King Saud University
College of Computer and Information Sciences
Department of Information Technology

IT222: Database Principles
1st Semester 1446 H

Le Méridien Hotel

Phase # 3

Section #	NAME	ID
View Name: Customer view		
77761	*Alanoud Khalid Aloraydi*	*444201111*
77761	*Sarah alruwayte*	*444200758*
77761	*Walaa Saif Aleslam mohammed*	*444200088*
77761	*Jana Abdullah Alsuwailem*	*444200816*
77761	*Atheer Ibrahim Bin Badie*	*444200894*

Supervised By: *Dr. Noof Alfear.*

Project Description:

This project is designing a database for a hotel chain with locations worldwide, offering a variety of services such as pools, spas, gyms, and more. Our primary clients are the guests who stay at these hotels, seeking a comfortable and enjoyable experience. Our database is designed to simplify the management of hotel information by centralizing data, thereby improving overall efficiency. It will empower staff to manage bookings, services, and customer information more effectively, ensuring a seamless experience for both employees and guests.

View Description:

The database view is designed to assist hotel guests (customers) in managing their interactions with the hotel. Customers can create accounts, make bookings, and manage their reservations. Each booking is linked to a branch, room details, and additional services.
The relationship between these elements ensures a smooth and integrated experience for customers, making the booking process efficient and user-friendly.

Data Requirements:

Customer: The person who will make the booking. The customer has a unique customerID, first and last name, email, and phone number. Each customer can make one or many bookings.

Booking: The customer's recorded reservation management. It includes a unique bookingNo, each booking has bookingStatus, paymentInfo, checkInDate, numOfNights, and totalCost. Each booking has one or more rooms and can contain many services, one or no service.

Branch: The branch of the hotel where all rooms belong to. is identified by branchID and has branchCity since the hotel has branches in different cities, each branch has many rooms.

Room: The room included in booking and identified by roomNo, and has attributes roomType, roomCost, bedType, floorNo, and roomView. Each room can be in more than one booking at different date. No one branch has two roomNo that are the same although two or more branches have the same roomNo. Room belongs to one branch and a branch has many rooms.

Services: Any service, whether paid or free, that the hotel offers to its customers, such as spa treatments, gym access, meal delivery, housekeeping and other services. It includes a unique serviceID, serviceName, serviceCost. Each service belongs to zero or many booking.

Transaction Requirements:

Data Entry:

1- Add New Customer

2- Enter the number of nights for booking

Data update/deletion:

1- Delete Reservation

2- Update Customer's Phone Number and Email

3- Update Payment info for a Booking

Data Queries:

1- Show the list of all branches

2- Show the list of the customer's current and previous reservations

3- Show the list of services priced under 400

4- Show the list of rooms and suites sorted from lowest to highest price at the Al Khobar branch

5- Show the list of rooms with a view at the Jeddah branch

6- Show the list of Single bed rooms at the Riyadh branch

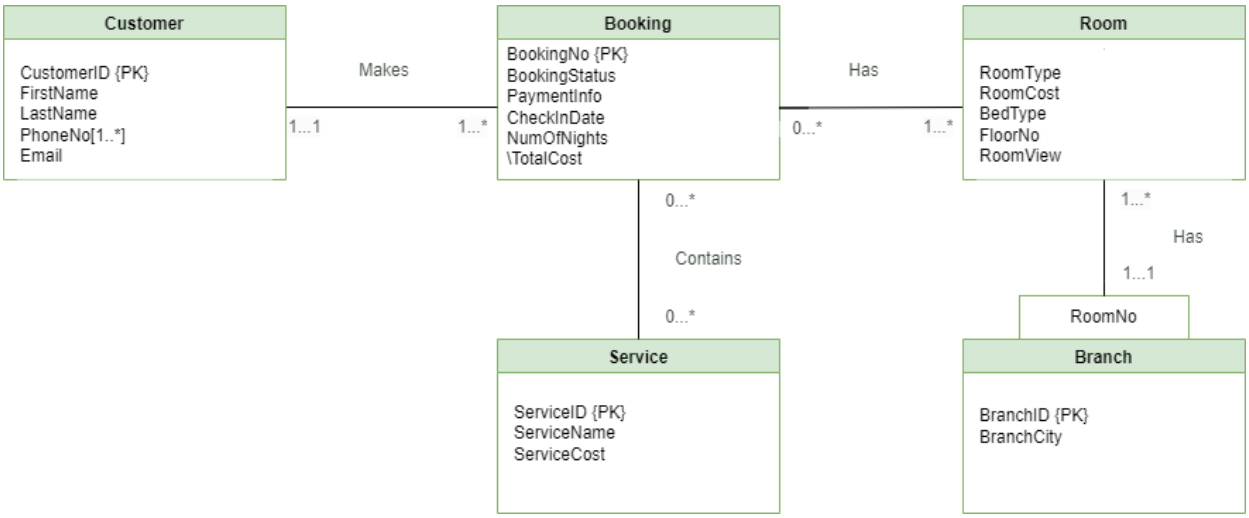
7- List of free services

8- Show the list of suites at the Al Khobar branch priced between 2000 and 3000

9- Show the list of rooms at the Jeddah branch located on the first floor

10- Calculate the total price of all services requested by the customer

Global enhanced entity relationship diagram (EER):



Relational Schema:

Customer (customerID, firstName, lastName, email)
Primary key: customerID

Telephone (phoneNo, customerID)
Primary key: phoneNo, customerID
Foreign key: customerID references Customer (customerID)

Booking (bookingNo, bookingStatus, paymentInfo, checkInDate, numOfNights, totalCost, customerID)
Primary key: bookingNo
Foreign key: customerID references Customer (customerID)

Branch (branchID, branchCity)
Primary key: branchID

Room (roomNo, branchID, roomType, roomCost, bedType, floorNo, roomView)
Primary key: roomNo, branchID
Foreign key: branchID references Branch (branchID)

Service (serviceID, serviceName, serviceCost)
Primary key: serviceID

Has (bookingNo, roomNo, branchID)
Primary key: bookingNo, roomNo, branchID
Foreign key: bookingNo references Booking (bookingNo)
Foreign key: roomNo references Room (roomNo)
Foreign key: branchID references Branch (branchID)

Contains (bookingNo, serviceID)
Primary key: bookingNo, serviceID
Foreign key: bookingNo references Booking (bookingNo)
Foreign key: serviceID references Service (serviceID)

Data Dictionary showing description of all entities:

Entity Name	Description	Occurrence
Customer	General term describing all The person who will make the booking.	Each customer can make one or many bookings.
Booking	General term describing all The Customer Is Recorded Reserve Management.	Each booking has one or more rooms and can contain many services, one or no service.
Room	General term describing all the room included in booking	Each room can be in more than one booking at different date. No one branch has two roomNo that are the same although two or more branches have the same roomNo. Room belongs to one branch and a branch has many rooms.
Service	General term describing all services that the hotel offers to its customers.	Each service belongs to zero or many booking.
Branch	General term describing all the branch of the hotel where all rooms belong to.	Each branch has many rooms.

