CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

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SUBJECT: Database Management System

SUBJECT CODE: CE246

SEM: 4

PRACTICAL-1

Evaluation of Database (File System, DBMS, RDBMS, DDBMS)

File System

- A file processing system(fps) is a technique of arranging the files in a storage medium like a hard disk, pen drive, DVD, etc. It helps you to organizes the data and allows easy retrieval of files when they are required. It mostly consists of different types of files like mp3, mp4, txt, doc, etc. that are grouped into directories.
- A file system enables you to handle the way of reading and writing data to the storage medium. It is directly installed into the computer with the Operating systems such as Windows and Linux.

Example:

NTFS (New Technology File System), EXT (Extended File System).

Features of a File system:

- It helps you to store data in a group of files.
- Files data are dependent on each other.
- C/C++ and COBOL languages were used to design the files.
- Shared File System Support
- Fast File System Recovery.

Advantages of File system:

- Enforcement of development and maintenance standards.

- Helps you to reduce redundancy
- Avoid inconsistency across file maintenance to get the integrity of data independence.
- Firm theoretical foundation (for the relational model).
- It is more efficient and cost less than a DBMS in certain situations.
- The design of file processing is simpler than designing Database.

Disadvantages of File Processing system:

- Each application has its data file so, the same data may have to be recorded and stored many times.
- Data dependence in the file processing system are data-dependent, but, the problem is incompatible with file format.
- The problem with security.
- Time-consuming.
- It allows you to maintain the record of the big firm having a large number of items.
- Required lots of labour work to do.

Application of File system:

- Language-specific run-time libraries
- API programs using it to make requests of the file system
- It is used for data transfer and positioning.
- Helps you to update the metadata
- Managing directories.

DBMS (Database Management System):

- Database Management System is basically a software that manages the collection of related data. It is used for storing data and retrieving the data effectively when it is needed. It also provides proper security measures for protecting the data from unauthorized access. In Database Management System the data can be fetched by SQL queries and relational algebra. It also provides mechanisms for data recovery and data backup.

Example:

Oracle, MySQL, MS SQL server.

Features of DBMS:

- A user-accessible catalog of data
- Transaction support
- Concurrency control with Recovery services
- Authorization services
- The value of data is the same at all places.
- Offers support for data communication
- Independent utility services
- Allows multiple users to share a file at the same time

Advantages of DBMS:

- DBMS offers a variety of techniques to store & retrieve data
- Uniform administration procedures for data

- Application programmers never exposed to details of data representation and Storage.
- A DBMS uses various powerful functions to store and retrieve data efficiently.
- Offers Data Integrity and Security
- Reduced Application Development Time
- Consume lesser space
- Reduction of redundancy.
- Data independence.

Disadvantages of the DBMS:

- Cost of Hardware and Software of a DBMS is quite high, which increases the budget of your organization.
- Most database management systems are often complex systems, so the training for users to use the DBMS is required.
- Data-sets begins to grow large as it provides a more predictable query response time.
- It required a processor with the high speed of data processing.
- The database can fail because or power failure or the whole system stops.

Application of the DBMS:

- Admission System Examination System Library System

- Payroll & Personnel Management System

- Accounting System Hotel Reservation System Airline Reservation System

- DBMS system also used by universities to keep call records, monthly bills, maintaining balances, etc.

- Finance for storing information about stock, sales, and purchases of financial instruments like stocks and bonds.

KEY DIFFERENCES BETWEEN FPS & DBMS:

- A file system is a software that manages and organizes the files in a storage medium, whereas DBMS is a software application that is used for accessing, creating, and managing databases.

- The file system doesn't have a crash recovery mechanism on the other hand, DBMS provides a crash recovery mechanism.

- Data inconsistency is higher in the file system. On the contrary Data inconsistency is low in a database management system.

- File system does not offer concurrency, whereas DBMS provides a concurrency facility.

RDBMS (Relational Database Management System):

- A relational database management system (RDBMS) is a program that allows you to create, update, and administer a relational database. Most relational database management systems use the SQL language to access the database.

- RDMBS adds the R of relational to the existing Database management technology. Created in the 1970s, RDBMS was designed to be a more sophisticated version of DBMS. RDBMS also adds a degree of finesse for the organization or the individuals accessing the data stored in the database.

- One key feature of RDBMS is that it can only keep the tabular form of data. Data in RDBMS is stored and sorted in the form of rows, columns (also called tuples and attribute in the DBMS language).

Example:

MySQL, PostgreSQL, Db2

Features of RDBMS:

- All data stored in the tables are provided by an RDBMS

- Ensures that all data stored are in the form of rows and columns

- Facilitates primary key, which helps in unique identification of the rows

- Facilitates a common column to be shared amid two or more tables

- Multi-user accessibility is facilitated to be controlled by individual users.

Advantages of RDBMS:

- It is secured in nature.
- The data manipulation can be done.
- It limits redundancy and replication of the data.
- It offers better data integrity.
- It provides better physical data independence.

Disadvantages of RDBMS:

- Software is expensive.
- It requires skilled human resources to implement.
- It is difficult to recover the lost data.
- Complex software refers to expensive hardware and hence increases overall cost to avail the RDBMS service.

DDBMS (Distributed Database Management System):

- Distributed Database Management System (DDBMS) is a type of DBMS which manages a number of databases hoisted at diversified locations and interconnected through a computer network. It provides mechanisms so that the distribution remains oblivious to the users, who perceive the database as a single database.

Features of DDBMS:

- It is used to create, retrieve, update and delete distributed databases.

- It synchronizes the database periodically and provides access mechanisms by the virtue of which the distribution becomes transparent to the users.

- It is used in application areas where large volumes of data are processed and accessed by numerous users simultaneously.

- It is designed for heterogeneous database platforms.

- It maintains confidentiality and data integrity of the databases.

Advantages of DDBMS:

- Reflects organizational structure

- Improved share ability

- Improved availability

- Improved reliability

- Improved performance

Disadvantages of DDBMS:

- Increased Cost

- Integrity control more difficult,

- Lack of standards,

- Database design more complex.

- Complexity of management and control. Applications must recognize data location and they must be able to stitch together data from various sites.
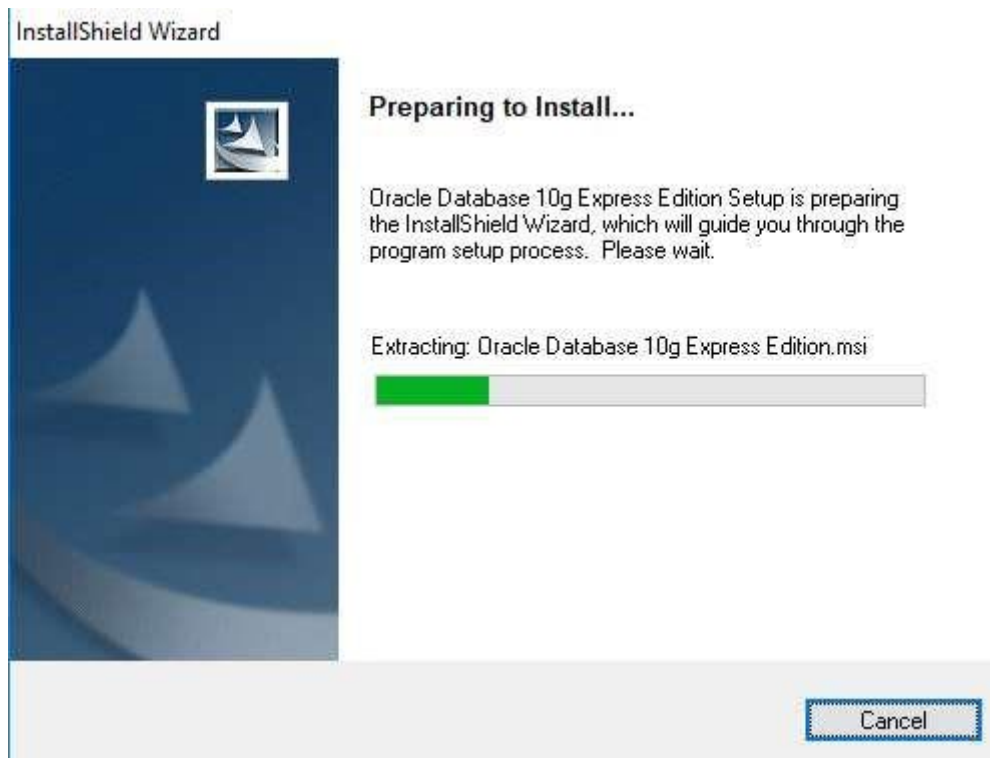
CONCLUSION:

