



**American International University- Bangladesh**  
**Department of Computer Science**  
**Faculty of Science and Technology**

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**Semester:** Fall 2021-2022

**Section:** C

<b>Course</b>	INTRODUCTION TO DATABASE
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**RESTAURANT MANAGEMENT SYSTEM**

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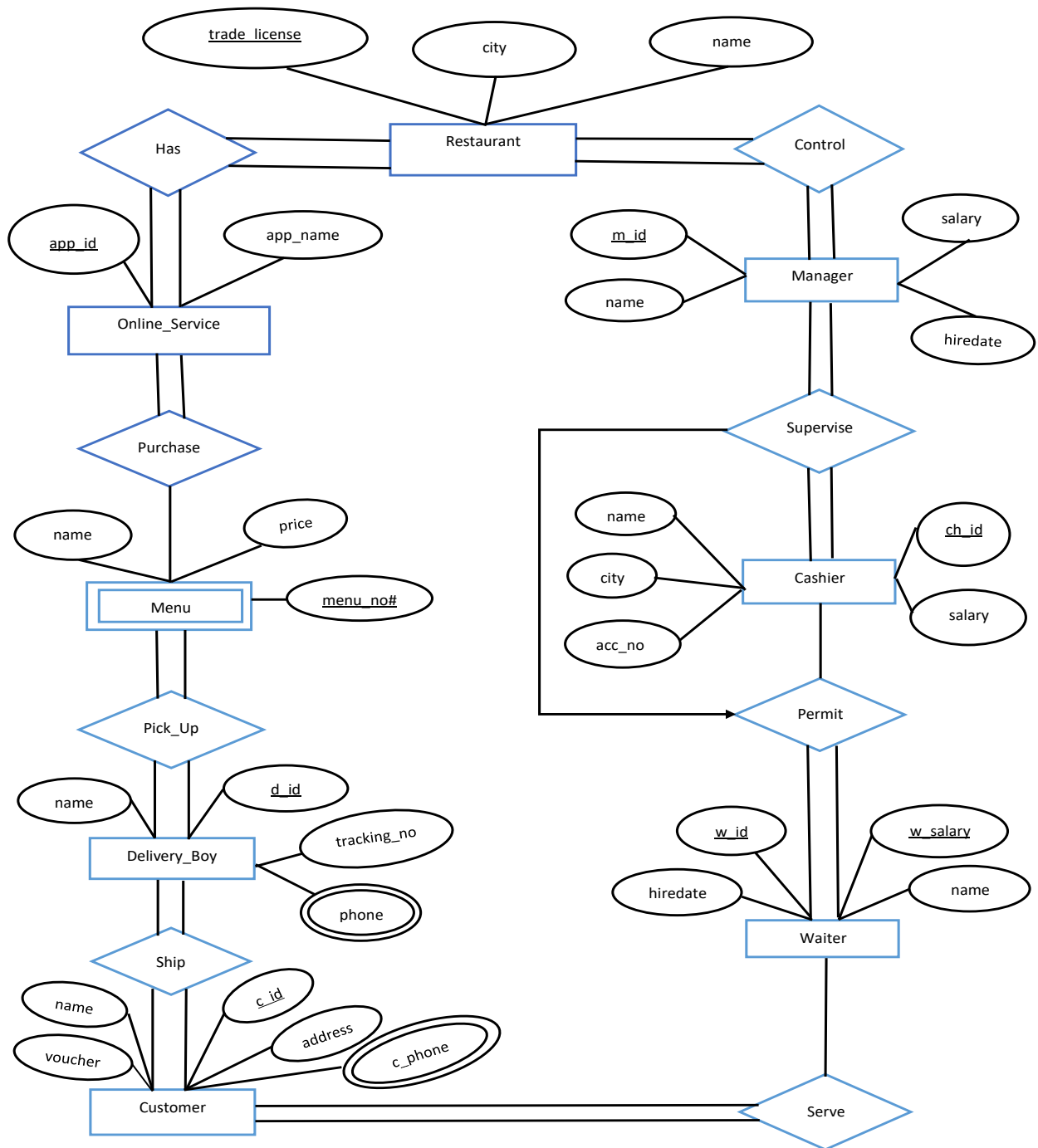
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- **Introduction:** A database management system (DBMS) is a system software for creating and managing databases. The DBMS provides users and programmers with a systematic way to create, retrieve, update and manage data. A DBMS makes it possible for end users to create, read, update and delete data in a database. In this project, we tried to create a database system of a restaurant management using the concept of DBMS.
  
- **Scenario:** A restaurant management system is to automate day to day activity of a restaurant. A restaurant is a kind of business that serves people all over the world with readymade food. In the restaurant management system, restaurant will be uniquely identified by trade\_license, city, and name. The restaurant has several branches throughout the country. Restaurants are controlled by a manager who will be uniquely identified by m\_id, name, salary and hiredate. A cashier is supervised by a manager who will be identified by name, salary, unique ch\_id, acc\_no, and city. A cashier can permit many waiters. Waiters have name, salary, hiredate, and a unique w\_id. Waiters serve different types of customers in restaurant. Customers are identified by name, address, a unique c\_id, and a voucher. Customers are shipped their order by delivery boy. Delivery boy has unique tracking\_no, phone, name, and unique d\_id. A delivery boy picks up items from menu to deliver to the customer. Menu has menu\_no and it will also store price and name of different food items of menu. These different items from menu are purchased by customers by using online service. In online service, there are many app identified by app name and unique app\_id by which customer can simply order their preferred food from home.  
The details of the restaurant are stored into the respective tables with all columns. Each entity contains primary key. There is one to many,

many to one and many to many relationships available. All the entities are normalized. The queries are written in oracle SQL.

## ER DIAGRAM



(Update: Participation and Aggregation added)

## Normalization

(Primary Key, Foreign Key)

Restaurant<has>Online service

HAS –

(trade\_license, city, name, app\_id, app\_name)

1NF: no multivalued attribute

2NF: trade\_license, city, name  
app\_id, app\_name

3NF: No transitive dependency  
trade\_license, city, name  
app\_id, app\_name

- Final list for Restaurant:
1. trade\_license, city, name
  2. app\_id, app\_name, trade\_license

Online service<purchase>Menu

Purchase –

(app\_id, app\_name, menu\_no, name, price)

1NF: no multivalued attribute

2NF: App\_id, app-name  
Menu\_no, name, price

3NF: No transitive dependency

App\_id, app\_name  
Menu\_no, name, price

- Final list for purchase:
- 3. App\_id, app\_name
- 4. Menu\_no, name, price
- 5. App\_id, menu\_no

Menu<pick up>Delivery boy

Pick up –

(menu\_no, name, price, d\_id, name, phone, tracking\_no)

1NF: phone is a multivalued attribute

2NF: menu\_no, name, price  
d\_id, name, phone, tracking\_no

3NF: No transitive dependency  
menu\_no, name, price  
d\_id, name, phone, tracking\_no

- Final list for pick up:
- 6. menu\_no, name, price, d\_id
- 7. d\_id, name, tracking\_no
- 8. d\_id, phone- Composite pk

Delivery boy<Ship>Customer

Ship-

(d\_id, name, phone, tracking\_no, c\_id, name, voucher, c\_phone, address)

1NF: phone, c\_phone are multivalued attributes

2NF: d\_id, name, phone, tracking\_no  
c\_id, name, voucher, c\_phone, address

3NF: No transitive dependency  
d\_id, name, phone, tracking\_no  
c\_id, name, voucher, c\_phone, address

➤ Final list for shipped:

9. d\_id, name, phone, tracking\_no
10. c\_id, name, voucher, c\_phone, address, d\_id
11. d\_id, phone- Composite pk
12. c\_id, c\_phone- Composite pk

Customer<serve>Waiter

Serve-

(c\_id, name, voucher, c\_phone, address, w\_id, name, w\_salary, w\_hiredate)

1NF: c\_phone is a multivalued attribute

2NF: c\_id, name, voucher, c\_phone, address  
w\_id, name, w\_salary, w\_hiredate

3NF: No transitive dependency  
c\_id, name, voucher, c\_phone, address  
w\_id, name, w\_salary, w\_hiredate

➤ Final list for serve:

13. c\_id, name, voucher, c\_phone, address
14. w\_id, name, w\_salary, w\_hiredate
15. c\_id, c\_phone, w\_id- Composite pk



## Waiter<permit>Cashier

Permit-

(w\_id, name, w\_salary, w\_hiredate, ch\_id, name, acc\_no, salary, city)

1NF: no multivalued attribute

2NF: w\_id, name, w\_salary, w\_hiredate  
ch\_id, name, acc\_no, salary, city

3NF: w\_id, name, w\_salary, w\_hiredate  
ch\_id, name, acc\_no, salary  
cc\_id, city, m\_id

➤ Final list for serve:

16.w\_id, name, w\_salary, w\_hiredate, ch\_id

17.ch\_id, name, acc\_no, salary, cc\_id

18.cc\_id, city, m\_id

## Cashier<supervise>Manager

Supervise-

(ch\_id, name, acc\_no, salary, city, m\_id, name, salary, hiredate)

1NF: no multivalued attribute

2NF: ch\_id, name, acc\_no, salary, city  
m\_id, name, salary, hiredate

3NF: ch\_id, name, acc\_no, salary  
cc\_id, city  
m\_id, name, salary, hiredate

- Final list for supervise:
  - 19.ch\_id, name, acc\_no, salary, cc\_id
  - 20.cc\_id, city, m\_id
  - 21.m\_id, name, salary, hiredate

### Manager<control>Restaurant

Control-

(m\_id, name, salary, hiredate, trade\_license, city, name)

1NF: no multivalued attribute

2NF: m\_id, name, salary, hiredate  
trade\_license, city, name

3NF: No transitive dependency  
m\_id, name, salary, hiredate  
trade\_license, city, name

- Final list for control:
  - 22.m\_id, name, salary, hiredate, trade\_license
  - 23.trade\_license, city, name

## Final list from normalization

1. **trade\_license**, city, name -> RESTAURANT
2. **app\_id**, app\_name, **trade\_license** -> ONLINE SERVICE
3. **app\_id**, **menu\_no** -> ONLINE INFO
4. **menu\_no**, name, price, **d\_id** -> MENU
5. **d\_id**, phone- Composite pk -> DELIVERY BOY INFO
6. **d\_id**, name, phone, tracking\_no -> DELIVERY BOY
7. **c\_id**, name, voucher, c\_phone, address, **d\_id** -> CUSTOMER
8. **c\_id**, c\_phone, **w\_id** - Composite pk -> CUSTOMER INFO
9. **w\_id**, name, w\_salary, w\_hireddate, **ch\_id** -> WAITER
10. **cc\_id**, city, **m\_id** -> CASHIER INFO
11. **ch\_id**, name, acc\_no, salary, **cc\_id** -> CASHIER
12. **m\_id**, name, salary, hireddate, **trade\_license** -> MANAGER

## Table Creation

### Description RESTAURANT Table

```
CREATE TABLE RESTAURANT(TRADE_LICENCE NUMBER(20),CONSTRAINT  
RESTAURANT_PK_REST PRIMARY KEY(TRADE_LICENCE),CITY VARCHAR2(30),NAME  
VARCHAR2(50));
```

```
DESC RESTAURANT;
```

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following text:

```
CREATE TABLE RESTAURANT(TRADE_LICENCE NUMBER(20),CONSTRAINT RESTAURANT_PK_REST PRIMARY KEY(TRADE_LICENCE),CITY VARCHAR2(30),NAME  
VARCHAR2(50));  
DESC RESTAURANT;
```

The interface includes a toolbar with 'Autocommit' checked, 'Display' set to 100, and 'Save' and 'Run' buttons. Below the SQL window, the 'Results' tab is active, showing the table structure for 'RESTAURANT'.

