AMERICAN INTERNATIONAL UNIVERSITY BANGLADESH (AIUB)

FACULTY OF SCIENCE & TECHNOLOGY

Course Title

INTRODUCTION TO DATABASE (2108)

Semester: 2023-2024,Spring

Section: [D]

TITLE

Gadget and Gear Management System

Supervised By

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Submitted By: Group no: 01

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Aman Ullah	22-49345-3
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TABLE OF CONTENTS

Introduction

Welcome to the Gadget and Gear Management System (GGMS) database project. GGMS is crafted to address the contemporary challenges in managing electronic devices within organizations. This project aims to develop a centralized platform for efficient inventory tracking, maintenance scheduling, and allocation of gadgets and gears. By providing real-time visibility and optimization of resources, GGMS intends to enhance productivity and reduce operational costs. Through this project, we endeavor to design a user-friendly interface with robust functionality, revolutionizing the management of gadgets and gears within organizations.

Case Study / Scenario

StudentID1: 22-49350-3 Name: Afnan Bin Islam Nahin	StudentID3: 22-49903-3 Name: Joy Sarker
StudentID2: 22-49345-3 Name: Aman Ullah	StudentID4: 22-49900-3 Name: S M Sarar Sakib
CO2: Understand the fundamental concepts underlying database systems and gain hands-on experience with ER diagram Case study	
PO-c2: Develop process for complex computer science and engineering problems considering cultural and societal factors.	Marks

Gadget and Gear Management System (GGMS) is enhancing operational efficiency with a design that allows customers to order a variety of tech products based on their preferences. It's an online-based company.

The company offers a wide range of electronics, including Apple mobile phones (iPhone 13 Pro to iPhone 15 Pro), Apple laptops (Macbook), headphones, shooting drones, power banks, speakers, camaras, and smart watches. Additionally, TVs from Sony are available. Customers can order products and must provide their name, phone number, and email.

This order details the product name, model, quantity, price, and order date. Orders are managed centrally, streamlining the purchasing process for efficiency and customer satisfaction. This company sells products at lower prices than others. So the sales of every product from this company have increased. Struggling to handle customers. Many customers buy more than one product due to lower prices. Due to this, there are many customers who are not able to buy any products.

For this reason, the company made a policy which is each customer can purchase any one product. These policy are made so that the products of this company can reach every customer.

ER Diagram

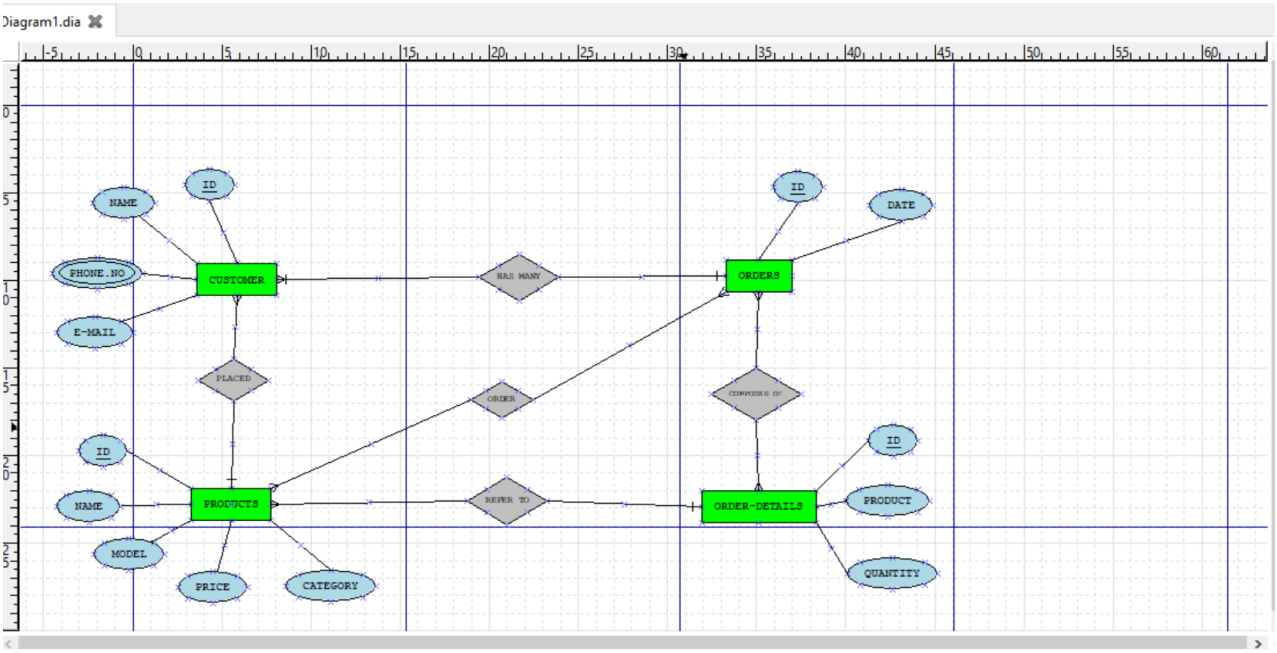


Diagram1.dia
NAME
ID
PHONE_NO
CUSTOMER
E-MAIL
PLACED
HAS MANY
ORDERS
ID
DATE
ORDER
COMPOSED OF
ID
NAME
PRODUCTS
MODEL
PRICE
CATEGORY
REFER TO
ORDER-DETAILS
ID
PRODUCT
QUANTITY

Normalization

Placed (C.Id, C.Name, Phone No., Email, P.Id, P.Name, Model, Price, Category)

1NF: Phone No. Multivalued Attributes

2NF: C.Id, C.Name, Phone No., Email, P.Id

P.Id, P.Name, Model, Price, Category

3NF: C.Id, C.Name, Phone No., Email, P.Id

P.Id, P.Name, Model, Price, Category.

(No Transitive Dependency)

Table:

C.Id, C.Name, Phone No., Email, P.Id

P.Id, P.Name, Model, Price, Category.

Has Many (C.Id, C.Name, Phone No., Email, O.Id, Date)

1NF: Phone No. Multivalued Attributes

2NF: C.Id, C.Name, Phone No., Email, O.Id

O.Id, Date

3NF: C.Id, C.Name, Phone No, Email, O.Id

O.Id, Date

(No Transitive Dependency)

Table:

C.Id, C.Name, Phone No., Email, O.Id

O.Id, Date

Order (P.Id, P.Name, Model, Price, Category, O.Id, Date)

1NF: No Multivalued Attributes

2NF: P.Id, P.Name, Model, Price, Category

O.Id, Date

PO.Id, P.Id, O.Id

3NF: P.Id, P.Name, Model, Price, Category

O.Id, Date

PO.Id, P.Id, O.Id

(No Transitive Dependency)

Table:

P.Id, P.Name, Model, Price, Category

O.Id, Date.

PO.Id, P.Id, O.Id

Refer To (P.Id, P.Name, Model, Price, Category, Od.Id, Quantity, Product-Id)

1NF: No Multivalued Attributes

2NF: P.Id, P.Name, Model, Price, Category, Od.Id

Od.Id, Quantity, Product-Id

3NF: P.Id, P.Name, Model, Price, Category, Od.Id

Od.Id, Quantity, Product

Table:

P.Id, P.Name, Model, Price, Category, Od.Id

Od.Id, Quantity, Product

Composed Of (O.Id, Date, Od.Id, Product, Quantity)

1NF: No Multivalued Attributes

2NF: O.Id, Date

Od.Id, Quantity, Product

Ood.Id, O.Id, Od.Id

3NF: O.Id, Date

Od.Id, Quantity, Product

Ood.Id, O.Id, Od.Id

Table:

O.Id, Date

Od.Id, Quantity, Product

Ood.Id, O.Id, Od.Id

Total Table:

1)C.Id, C.Name, Phone No., Email, P.Id

2)P.Id, P.Name, Model, Price, Category

3)C.Id, C.Name, Phone No., Email, O.Id

4)O.Id, Date

5)P.Id, P.Name, Model, Price, Category X

6)O.Id, Date. X

7)PO.Id, P.Id, O.Id

8)P.Id, P.Name, Model, Price, Category, Od.Id

9)Od.Id, Quantity, Product

10)O.Id, Date X

11)Od.Id, Quantity, Product X

12)Ood.Id, O.Id, Od.Id--Delivery

Finalization

Final Table:

1)C.Id, C.Name, Phone No., Email, P.Id--**Customer Details**

2)P.Id, P.Name, Model, Price, Category—**Product Information**

3)C.Id, C.Name, Phone No., Email, O.Id—**Customer Information**

4)O.Id, Date—**Order Details**

5)Po.Id, P.Id, O.Id—**Order Details 1**

6)P.Id, P.Name, Model, Price, Category, Od.Id—**Product Details**

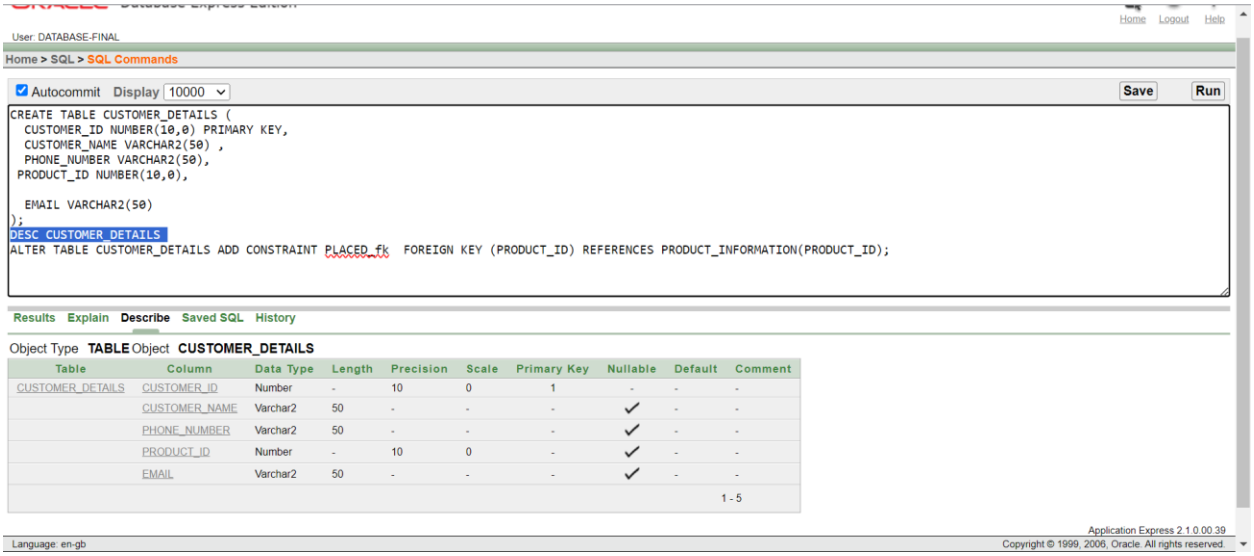
7)Od.Id, Quantity, Product—**Product Details 1**

8)Ood.Id, O.Id, Od.Id--**Delivery**

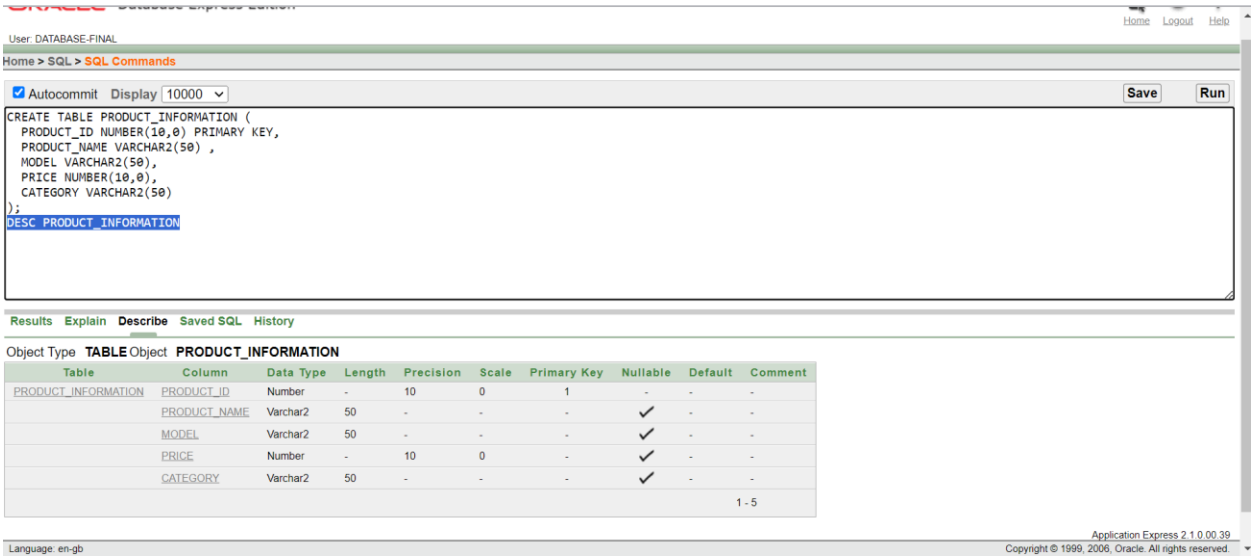
Table Creation (DDL Operations)