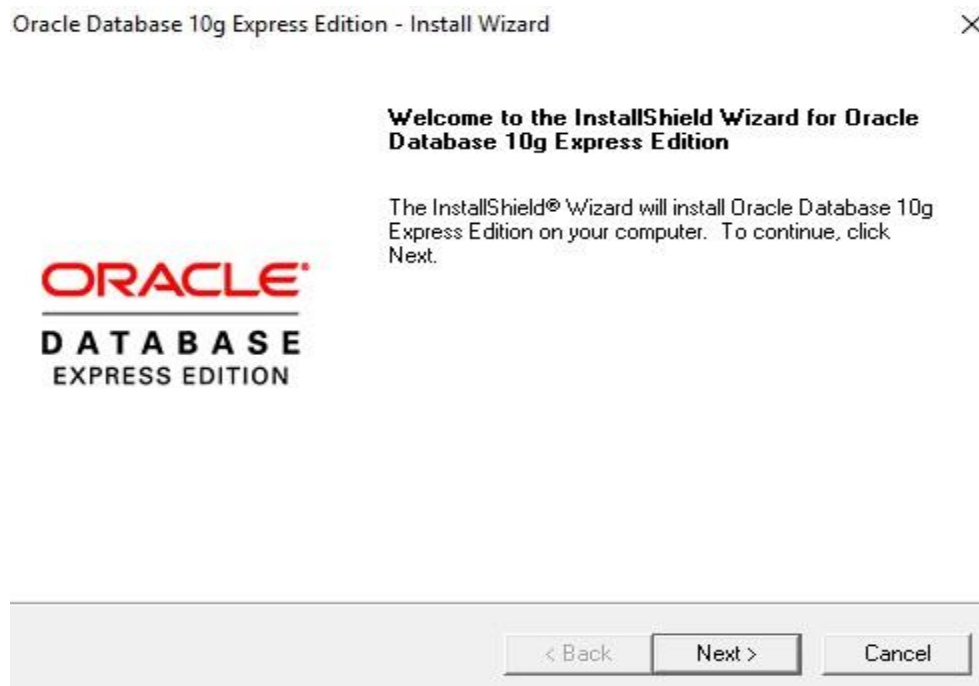In this practical, we learned the basics of DBMS and SQL.

PRACTICAL-2

Introduction to Oracle (step by step installation, introduction of sql, plsql).

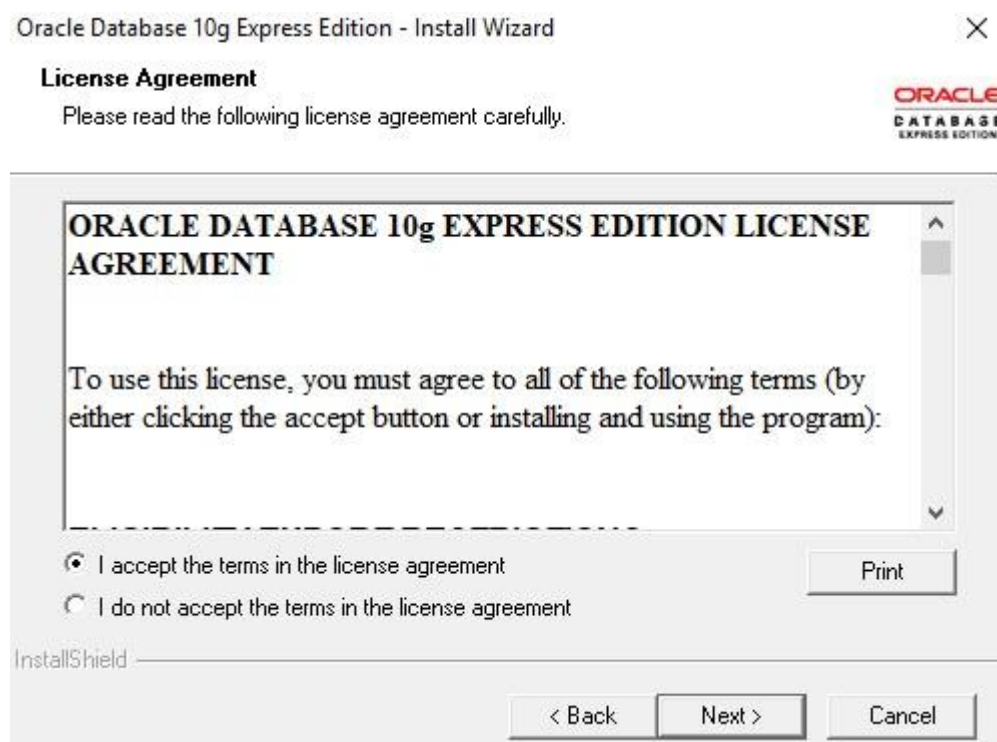1) Download Oracle 10g from below link:

2) Install it by double clicking .exe which you have downloaded

3) Click on Next button

Oracle Database 10g Express Edition - Install Wizard   ✕

Welcome to the InstallShield Wizard for Oracle Database 10g Express Edition

The InstallShield® Wizard will install Oracle Database 10g Express Edition on your computer. To continue, click Next.

ORACLE
DATABASE
EXPRESS EDITION

< Back   Next >   Cancel

4) Accept license agreement and click on next button

Oracle Database 10g Express Edition - Install Wizard   ✕

License Agreement

Please read the following license agreement carefully.   ORACLE
                                                                DATABASE
                                                                EXPRESS EDITION

ORACLE DATABASE 10g EXPRESS EDITION LICENSE AGREEMENT

To use this license, you must agree to all of the following terms (by either clicking the accept button or installing and using the program):

⦿ I accept the terms in the license agreement   Print

○ I do not accept the terms in the license agreement

InstallShield

< Back   Next >   Cancel

5) Click on next button

Oracle Database 10g Express Edition - Install Wizard   ✕

Choose Destination Location

Select folder where setup will install files.

ORACLE
DATABASE
EXPRESS EDITION

Setup will install Oracle Database 10g Express Edition in the following folder.

To install to this folder, click Next. To install to a different folder, click Browse and select another folder.

| ✓ Oracle Database 10g Express Edition | 1593016 K |

Destination Folder

C:\oraclexe\   Browse...