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
RESTAURANT	TRADE_LICENCE	Number	-	20	0	1	-	-	-
	CITY	Varchar2	30	-	-	-	✓	-	-
	NAME	Varchar2	50	-	-	-	✓	-	-

1 - 3

Application Express 2.1.0.00.39  
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## Description Online\_Service Table

```
CREATE TABLE ONLINE_SERVICE(APP_ID NUMBER(10),CONSTRAINT ONLINE_SERVICE_PK_ON  
PRIMARY KEY(APP_ID), APP_NAME VARCHAR2(30), TRADE_LICENCE  
NUMBER(20),CONSTRAINT FK_ONSER FOREIGN KEY (TRADE_LICENCE) REFERENCES  
RESTAURANT(TRADE_LICENCE));
```

```
DESC ONLINE_SERVICE
```

The screenshot shows the Oracle Database Express Edition interface. The browser address bar indicates the connection URL: 127.0.0.1:8080/apex/f?p=4500:1003:1791459908809317::NO::. The user is SYSTEM. The SQL Commands window is active, showing the following commands:

```
CREATE TABLE ONLINE_SERVICE(APP_ID NUMBER(10),CONSTRAINT ONLINE_SERVICE_PK_ON PRIMARY KEY(APP_ID), APP_NAME VARCHAR2(30), TRADE_LICENCE  
NUMBER(20),CONSTRAINT FK_ONSER FOREIGN KEY (TRADE_LICENCE) REFERENCES RESTAURANT(TRADE_LICENCE));  
DESC ONLINE_SERVICE
```

The interface includes a toolbar with 'Autocommit' checked, 'Display' set to 100, and 'Save' and 'Run' buttons. Below the SQL window, the 'Results' tab is selected, displaying the table structure for 'ONLINE\_SERVICE'.

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ONLINE_SERVICE	APP_ID	Number	-	10	0	1	-	-	-
	APP_NAME	Varchar2	30	-	-	-	✓	-	-
	TRADE_LICENCE	Number	-	20	0	-	✓	-	-

Page 1 - 3

Language: en-us

Application Express 2.1.0.00.39  
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## Description MANAGER Table

```
CREATE TABLE MANAGER (M_ID NUMBER(10),CONSTRAINT MANAGER_PK_MGR PRIMARY  
KEY(M_ID), NAME VARCHAR2(50),SALARY NUMBER(20), HIREDATE  
VARCHAR2(40),TRADE_LICENCE NUMBER(20),CONSTRAINT MANAGER_FK_MNGR FOREIGN  
KEY(TRADE_LICENCE) REFERENCES RESTAURANT(TRADE_LICENCE));
```

DESC MANAGER

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following text:

```
CREATE TABLE MANAGER (M_ID NUMBER(10),CONSTRAINT MANAGER_PK_MGR PRIMARY KEY(M_ID), NAME VARCHAR2(50),SALARY NUMBER(20), HIREDATE  
VARCHAR2(40),TRADE_LICENCE NUMBER(20),CONSTRAINT MANAGER_FK_MNGR FOREIGN KEY(TRADE_LICENCE) REFERENCES RESTAURANT(TRADE_LICENCE));  
DESC MANAGER
```

Below the SQL Commands window, the "Results" tab is selected, displaying the table structure for the MANAGER table:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MANAGER	M_ID	Number	-	10	0	1	-	-	-
	NAME	Varchar2	50	-	-	-	✓	-	-
	SALARY	Number	-	20	0	-	✓	-	-
	HIREDATE	Varchar2	40	-	-	-	✓	-	-
	TRADE_LICENCE	Number	-	20	0	-	✓	-	-

1 - 5

## Description CASHIER\_INFO Table

```
CREATE TABLE CASHIER_INFO( CC_ID NUMBER (10),CONSTRAINT CASHIER_INFO_PK_CASHIN  
PRIMARY KEY(CC_ID), CITY VARCHAR2(30),M_ID NUMBER(10),CONSTRAINT  
CASHIER_INFO_FK_CASH FOREIGN KEY(M_ID) REFERENCES MANAGER(M_ID));
```

```
DESC CASHIER_INFO
```

The screenshot shows the Oracle Database Express Edition interface. The browser address bar indicates the URL: 127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::-. The page title is "ORACLE Database Express Edition". The user is logged in as "SYSTEM". The navigation bar shows "Home > SQL > SQL Commands". The "SQL Commands" window is open, showing the following SQL commands:

```
CREATE TABLE CASHIER_INFO( CC_ID NUMBER (10),CONSTRAINT CASHIER_INFO_PK_CASHIN PRIMARY KEY(CC_ID), CITY VARCHAR2(30),M_ID  
NUMBER(10),CONSTRAINT CASHIER_INFO_FK_CASH FOREIGN KEY(M_ID) REFERENCES MANAGER(M_ID));  
  
DESC CASHIER_INFO
```

The "Autocommit" checkbox is checked, and the "Display" dropdown is set to "10". The "Save" and "Run" buttons are visible. Below the SQL commands, the "Results" tab is selected, showing the table structure for "CASHIER\_INFO".

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CASHIER_INFO	CC_ID	Number	-	10	0	1	-	-	-
	CITY	Varchar2	30	-	-	-	✓	-	-
	M_ID	Number	-	10	0	-	✓	-	-
1 - 3									

The bottom right corner of the interface shows "Application Express 2.1.0.0.39".

# Description CASHIER Table

CREATE TABLE CASHIER( CH\_ID NUMBER(10),CONSTRAINT CASHIER\_PK\_CASHR PRIMARY KEY (CH\_ID), NAME VARCHAR2(50),ACC\_NO NUMBER(20),SALARY NUMBER(10),CC\_ID NUMBER (10),CONSTRAINT CASHIER\_FK\_CASHH FOREIGN KEY (CC\_ID) REFERENCES CASHIER\_INFO (CC\_ID));

DESC CASHIER

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

Autocommit Display 10 Save Run

CREATE TABLE CASHIER( CH\_ID NUMBER(10),CONSTRAINT CASHIER\_PK\_CASHR PRIMARY KEY (CH\_ID), NAME VARCHAR2(50),ACC\_NO NUMBER(20),SALARY NUMBER(10),CC\_ID NUMBER (10),CONSTRAINT CASHIER\_FK\_CASHH FOREIGN KEY (CC\_ID) REFERENCES CASHIER\_INFO (CC\_ID));

DESC CASHIER

Results Explain Describe Saved SQL History

Object Type TABLE Object CASHIER

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CASHIER	CH_ID	Number	-	10	0	1	-	-	-
	NAME	Varchar2	50	-	-	-	✓	-	-
	ACC_NO	Number	-	20	0	-	✓	-	-
	SALARY	Number	-	10	0	-	✓	-	-
	CC_ID	Number	-	10	0	-	✓	-	-

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Application Express 2.1.0.00.39

Language: en-us

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## Description WAITER Table

```
CREATE TABLE WAITER(W_ID NUMBER(10), CONSTRAINT WAITER_PK_WAIT PRIMARY KEY (W_ID), W_SALARY NUMBER(10), W_HIREDATE VARCHAR2(30), CH_ID NUMBER(10), CONSTRAINT WAITER_FK_WAITR FOREIGN KEY (CH_ID) REFERENCES CASHIER (CH_ID))
```

DESC WAITER

The screenshot shows the Oracle APEX SQL Commands window. The command entered is: `CREATE TABLE WAITER(W_ID NUMBER(10), CONSTRAINT WAITER_PK_WAIT PRIMARY KEY (W_ID), W_SALARY NUMBER(10), W_HIREDATE VARCHAR2(30), CH_ID NUMBER(10), CONSTRAINT WAITER_FK_WAITR FOREIGN KEY (CH_ID) REFERENCES CASHIER (CH_ID))`. Below the command, the `DESC WAITER` command is entered. The window has tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Describe' tab is active, showing the table structure for 'WAITER'.

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
WAITER	W_ID	Number	-	10	0	1	-	-	-
	W_SALARY	Number	-	10	0	-	✓	-	-
	W_HIREDATE	Varchar2	30	-	-	-	✓	-	-
	CH_ID	Number	-	10	0	-	✓	-	-

1 - 4

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## Description DELIVERY\_BOY Table

```
CREATE TABLE DELIVERY_BOY(D_ID NUMBER(10), CONSTRAINT DELIVERY_BOY_PK_DEL  
PRIMARY KEY (D_ID), NAME VARCHAR2(30), PHONE VARCHAR2(40), TRACKING_NO  
NUMBER(30));
```

```
DESC DELIVERY_BOY
```

The screenshot shows the Oracle SQL Developer interface. The top bar indicates the current session is connected to 127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::. The main window displays the SQL Commands tab with the following text:

```
CREATE TABLE DELIVERY_BOY(D_ID NUMBER(10), CONSTRAINT DELIVERY_BOY_PK_DEL PRIMARY KEY (D_ID), NAME VARCHAR2(30), PHONE VARCHAR2(40),  
TRACKING_NO NUMBER(30));  
  
DESC DELIVERY_BOY
```

Below the SQL editor, the 'Results' tab is active, showing the table structure for 'DELIVERY\_BOY'. The table has the following columns:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DELIVERY_BOY	D_ID	Number	-	10	0	1	-	-	-
	NAME	Varchar2	30	-	-	-	✓	-	-
	PHONE	Varchar2	40	-	-	-	✓	-	-
	TRACKING_NO	Number	-	30	0	-	✓	-	-

At the bottom of the interface, the footer indicates the application is 'Application Express 2.1.0.00.39' and includes the copyright notice: 'Copyright © 1999, 2006, Oracle. All rights reserved.'