StudentID1: 22-49350-3 Name: Afnan Bin Islam Nahin	StudentID3: 22-49903-3 Name: Joy Sarker
StudentID2: 22-49345-3 Name: Aman Ullah	StudentID4: 22-49900-3 Name: S M Sarar Sakib
CO4: Creating DML, DDL using Oracle and connection with ODBC/JDBC for existing JAVA application	
PO-e-2: Use modern engineering and IT tools for prediction and modeling of complex computer science and engineering problem	Marks

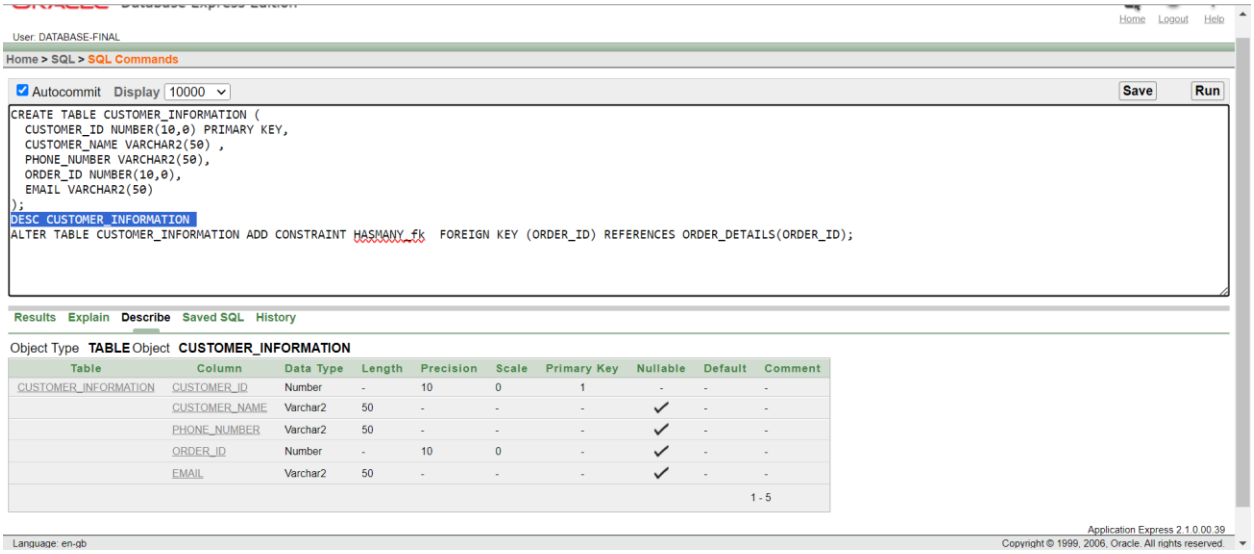
Create Table : **Customer Details**



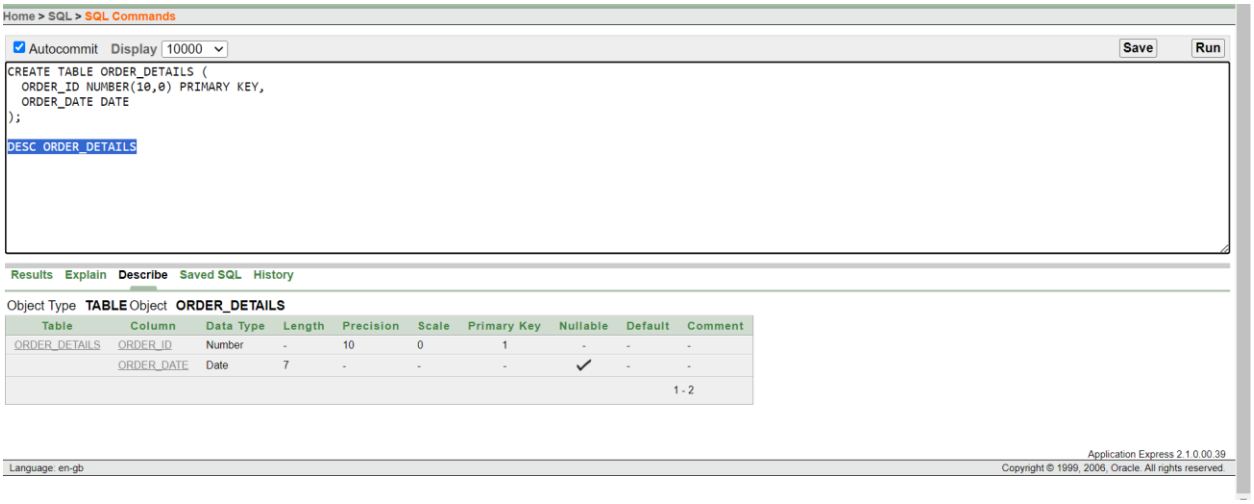
Create Table : **Product Information**



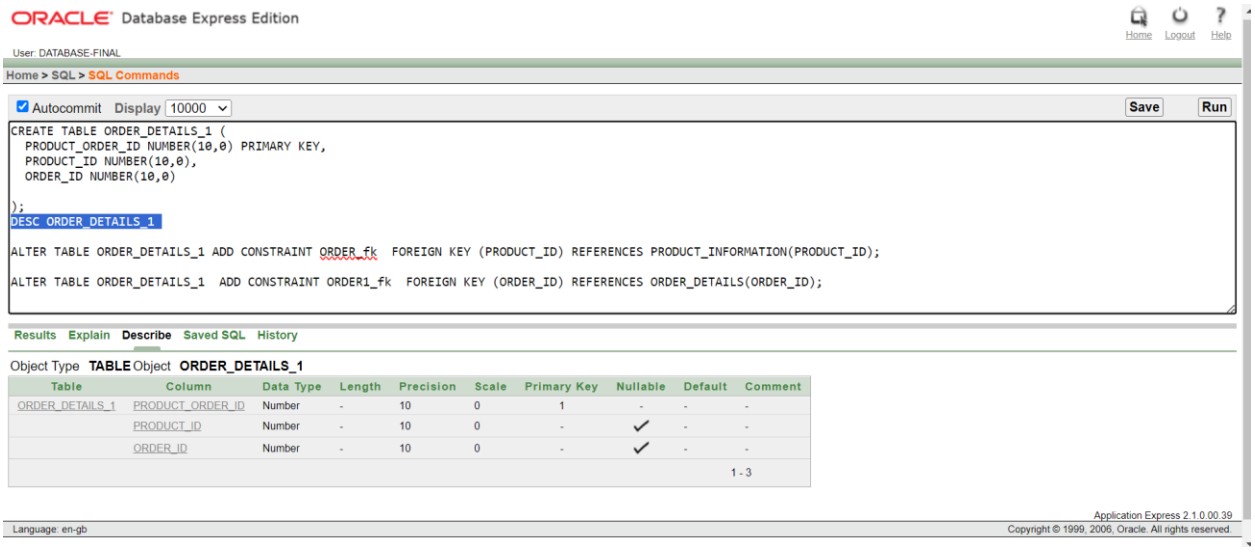
Create Table : **Customer Information**



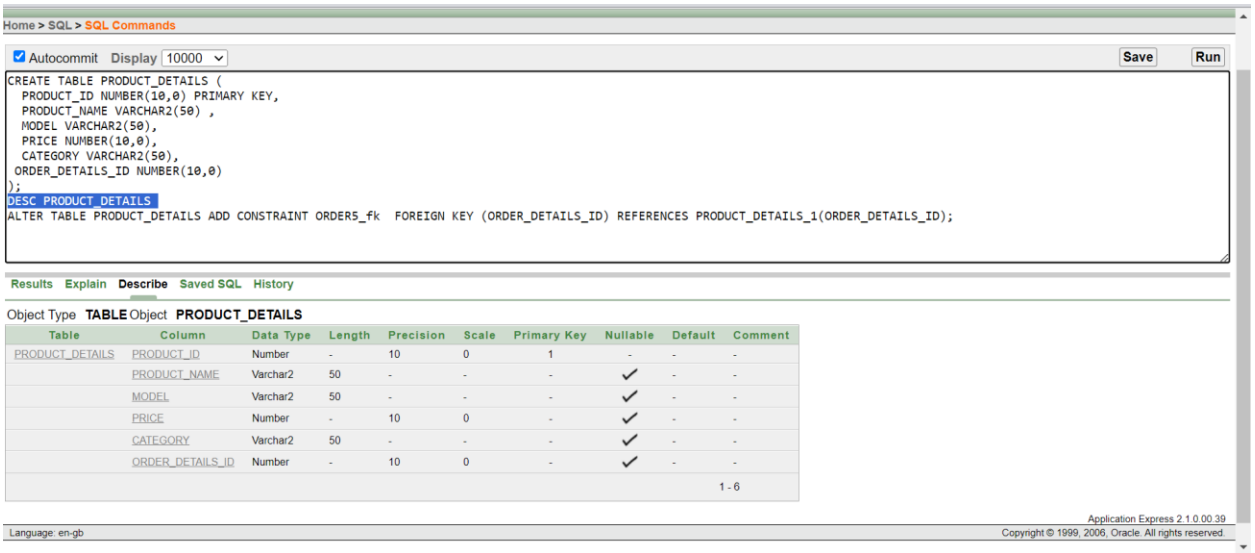
Create Table: **Order Details**



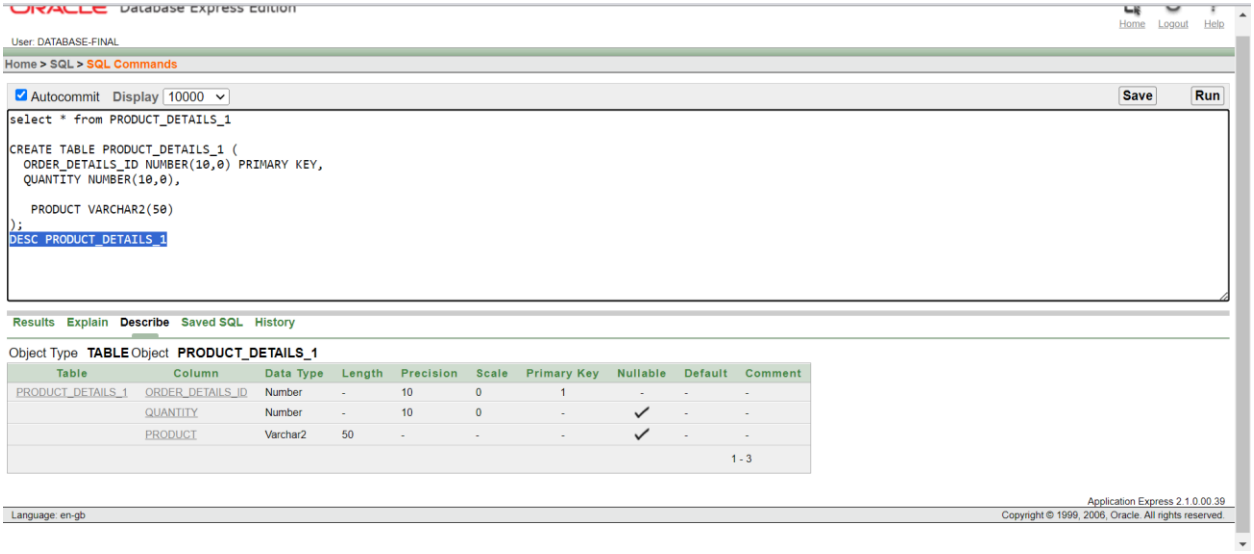
Create Table**: Order Details 1**



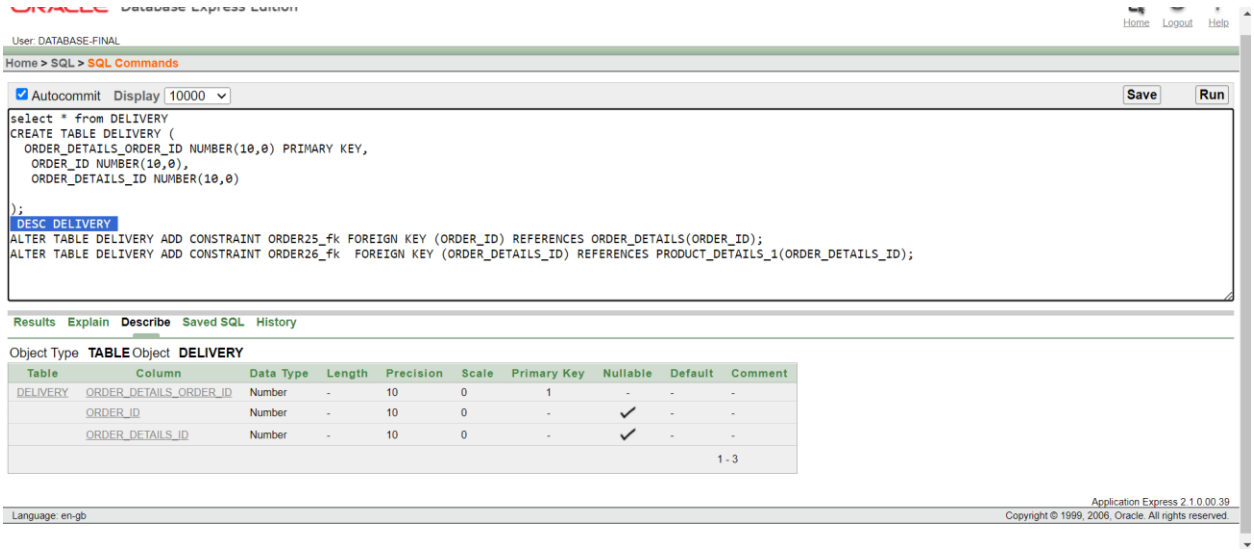
Create Table **: Product Details**



Create Table: **Product Details 1**

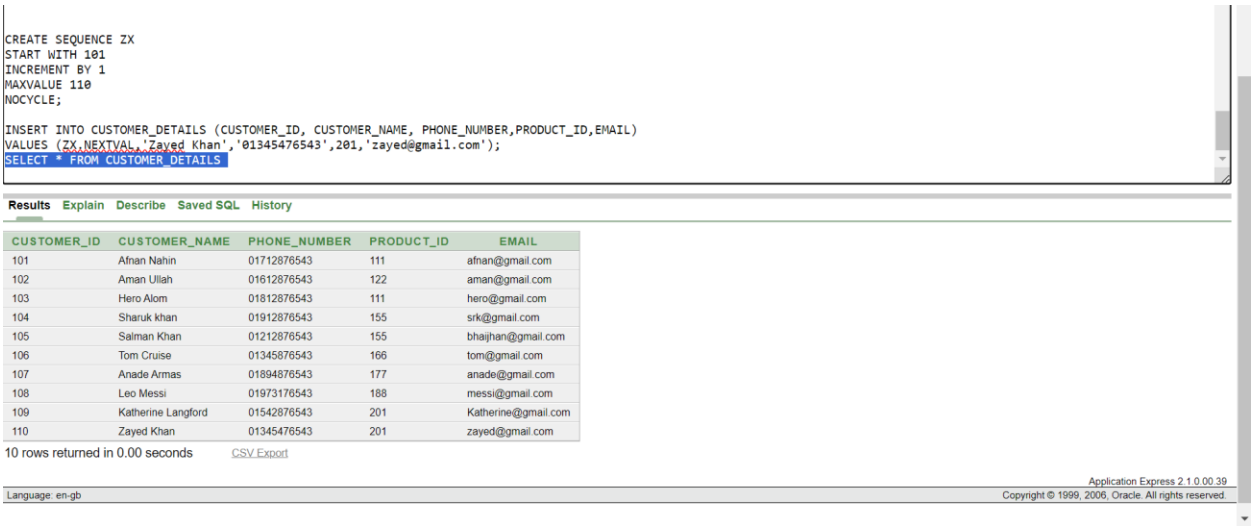


Create Table: **Delivery**



Inserted Values in the tables

Data insertion in Customer Details table:



```
CREATE SEQUENCE ZX
START WITH 101
INCREMENT BY 1
MAXVALUE 110
NOCYCLE;

INSERT INTO CUSTOMER_DETAILS (CUSTOMER_ID, CUSTOMER_NAME, PHONE_NUMBER,PRODUCT_ID,EMAIL)
VALUES (ZX.NEXTVAL,'Zayed Khan','01345476543',201,'zayed@gmail.com');
SELECT * FROM CUSTOMER_DETAILS
```

Results Explain Describe Saved SQL History

CUSTOMER_ID	CUSTOMER_NAME	PHONE_NUMBER	PRODUCT_ID	EMAIL
101	Afnan Nahin	01712876543	111	afnan@gmail.com
102	Aman Ullah	01612876543	122	aman@gmail.com
103	Hero Alom	01812876543	111	hero@gmail.com
104	Sharuk khan	01912876543	155	srk@gmail.com
105	Salman Khan	01212876543	155	bhaijhan@gmail.com
106	Tom Cruise	01345876543	166	tom@gmail.com
107	Anade Armas	01894876543	177	anade@gmail.com
108	Leo Messi	01973176543	188	messi@gmail.com
109	Katherine Langford	01542876543	201	Katherine@gmail.com
110	Zayed Khan	01345476543	201	zayed@gmail.com

10 rows returned in 0.00 seconds CSV Export

Application Express 2.1.0.00.39

Language: en-gb

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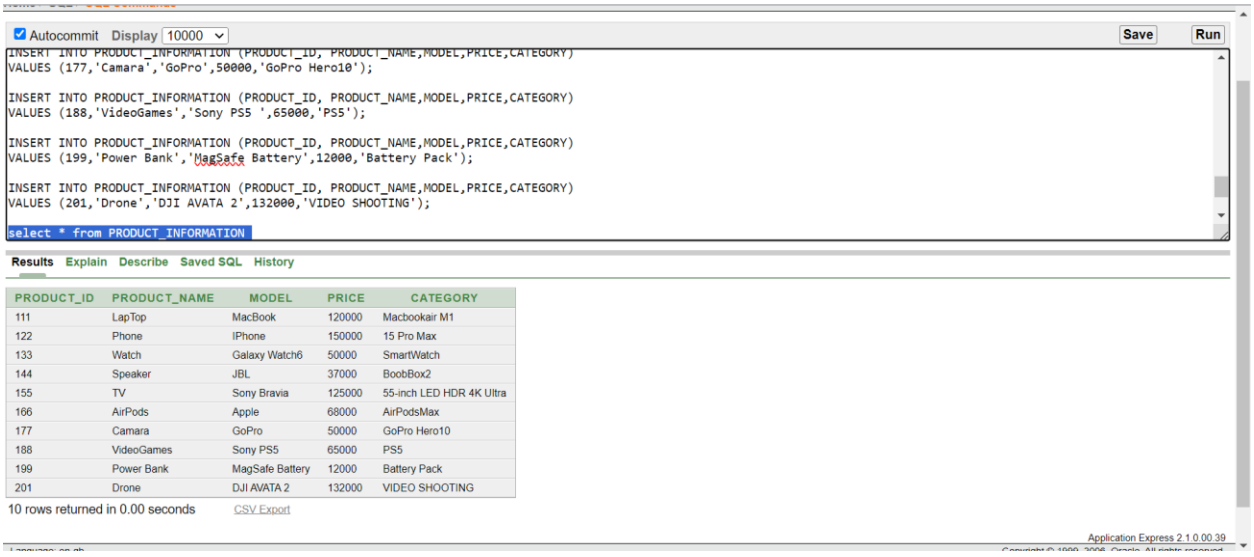
Data insertion in Product Information table:



Autocommit Display 10000 Save Run