Space Required on C: 1593016 K

Space Available on C: 44830184 K

InstallShield

< Back   Next >   Cancel

6) Enter password and confirm password for SYS and SYSTEM user. Please remember it because once installation will be over you have to enter it. To make it easy to remember give password as : "oracle"

Oracle Database 10g Express Edition - Install Wizard   ✕

Specify Database Passwords

ORACLE
DATABASE
EXPRESS EDITION

Enter and confirm passwords for the database. This password will be used for both the SYS and the SYSTEM database accounts.
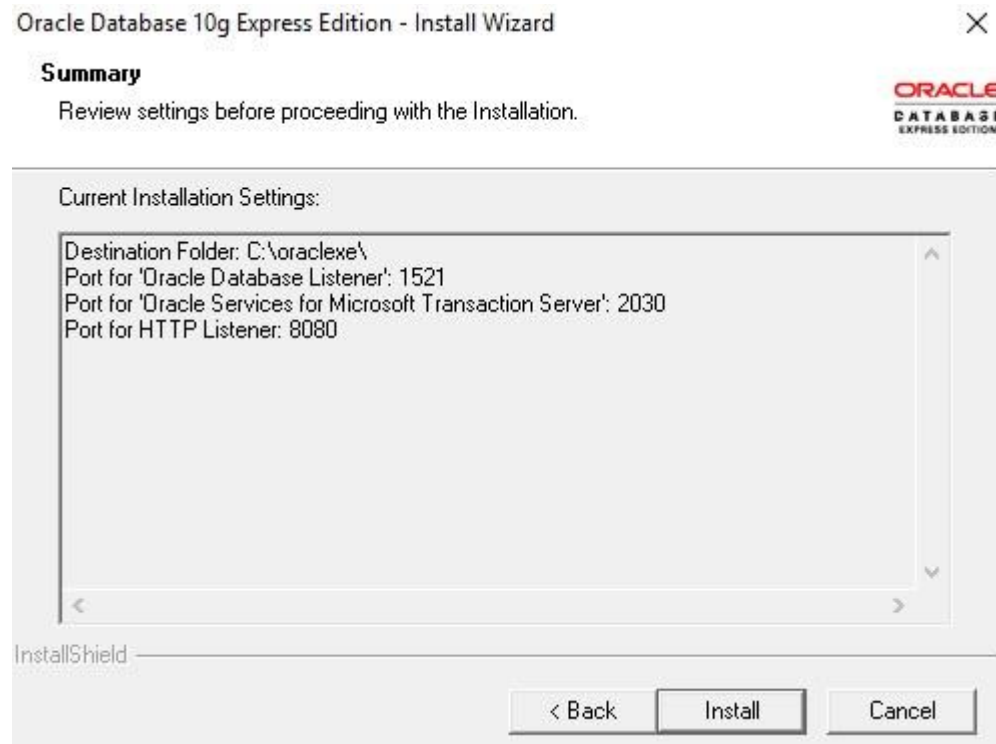
Enter Password   ******

Confirm Password   ******

Note: You should use the SYSTEM user along with the password you enter here to log in to the Database Home Page after the install is complete.

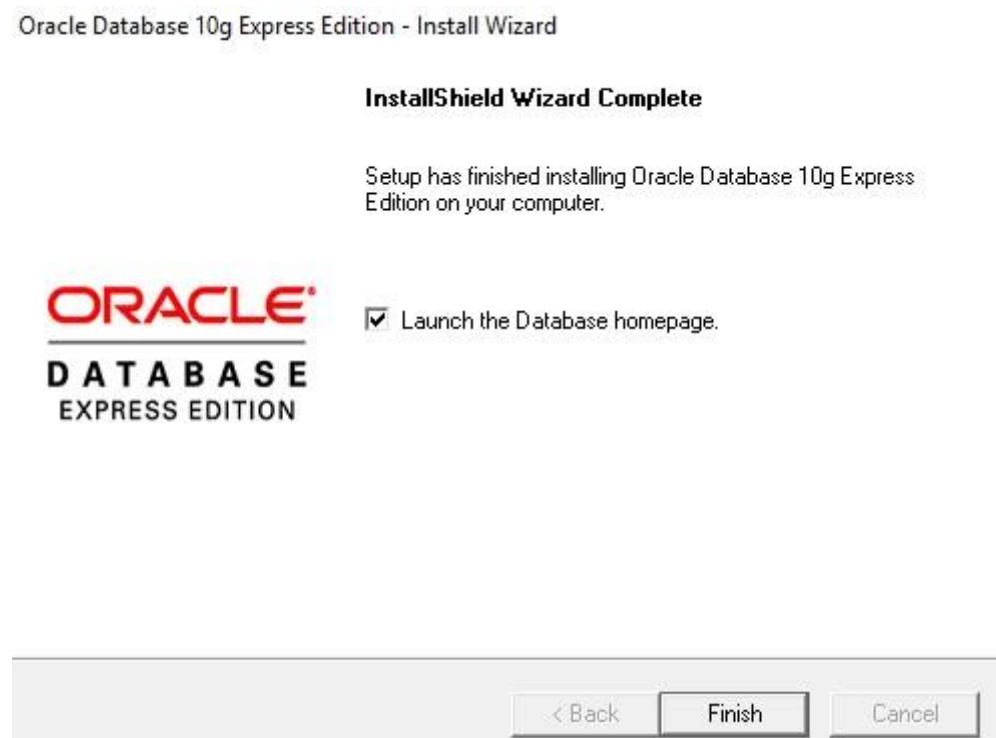InstallShield

< Back   Next >   Cancel

7) Click on install button

Oracle Database 10g Express Edition - Install Wizard   ×

Summary

Review settings before proceeding with the Installation.   ORACLE
                                                                            DATABASE
                                                                            EXPRESS EDITION

Current Installation Settings:

Destination Folder: C:\oraclexe\
Port for 'Oracle Database Listener': 1521
Port for 'Oracle Services for Microsoft Transaction Server': 2030
Port for HTTP Listener: 8080

InstallShield

< Back   Install   Cancel

8) Click on finish button.

Oracle Database 10g Express Edition - Install Wizard

InstallShield Wizard Complete

Setup has finished installing Oracle Database 10g Express
Edition on your computer.

ORACLE   ☑ Launch the Database homepage.
DATABASE
EXPRESS EDITION

< Back   Finish   Cancel

9) Enter username as SYS OR SYSTEM and enter your password (Entered in step: 6)
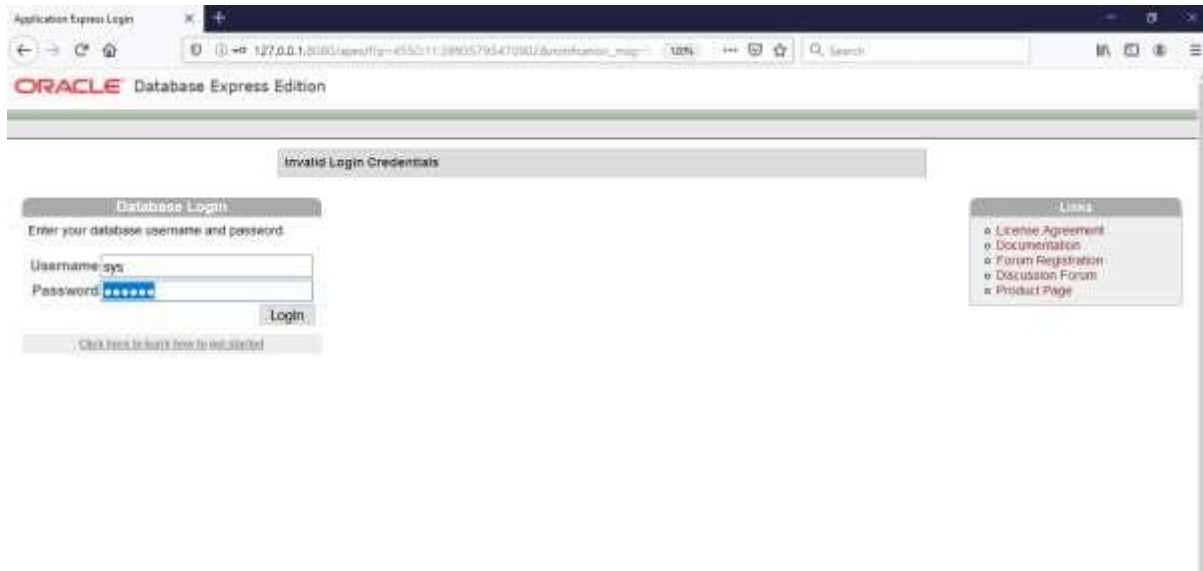
10) Click on Administration