## Description CUSTOMER Table

```
CREATE TABLE CUSTOMER (C_ID NUMBER(10),CONSTRAINT CUSTOMER_PK_CUS PRIMARY KEY (C_ID), NAME VARCHAR2(30), VOUCHER VARCHAR2(40),C_PHONE VARCHAR2(30), ADDRESS VARCHAR2(50),D_ID NUMBER(30),CONSTRAINT CUSTOMER_FK_CUST FOREIGN KEY (D_ID) REFERENCES DELIVERY_BOY(D_ID));
```

DESC CUSTOMER

The screenshot shows the Oracle Application Express interface. At the top, the browser address bar displays the URL. Below it, the 'SQL Commands' window is open, showing the SQL commands entered: 'CREATE TABLE CUSTOMER (C\_ID NUMBER(10),CONSTRAINT CUSTOMER\_PK\_CUS PRIMARY KEY (C\_ID), NAME VARCHAR2(30), VOUCHER VARCHAR2(40),C\_PHONE VARCHAR2(30), ADDRESS VARCHAR2(50),D\_ID NUMBER(30),CONSTRAINT CUSTOMER\_FK\_CUST FOREIGN KEY (D\_ID) REFERENCES DELIVERY\_BOY(D\_ID));' and 'DESC CUSTOMER'. The 'Run' button is visible. Below the SQL window, the 'Results' tab is selected, displaying the table structure for 'CUSTOMER'.

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMER	C_ID	Number	-	10	0	1	-	-	-
	NAME	Varchar2	30	-	-	-	✓	-	-
	VOUCHER	Varchar2	40	-	-	-	✓	-	-
	C_PHONE	Varchar2	30	-	-	-	✓	-	-
	ADDRESS	Varchar2	50	-	-	-	✓	-	-
	D_ID	Number	-	30	0	-	✓	-	-

1 - 6

Application Express 2.1.0.00.39

## Description CUSTOMER\_INFO Table

```
CREATE TABLE CUSTOMER_INFO(C_ID NUMBER (10),CONSTRAINT  
CUSTOMERINFO_FK_CUSINFO FOREIGN KEY (C_ID) REFERENCES CUSTOMER(C_ID), W_ID  
NUMBER (10),CONSTRAINT CUSTOMERINFO_FK_CUSSINFO FOREIGN KEY (W_ID) REFERENCES  
WAITER (W_ID));
```

```
DESC CUSTOMER_INFO
```

The screenshot shows the Oracle Application Express interface. The top bar indicates the user is SYSTEM. The breadcrumb navigation shows 'Home > SQL > SQL Commands'. The 'Autocommit' checkbox is checked, and the 'Display' value is set to 100. The SQL command area contains the following text:

```
SELECT*FROM CUSTOMER_INFO  
DESC CUSTOMER_INFO  
CREATE TABLE CUSTOMER_INFO(C_ID NUMBER (10),CONSTRAINT CUSTOMERINFO_FK_CUSINFO FOREIGN KEY (C_ID) REFERENCES CUSTOMER(C_ID), W_ID  
NUMBER (10),CONSTRAINT CUSTOMERINFO_FK_CUSSINFO FOREIGN KEY (W_ID) REFERENCES WAITER (W_ID))  
DESC CUSTOMER_INFO
```

Below the command area, the 'Results' tab is selected. It shows the object type as 'TABLE' and the object name as 'CUSTOMER\_INFO'. A table displays the structure of the table:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMER_INFO	C_ID	Number	-	10	0	-	✓	-	-
	W_ID	Number	-	10	0	-	✓	-	-

At the bottom right of the results area, it says '1 - 2'. The footer of the application shows 'Application Express 2.1.0.00.39' and 'Copyright © 1999, 2006, Oracle. All rights reserved.'

## Description DELIVERY\_BOY\_INFO Table

```
CREATE TABLE DELIVERY_BOY_INFO (D_ID NUMBER(10),CONSTRAINT  
DELIVERY_BOY_INFO_FK_DINFO FOREIGN KEY(D_ID) REFERENCES  
DELIVERY_BOY(D_ID),PHONE VARCHAR2(30));
```

```
DESC DELIVERY_BOY_INFO
```

The screenshot shows the Oracle Application Express interface. The top bar indicates the user is 'SYSTEM'. The breadcrumb trail is 'Home > SQL > SQL Commands'. The 'Autocommit' checkbox is checked, and the 'Display' dropdown is set to '10'. The 'Save' and 'Run' buttons are visible. The SQL command area contains the following text:

```
CREATE TABLE DELIVERY_BOY_INFO (D_ID NUMBER(10),CONSTRAINT DELIVERY_BOY_INFO_FK_DINFO FOREIGN KEY(D_ID) REFERENCES  
DELIVERY_BOY(D_ID),PHONE VARCHAR2(30))  
  
DESC DELIVERY_BOY_INFO
```

Below the command area, the 'Results' tab is selected. It shows the object type as 'TABLE' and the object name as 'DELIVERY\_BOY\_INFO'. A table displays the table's structure:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DELIVERY_BOY_INFO	D_ID	Number	-	10	0	-	✓	-	-
	PHONE	Varchar2	30	-	-	-	✓	-	-

At the bottom right, the text 'Application Express 2.1.0.00.39' and 'Copyright © 1999, 2006, Oracle. All rights reserved.' are visible.

## Description MENU Table

```
CREATE TABLE MENU(MENU_NO NUMBER(10),CONSTRAINT MENU_PK_MNU PRIMARY KEY (MENU_NO), NAME VARCHAR2(30),PRICE VARCHAR2(40),D_ID NUMBER(10),CONSTRAINT MENU_FK_MENUUU FOREIGN KEY (D_ID) REFERENCES DELIVERY_BOY(D_ID));
```

DESC MENU

The screenshot shows the Oracle SQL Developer interface. The top window is titled "SQL Commands" and contains the following SQL code:

```
CREATE TABLE MENU(MENU_NO NUMBER(10),CONSTRAINT MENU_PK_MNU PRIMARY KEY (MENU_NO), NAME VARCHAR2(30),PRICE VARCHAR2(40),D_ID NUMBER(10),CONSTRAINT MENU_FK_MENUUU FOREIGN KEY (D_ID) REFERENCES DELIVERY_BOY(D_ID));
```

Below the SQL Commands window, the "Results" window is visible, showing the table structure for the "MENU" table. The table has the following columns:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MENU	MENU_NO	Number	-	10	0	1	-	-	-
	NAME	Varchar2	30	-	-	-	✓	-	-
	PRICE	Varchar2	40	-	-	-	✓	-	-
	D_ID	Number	-	10	0	-	✓	-	-

The "Results" window also shows the "Object Type" as "TABLE" and the "Object" as "MENU".

# Description ONLINE\_INFO Table

CREATE TABLE ONLINE\_INFO(APP\_ID NUMBER(10),CONSTRAINT FK\_OLLL FOREIGN KEY (APP\_ID) REFERENCES ONLINE\_SERVICE(APP\_ID),MENU\_NO NUMBER (10),CONSTRAINT FK\_OONN FOREIGN KEY (MENU\_NO) REFERENCES MENU(MENU\_NO));

DESC ONLINE\_INFO

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit   Display 10   Save   Run

```
CREATE TABLE ONLINE_INFO(APP_ID NUMBER(10),CONSTRAINT FK_OLLL FOREIGN KEY (APP_ID) REFERENCES ONLINE_SERVICE(APP_ID),MENU_NO NUMBER (10),CONSTRAINT FK_OONN FOREIGN KEY (MENU_NO) REFERENCES MENU(MENU_NO))

DESC ONLINE_INFO
```

Results   Explain   Describe   Saved SQL   History

Object Type **TABLE** Object **ONLINE\_INFO**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ONLINE_INFO	APP_ID	Number	-	10	0	-	✓	-	-
	MENU_NO	Number	-	10	0	-	✓	-	-
1 - 2									

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## Value Insertion

### RESTAURANT VALUE Insertion

```
INSERT INTO RESTAURANT VALUES(7757,'DHAKA','DINER')
INSERT INTO RESTAURANT VALUES(7976,'CHITTAGONG','RED ROSE')
INSERT INTO RESTAURANT VALUES(7767,'SYHLHET','CHILL OUT')
INSERT INTO RESTAURANT VALUES(7758,'BARISAL','VOOTER BARI')
INSERT INTO RESTAURANT VALUES(7759,'TANGAIL','ITALIA')
```

```
SELECT * FROM RESTAURANT
```

The screenshot displays the Oracle SQL Developer interface. At the top, a browser window shows the URL `127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::`. The main window is titled "SQL Commands" and shows the user "SYSTEM". The breadcrumb navigation is "Home > SQL > SQL Commands". Below the breadcrumb, there are buttons for "Autocommit" (checked), "Display" (set to 10), "Save", and "Run". The SQL editor contains the following commands:

```
INSERT INTO RESTAURANT VALUES(7757, 'DHAKA', 'DINER')
INSERT INTO RESTAURANT VALUES(7976, 'CHITTAGONG', 'RED ROSE')
INSERT INTO RESTAURANT VALUES(7767, 'SYHLHET', 'CHILL OUT')
INSERT INTO RESTAURANT VALUES(7758, 'BARISAL', 'VOOTER BARI')
INSERT INTO RESTAURANT VALUES(7759, 'TANGAIL', 'ITALIA')
SELECT * FROM RESTAURANT
```

Below the editor, the "Results" tab is active, showing a table with the following data:

TRADE_LICENCE	CITY	NAME
7757	DHAKA	DINER
7976	CHITTAGONG	RED ROSE
7767	SYHLHET	CHILL OUT
7758	BARISAL	VOOTER BARI
7759	TANGAIL	ITALIA