```
INSERT INTO PRODUCT_INFORMATION (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY)
VALUES (177,'Camara','GoPro',50000,'GoPro Hero10');

INSERT INTO PRODUCT_INFORMATION (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY)
VALUES (188,'VideoGames','Sony PS5 ',65000,'PS5');

INSERT INTO PRODUCT_INFORMATION (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY)
VALUES (199,'Power Bank','MagSafe Battery',12000,'Battery Pack');

INSERT INTO PRODUCT_INFORMATION (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY)
VALUES (201,'Drone','DJI AVATA 2',132000,'VIDEO SHOOTING');

select * from PRODUCT_INFORMATION
```

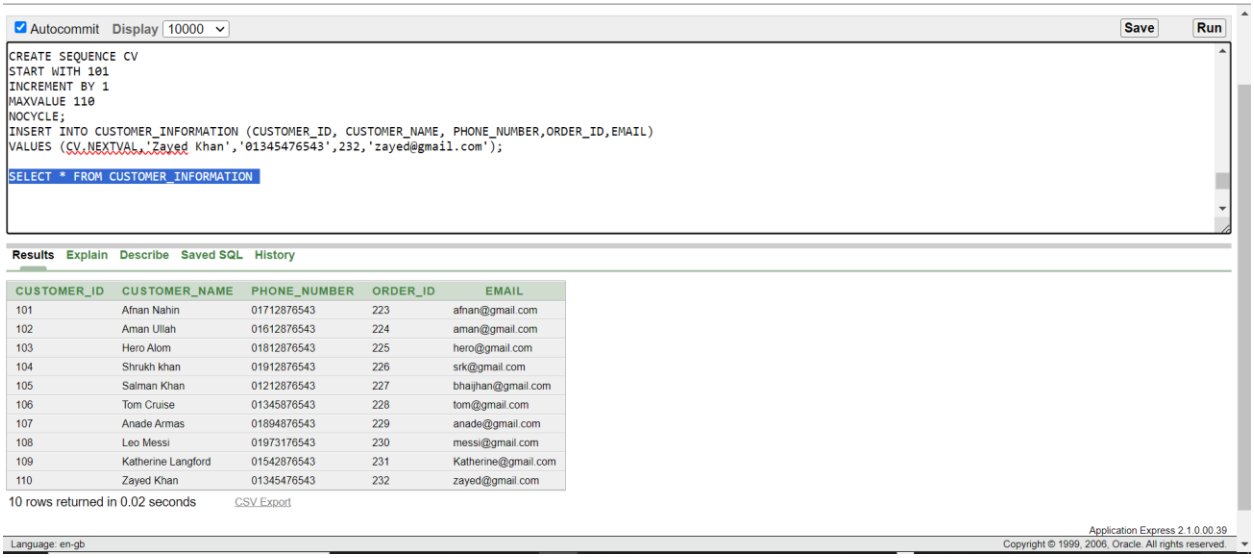
Results Explain Describe Saved SQL History

PRODUCT_ID	PRODUCT_NAME	MODEL	PRICE	CATEGORY
111	LapTop	MacBook	120000	Macbookair M1
122	Phone	IPhone	150000	15 Pro Max
133	Watch	Galaxy Watch6	50000	SmartWatch
144	Speaker	JBL	37000	BoobBox2
155	TV	Sony Bravia	125000	55-inch LED HDR 4K Ultra
166	AirPods	Apple	68000	AirPodsMax
177	Camara	GoPro	50000	GoPro Hero10
188	VideoGames	Sony PS5	65000	PS5
199	Power Bank	MagSafe Battery	12000	Battery Pack
201	Drone	DJI AVATA 2	132000	VIDEO SHOOTING

10 rows returned in 0.00 seconds CSV Export

Application Express 2.1.0.00.39

Data insertion in Customer Information table:



Autocommit Display 10000 Save Run

```
CREATE SEQUENCE CV
START WITH 101
INCREMENT BY 1
MAXVALUE 110
NOCYCLE;
INSERT INTO CUSTOMER_INFORMATION (CUSTOMER_ID, CUSTOMER_NAME, PHONE_NUMBER,ORDER_ID,EMAIL)
VALUES (CV.NEXTVAL,'Zayed Khan','01345476543',232,'zayed@gmail.com');

SELECT * FROM CUSTOMER_INFORMATION
```

Results Explain Describe Saved SQL History

CUSTOMER_ID	CUSTOMER_NAME	PHONE_NUMBER	ORDER_ID	EMAIL
101	Afnan Nahin	01712876543	223	afnan@gmail.com
102	Aman Ullah	01612876543	224	aman@gmail.com
103	Hero Alom	01812876543	225	hero@gmail.com
104	Shrukh khan	01912876543	226	srk@gmail.com
105	Salman Khan	01212876543	227	bhaijhan@gmail.com
106	Tom Cruise	01345876543	228	tom@gmail.com
107	Anade Armas	01894876543	229	anade@gmail.com
108	Leo Messi	01973176543	230	messi@gmail.com
109	Katherine Langford	01542876543	231	Katherine@gmail.com
110	Zayed Khan	01345476543	232	zayed@gmail.com