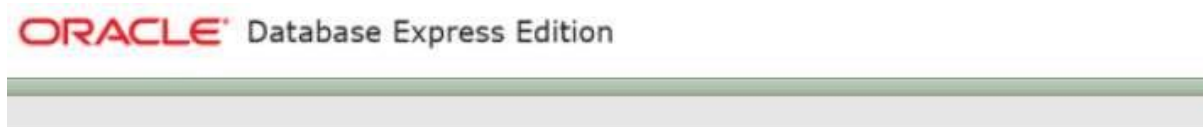11)Now click on "database user drop down button". From that click on "create user".

12) Enter your college roll no in username and give password (NEW) and confirm password. Don't check expire password, make account status unblocked if it is not. Give all privileges to your user. Finally click on "create" button.
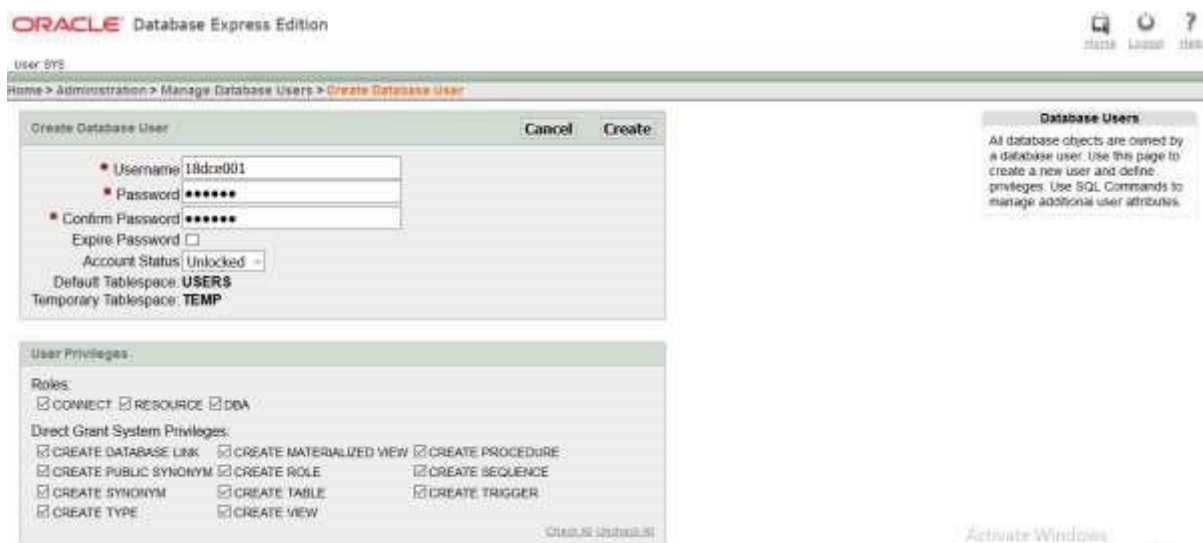
13) This page will be shown to you. Now click on "logout" button.

14) Click on login

15) Enter username and password that you just created and click on "login" button

16) Click on SQL

17) Click on SQL Commands

18) Congratulation!!! Now you are ready to code SQL and PLSQL.

What is SQL ?

• SQL is a standard language for accessing and manipulating databases.

• SQL is a standard language for accessing and manipulating databases. SQL stands for

Structured Query Language

• SQL lets you access and manipulate databases

• SQL became a standard of the American National Standards Institute (ANSI) in 1986,

and of the International Organization for Standardization (ISO) in 1987.

• SQL can retrieve data, update, insert, create tables, create new database, can set

permissions on tables, etc.

What is PLSQL?

• PL/SQL stands for "Procedural Language extensions to the Structured Query

Language".

• SQL is a popular language for both querying and updating data in the relational

database management systems (RDBMS).

• PL/SQL adds many procedural constructs to SQL language to overcome some

limitations of SQL.

• Besides, PL/SQL provides a more comprehensive programming language solution for

building mission-critical applications on Oracle Databases.

• PL/SQL is a highly structured and readable language. Its constructs express the intent

of the code clearly. Also, PL/SQL is a straightforward language to learn.

• PL/SQL is a standard and portable language for Oracle Database development. If you

develop a program that executes on an Oracle Database, you can quickly move it to

another compatible Oracle Database without any changes.

CONCLUSION:

In this practical, we learned the basics of oracle database and SQL and PL/SQL.

PRACTICAL-3
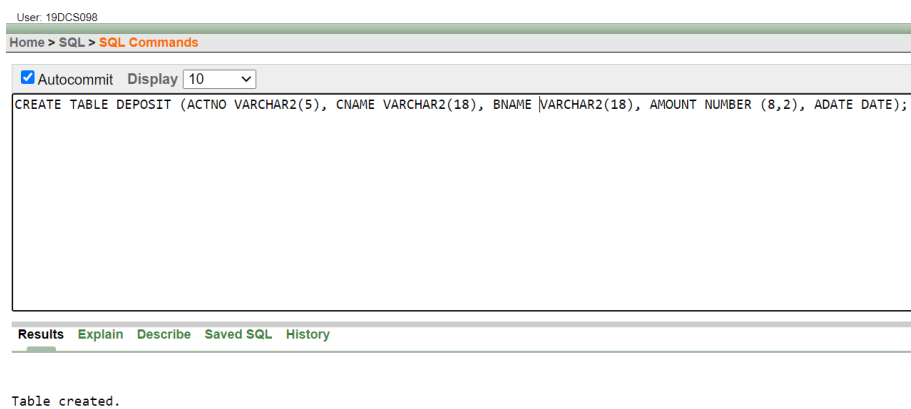
To study DDL-create and DML-insert commands.

(i) Create tables according to the following definition.
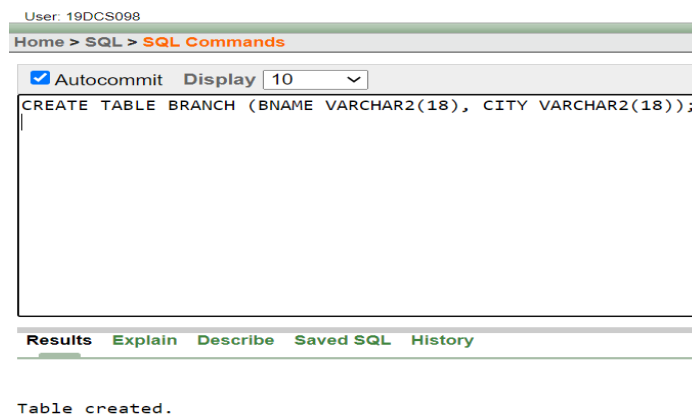
● CREATE TABLE D