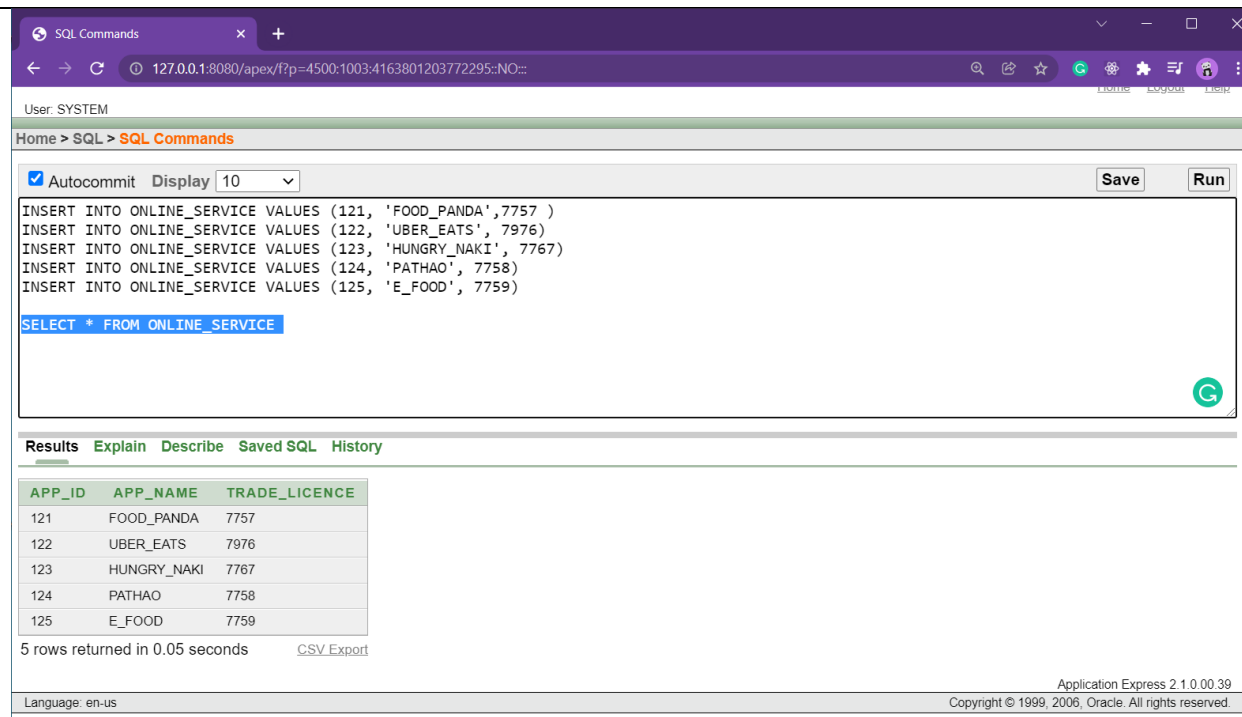
At the bottom of the results section, it states "5 rows returned in 0.07 seconds" and provides a "CSV Export" link. The footer of the application shows "Application Express 2.1.0.00.39" and "Copyright © 1999, 2006, Oracle. All rights reserved."



## ONLINE SERVICE VALUE Insertion

```
INSERT INTO ONLINE_SERVICE VALUES (121, 'FOOD_PANDA', 7757 )
INSERT INTO ONLINE_SERVICE VALUES (122, 'UBER_EATS', 7976)
INSERT INTO ONLINE_SERVICE VALUES (123, 'HUNGRY_NAKI', 7767)
INSERT INTO ONLINE_SERVICE VALUES (124, 'PATHAO', 7758)
INSERT INTO ONLINE_SERVICE VALUES (125, 'E_FOOD', 7759)
```

```
SELECT * FROM ONLINE_SERVICE
```



SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

```
INSERT INTO ONLINE_SERVICE VALUES (121, 'FOOD_PANDA', 7757 )
INSERT INTO ONLINE_SERVICE VALUES (122, 'UBER_EATS', 7976)
INSERT INTO ONLINE_SERVICE VALUES (123, 'HUNGRY_NAKI', 7767)
INSERT INTO ONLINE_SERVICE VALUES (124, 'PATHAO', 7758)
INSERT INTO ONLINE_SERVICE VALUES (125, 'E_FOOD', 7759)

SELECT * FROM ONLINE_SERVICE
```

Results Explain Describe Saved SQL History

APP_ID	APP_NAME	TRADE_LICENCE
121	FOOD_PANDA	7757
122	UBER_EATS	7976
123	HUNGRY_NAKI	7767
124	PATHAO	7758
125	E_FOOD	7759

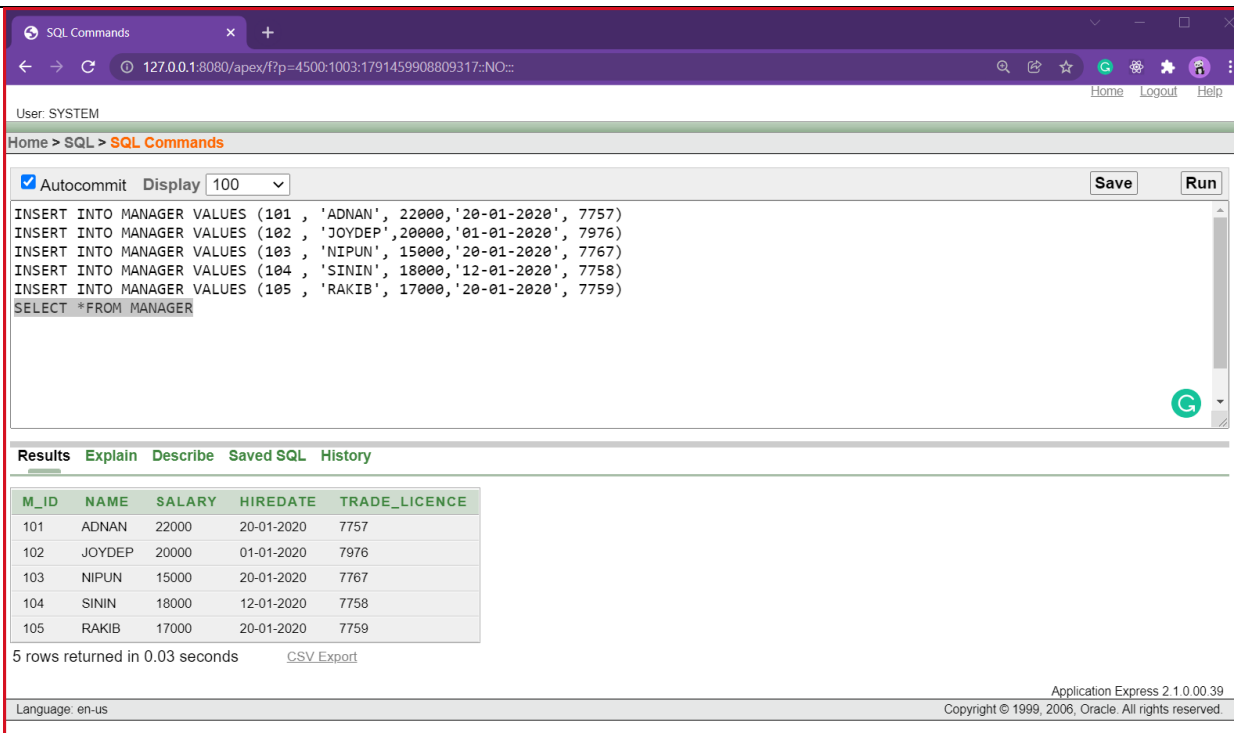
5 rows returned in 0.05 seconds [CSV Export](#)

Application Express 2.1.0.00.39  
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## MANAGER VALUE Insertion

```
INSERT INTO MANAGER VALUES (101 , 'ADNAN', 22000,'20-01-2020', 7757)
INSERT INTO MANAGER VALUES (102 , 'JOYDEP',20000,'01-01-2020', 7976)
INSERT INTO MANAGER VALUES (103 , 'NIPUN', 15000,'20-01-2020', 7767)
INSERT INTO MANAGER VALUES (104 , 'SININ', 18000,'12-01-2020', 7758)
INSERT INTO MANAGER VALUES (105 , 'RAKIB', 17000,'20-01-2020', 7759)
```

```
SELECT *FROM MANAGER
```



SQL Commands

127.0.0.1:8080/apex/?p=4500:1003:1791459908809317::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 100 Save Run

```
INSERT INTO MANAGER VALUES (101 , 'ADNAN', 22000,'20-01-2020', 7757)
INSERT INTO MANAGER VALUES (102 , 'JOYDEP',20000,'01-01-2020', 7976)
INSERT INTO MANAGER VALUES (103 , 'NIPUN', 15000,'20-01-2020', 7767)
INSERT INTO MANAGER VALUES (104 , 'SININ', 18000,'12-01-2020', 7758)
INSERT INTO MANAGER VALUES (105 , 'RAKIB', 17000,'20-01-2020', 7759)
SELECT *FROM MANAGER
```

Results Explain Describe Saved SQL History

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
101	ADNAN	22000	20-01-2020	7757
102	JOYDEP	20000	01-01-2020	7976
103	NIPUN	15000	20-01-2020	7767
104	SININ	18000	12-01-2020	7758
105	RAKIB	17000	20-01-2020	7759

5 rows returned in 0.03 seconds [CSV Export](#)

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# CASHIER\_INFO VALUE Insertion

```
INSERT INTO CASHIER_INFO VALUES(201,'DHAKA',101)
INSERT INTO CASHIER_INFO VALUES(202,'CHITTAGONG',102)
INSERT INTO CASHIER_INFO VALUES(203,'SYLHET',103)
INSERT INTO CASHIER_INFO VALUES(204,'BARISAL',104)
INSERT INTO CASHIER_INFO VALUES(205,'TANGAIL',105)
```

```
SELECT*FROM CASHIER_INFO
```

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit   Display 10   Save   Run

```
INSERT INTO CASHIER_INFO VALUES(201,'DHAKA',101)
INSERT INTO CASHIER_INFO VALUES(202,'CHITTAGONG',102)
INSERT INTO CASHIER_INFO VALUES(203,'SYLHET',103)
INSERT INTO CASHIER_INFO VALUES(204,'BARISAL',104)
INSERT INTO CASHIER_INFO VALUES(205,'TANGAIL',105)

SELECT*FROM CASHIER_INFO
```