10 rows returned in 0.02 seconds CSV Export

Application Express 2.1.0.00.39

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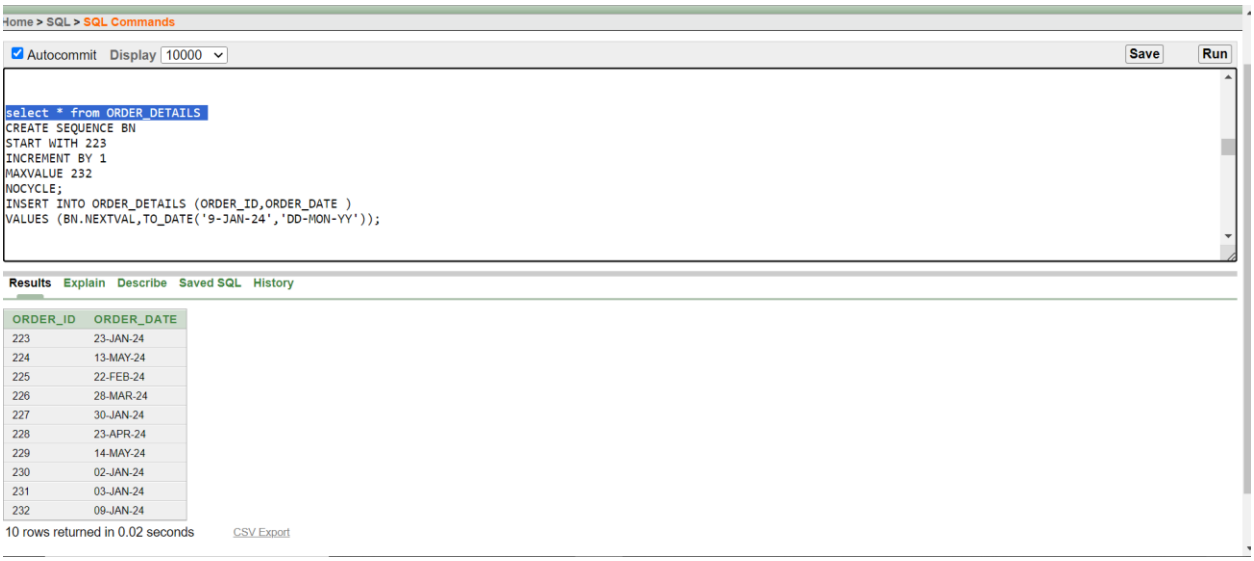
Data insertion in Order details table:



Home > SQL > SQL Commands

Autocommit Display 10000 Save Run

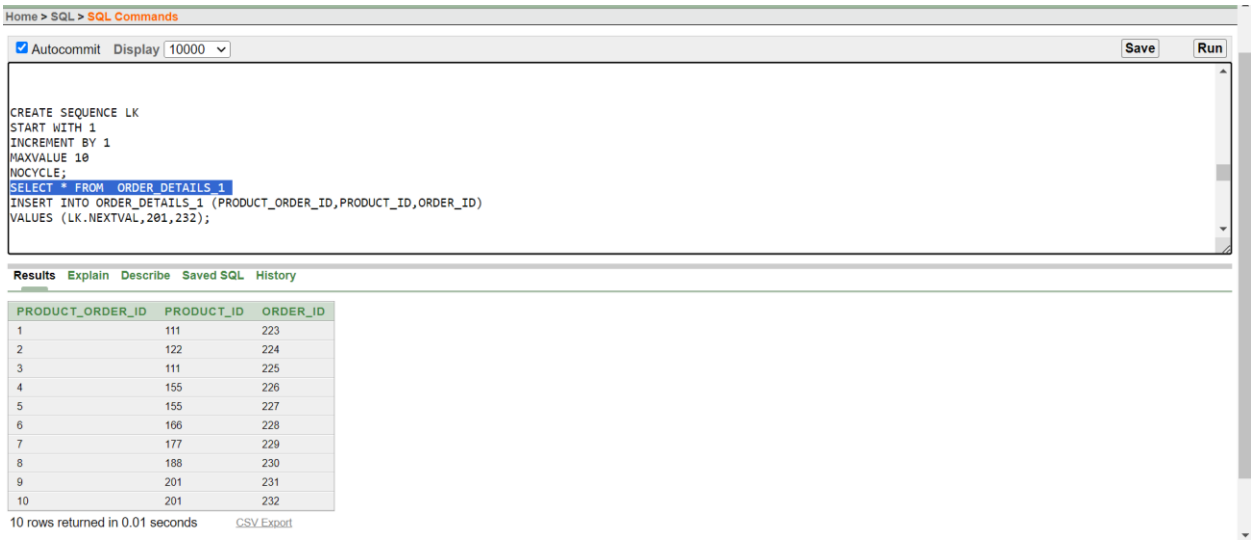
```
select * from ORDER_DETAILS
CREATE SEQUENCE BN
START WITH 223
INCREMENT BY 1
MAXVALUE 232
NOCYCLE;
INSERT INTO ORDER_DETAILS (ORDER_ID,ORDER_DATE )
VALUES (BN.NEXTVAL,TO_DATE('9-JAN-24','DD-MON-YY'));
```

Results Explain Describe Saved SQL History

ORDER_ID	ORDER_DATE
223	23-JAN-24
224	13-MAY-24
225	22-FEB-24
226	28-MAR-24
227	30-JAN-24
228	23-APR-24
229	14-MAY-24
230	02-JAN-24
231	03-JAN-24
232	09-JAN-24

10 rows returned in 0.02 seconds CSV Export

Data insertion in Order details 1 table:



Home > SQL > SQL Commands

Autocommit Display 10000 Save Run

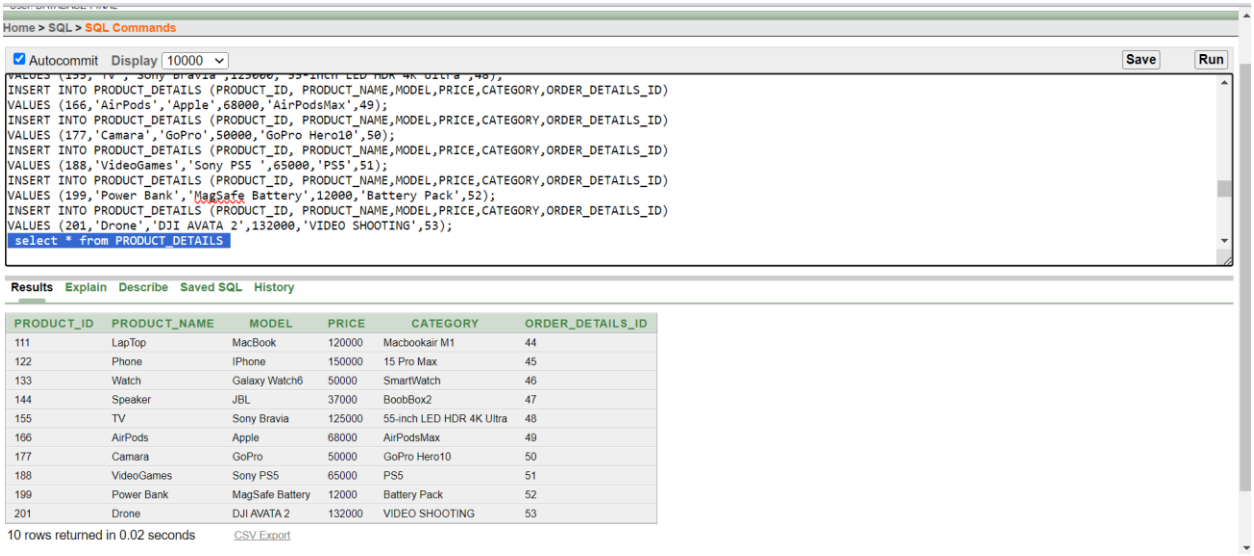
```
CREATE SEQUENCE LK
START WITH 1
INCREMENT BY 1
MAXVALUE 10
NOCYCLE;
SELECT * FROM  ORDER_DETAILS_1
INSERT INTO ORDER_DETAILS_1 (PRODUCT_ORDER_ID,PRODUCT_ID,ORDER_ID)
VALUES (LK.NEXTVAL,201,232);
```

Results Explain Describe Saved SQL History

PRODUCT_ORDER_ID	PRODUCT_ID	ORDER_ID
1	111	223
2	122	224
3	111	225
4	155	226
5	155	227
6	166	228
7	177	229
8	188	230
9	201	231
10	201	232

10 rows returned in 0.01 seconds CSV Export

Data insertion in product details table:



Home > SQL > SQL Commands

Autocommit Display 10000 Save Run

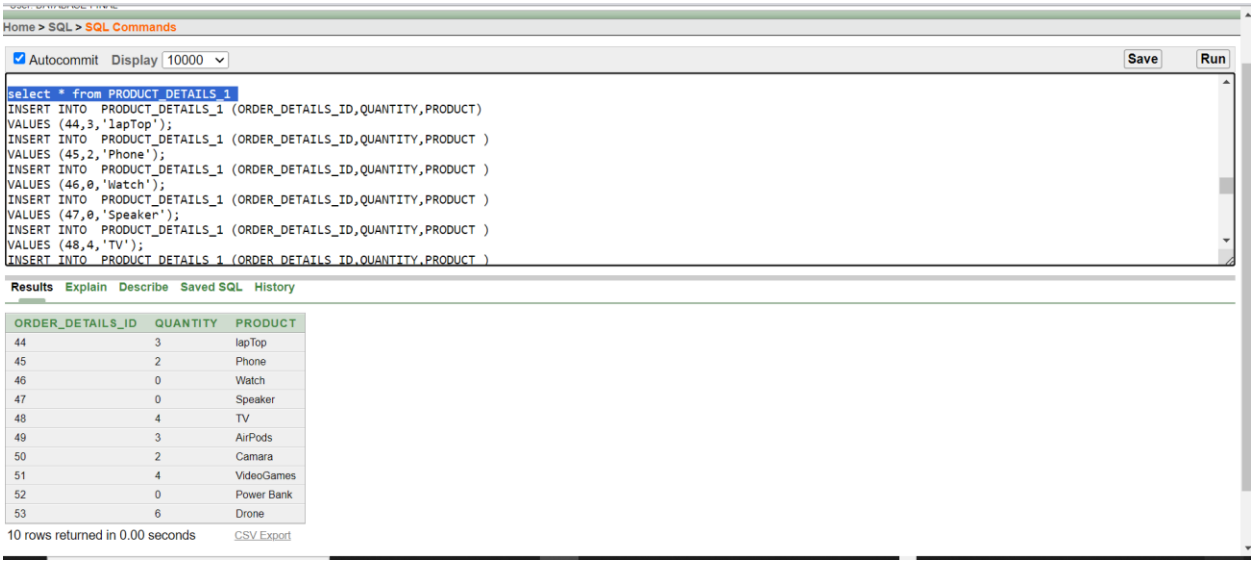
```
INSERT INTO PRODUCT_DETAILS (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY,ORDER_DETAILS_ID)
VALUES (166,'AirPods','Apple',68000,'AirPodsMax',49);
INSERT INTO PRODUCT_DETAILS (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY,ORDER_DETAILS_ID)
VALUES (177,'Camara','GoPro',50000,'GoPro Hero10',50);
INSERT INTO PRODUCT_DETAILS (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY,ORDER_DETAILS_ID)
VALUES (188,'VideoGames','Sony PS5 ',65000,'PS5',51);
INSERT INTO PRODUCT_DETAILS (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY,ORDER_DETAILS_ID)
VALUES (199,'Power Bank','MagSafe Battery',12000,'Battery Pack',52);
INSERT INTO PRODUCT_DETAILS (PRODUCT_ID, PRODUCT_NAME,MODEL,PRICE,CATEGORY,ORDER_DETAILS_ID)
VALUES (201,'Drone','DJI AVATA 2',132000,'VIDEO SHOOTING',53);
select * from PRODUCT_DETAILS
```

Results Explain Describe Saved SQL History

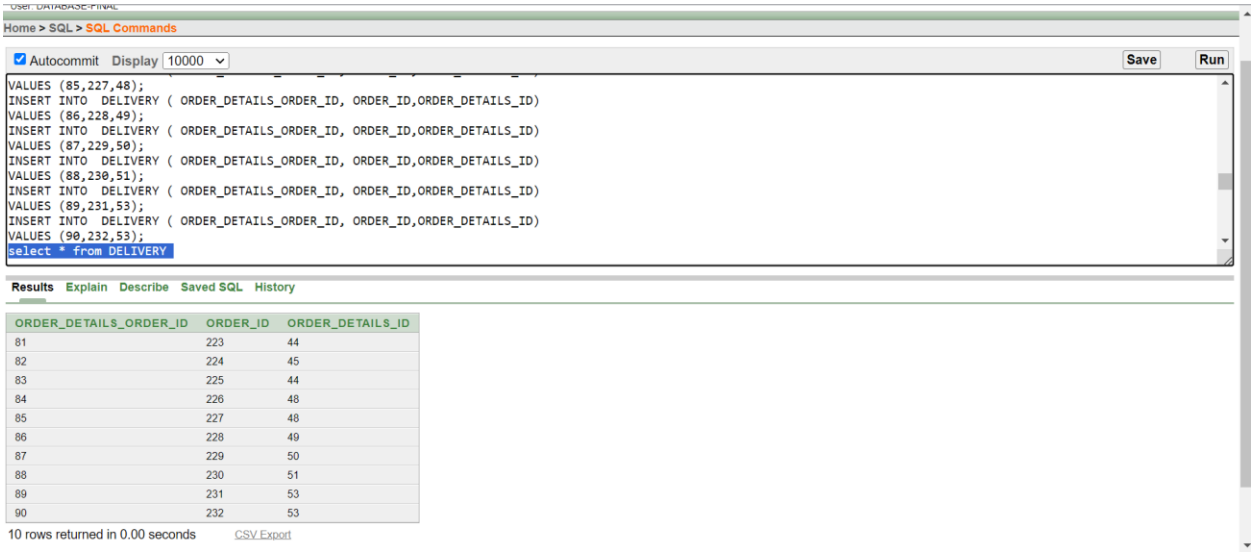
PRODUCT_ID	PRODUCT_NAME	MODEL	PRICE	CATEGORY	ORDER_DETAILS_ID
111	LapTop	MacBook	120000	Macbookair M1	44
122	Phone	IPhone	150000	15 Pro Max	45
133	Watch	Galaxy Watch6	50000	SmartWatch	46
144	Speaker	JBL	37000	BoobBox2	47
155	TV	Sony Bravia	125000	55-inch LED HDR 4K Ultra	48
166	AirPods	Apple	68000	AirPodsMax	49
177	Camara	GoPro	50000	GoPro Hero10	50
188	VideoGames	Sony PS5	65000	PS5	51
199	Power Bank	MagSafe Battery	12000	Battery Pack	52
201	Drone	DJI AVATA 2	132000	VIDEO SHOOTING	53

