many rooms they reserved. I listed the number of available hotel rooms for the sake of the prompt process in the reservation system. I also selected the specific room-service for reserved rooms. I had to update the payment prices by adding the room service prices to the original reservation price.

The database lacks the feature of data-driven technology-analyzing and reacting to data. It should be developed into the automation phase by linking the hotel property management system to its email service provider (Pebble Design, 2014). As regards the employment of the database, the hotel offers an annual special discount package to their customers whose email-addresses are saved in the database. In such offers, Novotel sends out emails with custom templates to their guests offering them special discount coupons.

3.1.3 How the database supports the transactions

The room reservation database meets our hotel’ main transactions-room reservation management as well as room service system. It predominantly eases the burden of time-consuming tasks such as jotting down the customers’ reservations and demands in the address book. For the room reservation transaction, the database first records rooms’ specifications in the respective tables. It also gives such a smooth transaction that the administrator can update the room availability in the “Room” table. The real motive behind this is to give customers instance responses. On the other hand, it also collects customers’ details and provides identification to each customer in order to simplify the further process. It records their reservation after their reserved rooms have been checked on availability.

The database supports the room service transaction. This transaction also plays a supportive role in totalizing the customer’s total cost and the hotel’s revenue. On top of that, the payment column in the “Payment” table has to be invariably updated by adding the room service price to the particular payment. The “Payment” table in the database accentuates the

customer’s total cost and the hotel’s net income. For instance, if the customer who reserves three rooms, there will be three reservations in the “Reservation” table. Therefore, payments of these reservations are added altogether to generate the total cost of each customer.

References

GeeksforGeeks (2019) *Advantages of database management system*, *GeeksforGeeks*. Available at: https://www.geeksforgeeks.org/advantages-of-database-management-system/ (Accessed: January 7, 2022).

Pebble Design (2014) 6 tips to growing your hotel database, Pebble Design. Available at: https://pebbledesign.com/insights/6-tips-to-growing-your-hotel-database/ (Accessed: January 13, 2022).

Peterson, R. (2020) ER diagram: Entity relationship diagram model, Guru99. Available at: https://www.guru99.com/er-diagram-tutorial-dbms.html (Accessed: January 10, 2022).

Vertabelo Team (2021) Why do you need an ER diagram?, Vertabelo Data Modeler. Vertabelo. Available at: https://vertabelo.com/blog/why-need-an-er-diagram/ (Accessed: January 10, 2022).