Results   Explain   Describe   Saved SQL   History

CC_ID	CITY	M_ID
201	DHAKA	101
202	CHITTAGONG	102
203	SYLHET	103
204	BARISAL	104
205	TANGAIL	105

5 rows returned in 0.00 seconds   [CSV Export](#)

Application Express 2.1.0.00.39

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## CASHIER VALUE Insertion

```
INSERT INTO CASHIER VALUES(301,'TANVIR',21525387,10000,201)
INSERT INTO CASHIER VALUES(302,'SADMAN',32525455,12000,202)
INSERT INTO CASHIER VALUES(303,'DEEP',76425365,8000,203)
INSERT INTO CASHIER VALUES(304,'SELIM',89525365,9000,204)
INSERT INTO CASHIER VALUES(305,'MUNIM',21565378,7000,205)
```

```
SELECT *FROM CASHIER
```

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following commands:

```
INSERT INTO CUSTOMER VALUES (500,' SAJID ','100', '12345678911', 'NARSHINDI', 501)
INSERT INTO CUSTOMER VALUES (200, 'KAMAL' , '50' , '12345678912', 'DHAKA' , 502)
INSERT INTO CUSTOMER VALUES (300, 'ANIK' , '50', '12345678901', 'SYLHET' , 503)
INSERT INTO CUSTOMER VALUES (400, 'SAAD', '100' , '1234578900', 'KHULNA' , 504)
INSERT INTO CUSTOMER VALUES (100, 'RAMIM',' NULL', '1234578916','BARISHAL' , 505)

SELECT* FROM CUSTOMER
```

The Results tab shows the following data:

C_ID	NAME	VOUCHER	C_PHONE	ADDRESS	D_ID
200	KAMAL	50	12345678912	DHAKA	502
300	ANIK	50	12345678901	SYLHET	503
400	SAAD	100	1234578900	KHULNA	504
100	RAMIM	NULL	1234578916	BARISHAL	505
500	SAJID	100	12345678911	NARSHINDI	501

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

## WAITER VALUE Insertion

```
INSERT INTO WAITER VALUES (401,6000, '01-01-2021',301)
INSERT INTO WAITER VALUES (402,5000, '17-6-2021',302)
INSERT INTO WAITER VALUES (403,5500, '30-11-2021',303)
INSERT INTO WAITER VALUES (404,6500, '05-12-2021',304)
INSERT INTO WAITER VALUES (405,5000, '02-06-2021',305)
```

```
SELECT * FROM WAITER
```

The screenshot shows the Oracle APEX SQL Commands interface. The top bar indicates the user is 'SYSTEM' and the page is 'SQL Commands'. The main area contains the following SQL commands:

```
INSERT INTO WAITER VALUES (401,6000, '01-01-2021',301)
INSERT INTO WAITER VALUES (402,5000, '17-6-2021',302)
INSERT INTO WAITER VALUES (403,5500, '30-11-2021',303)
INSERT INTO WAITER VALUES (404,6500, '05-12-2021',304)
INSERT INTO WAITER VALUES (405,5000, '02-06-2021',305)
SELECT * FROM WAITER
DESC WAITER
```

Below the commands, the 'Results' tab is active, displaying a table with 5 rows of data:

W_ID	W_SALARY	W_HIREDATE	CH_ID
401	6000	01-01-2021	301
402	5000	17-6-2021	302
403	5500	30-11-2021	303
404	6500	05-12-2021	304
405	5000	02-06-2021	305

At the bottom, it states '5 rows returned in 0.01 seconds' and provides a 'CSV Export' link. The footer includes 'Application Express 2.1.0.00.39' and 'Copyright © 1999, 2006, Oracle. All rights reserved.'

# DELIVERY\_BOY VALUE Insertion

```
INSERT INTO DELIVERY_BOY VALUES (501, 'REFAT', '12345678910', 7364)
INSERT INTO DELIVERY_BOY VALUES (502, 'SAGOR', '12345678911', 7366)
INSERT INTO DELIVERY_BOY VALUES (503, 'HASIN', '12345678912', 7264)
INSERT INTO DELIVERY_BOY VALUES (504, 'RAHAT', '12345678913', 7304)
INSERT INTO DELIVERY_BOY VALUES (505, 'SAJIB', '12345678915', 7354)
```

```
SELECT*FROM DELIVERY_BOY
```

SQL Commands

127.0.0.1:8080/apex/?p=4500:1003:1791459908809317::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 100 Save Run

```
INSERT INTO DELIVERY_BOY VALUES (501, 'REFAT', '12345678910', 7364)
INSERT INTO DELIVERY_BOY VALUES (502, 'SAGOR', '12345678911', 7366)
INSERT INTO DELIVERY_BOY VALUES (503, 'HASIN', '12345678912', 7264)
INSERT INTO DELIVERY_BOY VALUES (504, 'RAHAT', '12345678913', 7304)
INSERT INTO DELIVERY_BOY VALUES (505, 'SAJIB', '12345678915', 7354)

SELECT*FROM
DELIVERY_BOY
```

Results Explain Describe Saved SQL History

D_ID	NAME	PHONE	TRACKING_NO
501	REFAT	12345678910	7364
502	SAGOR	12345678911	7366
503	HASIN	12345678912	7264
504	RAHAT	12345678913	7304
505	SAJIB	12345678915	7354

5 rows returned in 0.00 seconds CSV Export

Language: en-us

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## CUSTOMER VALUE Insertion

```
INSERT INTO CUSTOMER VALUES (500,'SAJID','100','12345678911','NARSHINDI',501)
INSERT INTO CUSTOMER VALUES (200,'KAMAL','50','12345678912','DHAKA',502)
INSERT INTO CUSTOMER VALUES (300,'ANIK','50','12345678901','SYLHET',503)
INSERT INTO CUSTOMER VALUES (400,'SAAD','100','1234578900','KHULNA',504)
INSERT INTO CUSTOMER VALUES (100,'RAMIM','NULL','1234578916','BARISHAL',505)
```

```
SELECT* FROM CUSTOMER
```

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following text:

```
Autocommit Display 100
INSERT INTO CUSTOMER VALUES (102,'SAJID','100','12345678911','NARSHINDI',501)
INSERT INTO CUSTOMER VALUES (200,'KAMAL','50','12345678912','DHAKA',502)
INSERT INTO CUSTOMER VALUES (300,'ANIK','50','12345678901','SYLHET',503)
INSERT INTO CUSTOMER VALUES (400,'SAAD','100','1234578900','KHULNA',504)
INSERT INTO CUSTOMER VALUES (100,'RAMIM','NULL','1234578916','BARISHAL',505)

SELECT* FROM CUSTOMER
```

Below the SQL Commands window, the Results tab is selected, displaying a table with 5 rows:

C_ID	NAME	VOUCHER	C_PHONE	ADDRESS	D_ID
102	SAJID	100	12345678911	NARSHINDI	501
200	KAMAL	50	12345678912	DHAKA	502
300	ANIK	50	12345678901	SYLHET	503
400	SAAD	100	1234578900	KHULNA	504
100	RAMIM	NULL	1234578916	BARISHAL	505

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

## CUSTOMER\_INFO VALUE Insertion

```
INSERT INTO CUSTOMER_INFO VALUES (200, 401)
INSERT INTO CUSTOMER_INFO VALUES (300, 402)
INSERT INTO CUSTOMER_INFO VALUES (400, 403)
INSERT INTO CUSTOMER_INFO VALUES (100, 404)
INSERT INTO CUSTOMER_INFO VALUES (500, 405)
```

```
SELECT*FROM CUSTOMER_INFO
```

The screenshot shows the Oracle Database Express Edition interface. The browser address bar indicates the URL: 127.0.0.1:8080/apex/f?p=4500:1003:1791459908809317:NO::: The page title is "ORACLE Database Express Edition". The user is logged in as "SYSTEM". The "SQL Commands" window is active, showing the following SQL commands:

```
Autocommit Display 100
INSERT INTO CUSTOMER_INFO VALUES (200, 401)
INSERT INTO CUSTOMER_INFO VALUES (300, 402)
INSERT INTO CUSTOMER_INFO VALUES (400, 403)
INSERT INTO CUSTOMER_INFO VALUES (100, 404)
INSERT INTO CUSTOMER_INFO VALUES (500, 405)

SELECT*FROM CUSTOMER_INFO
DESC CUSTOMER_INFO
```

The "Results" tab is selected, displaying the following data:

C_ID	W_ID
200	401
300	402
400	403
100	404
500	405

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39



## DELIVERYBOY\_INFO VALUE Insertion

```
INSERT INTO DELIVERY_BOY_INFO VALUES (501,'0154243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (502,'0174243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (503,'0187243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (504,'0144243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (505,'019743557')
```

```
SELECT *FROM DELIVERY_BOY_INFO
```

The screenshot displays the Oracle Application Express (APEX) SQL Commands interface. The browser address bar shows the URL: 127.0.0.1:8080/apex/?p=4500:1003:1791459908809317::NO::: The user is identified as SYSTEM. The interface includes a toolbar with 'Autocommit' checked, 'Display' set to 100, and buttons for 'Save' and 'Run'. The SQL command area contains the following commands:

```
INSERT INTO DELIVERY_BOY_INFO VALUES (501,'0154243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (502,'0174243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (503,'0187243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (504,'0144243557')
INSERT INTO DELIVERY_BOY_INFO VALUES (505,'019743557')
SELECT *FROM DELIVERY_BOY_INFO
```

Below the command area, the 'Results' tab is active, showing a table with 5 rows. The table has two columns: D\_ID and PHONE. The data is as follows:

D_ID	PHONE
501	0154243557
502	0174243557
503	0187243557
504	0144243557
505	019743557

Below the table, it states '5 rows returned in 0.00 seconds' and provides a 'CSV Export' link. The footer of the interface includes 'Language: en-us' and 'Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.'