10 rows returned in 0.02 seconds CSV Export

Data insertion in Product details 1 table:



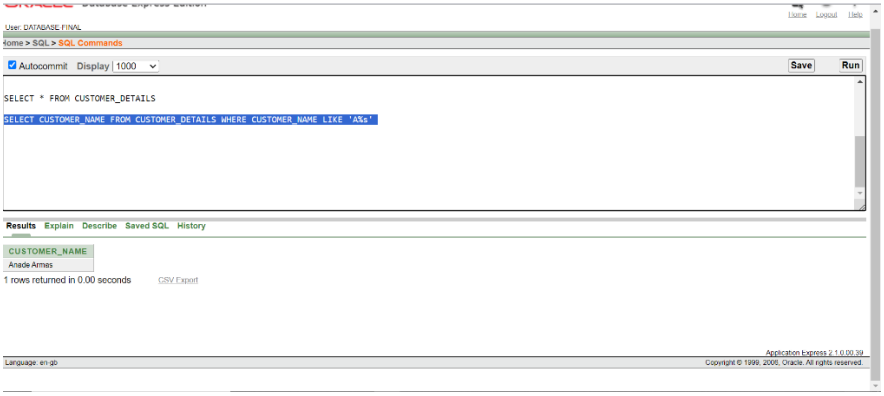
Data insertion in Delivery table:



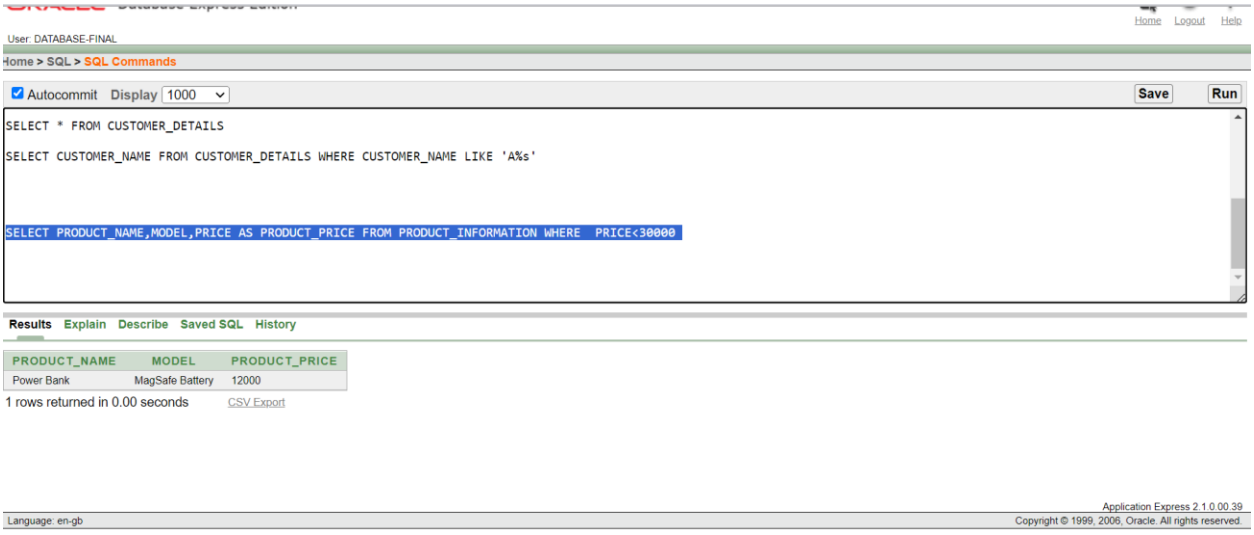
Query Test in DB

CONDITIONAL STATEMENT :

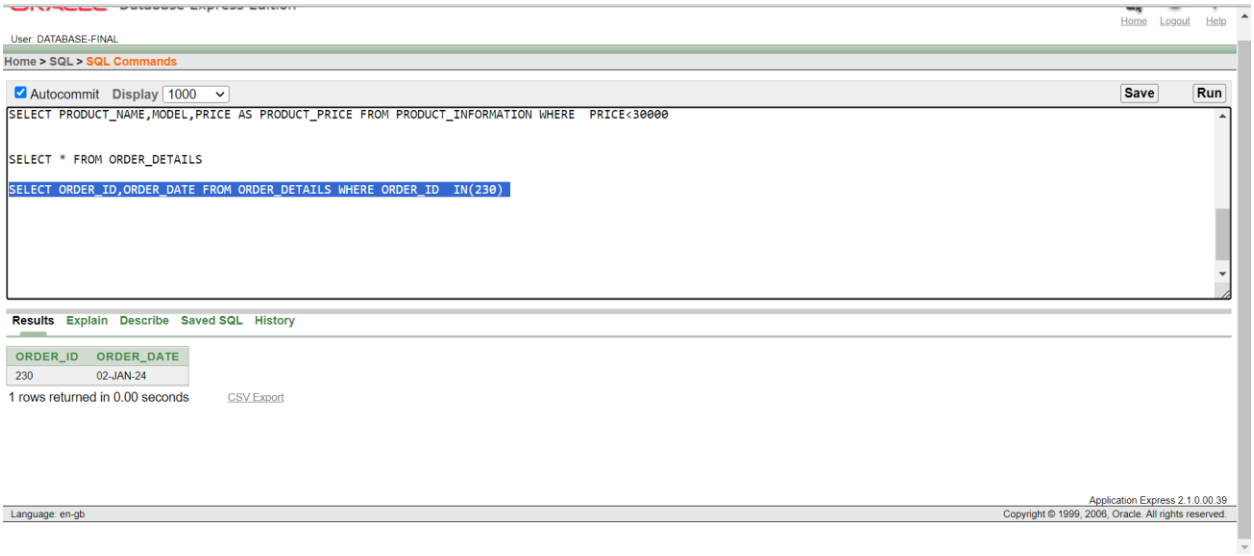
*Display the customer name from Customer Details where the name starting letter 'A' and end letter 's'



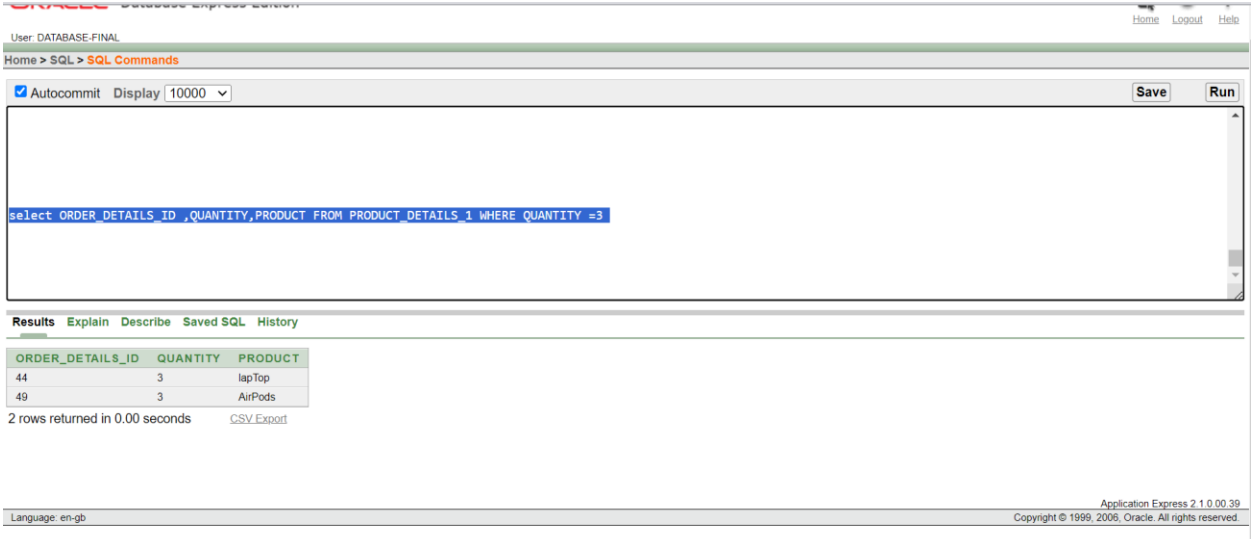
*Display customer name,model and price from product information where price is less than 30000



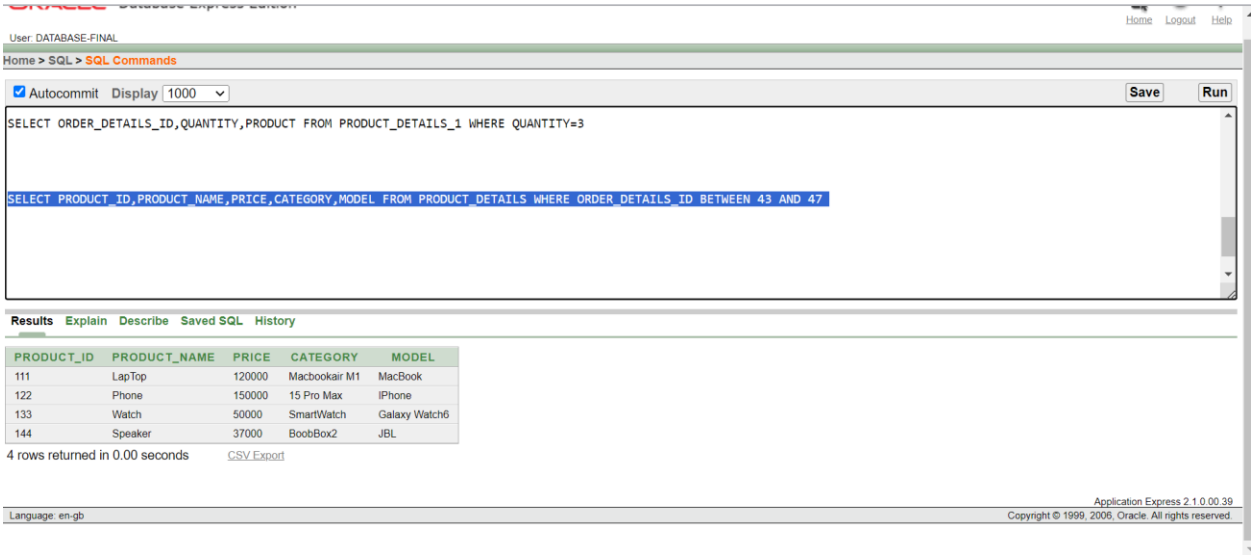
Display Order id and Order date from order details where order id is 230



Display Order_details_id ,quantity, product from product_details_1 where quantity is equal to 3

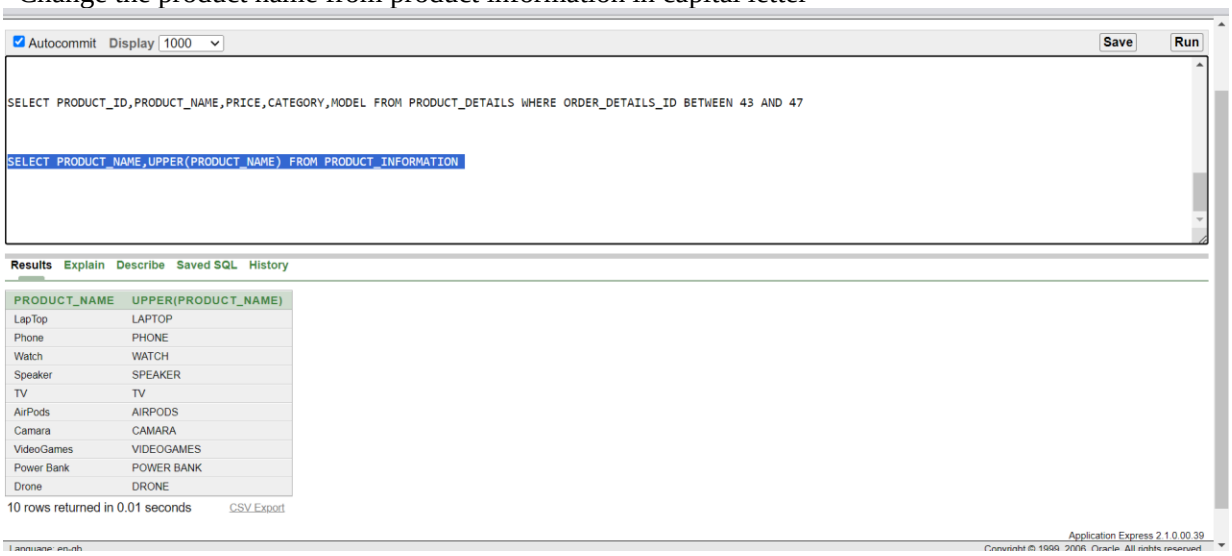


Display product id,product name,price ,category and model from product details where order_details_id is between 43 to 47