EPOSIT (ACTNO VARCHAR2(5), CNAME

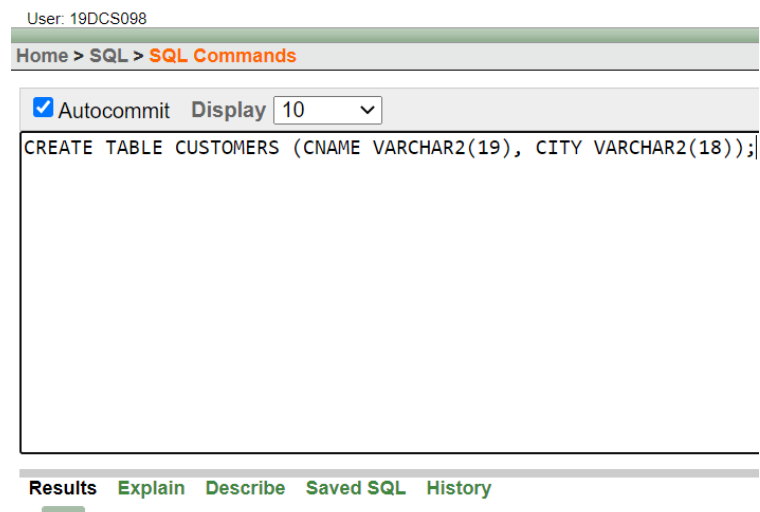VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER (8,2),

ADATE DATE);

● CREATE TABLE BRANCH (BNAME VARCHAR2(18), CITY

VARCHAR2(18));

● CREATE TABLE CUSTOMERS (CNAME VARCHAR2(19), CITY VARCHAR2(18));

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10   ▾

```
CREATE TABLE CUSTOMERS (CNAME VARCHAR2(19), CITY VARCHAR2(18));
```

Results Explain Describe Saved SQL History

```
Table created.
```

● CREATE TABLE BORROW (LOANNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER (8,2));

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10   ▾

```
CREATE TABLE BORROW (LOANNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME
VARCHAR2(18), AMOUNT NUMBER (8,2));
```

Results Explain Describe Saved SQL History

```
Table created.
```

(ii) Insert the data as shown below.

DEPOSIT

ACTNO	CNAME	BNAME	AMOUNT	ADATE
100	ANIL	VRCE	1000.00	1-MAR-95
101	SUNIL	AJNI	5000.00	4-JAN-96
102	MEHUL	KAROLBAGH	3500.00	17-NOV-95
104	MADHURI	CHANDI	1200.00	17-DEC-95
105	PRMOD	M.G.ROAD	3000.00	27-MAR-96
106	SANDIP	ANDHERI	2000.00	31-MAR-96
107	SHIVANI	VIRAR	1000.00	5-SEP-95
108	KRANTI	NEHRU PLACE	5000.00	2-JUL-95
109	MINU	POWAI	7000.00	10-AUG-95

BRANCH

BNAME	CITY
VRCE	NAGPUR
AJNI	NAGPUR
KAROLBAGH	DELHI
CHANDI	DELHI
DHARAMPETH	NAGPUR
M.G.ROAD	BANGLORE
ANDHERI	BOMBAY
VIRAR	BOMBAY
NEHRU PLACE	DELHI
POWAI	BOMBAY

CUSTOMERS

CNAME	CITY
ANIL	CALCUTTA
SUNIL	DELHI
MEHUL	BARODA
MANDAR	PATNA
MADHURI	NAGPUR
PRAMOD	NAGPUR
SANDIP	SURAT
SHIVANI	BOMBAY
KRANTI	BOMBAY
NAREN	BOMBAY

BORROW

LOANNO	CNAME	BNAME	AMOUNT
201	ANIL	VRCE	1000.00
206	MEHUL	AJNI	5000.00
311	SUNIL	DHARAMPETH	3000.00
321	MADHURI	ANDHERI	2000.00
375	PRMOD	VIRAR	8000.00
481	KRANTI	NEHRU PLACE	3000.00

• From the above given tables perform the following queries:

(1) Describe deposit, branch.

e

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10

```
desc deposit;
```

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **DEPOSIT**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DEPOSIT	ACTNO	Varchar2	5	-	-	-	✓	-	-
	CNAME	Varchar2	18	-	-	-	✓	-	-
	BNAME	Varchar2	18	-	-	-	✓	-	-
	AMOUNT	Number	-	8	2	-	✓	-	-
	ADATE	Date	7	-	-	-	✓	-	-
									1 - 5

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit **Display** 10

```
desc branch;
```

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **BRANCH**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
BRANCH	BNAME	Varchar2	18	-	-	-	✓	-	-
	CITY	Varchar2	18	-	-	-	✓	-	-
									1 - 2

(2) Describe borrow, customers.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit **Display** 10

```
desc borrow;
```

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **BORROW**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
BORROW	LOANNO	Varchar2	5	-	-	-	✓	-	-
	CNAME	Varchar2	18	-	-	-	✓	-	-
	BNAME	Varchar2	18	-	-	-	✓	-	-
	AMOUNT	Number	-	8	2	-	✓	-	-
									1 - 4

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   **Display** 10 ⌄

```
desc customers;
```

Results   Explain   **Describe**   Saved SQL   History

Object Type **TABLE** Object **CUSTOMERS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CNAME	Varchar2	19	-	-	-	✓	-	-
	CITY	Varchar2	18	-	-	-	✓	-	-
									1 - 2

(3) List all data from table DEPOSIT.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   **Display** 10 ⌄

```
select * from deposit;
```

Results   Explain   Describe   Saved SQL   History

ACTNO	CNAME	BNAME	AMOUNT	ADATE
100	ANIL	VRCE	1000	01-MAR-95
101	SUNIL	AJNI	5000	04-JAN-96
102	MEHUL	KAROLBAGH	3500	17-NOV-95
104	MADHURI	CHANDI	1200	17-DEC-95
105	PRMOD	M.G.ROAD	3000	27-MAR-96
106	SANDIP	ANDHERI	2000	31-MAR-96
107	SHIVANI	VIHAR	1000	05-SEP-95
108	KRANTI	NEHRU PLACE	5000	02-JUL-95
109	MINU	POWAI	7000	10-AUG-95

(4) List all data from table BORROW.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10

```
select * from borrow;
```

Results   Explain   Describe   Saved SQL   History

LOANNO	CNAME	BNAME	AMOUNT
201	ANIL	VRCE	1000
206	MEHUL	AJNI	5000
311	SUNIL	DHARAMPETH	3000
321	MADHURI	ANDHERI	2000
375	PRAMOD	VIRAR	8000
481	KRANTI	NEHRU PLACE	3000

(5) List all data from table CUSTOMERS.

User: 19DCS098

Home > SQL > SQL Comman

☑ Autocommit   Display

```
select * from customer
```

Results   Explain   Describ

CNAME	CITY
ANIL	CALCUTTA
SUNIL	DELHI
MEHUL	BARODA
MANDAR	PATNA
PRAMOD	NAGPUR
SANDIP	NAGPUR
SHIVANI	SURAT
KRANTI	BOMBAY
NAREN	BOMBAY

(6) List all data from table BRANCH.

(7) Give account no and amount of depositors.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
select actno,amount from deposit;
```

Results Explain Describe Saved SQL

ACTNO	AMOUNT
100	1000
101	5000
102	3500
104	1200
105	3000
106	2000
107	1000
108	5000
109	7000

(8) Give name of depositors having amount greater than 4000.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
select cname from deposit where amount>4000;
```

Results Explain Describe Saved SQL History

CNAME
SUNIL
KRANTI
MINU

(9) Give name of customers who opened account after date '1-12-96'.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   Display   10

```
select cname from deposit
where adate>'1-dec-1995'
```

Results   Explain   Describe

CNAME
SUNIL
MADHURI
PRMOD
SANDIP

(10)   Give name of city where branch karolbagh is located.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   Display   10

```
select city from branch
where bname='KAROLBAGH';
```

Results   Explain   Describe

CITY
DELHI

(11) Give account no and amount of customer having account opened between date 1-12-96 and 1-6-96.