## MENU VALUE Insertion

```
INSERT INTO MENU VALUES(01,'PIZZA','120', 501)
INSERT INTO MENU VALUES(02,'FRIED CHICKEN','120', 502)
INSERT INTO MENU VALUES(03,'FRENCH FRY','80', 503)
INSERT INTO MENU VALUES(04,'PATTIS','70', 504)
INSERT INTO MENU VALUES(05,'BURGER','60', 505)
```

```
SELECT *FROM MENU
```

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following commands:

```
INSERT INTO MENU VALUES(02,'FRIED CHICKEN','120', 502)
INSERT INTO MENU VALUES(03,'FRENCH FRY','80', 503)
INSERT INTO MENU VALUES(04,'PATTIS','70', 504)
INSERT INTO MENU VALUES(05,'BURGER','60', 505)
SELECT *FROM MENU
```

The Results tab shows the output of the SELECT statement:

MENU_NO	NAME	PRICE	D_ID
1	PIZZA	120	501
2	FRIED CHICKEN	120	502
3	FRENCH FRY	80	503
4	PATTIS	70	504
5	BURGER	60	505

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

## ONLINE\_INFO VALUE Insertion

```
INSERT INTO ONLINE_INFO VALUES(121,01)
INSERT INTO ONLINE_INFO VALUES(122,02)
INSERT INTO ONLINE_INFO VALUES(123,03)
INSERT INTO ONLINE_INFO VALUES(124,04)
INSERT INTO ONLINE_INFO VALUES(125,05)
```

```
SELECT * FROM ONLINE_INFO
```

The screenshot shows the Oracle Database Express Edition interface. The browser address bar indicates the URL: 127.0.0.1:8080/apex/f?p=4500:1003:1791459908809317::NO::: The page title is "ORACLE Database Express Edition". The user is logged in as "SYSTEM". The "SQL Commands" window is active, showing the following SQL statements:

```
INSERT INTO ONLINE_INFO VALUES(121,01)
INSERT INTO ONLINE_INFO VALUES(122,02)
INSERT INTO ONLINE_INFO VALUES(123,03)
INSERT INTO ONLINE_INFO VALUES(124,04)
INSERT INTO ONLINE_INFO VALUES(125,05)

DESC ONLINE_INFO
SELECT * FROM ONLINE_INFO
```

The "Results" tab is selected, displaying the following table:

APP_ID	MENU_NO
121	1
122	2
123	3
124	4
125	5

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

## DML

### INSERT

INSERT INTO MANAGER VALUES (106 , 'SAJID KHAN', 23000,'20-01-2020', 7757)  
SELECT \*FROM MANAGER

The screenshot shows a web-based SQL interface. At the top, there's a browser address bar with the URL `127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::`. Below the browser, the user is identified as 'SYSTEM'. The main area is titled 'SQL Commands' and contains the following SQL code:

```
INSERT INTO MANAGER VALUES (106 , 'SAJID KHAN', 23000,'20-01-2020', 7757)
SELECT *FROM MANAGER
```

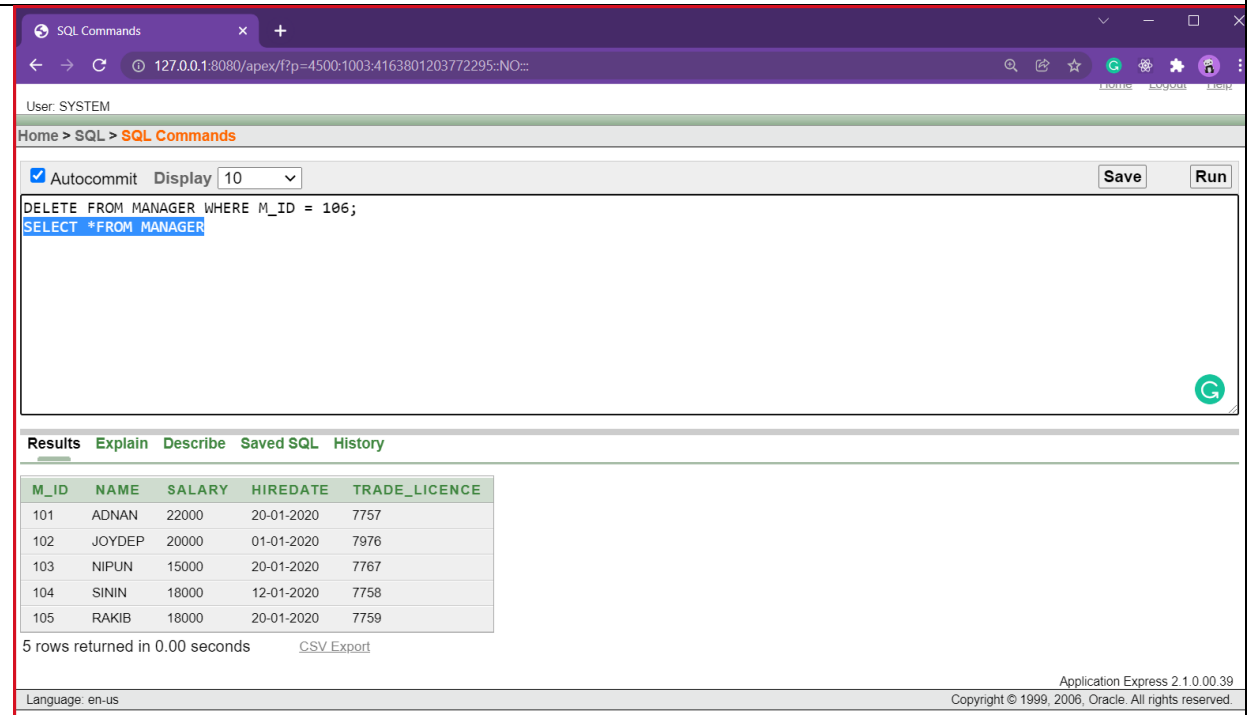
Below the code editor, there are tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Results' tab is active, displaying a table with 6 rows and 5 columns: M\_ID, NAME, SALARY, HIREDATE, and TRADE\_LICENCE.

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
101	ADNAN	22000	20-01-2020	7757
102	JOYDEP	20000	01-01-2020	7976
103	NIPUN	15000	20-01-2020	7767
104	SININ	18000	12-01-2020	7758
105	RAKIB	18000	20-01-2020	7759
106	SAJID KHAN	23000	20-01-2020	7757

Below the table, it says '6 rows returned in 0.00 seconds' and provides a 'CSV Export' link. At the bottom right, the text 'Application Express 2.1.0.00.39' is visible.

## DELETE

```
DELETE FROM MANAGER WHERE M_ID = 106;  
SELECT *FROM MANAGER
```



SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

```
DELETE FROM MANAGER WHERE M_ID = 106;  
SELECT *FROM MANAGER
```

**Results** Explain Describe Saved SQL History

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
101	ADNAN	22000	20-01-2020	7757
102	JOYDEP	20000	01-01-2020	7976
103	NIPUN	15000	20-01-2020	7767
104	SININ	18000	12-01-2020	7758
105	RAKIB	18000	20-01-2020	7759

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39  
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Language: en-us

## ALTER

UPDATE MANAGER SET SALARY =18000 WHRE M\_ID=105  
SELECT \*FROM MANAGER

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

```
UPDATE MANAGER
SET SALARY = 18000 WHERE M_ID = 105;
SELECT *FROM MANAGER;
```

**Results** Explain Describe Saved SQL History

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
101	ADNAN	22000	20-01-2020	7757
102	JOYDEP	20000	01-01-2020	7976
103	NIPUN	15000	20-01-2020	7767
104	SININ	18000	12-01-2020	7758
105	RAKIB	18000	20-01-2020	7759

5 rows returned in 0.00 seconds [CSV Export](#)

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Language: en-us

# Query

## 1.1 Display manager name who earns more than 20000?

SELECT \*FROM MANAGER WHERE SALARY>20000

The screenshot shows the Oracle Application Express SQL Commands interface. The query entered is "SELECT \*FROM MANAGER WHERE SALARY>20000". The results show one row for manager ADNAN with a salary of 22000.

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

Display manager name who earns more than 20000?  
SELECT \*FROM MANAGER WHERE SALARY>20000

Results Explain Describe Saved SQL History

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
101	ADNAN	22000	20-01-2020	7757

1 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39  
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## 1.2 Display the name of the manager whose name start with 'N'?

SELECT \*FROM MANAGER WHERE NAME LIKE 'N%'

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

Display the name of the manager whose name start with 'N'?

```
SELECT *FROM MANAGER WHERE NAME LIKE 'N%'
```

**Results** Explain Describe Saved SQL History

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
103	NIPUN	15000	20-01-2020	7767

1 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39  
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## 2. CONVERT LOWER CASE OF ALL MANAGER NAMES?

SELECT LOWER(NAME) FROM MANAGER

SQL Commands

127.0.0.1:8080/apex/?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

CONVERT LOWER CASE OF ALL MANAGER NAMES?  
SELECT LOWER(NAME) FROM MANAGER

Results Explain Describe Saved SQL History

LOWER(NAME)
adnan
joydep
nipun
sinin
rakib

5 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.0.39  
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### 3. Write a query to display the MANAGER WHERE SALARY BETWEEN 20000 AND 25000

SELECT \*FROM MANAGER WHERE SALARY BETWEEN 20000 AND 25000

The screenshot shows the Oracle Application Express (APEX) SQL Commands interface. The browser address bar shows the URL `127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::`. The user is logged in as SYSTEM. The breadcrumb navigation shows `Home > SQL > SQL Commands`. The interface includes a toolbar with `Autocommit` (checked), `Display` (set to 10), `Save`, and `Run` buttons. The SQL command area contains the text `SUM OF SALARY OF ALL MANAGER?` followed by `SELECT SUM(SALARY) FROM MANAGER`. A red circle with the number 1 is positioned at the bottom right of the command area. Below the command area, the `Results` tab is selected, showing a table with one column `SUM(SALARY)` and one row containing the value `92000`. Below the table, it states `1 rows returned in 0.00 seconds` and provides a `CSV Export` link. The footer of the interface includes the text `Application Express 2.1.0.00.39` and `Copyright © 1999, 2006, Oracle. All rights reserved.`.

SUM(SALARY)
92000

1 rows returned in 0.00 seconds [CSV Export](#)

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## 4.1 DISPLAY MAXIMUM SALARY OF MANAGER

select name, salary from manager where salary= (select MAX(salary) from manager)

The screenshot shows the Oracle APEX SQL Commands interface. The browser address bar indicates the URL: 127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::: The user is SYSTEM. The breadcrumb navigation is Home > SQL > SQL Commands. The Autocommit checkbox is checked, and the Display size is set to 10. The query entered is: `DISPLAY MAXIMUM SALARY OF MANAGER`  
`select name, salary from manager where salary= (select MAX(salary) from manager)` A red circle with the number 1 is in the bottom right corner of the query editor. Below the query editor, the Results tab is selected. The results show a table with two columns: NAME and SALARY. The data row is ADNAN with a salary of 22000. The status indicates 1 rows returned in 0.00 seconds. A CSV Export link is available. The footer shows the application version as Application Express 2.1.0.00.39 and the copyright notice: Copyright © 1999, 2006, Oracle. All rights reserved.