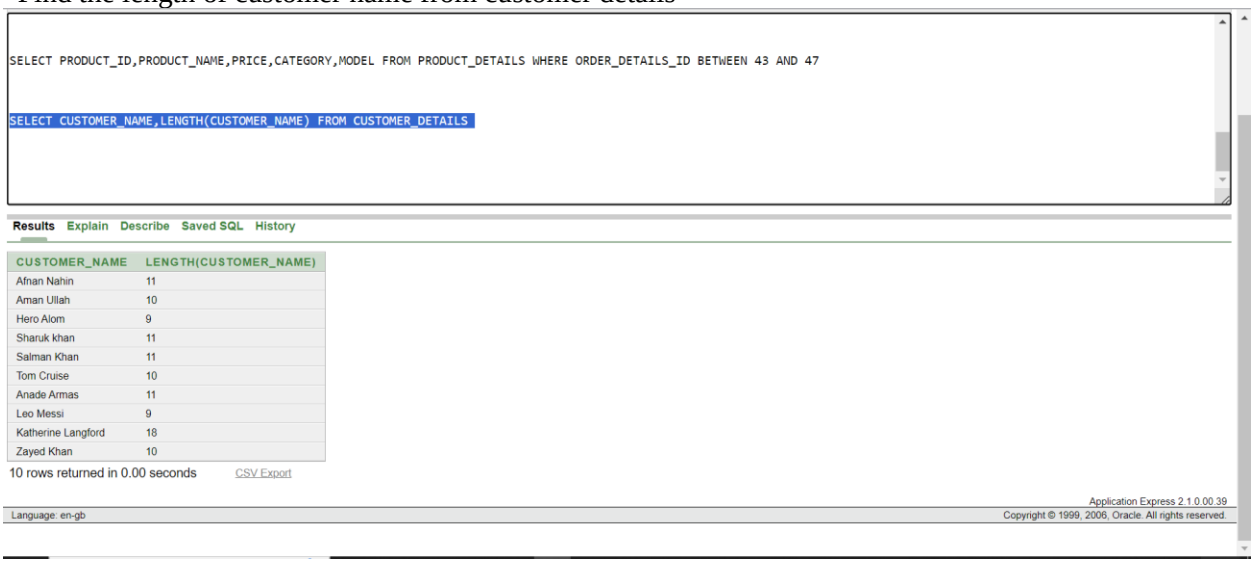


SINGLE ROW FUNCTION:

*Change the product name from product information in capital letter



*Find the length of customer name from customer details



```
SELECT PRODUCT_ID,PRODUCT_NAME,PRICE,CATEGORY,MODEL FROM PRODUCT_DETAILS WHERE ORDER_DETAILS_ID BETWEEN 43 AND 47

SELECT CUSTOMER_NAME,LENGTH(CUSTOMER_NAME) FROM CUSTOMER_DETAILS
```

Results Explain Describe Saved SQL History

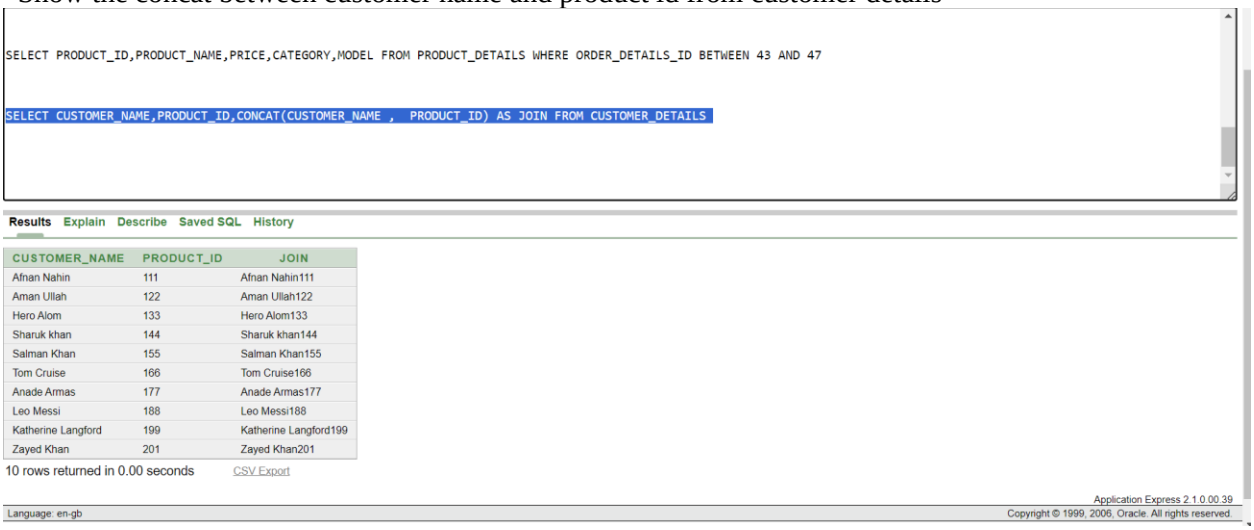
CUSTOMER_NAME	LENGTH(CUSTOMER_NAME)
Afnan Nahin	11
Aman Ullah	10
Hero Alom	9
Sharuk khan	11
Salman Khan	11
Tom Cruise	10
Anade Armas	11
Leo Messi	9
Katherine Langford	18
Zayed Khan	10

10 rows returned in 0.00 seconds CSV Export

Application Express 2.1.0.00.39

Language: en-gb

*Show the concat between customer name and product id from customer details



```
SELECT PRODUCT_ID,PRODUCT_NAME,PRICE,CATEGORY,MODEL FROM PRODUCT_DETAILS WHERE ORDER_DETAILS_ID BETWEEN 43 AND 47

SELECT CUSTOMER_NAME,PRODUCT_ID,CONCAT(CUSTOMER_NAME ,  PRODUCT_ID) AS JOIN FROM CUSTOMER_DETAILS
```

Results Explain Describe Saved SQL History

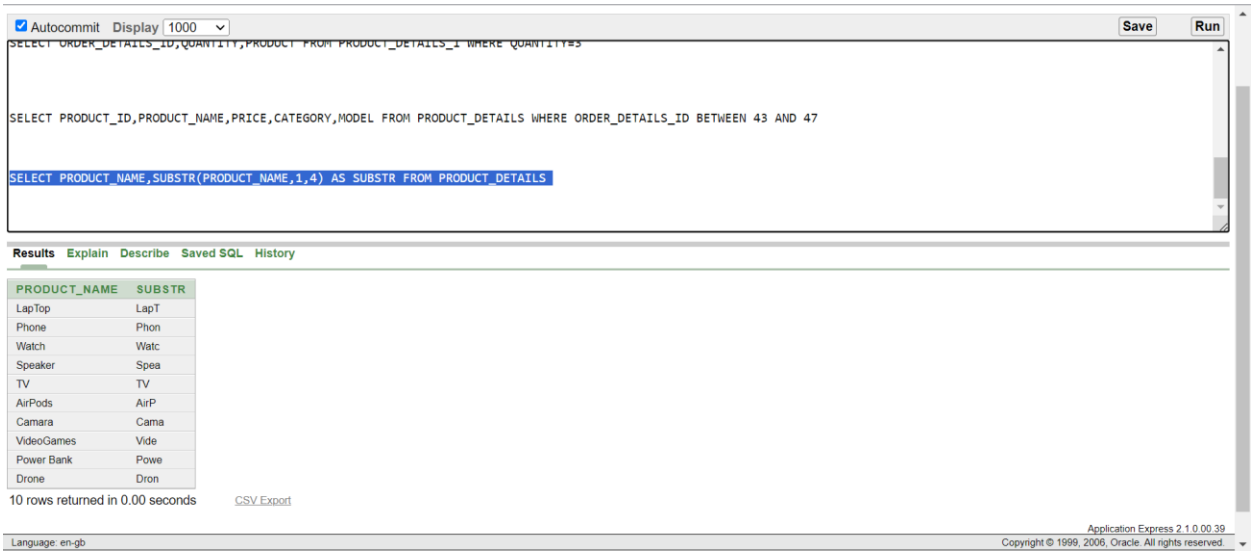
CUSTOMER_NAME	PRODUCT_ID	JOIN
Afnan Nahin	111	Afnan Nahin111
Aman Ullah	122	Aman Ullah122
Hero Alom	133	Hero Alom133
Sharuk khan	144	Sharuk khan144
Salman Khan	155	Salman Khan155
Tom Cruise	166	Tom Cruise166
Anade Armas	177	Anade Armas177
Leo Messi	188	Leo Messi188
Katherine Langford	199	Katherine Langford199
Zayed Khan	201	Zayed Khan201

10 rows returned in 0.00 seconds CSV Export

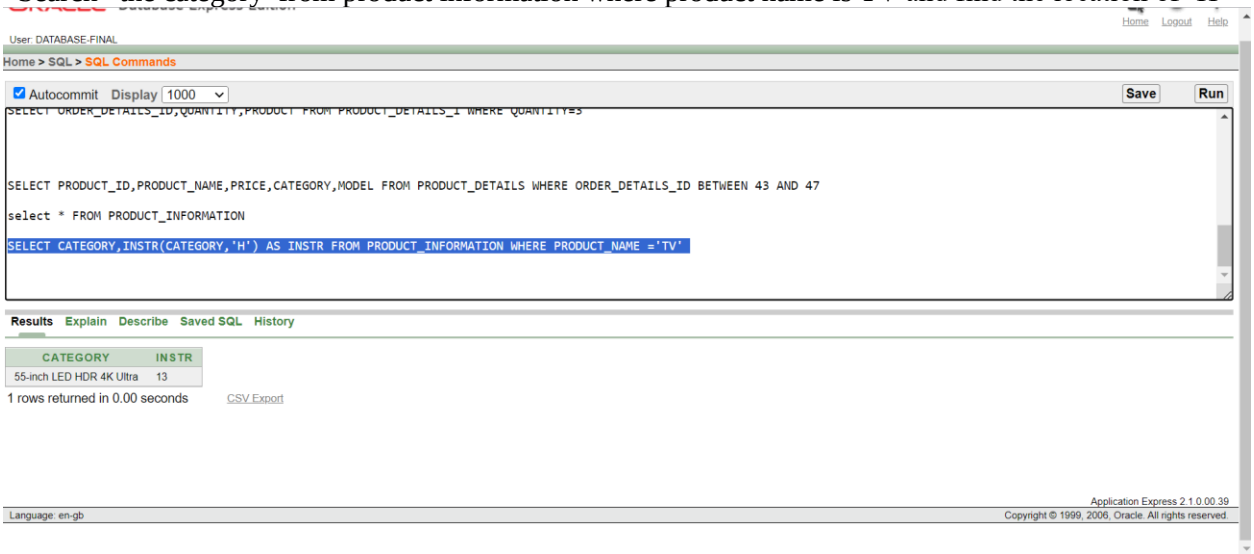
Application Express 2.1.0.00.39

Language: en-gb

*Print the first 4 letter of product name from product details

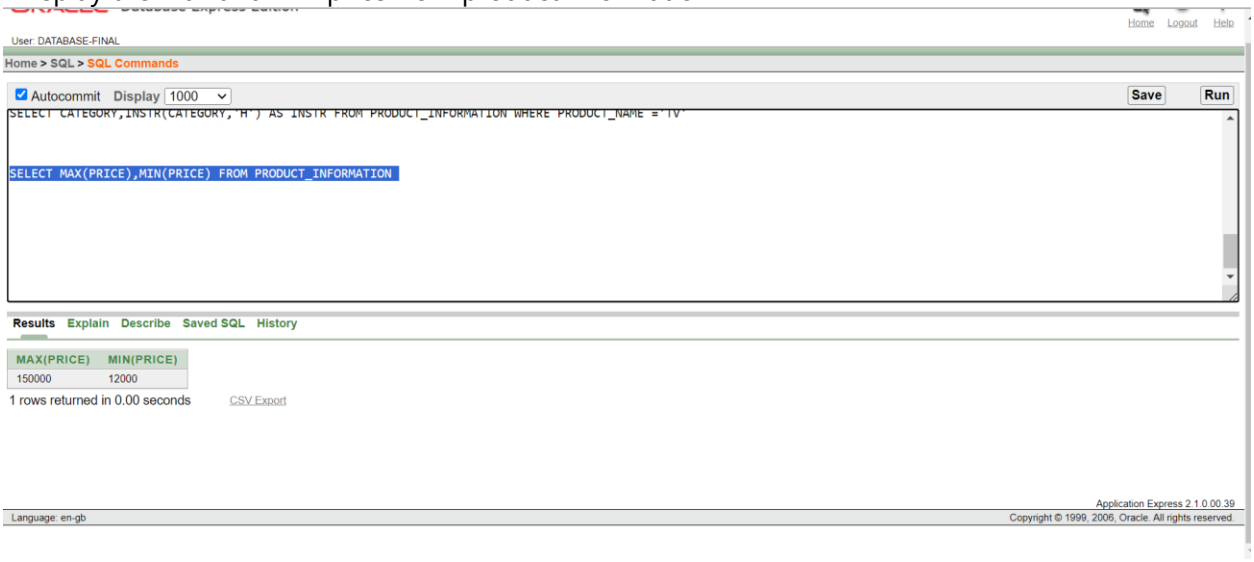


*Search the category from product information where product name is TV and find the location of ‘H’