Data Dictionary showing description of all relationships:

Entity Name	Multiplicity	Relationship	Entity Name	Multiplicity
Branch	1..1	Has	Room	1..*
Booking	0..*	Has	Room	1..*
Booking	0..*	Contains	Service	0..*
Customer	1..1	Makes	Booking	1..*

Data Dictionary showing description of all attributes:

Entity Name	Attribute	Description	Data Type	Length	Nulls	Multi-Valued	Default Value	Range	PK
Customer	CustomerID	Unique identifier number assigned to each customer stays at the hotel	number	10					Y
	FirstName	Frist name of customer	varchar	10					
	LastName	Last name of customer	varchar	10					
	PhoneNo	customer contact numbers	char	10		Y			
	Email	The customer email	varchar	64					
Booking	BookingNo	The unique number of the booking	number	10					Y

	BookingStatus	Booking status if confirmed or not	varchar	10				Confirm/ Canceled	
	PaymentInfo	Information of the customer payment	varchar	10					
	CheckInDate	Booking start date	date	10					
	NumOfNights	Number of customer sleep nights	integer						
	TotalCost	Total cost of the booking	decimal	8.2	Y				
Room	RoomType	The room’s type	varchar	10					
	RoomCost	The room's price	decimal	6.2					
	BedType	Type of beds in the room	varchar	10	Y		Queen bed		
	FloorNo	The floor`s number	varchar	2					
	RoomView	whether the room has a view or not.	varchar	10	Y		No view	No view/ with view	
	RoomNo	The room`s number	varchar	3					Y
Branch	BranchID	The unique number of the Branch	char	5					Y
	BranchCity	City where the hotel is located	varchar	10					
Service	ServiceID	unique service ID	char	5					Y
	ServiceName	The name of the service provided	varchar	10					
	ServiceCost	The service's price	decimal	6.2					

Table Booking

DB tables creation:

BOOKING

Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

+ Add Column | Modify Column | Rename Column | Drop Column | UI Defaults | Refresh | More

Column Name	Data Type	Nullable	Default	Primary Key	Comment	Identity
BOOKING_STATUS	VARCHAR2(10 CHAR)	N				
PAYMENT_INFO	VARCHAR2(10 CHAR)	N				
CHECKIN_DATE	DATE	N				
NUM_OF_NIGHTS	NUMBER	N				
TOTAL_COST	NUMBER(8,2)	Y				
CUSTOMER_ID	NUMBER(10,0)	N				
BOOKING_NO	NUMBER	N		1		

BOOKING

Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

Download | Refresh

```
CREATE TABLE "BOOKING"
 (    "BOOKING_STATUS" VARCHAR2(10 CHAR) NOT NULL ENABLE,
  "PAYMENT_INFO" VARCHAR2(10 CHAR) NOT NULL ENABLE,
  "CHECKIN_DATE" DATE NOT NULL ENABLE,
  "NUM_OF_NIGHTS" NUMBER NOT NULL ENABLE,
  "TOTAL_COST" NUMBER(8,2),
  "CUSTOMER_ID" NUMBER(10,0) NOT NULL ENABLE,
  "BOOKING_NO" NUMBER,
   CONSTRAINT "BOOKING_STATUS_CHK" CHECK ("BOOKING_STATUS" IN ('confirmed', 'canceled')) ENABLE,
   CONSTRAINT "BOOKING_PK" PRIMARY KEY ("BOOKING_NO")
USING INDEX  ENABLE
 ) ;

ALTER TABLE "BOOKING" ADD CONSTRAINT "FK_BOOKING_CUSTOMER_ID" FOREIGN KEY ("CUSTOMER_ID")
    REFERENCES "CUSTOMER" ("CUSTOMER_ID") ENABLE;

CREATE OR REPLACE EDITIONABLE TRIGGER "CALCULATE_TOTALCOST"
BEFORE INSERT OR UPDATE ON BOOKING
FOR EACH ROW
DECLARE
  ROOM_COST NUMBER := 0;
  TOTAL_ROOM_COST NUMBER := 0;
BEGIN

  FOR r IN (SELECT r.ROOM_COST
            FROM ROOM r
            JOIN HAS h ON r.ROOM_NO = h.ROOM_NO
            WHERE h.BOOKING_NO = :NEW.BOOKING_NO) LOOP
    TOTAL_ROOM_COST := TOTAL_ROOM_COST + r.ROOM_COST;
  END LOOP;


  IF TOTAL_ROOM_COST > 0 THEN
    :NEW.TOTAL_COST := TOTAL_ROOM_COST * :NEW.NUM_OF_NIGHTS;
  ELSE
    :NEW.TOTAL_COST := 0;
  END IF;
END;
/
ALTER TRIGGER "CALCULATE_TOTALCOST" ENABLE;
```

Data insertion:

BOOKING

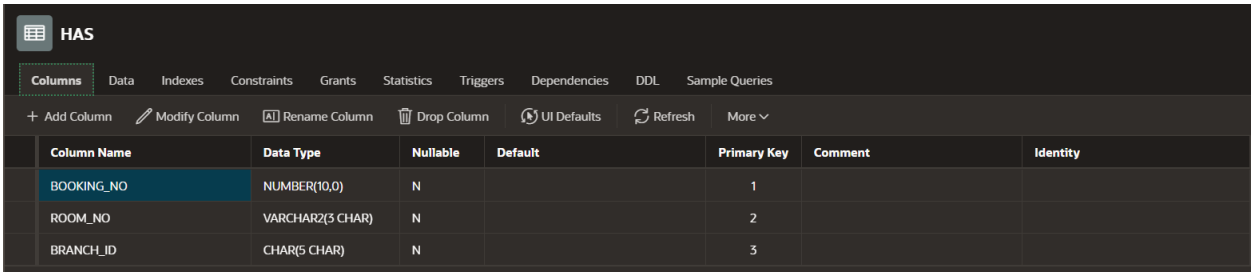
Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

+ Insert Row | Columns... | Filter... | Count Rows | Load Data | Download | Refresh

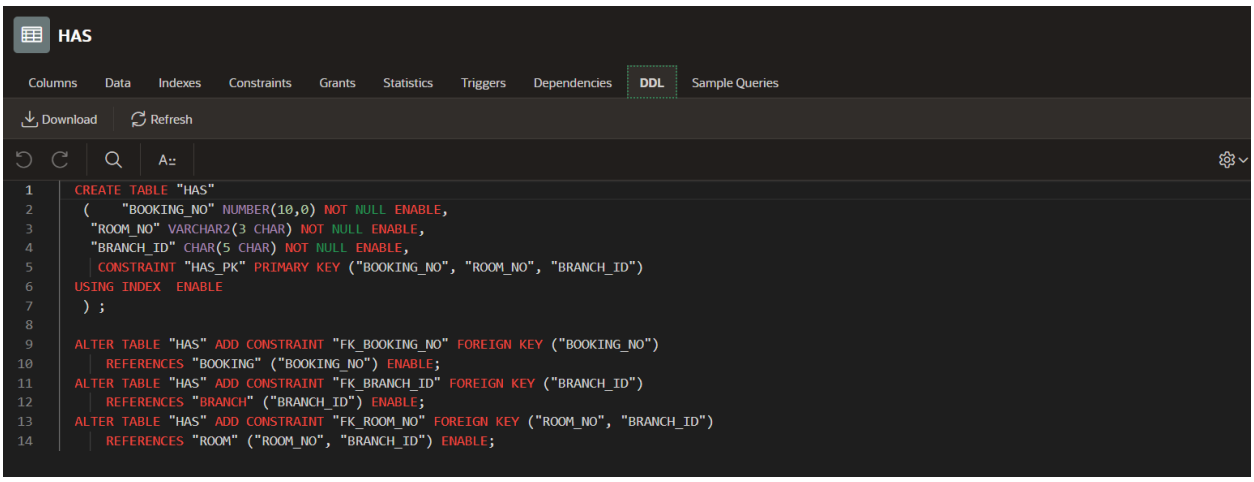
BOOKING_STATUS	PAYMENT_INFO	CHECKIN_DATE	NUM_OF_NIGHTS	TOTAL_COST	CUSTOMER_ID	BOOKING_NO
canceled	cash	01/10/2024	6	19800	2	2001
confirmed	cash	10/10/2025	5	12500	1	2004
confirmed	cash	12/12/2024	4	6000	1	2002
confirmed	cash	01/01/2025	8	64000	3	2003

Table Has

DB tables creation:



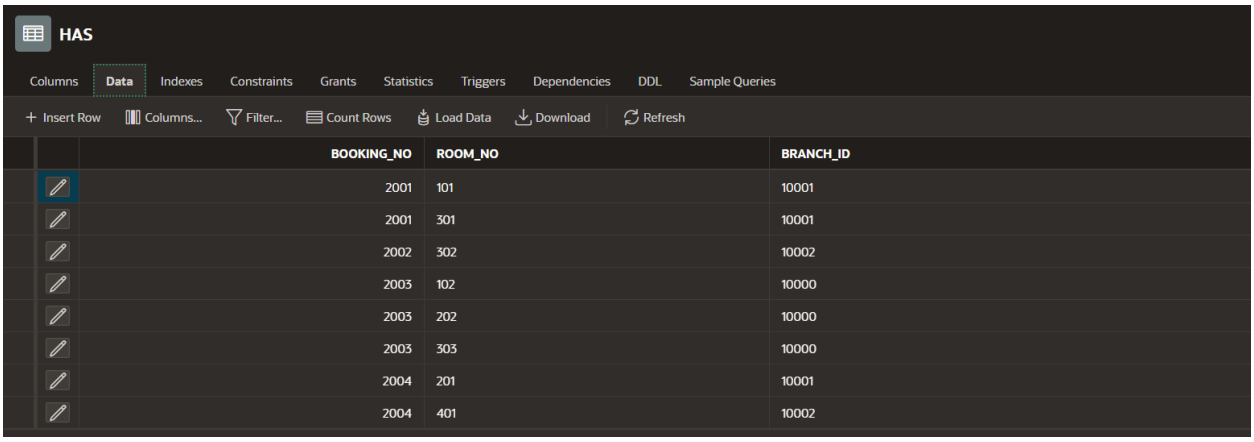
Column Name	Data Type	Nullable	Default	Primary Key	Comment	Identity
BOOKING_NO	NUMBER(10,0)	N		1		
ROOM_NO	VARCHAR2(3 CHAR)	N		2		
BRANCH_ID	CHAR(5 CHAR)	N		3		




```
CREATE TABLE "HAS"
 (    "BOOKING_NO" NUMBER(10,0) NOT NULL ENABLE,
  "ROOM_NO" VARCHAR2(3 CHAR) NOT NULL ENABLE,
  "BRANCH_ID" CHAR(5 CHAR) NOT NULL ENABLE,
   CONSTRAINT "HAS_PK" PRIMARY KEY ("BOOKING_NO", "ROOM_NO", "BRANCH_ID")
USING INDEX  ENABLE
 ) ;

ALTER TABLE "HAS" ADD CONSTRAINT "FK_BOOKING_NO" FOREIGN KEY ("BOOKING_NO")
    REFERENCES "BOOKING" ("BOOKING_NO") ENABLE;
ALTER TABLE "HAS" ADD CONSTRAINT "FK_BRANCH_ID" FOREIGN KEY ("BRANCH_ID")
    REFERENCES "BRANCH" ("BRANCH_ID") ENABLE;
ALTER TABLE "HAS" ADD CONSTRAINT "FK_ROOM_NO" FOREIGN KEY ("ROOM_NO", "BRANCH_ID")
    REFERENCES "ROOM" ("ROOM_NO", "BRANCH_ID") ENABLE;
```

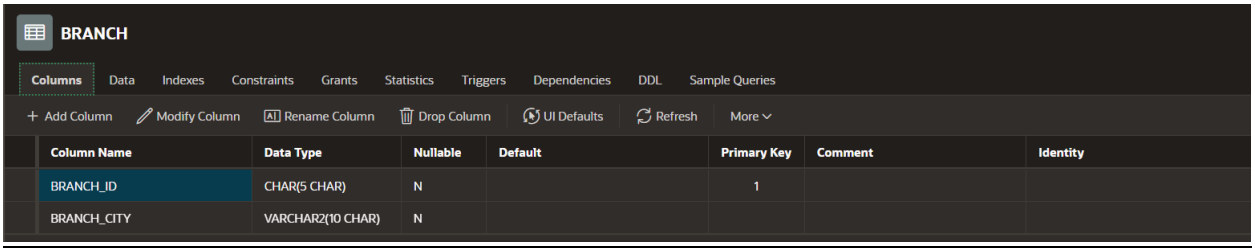
Data insertion:

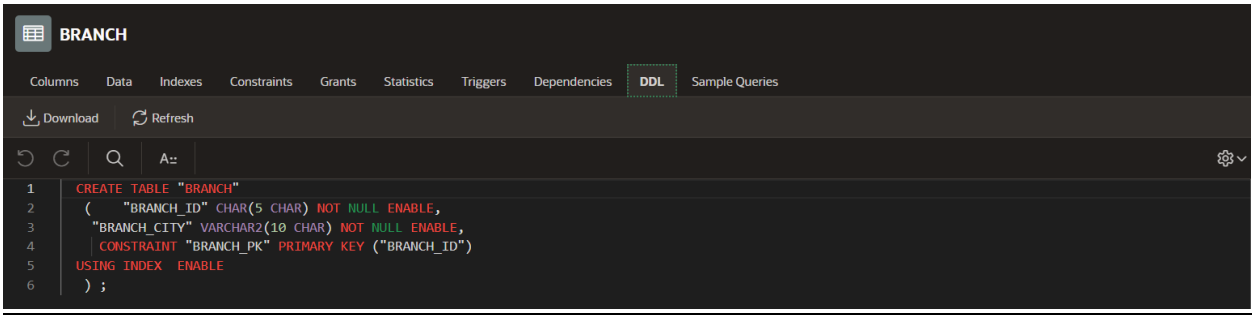


BOOKING_NO	ROOM_NO	BRANCH_ID
2001	101	10001
2001	301	10001
2002	302	10002
2003	102	10000
2003	202	10000
2003	303	10000
2004	201	10001
2004	401	10002

Table Branch

DB tables creation:





Data insertion:

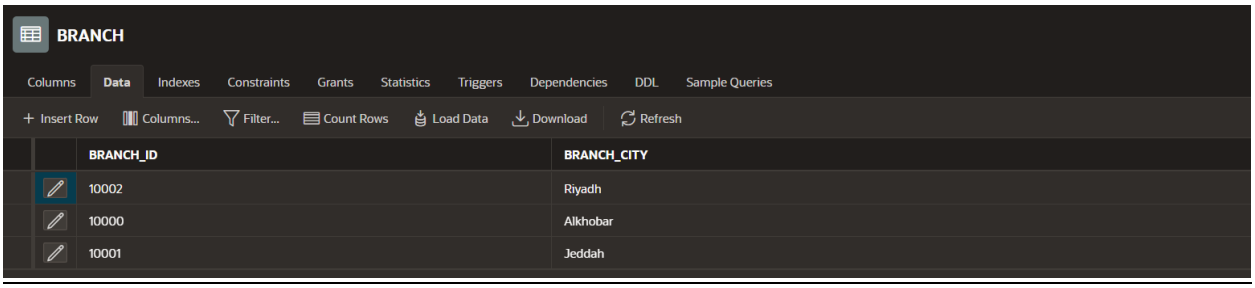
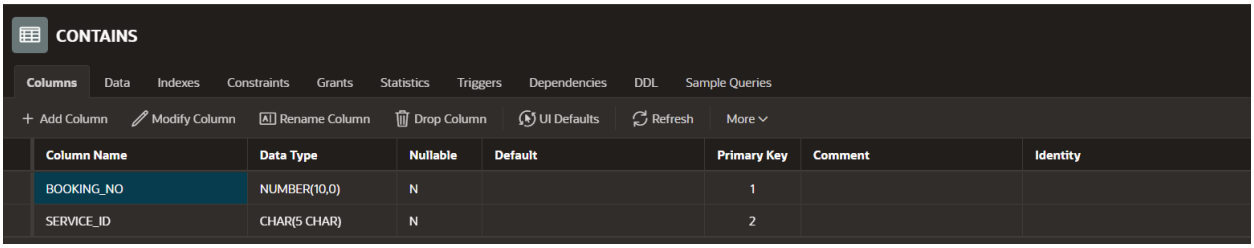
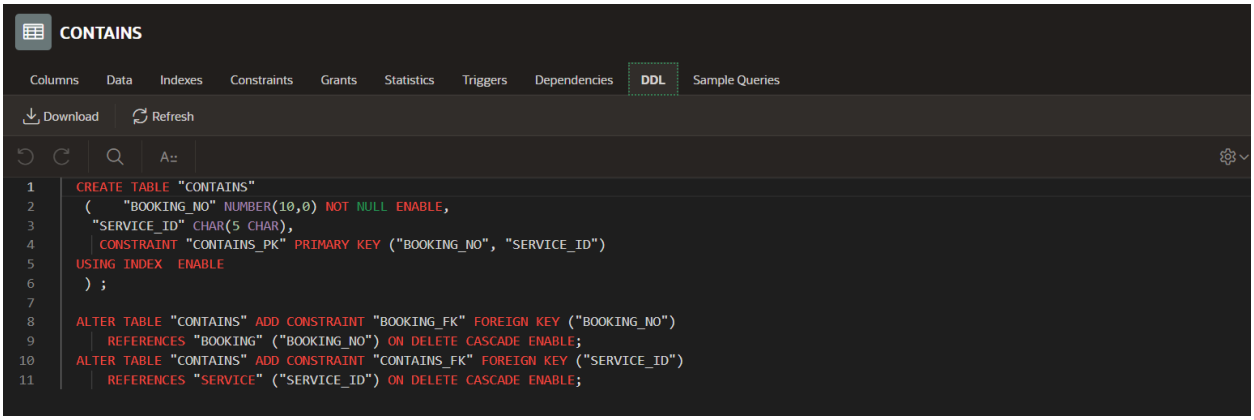