User: 19DCS098

Home > SQL > **SQL Commands**

☑Autocommit Display 10

```
select actno,amount from deposit
where adate>'1-jun-1995' and adate<'1-dec-1995';
```

Results   Explain   Describe   Saved SQL   History

ACTNO	AMOUNT
102	3500
107	1000
108	5000
109	7000

(12) Give names of depositors having account at VRCE.

User: 19DCS098

Home > SQL > **SQL Commands**

☑Autocommit Display 10

```
select cname from deposit
where bname='VRCE';
```

Results   Explain   Describe   Sav

CNAME
ANIL

CONCLUSION:

In the above practicals, we learned the basics of DDL and DML.

PRACTICAL-4

Create the below given table and insert the data accordingly

• Create Table Job (job_id, job_title, min_sal, max_sal)

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10 ⌄

```
Create Table Job (job_id Varchar2(15), job_title Varchar2(30), min_sal Number(7,2),
max_sal Number(7,2))
```

Results   Explain   Describe   Saved SQL   History

Table created.

Create table Employee (emp_no, emp_name, emp_sal, emp_comm, dept_no, l_name, dept_name,job_id, location, manager_id, hiredate)

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10 ⌄

```
Create table Employee (emp_no Number(3), emp_name Varchar2(30), emp_sal
Number(8,2), emp_comm Number(6,1), dept_no Number(3), l_name Varchar2(30),
dept_name Varchar2(30), job_id Varchar2(15), location Varchar2(15), manager_id
Number(5), hiredate Date);
```

Results   Explain   Describe   Saved SQL   History

Table created.

Create table deposit(a_no,cname,bname,amount,a_date).

User: 19DCS098

Home > SQL > SQL Commands

☑Autocommit   **Display** 10 ⌄

```
Create table depositt(a_no Varchar2(5),cname Varchar2(15),bname Varchar2(10),
amount Number(7,2),a_date Date)
```

Results Explain Describe Saved SQL History

Table created.

Create table borrow (loanno, cname, bname, amount).

User: 19DCS098

Home > SQL > SQL Commands

☑Autocommit   **Display** 10 ⌄

```
CREATE TABLE BORROW_2 (LOANNO varchar(5),CNAME varchar2(15),BNAME
varchar2(10),AMOUNT NUMBER(7,2));
```

Results Explain Describe Saved SQL History

Table created.

• **Insert following values in the table Employee.**

emp_	emp_name	emp_sal	emp_com	dept	l_name	dept_name	job_id	location	managerid	hiredate
101	Smith	800		20	shah	machine learning	fi_mgr	toronto	105	09-aug-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas		14-mar-96
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-nov-95
104	Aman	3000		15	sharma	virtual reality	comp_op	mexico	12	02-oct-97
105	Anita	5000	50,000	10	patel	big data analytics	comp_op	germany	107	01-jan-98
106	Sneha	2450	24,500	10	joseph	big data analytics	fi_acc	melbourne	105	26-sep-97
107	Anamika	2975		30	jha	artificial intelligence	it_prog	new york		15jul-97

• **Insert following values in the table Job.**

job_id	job_name	min_sal	max_sal
it_prog	Programmer	4000	10000
mk_mgr	Marketing manager	9000	15000
fi_mgr	Finance manager	8200	12000
fi_acc	Account	4200	9000
lec	Lecturer	6000	17000
comp_op	Computer Operator	1500	3000

A_no	cname	Bname	Amount	date
101	Anil	andheri	7000	01-jan-06
102	sunil	virar	5000	15-jul-06
103	jay	villeparle	6500	12-mar-06
104	vijay	andheri	8000	17-sep-06
105	keyur	dadar	7500	19-nov-06
106	mayur	borivali	5500	21-dec-06

Perform following queries

(1) Retrieve all data from employee, jobs and deposit.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display [10 ▾]

`select * from employee;`

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	20	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▾

```
select * from job;
```

Results Explain Describe Saved SQL History

JOB_ID	JOB_TITLE	MIN_SAL	MAX_SAL
it_prog	Programmer	4000	10000
mk_mgr	Marketing manager	9000	15000
fi_mgr	Finance manager	8200	12000
fi_acc	Account	4200	9000
lec	Lecturer	6000	17000
comp_op	Computer Operator	1500	3000

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▾

```
select * from depositt;
```

Results Explain Describe Saved SQL History

A_NO	CNAME	BNAME	AMOUNT	A_DATE
101	Anil	andheri	7000	01-JAN-06
102	sunil	virar	5000	15-JUL-06
103	jay	villeparle	6500	12-MAR-06
104	vijay	andheri	8000	17-SEP-06
105	keyur	dadar	7500	19-NOV-06
106	mayur	borivali	5500	21-DEC-06

(2) Give details of account no. and deposited rupees of customers having account opened between dates 01-01-06 and 25-07-06.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10

```
select a_no,amount from depositt
where a_date between'1-Jan-2006'and '25-JUL-2006';
```

Results   Explain   Describe   Saved SQL   History

A_NO	AMOUNT
101	7000
102	5000
103	6500

(3) Display all jobs with minimum salary is greater than 4000.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10

```
select * from job where min_sal>4000;
```

Results   Explain   Describe   Saved SQL   History

JOB_ID	JOB_TITLE	MIN_SAL	MAX_SAL
mk_mgr	Marketing manager	9000	15000
fi_mgr	Finance manager	8200	12000
fi_acc	Account	4200	9000
lec	Lecturer	6000	17000

(4) Display name and salary of employee whose department no is 20. Give alias name to name of employee.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10 ▾

```
select emp_name as Name,emp_sal from employee
where dept_no=20;
```

Results   Explain   Describe   Saved SQL   History

NAME	EMP_SAL
Smith	800
Adama	1100

(5) Display employee no, name and department details of those employee whose department lies in (10,20).

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10 ▾

```
select emp_no,emp_name,dept_name
from employee
where dept_no in (10,20);
```

Results   Explain   Describe   Saved SQL   Histo

EMP_NO	EMP_NAME	DEPT_NAME
101	Smith	machine learning
103	Adama	machine learning
105	Anita	big data analytics
106	Sneha	big data analytics

(6) Display the non-null values of employees.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select * from employee
where emp_comm is not null
and manager_id is not null;
```

Results   Explain   Describe   Saved SQL   History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97

(7) Display name of customer along with its account no (both column should be displayed as one) whose amount is not equal to 8000 Rs.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select concat(A_NO,CNAME) from depositt
where AMOUNT != 8000;
```

Results   Explain   Describe   Saved SQL   Histor

CONCAT(A_NO,CNAME)
101Anil
102sunil
103jay
105keyur
106mayur

(8) Display the content of job details with minimum salary either 2000 or 4000.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
select job_id,job_title from job
where MIN_SAL=2000 or
MIN_SAL=4000;
```

Results   **Explain**   **Describe**   **Saved SQ**

JOB_ID	JOB_TITLE
it_prog	Programmer

To study various options of LIKE predicate

(1) Display all employee whose name start with 'A' and third character is ''a'.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▼

```
select * from employee
where EMP_NAME like 'A_a%';
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

(2) Display name, number and salary of those employees whose name is 5 characters long and first three characters are 'Ani'

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▼

```
select emp_no,emp_name,emp_sal
from employee
where emp_name like 'Ani__';
```

Results Explain Describe Saved SQL

EMP_NO	EMP_NAME	EMP_SAL
105	Anita	5000

(3) Display all information of employee whose second character of name is either 'M' or 'N'.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select * from employee
where emp_name like '_m%'
or emp_name like '_n%';
```

Results   Explain   Describe   Saved SQL   History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	20	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

(4) Find the list of all customer name whose branch is in 'andheri' or 'dadar' or 'virar'.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select * from depositt
where bname='andheri'
or bname='virar';
```