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

DISPLAY MAXIMUM SALARY OF MANAGER

select name, salary from manager where salary= (select MAX(salary) from manager)

1

Results Explain Describe Saved SQL History

NAME	SALARY
ADNAN	22000

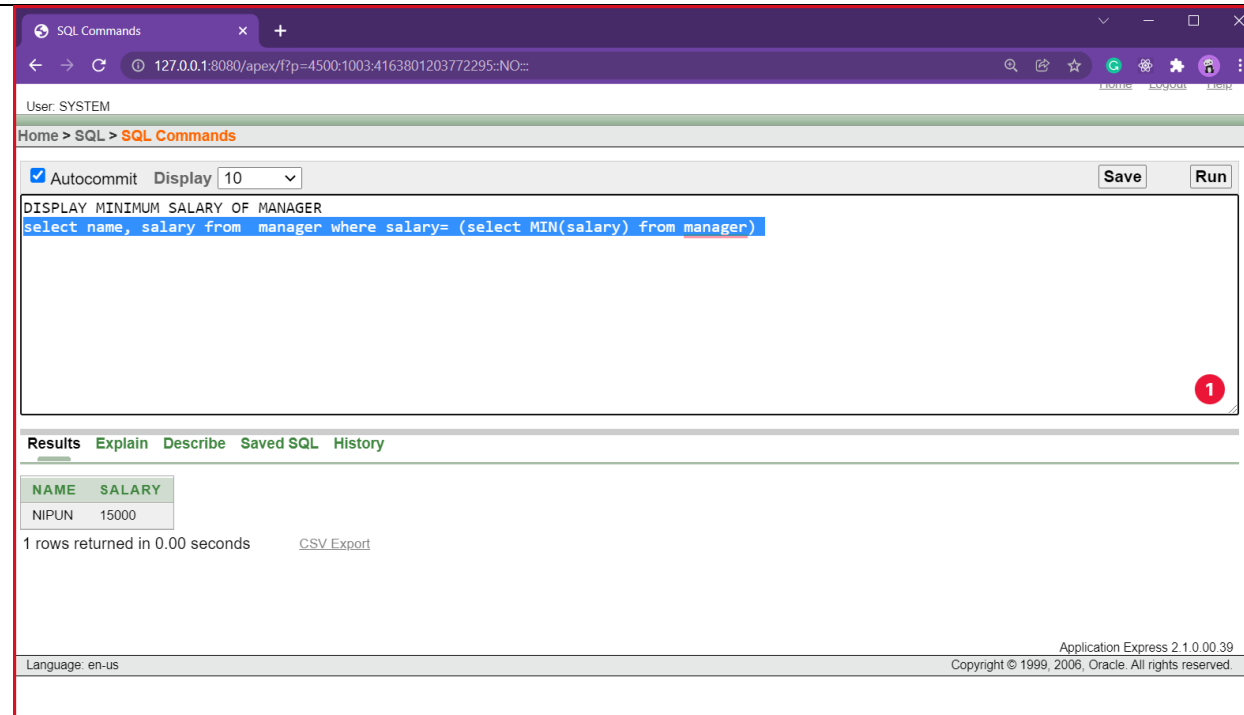
1 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.00.39  
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## 4.2 DISPLAY MINIMUM SALARY OF MANAGER

select name, salary from manager where salary= (select MIN(salary) from manager)



The screenshot shows the Oracle APEX SQL Commands interface. The browser address bar indicates the URL: 127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::: The user is SYSTEM. The breadcrumb navigation shows Home > SQL > SQL Commands. The interface includes a toolbar with 'Autocommit' checked, 'Display' set to 10, and 'Save' and 'Run' buttons. The SQL command area contains the query: `DISPLAY MINIMUM SALARY OF MANAGER`  
`select name, salary from manager where salary= (select MIN(salary) from manager)` A red circle with the number 1 is in the bottom right corner of the SQL command area. Below the command area, the 'Results' tab is selected, showing a table with two columns: NAME and SALARY. The table contains one row: NIPUN, 15000. Below the table, it says '1 rows returned in 0.00 seconds' and provides a 'CSV Export' link. The footer shows 'Language: en-us' and 'Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.'

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

DISPLAY MINIMUM SALARY OF MANAGER

select name, salary from manager where salary= (select MIN(salary) from manager)

1

Results Explain Describe Saved SQL History

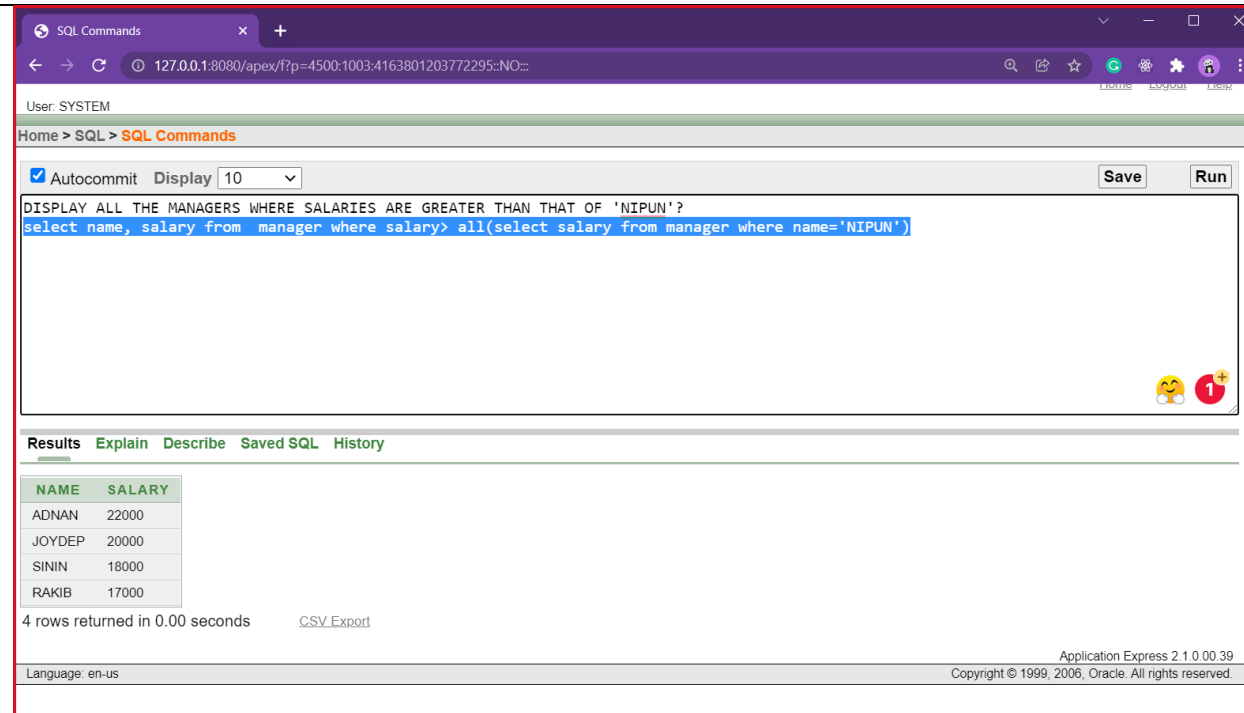
NAME	SALARY
NIPUN	15000

1 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

## 5. DISPLAY ALL THE MANAGERS WHERE SALARIES ARE GREATER THAN THAT OF 'NIPUN'?

select name, salary from manager where salary > all(select salary from manager where name='NIPUN')



SQL Commands

127.0.0.1:8080/apex/?p=4500:1003:4163801203772295::NO...

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

DISPLAY ALL THE MANAGERS WHERE SALARIES ARE GREATER THAN THAT OF 'NIPUN'?  
select name, salary from manager where salary > all(select salary from manager where name='NIPUN')

Results Explain Describe Saved SQL History

NAME	SALARY
ADNAN	22000
JOYDEP	20000
SININ	18000
RAKIB	17000

4 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.00.39  
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## 6.1 Query to Find Second Highest Salary of MANAGER?

```
SELECT MAX(salary) as Salary  
FROM manager  
WHERE salary=(SELECT MAX(salary) FROM manager where salary< (SELECT MAX(salary)  
FROM manager )) ;
```

The screenshot shows a web browser window with the URL `127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::`. The page title is "SQL Commands". The user is "SYSTEM". The breadcrumb is "Home > SQL > SQL Commands". The "Autocommit" checkbox is checked, and the "Display" dropdown is set to "10". There are "Save" and "Run" buttons. The query text is: "Query to Find Second Highest Salary of MANAGER? SELECT MAX(salary) as Salary FROM manager WHERE salary=(SELECT MAX(salary) FROM manager where salary< (SELECT MAX(salary) FROM manager )) ;". Below the query, there are "Results", "Explain", "Describe", "Saved SQL", and "History" tabs. The "Results" tab is active, showing a table with one column "SALARY" and one row with the value "20000". Below the table, it says "1 rows returned in 0.02 seconds" and there is a "CSV Export" link. At the bottom, the language is "en-us" and the footer says "Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved."

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

Query to Find Second Highest Salary of MANAGER?  
SELECT MAX(salary) as Salary  
FROM manager  
WHERE salary=(SELECT MAX(salary) FROM manager where salary< (SELECT MAX(salary)  
FROM manager )) ;

Results Explain Describe Saved SQL History

SALARY
20000

1 rows returned in 0.02 seconds [CSV Export](#)

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

## 6.2 Query to Find Second MINIMUM Salary of MANAGER?

```
SELECT MIN(salary) as Salary  
FROM manager  
WHERE salary=(SELECT MIN(salary) FROM manager where salary> (SELECT MIN(salary)  
FROM manager )) ;
```

The screenshot shows a web-based SQL interface. At the top, there's a browser address bar with the URL `127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::`. Below the browser, the user is identified as 'SYSTEM'. The main area is titled 'SQL Commands' and contains the following SQL query:

```
Query to Find Second MINIMUM Salary of MANAGER?  
SELECT MIN(salary) as Salary  
FROM manager  
WHERE salary=(SELECT MIN(salary) FROM manager where salary> (SELECT MIN(salary)  
FROM manager )) ;
```

Below the query editor, there are tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Results' tab is active, showing a single row with the column header 'SALARY' and the value '17000'. Below the results, it states '1 rows returned in 0.00 seconds' and provides a 'CSV Export' link. At the bottom right, the text 'Application Express 2.1.0.00.39' and 'Copyright © 1999, 2006, Oracle. All rights reserved.' are visible.