Table Contains

DB tables creation:





Data insertion:

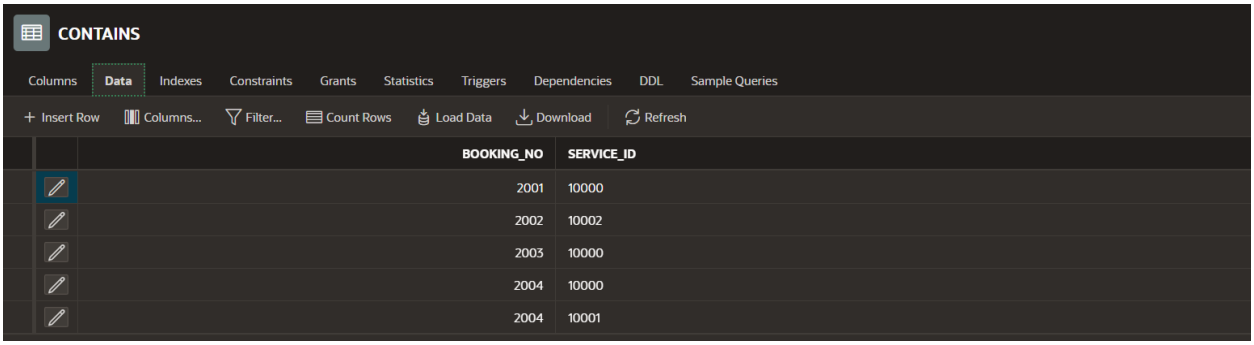


Table Room

DB tables creation:

ROOM

Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

+ Add Column | Modify Column | Rename Column | Drop Column | UI Defaults | Refresh | More

Column Name	Data Type	Nullable	Default	Primary Key	Comment	Identity
ROOM_NO	VARCHAR2(3 CHAR)	N		1		
BRANCH_ID	CHAR(5 CHAR)	N		2		
ROOM_TYPE	VARCHAR2(10 CHAR)	N				
ROOM_COST	NUMBER(6,2)	N				
BED_TYPE	VARCHAR2(10 CHAR)	Y	'Queen bed'			
FLOOR_NO	VARCHAR2(2 CHAR)	N				
ROOM_VIEW	VARCHAR2(10 CHAR)	Y	'No view'			

ROOM

Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

Download | Refresh

```
CREATE TABLE "ROOM"
 (    "ROOM_NO" VARCHAR2(3 CHAR) NOT NULL ENABLE,
  "BRANCH_ID" CHAR(5 CHAR) NOT NULL ENABLE,
  "ROOM_TYPE" VARCHAR2(10 CHAR) NOT NULL ENABLE,
  "ROOM_COST" NUMBER(6,2) NOT NULL ENABLE,
  "BED_TYPE" VARCHAR2(10 CHAR) DEFAULT 'Queen bed',
  "FLOOR_NO" VARCHAR2(2 CHAR) NOT NULL ENABLE,
  "ROOM_VIEW" VARCHAR2(10 CHAR) DEFAULT 'No view',
   CHECK ("ROOM_VIEW" IN ('No view', 'With view')) ENABLE,
   CONSTRAINT "ROOM_PK" PRIMARY KEY ("ROOM_NO", "BRANCH_ID")
USING INDEX  ENABLE
 ) ;

ALTER TABLE "ROOM" ADD CONSTRAINT "FK_BRANCH" FOREIGN KEY ("BRANCH_ID")
    REFERENCES "BRANCH" ("BRANCH_ID") ON DELETE CASCADE ENABLE;
```

Data insertion:

ROOM

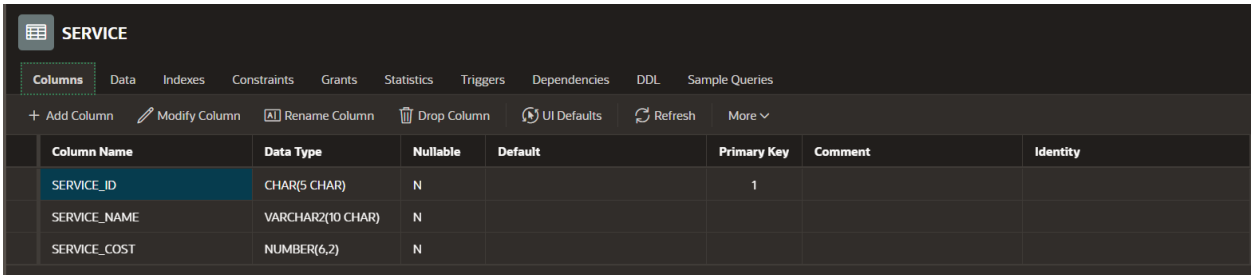
Columns | Data | Indexes | Constraints | Grants | Statistics | Triggers | Dependencies | DDL | Sample Queries

+ Insert Row | Columns... | Filter... | Count Rows | Load Data | Download | Refresh

ROOM_NO	BRANCH_ID	ROOM_TYPE	ROOM_COST	BED_TYPE	FLOOR_NO	ROOM_VIEW
302	10002	room	1500	Queen	3	With view
101	10001	room	1000	Singal	1	With view
202	10000	suite	2500	Queen	2	No view
201	10001	room	1000	Single	2	No view
102	10000	room	2000	Queen	1	With view
301	10001	suite	2300	Queen	3	No view
303	10000	suite	3500	Queen	3	With view
401	10002	room	1500	Single	4	With view

Table Service

DB tables creation:



Data insertion:

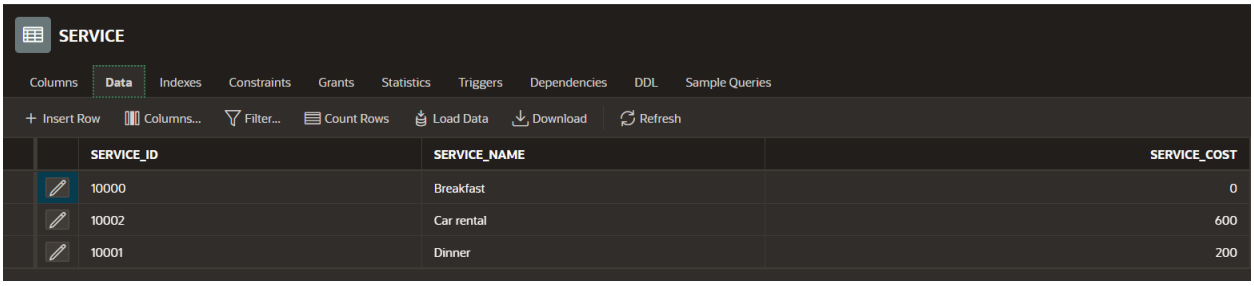
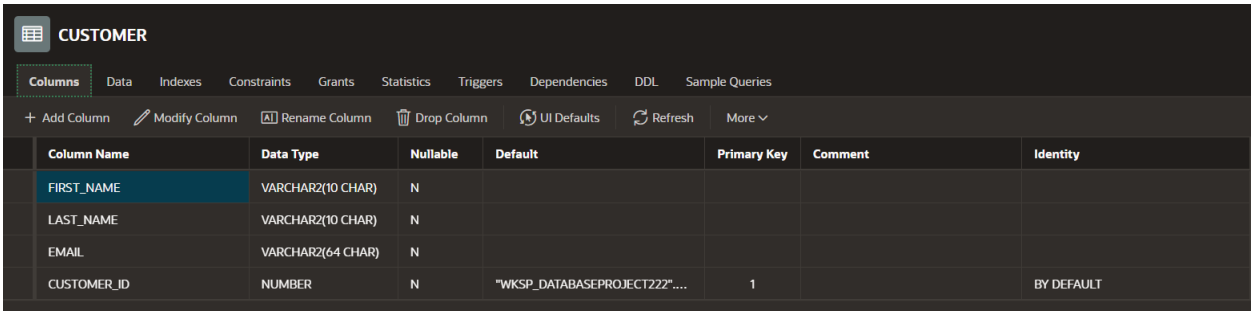
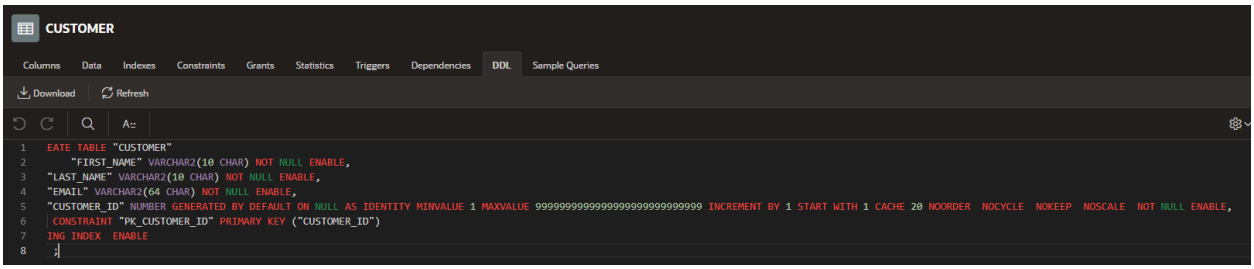


Table Customer

DB tables creation:





Data insertion:

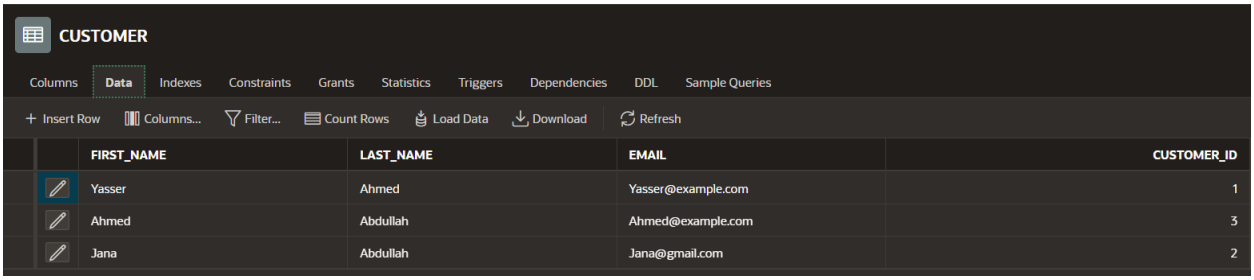
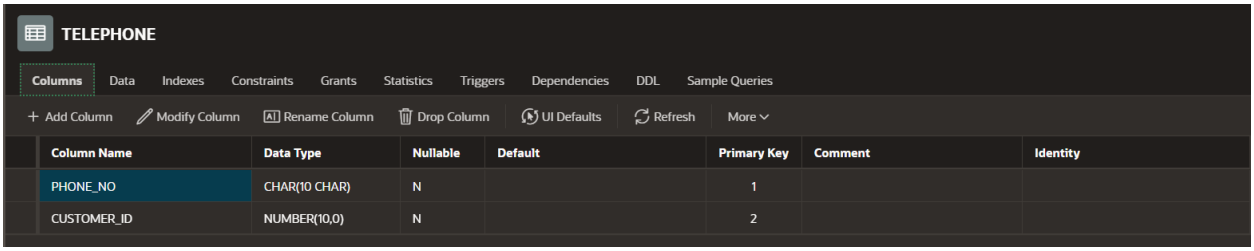
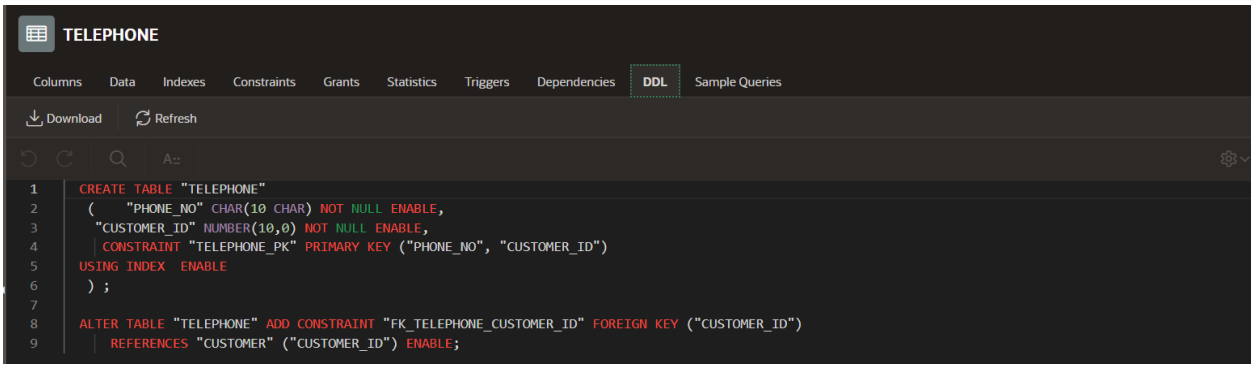


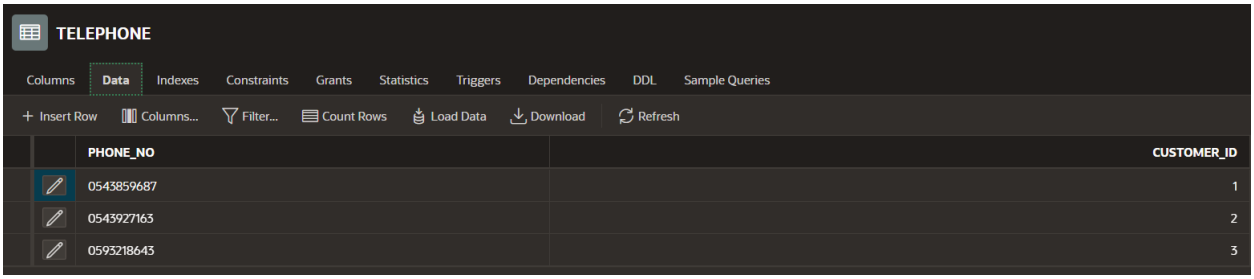
Table Telephone

DB tables creation:



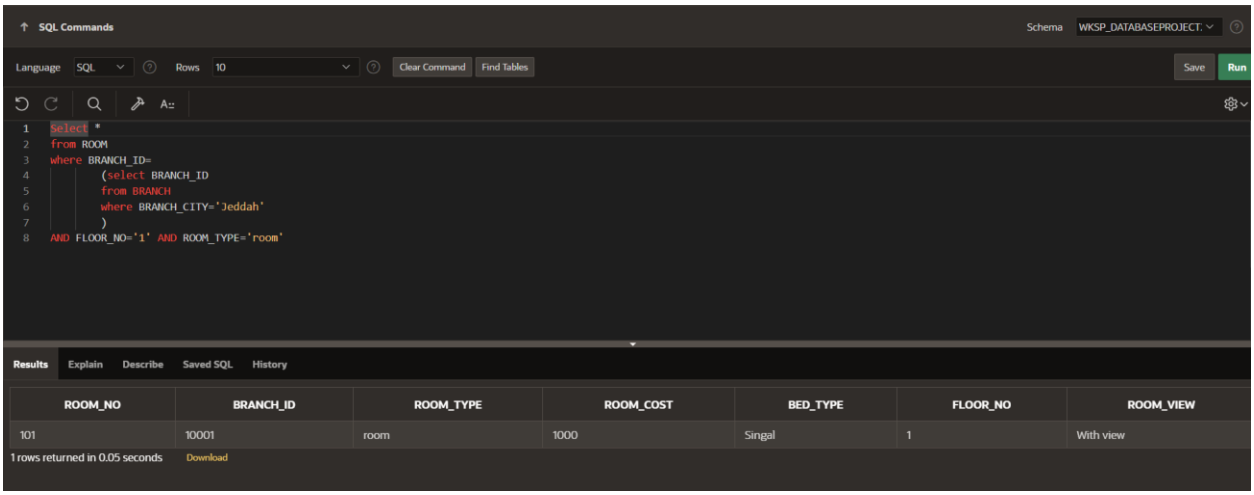


Data insertion:

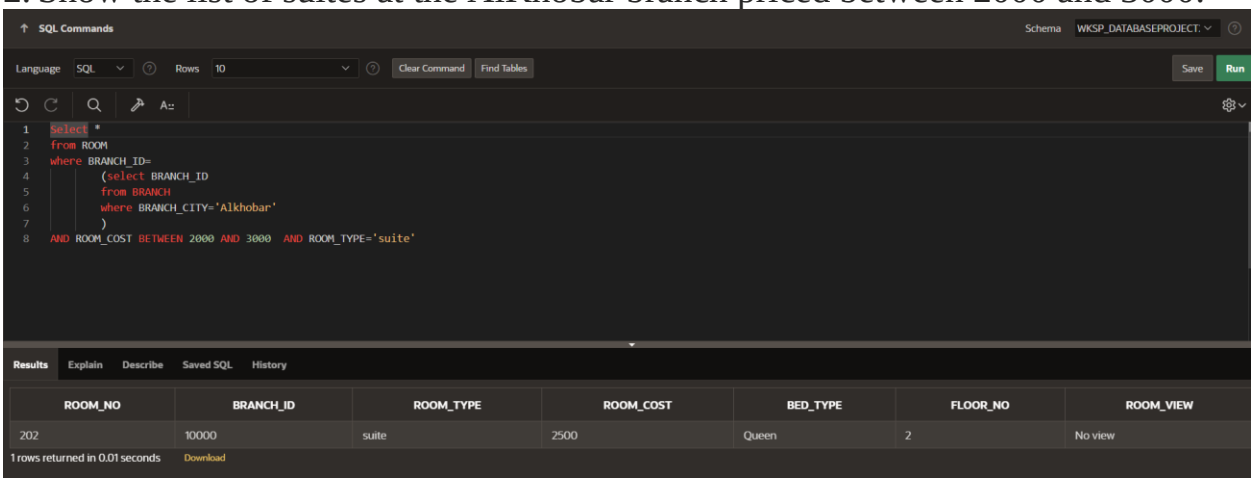


Data Queries:

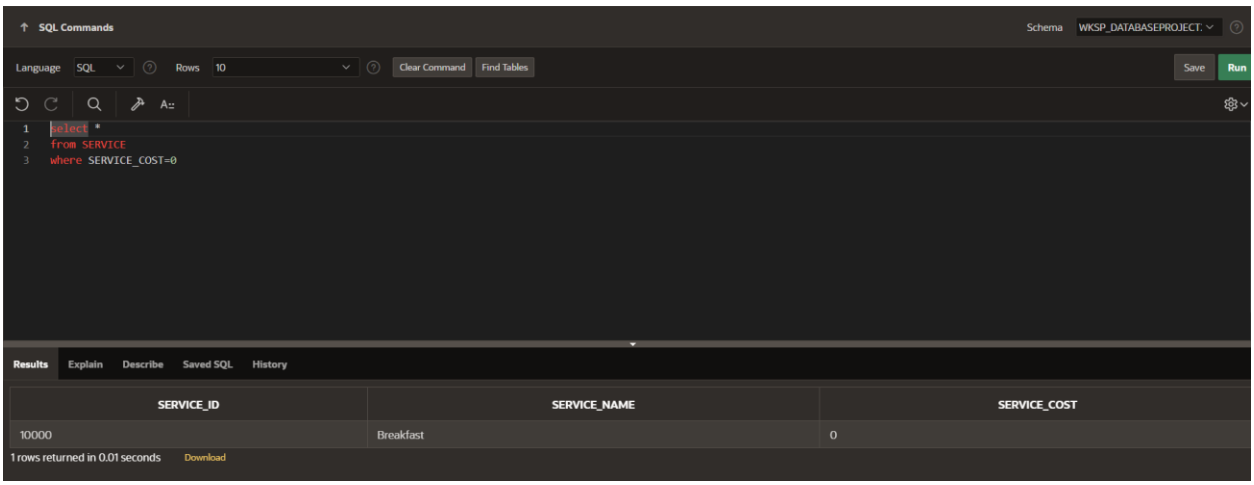
1.Show the list of rooms at the Jeddah branch located on the first floor:



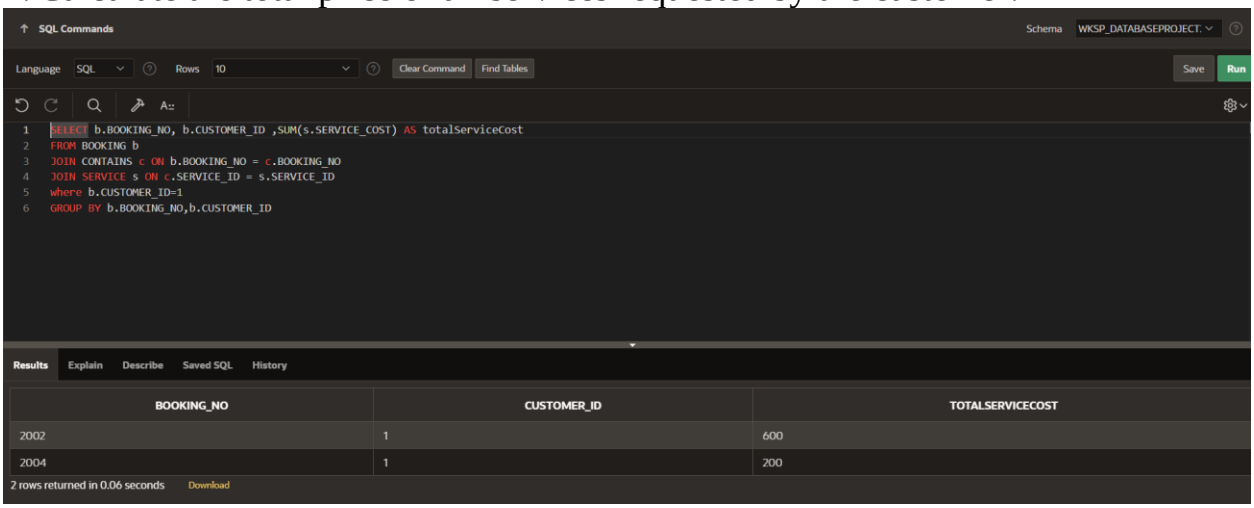
2. Show the list of suites at the AlKhobar branch priced between 2000 and 3000:



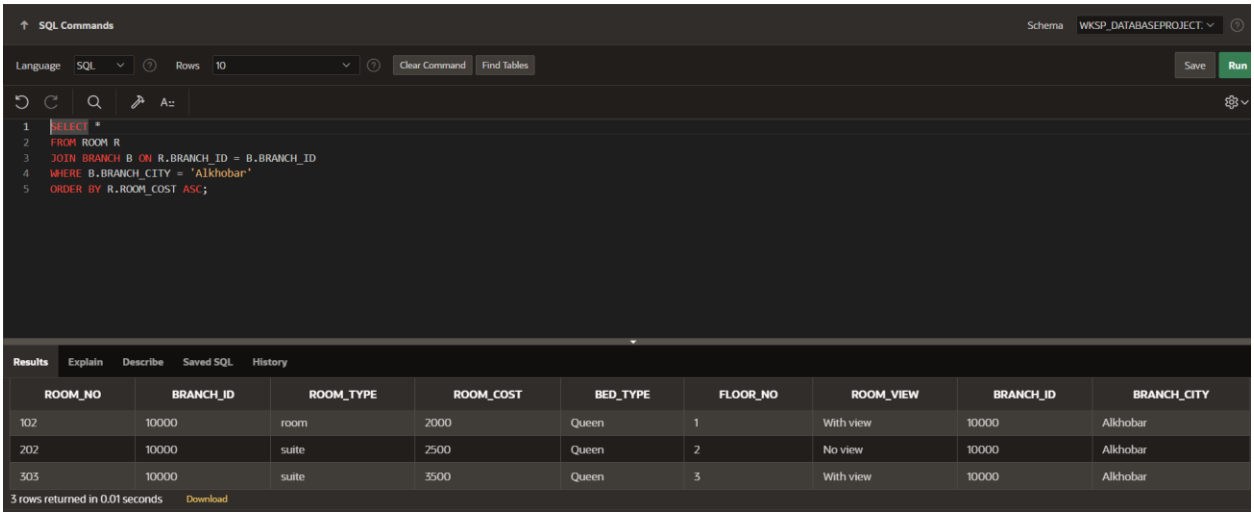
3. List of free services:



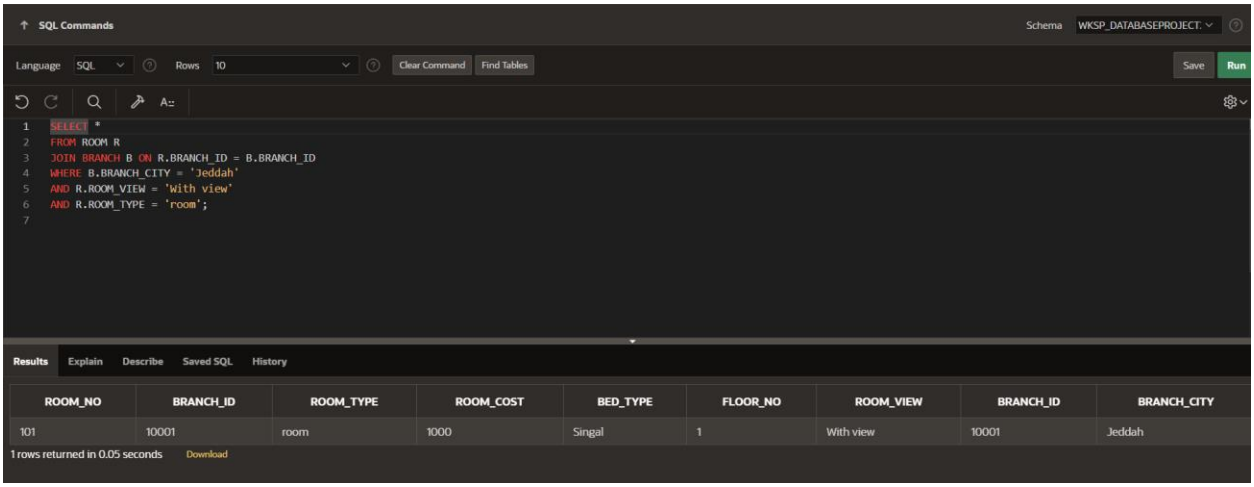
4. Calculate the total price of all services requested by the customer:



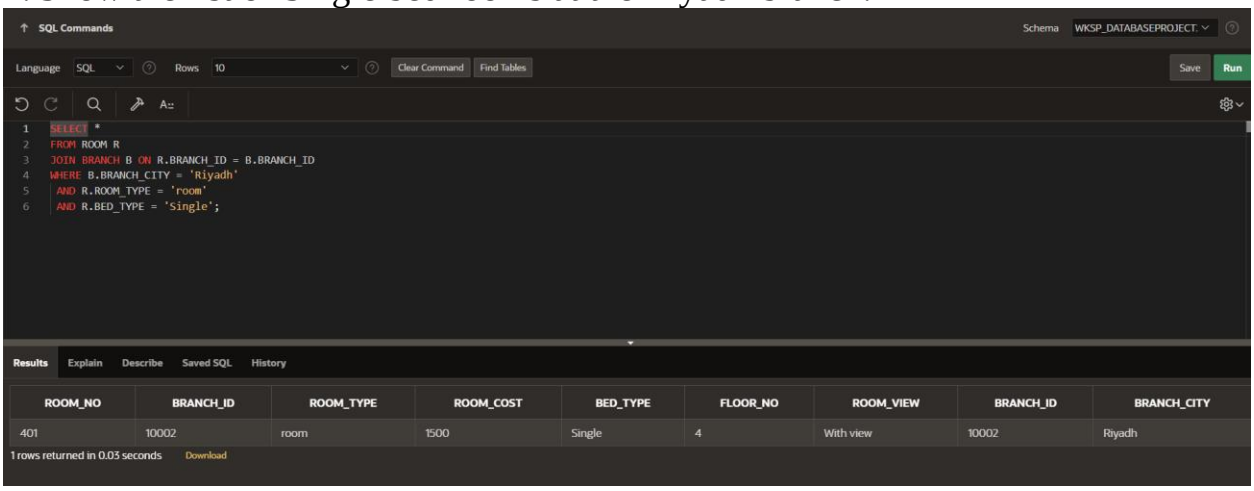
5. Show the list of rooms and suites sorted from lowest to highest price at the Al Khobar branch:



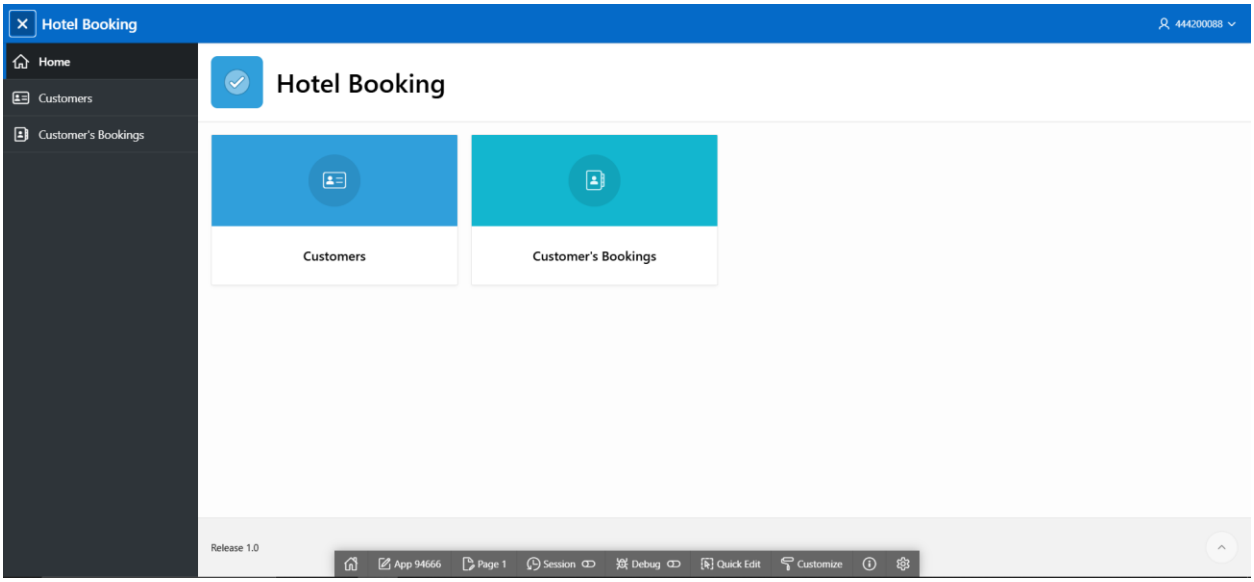
6. Show the list of rooms with a view at the Jeddah branch:



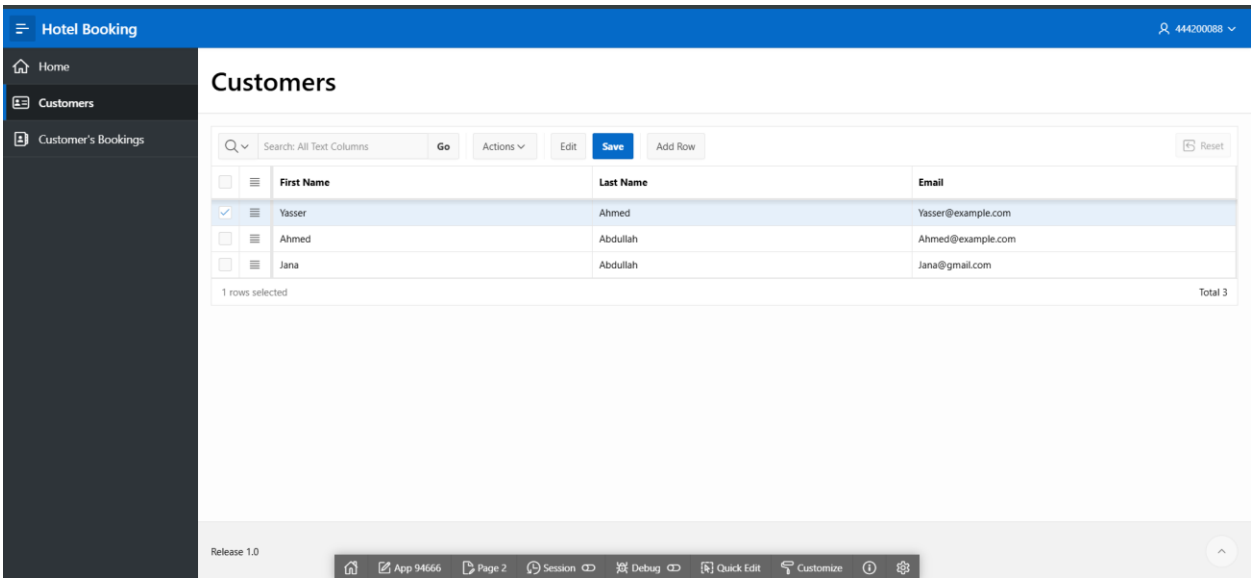
7. Show the list of Single bed rooms at the Riyadh branch:



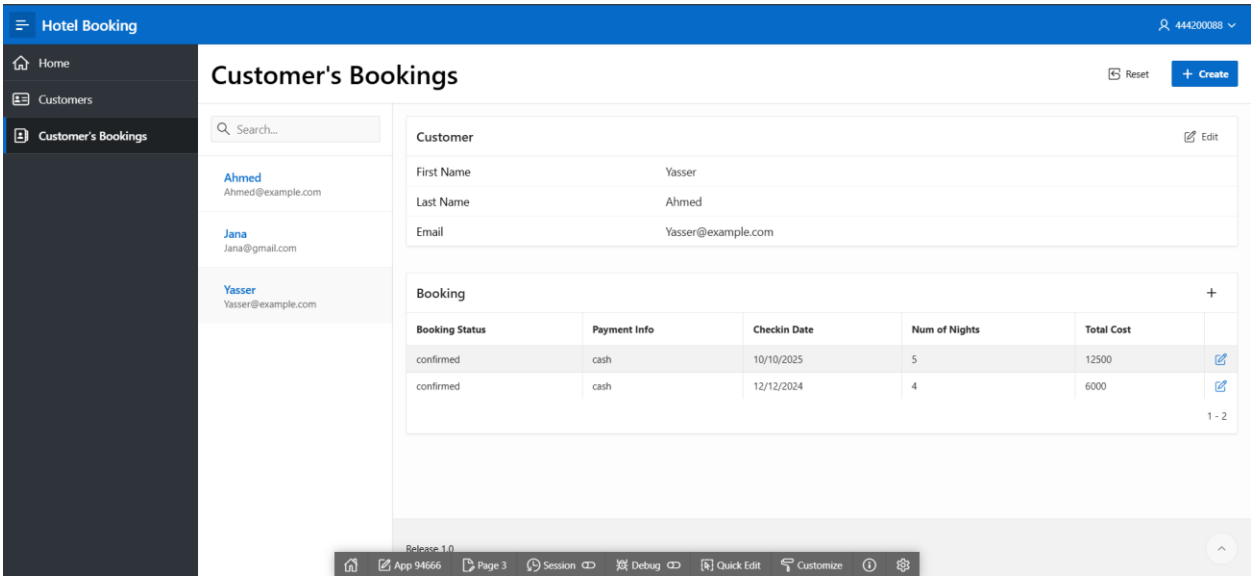
App Builder:


Hotel Booking
444200088
Home
Customers
Customer's Bookings
Hotel Booking
Customers
Customer's Bookings
Release 1.0
App 94666
Page 1
Session
Debug
Quick Edit
Customize

- Interactive Grid:



- Master Detail:



Work Distribution:

NAME	ID	Percentage	WORK
Alanoud Khalid Aloraydi	*444201111*	*20%*	• *Transaction Requirements* • *Data Dictionary showing description of all entities.* • *Apex (Table Room + queries)*
Sarah alruwayte	*444200758*	*20%*	• *Data Dictionary showing description of all attributes.* • *Apex (Table (Service+ Contain) + queries)*
Walaa Saif Aleslam Mohammed	*444200088*	*20%*	• *Data requirements.* • *Relational Schema.* • *Apex (Table (Booking+ Has) + app builder)*
Atheer Bin Badie	*444200894*	*20%*	• *EER diagram* • *Data Dictionary showing description of all attributes.* • *Apex (Table Branch + app builder)*
Jans Alsuwailem	*444200816*	*20%*	• *Project description* • *View description* • *Data Dictionary showing description of all relationships.* • *Apex (Table (Customer + Telephone) + app builder)*