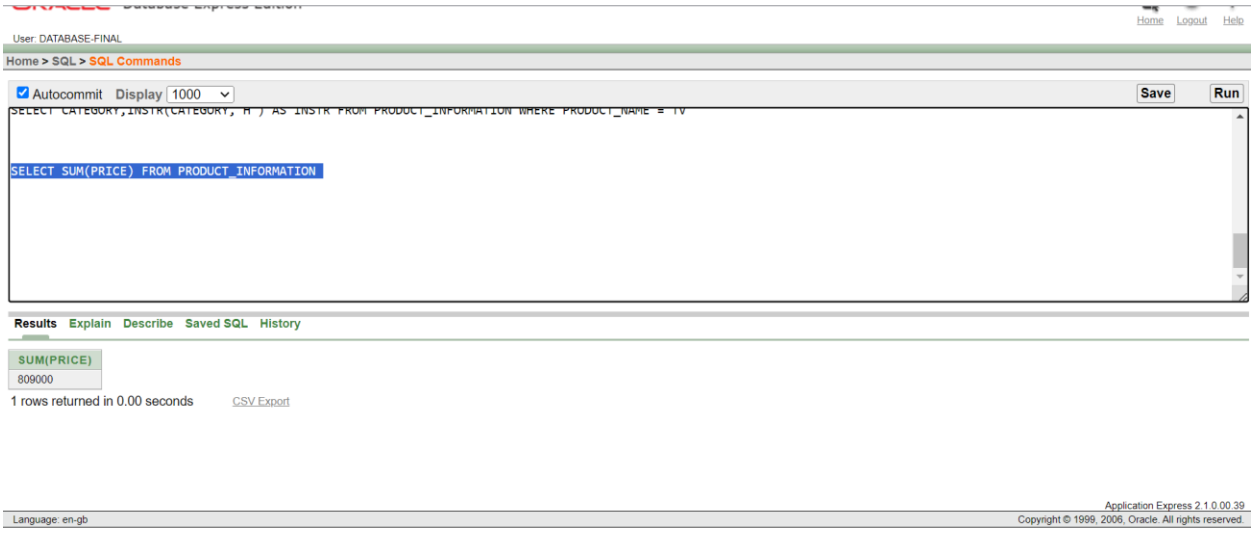


MULTIPLE ROW FUNCTION :

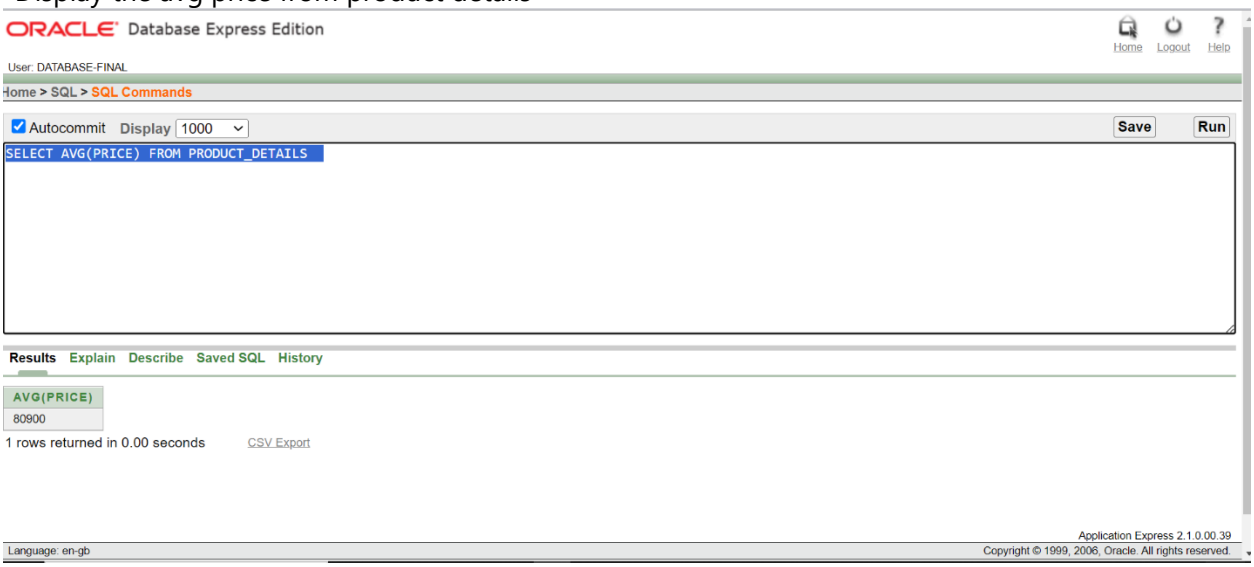
*Display the max and min price from product information



*Display the sum price from product information

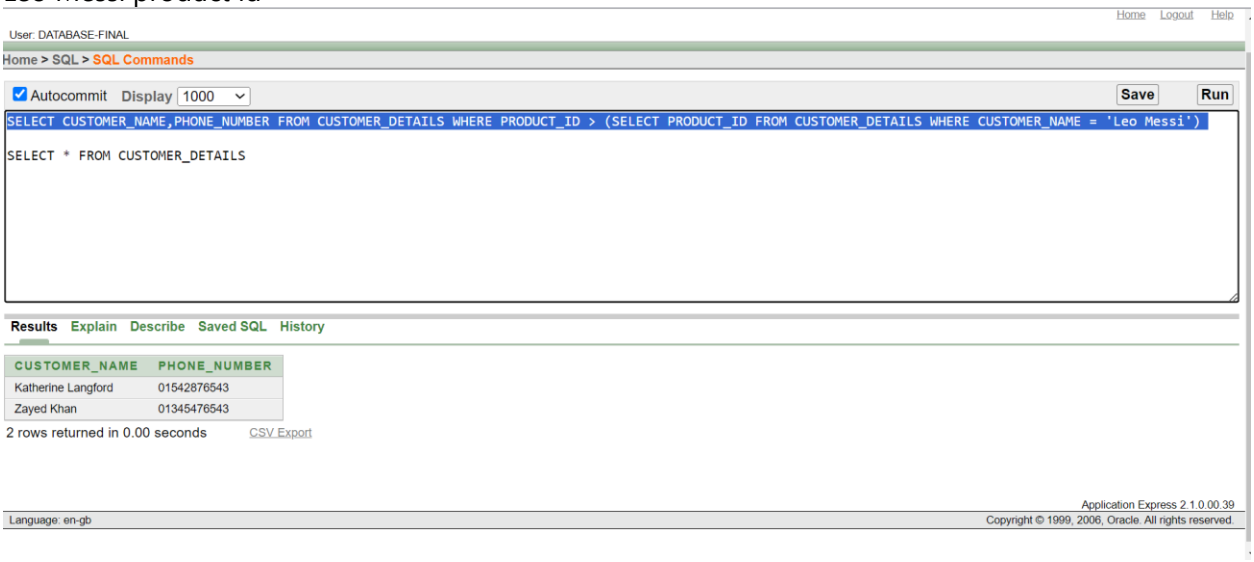


*Display the avg price from product details

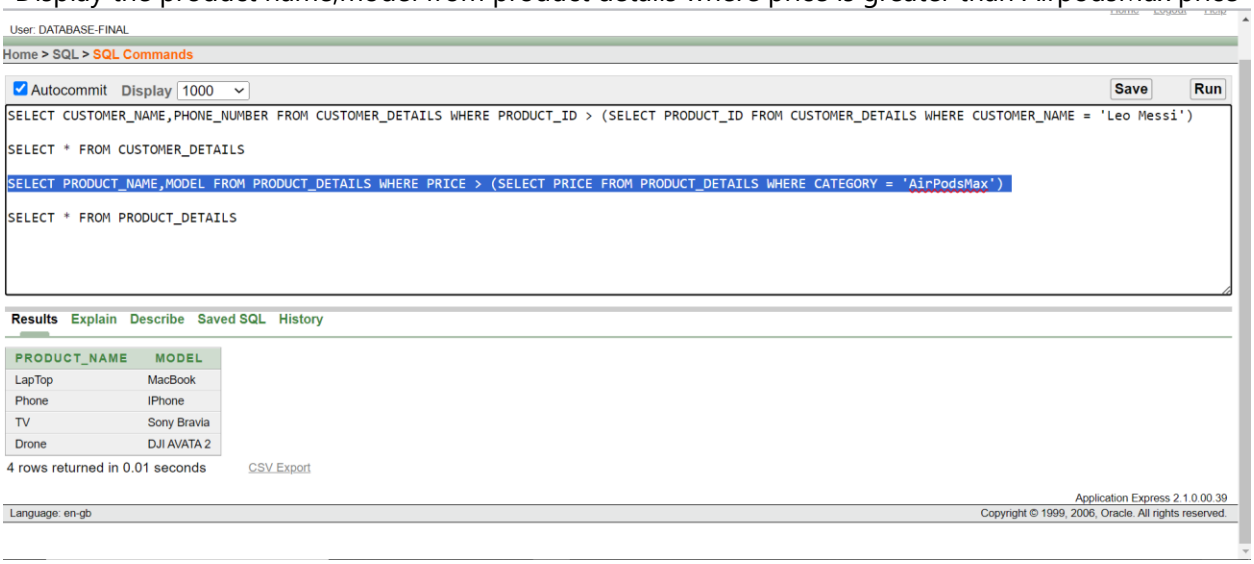


SUBQUERY:

*Display the customer name,phone number from customer details where product id is greater than Leo Messi product id

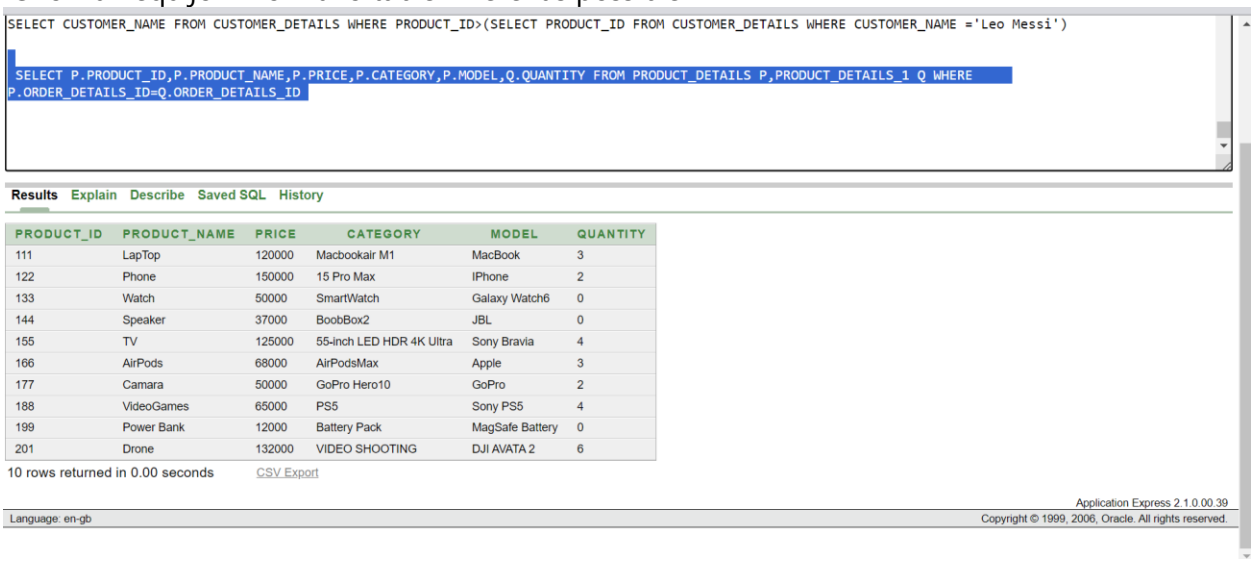


*Display the product name,model from product details where price is greater than AirpodsMax price