SALARY
17000

## 7.1 DISPLAY ALL THE INFO OF CASHIER (EQUI JOIN)

```
SELECT CH_ID, NAME, CITY FROM CASHIER, CASHIER_INFO WHERE  
CASHIER.CC_ID=CASHIER_INFO.CC_ID;
```

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

DISPLAY ALL THE INFO OF CASHIER | (EQUIJOIN)  
SELECT CH\_ID,NAME,CITY FROM CASHIER,CASHIER\_INFO WHERE CASHIER.CC\_ID=CASHIER\_INFO.CC\_ID;

Results Explain Describe Saved SQL History

CH_ID	NAME	CITY
301	TANVIR	DHAKA
302	SADMAN	CHITTAGONG
303	DEEP	SYLHET
304	SELIM	BARISAL
305	MUNIM	TANGAIL

5 rows returned in 0.04 seconds [CSV Export](#)

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## 7.2 Perform a non-equi join

```
select m_id, manager.name, manager.salary as manager_salary, cashier.salary as cashier_salary from manager, cashier where manager.salary<16000 and manager.salary>cashier.salary
```

SQL Commands

127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 200 Save Run

```
SELECT *FROM MANAGER
SELECT *FROM CASHIER

select m_id,manager.name, manager.salary as manager_salary, cashier.salary as cashier_salary from manager, cashier where
manager.salary<16000 and manager.salary>cashier.salary
```

Results Explain Describe Saved SQL History

M_ID	NAME	MANAGER_SALARY	CASHIER_SALARY
103	NIPUN	15000	10000
103	NIPUN	15000	12000
103	NIPUN	15000	8000
103	NIPUN	15000	9000
103	NIPUN	15000	7000

5 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.00.39  
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## 7.3 PERFORM LEFT OUTER JOIN IN CUSTOMER TABLE

```
SELECT *FROM CUSTOMER
SELECT *FROM DELIVERY_BOY
SELECT CUSTOMER.NAME, C_PHONE, ADDRESS, VOUCHER FROM CUSTOMER LEFT JOIN
DELIVERY_BOY ON CUSTOMER.D_ID = DELIVERY_BOY.D_ID
```

The screenshot shows the Oracle Application Express interface. The browser address bar displays the URL: 127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::-. The user is logged in as SYSTEM. The page title is "Home > SQL > SQL Commands". The "Autocommit" checkbox is checked, and the "Display" dropdown is set to 10. The "Save" and "Run" buttons are visible. The SQL command area contains the following text:

```
PERFORM LEFT OUTER JOIN IN CUSTOMER TABLE
SELECT *FROM CUSTOMER
SELECT *FROM DELIVERY_BOY
SELECT CUSTOMER.NAME, C_PHONE, ADDRESS, VOUCHER FROM CUSTOMER LEFT JOIN DELIVERY_BOY ON CUSTOMER.D_ID = DELIVERY_BOY.D_ID
```

The "Results" tab is selected, showing the following data:

NAME	C_PHONE	ADDRESS	VOUCHER
KAMAL	12345678912	DHAKA	50
ANIK	12345678901	SYLHET	50
SAAD	1234578900	KHULNA	100
RAMIM	1234578916	BARISHAL	NULL
SAJID	12345678911	NARSHINDI	100

5 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.00.39  
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## 7.4 PERFORM RIGHT OUTER JOIN IN CUSTOMER TABLE

SELECT CUSTOMER.NAME, C\_PHONE, ADDRESS, VOUCHER FROM CUSTOMER RIGHT JOIN  
DELIVERY\_BOY ON CUSTOMER.D\_ID = DELIVERY\_BOY.D\_ID

The screenshot shows the 'SQL Commands' window in Oracle Application Express. The browser address bar indicates the URL: 127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::. The window title is 'SQL Commands'. Below the title bar, there are tabs for 'Home', 'SQL', and 'SQL Commands'. The 'SQL Commands' tab is active. The main area contains a text editor with the following SQL query:

```
PERFORM RIGHT OUTER JOIN IN CUSTOMER TABLE  
SELECT *FROM CUSTOMER  
SELECT *FROM DELIVERY_BOY  
SELECT CUSTOMER.NAME, C_PHONE, ADDRESS, VOUCHER FROM CUSTOMER RIGHT JOIN DELIVERY_BOY ON CUSTOMER.D_ID = DELIVERY_BOY.D_ID
```

The query is highlighted in blue. To the right of the text editor are buttons for 'Autocommit' (checked), 'Display' (set to 10), 'Save', and 'Run'. Below the text editor is a 'Results' section with tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Results' tab is active, showing a table with 5 rows and 4 columns: NAME, C\_PHONE, ADDRESS, and VOUCHER.

NAME	C_PHONE	ADDRESS	VOUCHER
KAMAL	12345678912	DHAKA	50
ANIK	12345678901	SYLHET	50
SAAD	1234578900	KHULNA	100
RAMIM	1234578916	BARISHAL	NULL
SAJID	12345678911	NARSHINDI	100

Below the table, it says '5 rows returned in 0.00 seconds' and 'CSV Export'. At the bottom right, the footer text reads: 'Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.'

## 7.5 PERFORM FULL OUTER JOIN IN CUSTOMER TABLE

SELECT CUSTOMER.NAME, CUSTOMER.D\_ID, VOUCHER FROM CUSTOMER FULL OUTER JOIN  
DELIVERY\_BOY ON (CUSTOMER.D\_ID=DELIVERY\_BOY.D\_ID)

The screenshot shows the Oracle Database Express Edition interface. The browser address bar indicates the URL `127.0.0.1:8080/apex/f?p=4500:1003:4163801203772295::NO::`. The page title is "ORACLE Database Express Edition". The user is logged in as "SYSTEM". The navigation bar shows "Home > SQL > SQL Commands". The "SQL Commands" window is active, showing the query: `PERFORM FULL OUTER JOIN IN CUSTOMER TABLE  
SELECT CUSTOMER.NAME, CUSTOMER.D_ID, VOUCHER FROM CUSTOMER FULL OUTER JOIN DELIVERY_BOY ON (CUSTOMER.D_ID=DELIVERY_BOY.D_ID)`. The "Autocommit" checkbox is checked, and the "Display" dropdown is set to "10". The "Save" and "Run" buttons are visible. Below the query window, the "Results" tab is selected, displaying a table with 5 rows and 3 columns: NAME, D\_ID, and VOUCHER. The results are: KAMAL (502, 50), ANIK (503, 50), SAAD (504, 100), RAMIM (505, NULL), and SAJID (501, 100). The status bar indicates "5 rows returned in 0.00 seconds" and provides a "CSV Export" link.

NAME	D_ID	VOUCHER
KAMAL	502	50
ANIK	503	50
SAAD	504	100
RAMIM	505	NULL
SAJID	501	100

5 rows returned in 0.00 seconds [CSV Export](#)

## 8. CREATE A VIEW FROM MANAGER TABLE

```
CREATE VIEW MANAGERVIEW AS SELECT M_ID, NAME, SALARY FROM MANAGER WHERE M_ID=101  
SELECT * FROM MANAGERVIEW
```

SQL Commands

127.0.0.1:8080/apex/?p=4500:1003:4163801203772295:NO::

User: SYSTEM

Home > SQL > SQL Commands

☒ Autocommit Display 10 Save Run

```
CREATE A VIEW FROM MANAGER TABLE  
CREATE VIEW MANAGERVIEW AS SELECT M_ID ,NAME ,SALARY FROM MANAGER WHERE M_ID=101  
SELECT * FROM MANAGERVIEW
```

Results Explain Describe Saved SQL History

M_ID	NAME	SALARY
101	ADNAN	22000

1 rows returned in 0.02 seconds [CSV Export](#)

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

## 9. CREATE A SEQUENCE FROM MANAGER TABLE

```
CREATE SEQUENCE MANAGER_SEQ  
MINVALUE 10  
MAXVALUE 100  
START WITH 10  
INCREMENT BY 10;
```

```
INSERT INTO MANAGER VALUES (MANAGER_SEQ.NEXTVAL,'KABIR',22000,'11-2-2020',7757)  
INSERT INTO MANAGER VALUES (106,'SAKIB',25000,'10-1-2020',7757)  
SELECT *FROM MANAGER
```

The screenshot shows the Oracle SQL Developer interface. The top pane displays the SQL commands entered in the 'SQL Commands' window. The bottom pane shows the 'Results' tab with a table of data returned by the 'SELECT \*FROM MANAGER' query. The table has 7 rows and 5 columns: M\_ID, NAME, SALARY, HIREDATE, and TRADE\_LICENCE. The data includes employees ADNAN, JOYDEP, NIPUN, SININ, RAKIB, SAKIB, and KABIR. The interface also shows a status bar at the bottom with 'Language: en-us' and 'Copyright © 1999, 2006, Oracle. All rights reserved.'

```
SQL Commands
```

127.0.0.1:8080/apex/?p=4500:1003:4163801203772295:NO=

Autocommit Display 10 Save Run

```
CREATE A SEQUENCE FROM MANAGER TABLE  
CREATE SEQUENCE MANAGER_SEQ  
MINVALUE 10  
MAXVALUE 100  
START WITH 10  
INCREMENT BY 10;  
  
INSERT INTO MANAGER VALUES (MANAGER_SEQ.NEXTVAL,'KABIR',22000,'11-2-2020',7757)  
INSERT INTO MANAGER VALUES (106,'SAKIB',25000,'10-1-2020',7757)  
SELECT *FROM MANAGER
```

Results Explain Describe Saved SQL History

M_ID	NAME	SALARY	HIREDATE	TRADE_LICENCE
101	ADNAN	22000	20-01-2020	7757
102	JOYDEP	20000	01-01-2020	7976
103	NIPUN	15000	20-01-2020	7767
104	SININ	18000	12-01-2020	7758
105	RAKIB	17000	20-01-2020	7759
106	SAKIB	25000	10-1-2020	7757
10	KABIR	22000	11-2-2020	7757

7 rows returned in 0.00 seconds [CSV Export](#)

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