Results   Explain   Describe   Saved SQL   History

A_NO	CNAME	BNAME	AMOUNT	A_DATE
101	Anil	andheri	7000	01-JAN-06
102	sunil	virar	5000	15-JUL-06
104	vijay	andheri	8000	17-SEP-06

(5) Display the job name whose first three character in job id field is 'FI_'

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
select job_title from job
where job_id like 'fi_%';
```

Results   Explain   Describe   S:

JOB_TITLE
Finance manager
Account

(6) Display the title/name of job who's last three character are '_MGR' and their maximum salary is greater than Rs 12000

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
select job_title from job
where job_id like '%mgr'
and max_sal>12000;
```

Results   Explain   Describe   S

JOB_TITLE
Marketing manager

(7) **Display the non-null values of employees and also employee name second character should be 'n' and string should be 5-character long.**

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select * from employee
where emp_name like '_n___'
and emp_comm is not null
and manager_id is not null;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97

(8) **Display the null values of employee and also employee name's third character should be 'a'.**

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select * from employee
where emp_name like'__a%'
and emp_comm is null;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

(9) **What will be output if you are giving LIKE predicate as '%_%' ESCAPE '\'**

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
select * from employee
where job_id like '%\_%' ESCAPE '\' ;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	20	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

CONCLUSION:

In the above practical, we learned DDL,DML and the concept of 'LIKE'

PRACTICAL-5

To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables.

(1) List total deposit from deposit.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
select SUM(amount) from deposit;
```

Results   Explain   Describe   Saved SQL

SUM(AMOUNT)
28700

(2) List total loan from karolbagh branch

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
select SUM(amount) from borrow
where bname='KAROLBAGH';
```

Results   Explain   Describe   Saved S

SUM(AMOUNT)
-

(3) Give maximum loan from branch vrce

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
select MAX(amount) from borrow
where bname='VRCE';
```

Results Explain Describe Saved S

MAX(AMOUNT)
1000

(4) Count total number of customers

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
select COUNT(cname) from deposit;
```

Results Explain Describe Saved SQL

COUNT(CNAME)
9

(5) Count total number of customer's cities

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
select COUNT(bname) from deposit;
```

Results Explain Describe Saved SQL

COUNT(BNAME)
9

(6) Create table supplier from employee with all the columns

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
CREATE TABLE supplier AS SELECT * FROM employee;
```

Results Explain Describe Saved SQL History

```
Table created.
```

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

SELECT * FROM supplier;

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	20	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

(7) Create table sup1 from employee with first two columns.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
CREATE TABLE sup1
AS (SELECT emp_no,emp_name FROM employee);
```

Results Explain Describe Saved SQL History

Table created.

(8) Create table sup2 from employee with no data

Table created.

(9) Insert the data into sup2 from employee whose second character should be 'n' and string should be 5 characters long in employee name field.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
INSERT INTO sup2
SELECT * FROM EMPLOYEE
WHERE emp_name LIKE '_n___';

SELECT * FROM sup2;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97

(10)   Delete all the rows from sup1.

User: 19DCS098

Home > SQL > **SQL Comm**

☑ Autocommit Displa

```
DELETE FROM sup1;
SELECT * FROM sup1;
```

Results **Explain** Desc

no data found

(11)   Delete the detail of supplier whose sup_no is 103

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
ALTER TABLE supplier RENAME COLUMN emp_NO TO sup_no;

DELETE FROM supplier WHERE sup_no=103;

SELECT * FROM supplier;
```

Results Explain Describe Saved SQL History

SUP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	20	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96
104	Aman	3000	-	15	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

(12)   Rename the table sup2.

Home > SQL > SQL Commands

☑ Autocommit   Display 10 ⌄

```
ALTER TABLE sup2
RENAME TO supplier2;

SELECT * FROM supplier2;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97

(13)   Destroy table sup1 with all the data.

User: 19DCS098

Home > SQL > SQL C

☑ Autocommit   Di

```
DROP TABLE sup1;
```

Results   **Explain**

Table dropped.

(14)Update the value dept_no to 10 where second character of emp.name is 'm'

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▾

```
UPDATE employee SET dept_no= 10 WHERE emp_name LIKE '_m%';

SELECT * FROM employee;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

Update the value of employee name whose employee number is 103.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▾

```
UPDATE EMPLOYEE SET emp_name = 'mohit' WHERE emp_no=103;
SELECT * FROM employee;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97

(14)   Add one column phone to employee with size of column is 10.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ▾

```
ALTER TABLE EMPLOYEE ADD phone_number NUMBER(10);

DESC employee;
```

Results   Explain   **Describe**   Saved SQL   History

Object Type **TABLE** Object **EMPLOYEE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable
EMPLOYEE	EMP_NO	Number	-	3	0	-	✔
	EMP_NAME	Varchar2	30	-	-	-	✔
	EMP_SAL	Number	-	8	2	-	✔
	EMP_COMM	Number	-	6	1	-	✔
	DEPT_NO	Number	-	3	0	-	✔
	L_NAME	Varchar2	30	-	-	-	✔
	DEPT_NAME	Varchar2	30	-	-	-	✔
	JOB_ID	Varchar2	15	-	-	-	✔
	LOCATION	Varchar2	15	-	-	-	✔
	MANAGER_ID	Number	-	5	0	-	✔
	HIREDATE	Date	7	-	-	-	✔
	PHONE_NUMBER	Number	-	10	0	-	✔

(15) Modify the column emp_name to hold maximum of 30 characters

User: 19DCS098

Home > SQL > **SQL Commands**

☐ Autocommit Display 10 ▾

```
ALTER TABLE EMPLOYEE MODIFY emp_name VARCHAR(30);

DESC EMPLOYEE;
```

Results   Explain   **Describe**   Saved SQL   History

Object Type **TABLE** Object **EMPLOYEE**

Table	Column	Data Type	Length	Precision
EMPLOYEE	EMP_NO	Number	-	3
	EMP_NAME	Varchar2	30	-
	EMP_SAL	Number	-	8
	EMP_COMM	Number	-	6

(16)   Count the total no as well as distinct rows in dept_no column with a condition of salary greater than 1000 of employee

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   Display 10 ⌄

```
SELECT COUNT(*) AS TOTAL,COUNT(DISTINCT(dept_no)) AS total_rows
FROM employee
WHERE emp_sal>1000;
```

Results Explain Describe Saved SQL History

TOTAL	TOTAL_ROWS
6	4

(17)   Display the detail of all employees in ascending order, descending order of their name and no

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
SELECT * FROM employee
ORDER BY emp_no ASC;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
SELECT * FROM employee
ORDER BY emp_no DESC;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
SELECT * FROM employee
ORDER BY emp_name ASC;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
SELECT * FROM employee
ORDER BY emp_name DESC;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-

(18) Display the dept_no in ascending order and accordingly display emp_comm in descending order

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
SELECT * FROM EMPLOYEE
ORDER BY dept_no ASC;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
SELECT * FROM EMPLOYEE
ORDER BY emp_comm DESC;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
103	mohit	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-

(19)   Update the value of emp_comm to 500 where dept_no is 20.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
UPDATE  employee
SET emp_comm=500
WHERE dept_no=20;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
103	mohit	1100	500	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-

(20)   Display the emp_comm in ascending order with null value first and accordingly sort employee salary in descending order

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ▾