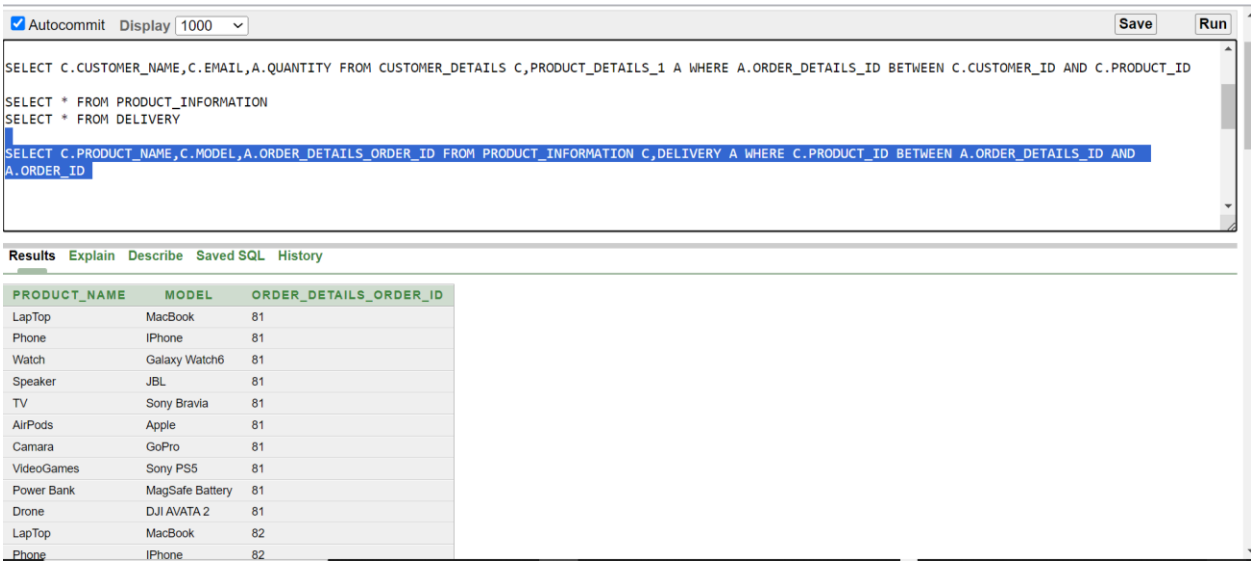


JOINING:

*Show an equijoin from two table where it's possible

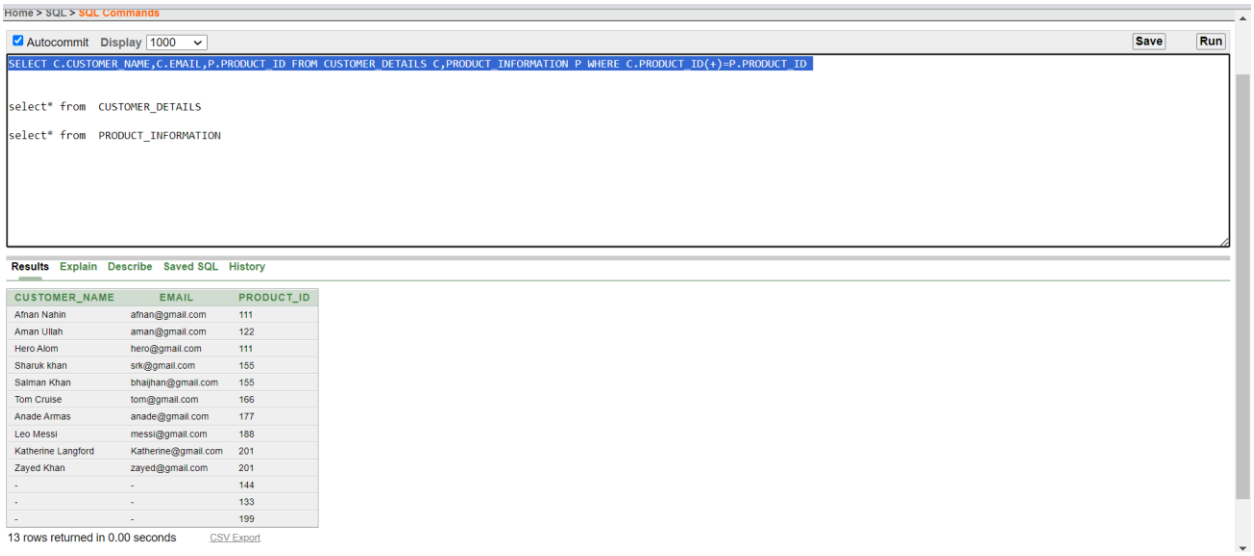


*Show an non-equijoin from two table where it's possible



PRODUCT_NAME	MODEL	ORDER_DETAILS_ORDER_ID
LapTop	MacBook	81
Phone	IPhone	81
Watch	Galaxy Watch6	81
Speaker	JBL	81
TV	Sony Bravia	81
AirPods	Apple	81
Camara	GoPro	81
VideoGames	Sony PS5	81
Power Bank	MagSafe Battery	81
Drone	DJI AVATA 2	81
LapTop	MacBook	82
Phone	IPhone	82

*Show an outer join from two table where it's possible

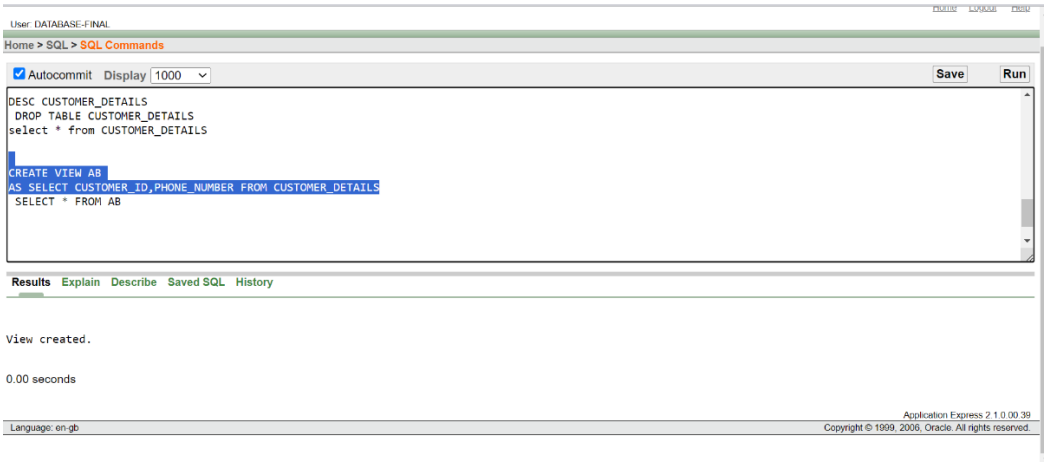


CUSTOMER_NAME	EMAIL	PRODUCT_ID
Afnan Nahin	afnan@gmail.com	111
Aman Ullah	aman@gmail.com	122
Hero Alom	hero@gmail.com	111
Sharuk khan	srk@gmail.com	155
Salman Khan	bhaijhan@gmail.com	155
Tom Cruise	tom@gmail.com	166
Anade Armas	anade@gmail.com	177
Leo Messi	messi@gmail.com	188
Katherine Langford	Katherine@gmail.com	201
Zayed Khan	zayed@gmail.com	201
-	-	144
-	-	133
-	-	199

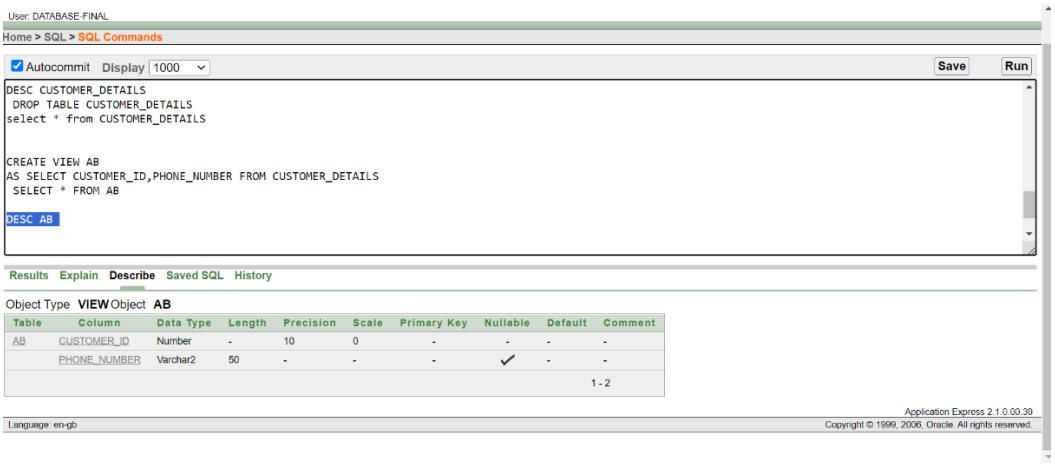
13 rows returned in 0.00 seconds CSV Export

VIEW:

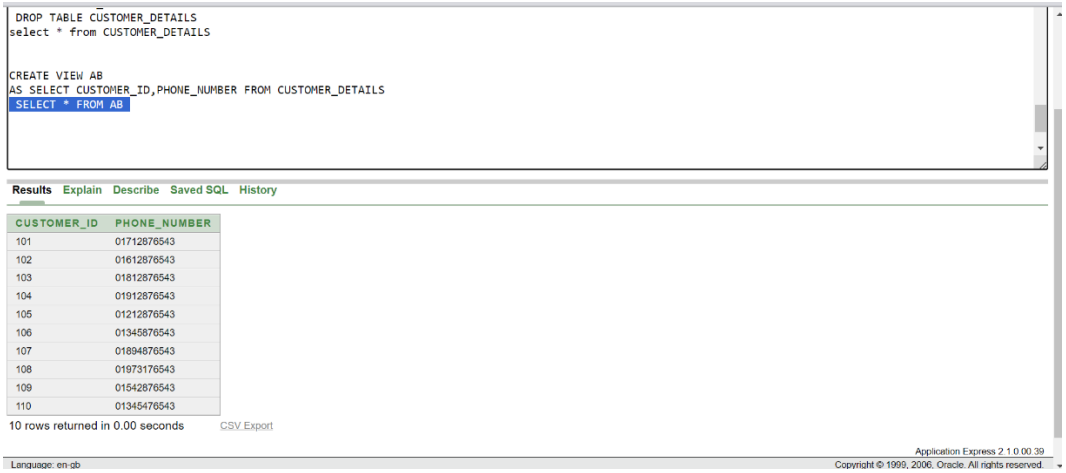
*Create a view where name is AB



*Create a view where name is AB



*The data of customer details after creating view



RELIATIONAL ALGEBRA :

- **Display the customer name from Customer Details where the name starting letter 'A' and end letter 's'**
  ----- ∏ customer_name[σ c_name Like'A%s' (Customer Details)]

- **Display customer name,model and price from product information where price is less than 3000**
  ----- ∏ customer_name,model,price [σ price <30000 (Product Information)]

- **Display Order id and Order date from order details where order id is 230**
  ----- ∏ order_id,order_date [σ order_id= 230 (Order Details)]

- **Display Order_details_id ,quantity, product from product_details_1 where quantity is equal to 3**
  ----- ∏ order_details_id,quantity,product [σ quantity =3 (Product Details)]

- **Display product id,product name,price ,category and model from product details where order_details_id is between 43 to 47**
  ----- ∏ product_id,product_name,model,price,catagory [σorder_details_id between 43 and 47(Product Details)]

- **Display the product name,model from product details where price is greater than AirpodsMax price**
  ----- ∏ product_name,model [σ price> AirpodsMax price (Product Details)]

- **Display the customer name,phone nuber from customer details where product id is greater than Leo Messi product id**
  ----- ∏ customer_name,phone_number [σ product_id>LeoMessi product_id (Customer Details)]

- **Display customer name,email,phone number from customer details**
  ----- ∏ customer_name,email,phone_number (Customer Details)

- **Display customer name,model and price from product information where price is GREATERthan 50000**
  ----- ∏ customer_name,model,price [σ price >50000 (Product Information)]

- **Display the customer name,phone nuber from customer details where product id is greater than Anade Armas product id**
  ----- ∏ customer_name,phone_number [σ product_id>AnadeArmas product_id (Customer Details)]

Conclusion:

In summary, the Gadget and Gear Management System (GGMS) project has successfully streamlined the purchasing process for electronic devices. By offering a diverse range of products and implementing centralized order management, GGMS has significantly enhanced operational efficiency and customer satisfaction. Moving forward, GGMS remains dedicated to innovation and efficiency in gadget and gear management.