```
SELECT emp_comm FROM employee
ORDER BY emp_comm ASC NULLS FIRST,
emp_sal DESC;
```

Results Explain Describe Saved SQL

EMP_COMM
-
-
-
300
500
24500
50000

(21)   Display the emp_comm in ascending order with null value last and accordingly sort emp_no in descending order

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10 ⌄

```
SELECT emp_comm FROM employee
ORDER BY emp_comm NULLS LAST,
emp_no DESC;
```

Results   Explain   Describe   Saved S

EMP_COMM
300
500
24500
50000
-
-
-

CONCLUSION:

In the above practical, we learned the various data manipulation commands and aggregate functions.

PRACTICAL-6

To study Single-row functions.

(1) Write a query to display the current date. Label the column Date

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

SELECT CURRENT_DATE "DATE" FROM DUAL;

Results Explain Describe Saved SQL His

DATE
17-MAR-21

(2) For each employee, display the employee number, salary, and salary increased by 15% and expressed as a whole number. Label the column New Salary

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

SELECT emp_no,emp_sal,
ROUND(emp_sal+ (emp_sal*0.15))
AS new_sal
FROM employee;

Results Explain Describe Saved SC

EMP_NO	EMP_SAL	NEW_SAL
101	800	920
102	1600	1840
103	1100	1265
104	3000	3450
105	5000	5750
106	2450	2818
107	2975	3421

(3) Modify your query no (2) to add a column that subtracts the old salary from the new salary. Label the column Increase

(4) Write a query that displays the employee's names with the first letter capitalized and all other letters lowercase, and the length of the names, for all employees whose name starts with J, A, or M. Give each column an appropriate label. Sort the results by the employees' last names.

(5) Write a query that produces the following for each employee:

earns monthly

User: 19DCS098

Home > SQL > **SQL Commands**

☑Autocommit **Display** 10 ∨

```
SELECT CONCAT(CONCAT(emp_name,' earns '),
CONCAT(emp_sal,' monthly')) AS INFORMATION
FROM employee;
```

Results Explain Describe Saved SQL History

INFORMATION
Smith earns 800 monthly
Snehal earns 1600 monthly
mohit earns 1100 monthly
Aman earns 3000 monthly
Anita earns 5000 monthly
Sneha earns 2450 monthly
Anamika earns 2975 monthly

(6) Display the name, date, number of months employed and day of the week on which the employee has started. Order the results by the day of the week starting with Monday

(7) Write a query to calculate the annual compensation of all employees (sal +comm.).

CONCLUSION:

In the above practical, we can learned the concept and application of single row functions.

PRACTICAL-7

Displaying data from Multiple Tables (join)

(1)Give details of customers ANIL.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display [10 ▼]

```
SELECT DEPOSIT.ACTNO,DEPOSIT.CNAME,DEPOSIT.BNAME,DEPOSIT.AMOUNT,DEPOSIT.ADATE,BRANCH.BNAME,BRANCH.CITY
FROM DEPOSIT JOIN BRANCH
ON DEPOSIT.BNAME=BRANCH.BNAME
JOIN CUSTOMERS ON DEPOSIT.CNAME=CUSTOMERS.CNAME
JOIN BORROW ON DEPOSIT.CNAME=BORROW.CNAME
WHERE CNAME='ANIL';
```

Results Explain Describe Saved SQL History

ACTNO	CNAME	BNAME	AMOUNT	ADATE	BNAME	CITY
100	ANIL	VRCE	1000	01-MAR-95	VRCE	NAGPUR

(2)Give name of customer who are borrowers and depositors and having living city Nagpur

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** [10 ▼]

```
SELECT DEPOSIT.CNAME
FROM DEPOSIT
JOIN CUSTOMERS ON DEPOSIT.CNAME=CUSTOMERS.CNAME
JOIN BORROW ON DEPOSIT.CNAME=BORROW.CNAME
WHERE CITY='NAGPUR';
```

Results Explain Describe Saved SQL History

CNAME
MADHURI

3) Give city as their city name of customers having same living branch.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
SELECT CNAME, CUSTOMERS.CITY
FROM DEPOSIT
JOIN BRANCH ON DEPOSIT.BNAME=BRANCH.BNAME
JOIN CUSTOMERS ON DEPOSIT.CNAME=CUSTOMERS.CNAME
WHERE BRANCH.CITY=CUSTOMERS.CITY;
```

Results Explain Describe Saved SQL History

CNAME	CITY
SHIVANI	BOMBAY

4) Write a query to display the last name, department number, and department name for all employees

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
SELECT l_name,dept_no,dept_name
FROM employee;
```

Results Explain Describe Saved SQL Hi

L_NAME	DEPT_NO	DEPT_NAME
shah	10	machine learning
gupta	25	data science
wales	20	machine learning
sharma	10	virtual reality
patel	10	big data analytics
joseph	10	big data analytics
jha	30	artificial intelligence

5) Create a unique listing of all jobs that are in department 30. Include the location of the department in the output

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** [10 ▾]

```
SELECT job_title AS "job",location
FROM employee
JOIN job ON employee.job_id=job.job_id
WHERE dept_no=30;
```

Results Explain Describe Saved SQL Histor

Job	LOCATION
Programmer	new york

6) Write a query to display the employee name, department number, and department name for all employees who work in NEW YORK.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** [10 ▾]

```
SELECT emp_name,dept_no,dept_name
FROM employee
WHERE location='new york';
```

Results Explain Describe Saved SQL Histo

EMP_NAME	DEPT_NO	DEPT_NAME
Anamika	30	artificial intelligence

7) Display the employee last name and employee number along with their manager's last name and manager number. Label the columns Employee, Emp#, Manager, and Mgr#, respectively.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
SELECT emp.l_name "employee",emp.emp_no "emp#",mgr.l_name "manager",mgr.emp_no "mgr#"
FROM employee emp,employee mgr
WHERE emp.manager_id=mgr.emp_no;
```

Results Explain Describe Saved SQL History

Employee	Emp#	Manager	Mgr#
joseph	106	patel	105
wales	103	patel	105
shah	101	patel	105
patel	105	jha	107

8) Create a query to display the name and hire date of any employee hired after employee "smith"

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ⌄

```
SELECT emp_name, hiredate
FROM employee
WHERE hiredate >
(SELECT hiredate FROM employee WHERE emp_name='Smith')
```

Results Explain Describe Saved SQL History

EMP_NAME	HIREDATE
Aman	02-OCT-97
Anita	01-JAN-98
Sneha	26-SEP-97
Anamika	15-JUL-97

CONCLUSION:

In the above Practical, we learned the concept of JOINS.

Practical-8

To apply the concept of Aggregating Data using Group functions.

1) **List total deposit of customer having account date after 1-jan-96.**

2) **List total deposit of customers living in city Nagpur.**

3) List maximum deposit of customers living in bombay.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10 ⌄

```
SELECT MAX(amount) AS "max deposit"
FROM DEPOSIT
JOIN CUSTOMERS ON DEPOSIT.CNAME=CUSTOMERS.CNAME
WHERE CITY='BOMBAY';
```

Results   Explain   Describe   Saved SQL   History

Max Deposit
5000

4) Display the highest, lowest, sum, and average salary of all employees. Label the columns Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10 ⌄

```
SELECT MAX(emp_sal) "maximum",MIN(emp_sal) "minimum",
SUM(emp_sal) "sum",ROUND(AVG(emp_sal)) "average salary"
FROM employee;
```

Results   Explain   Describe   Saved SQL   History

Maximum	Minimum	Sum	Average Salary
5000	800	16925	2418

5) Write a query that displays the difference between the highest and lowest salaries. Label the column DIFFERENCE.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10 ⌄

```
SELECT MAX(emp_sal)-MIN(emp_sal) "difference"
FROM EMPLOYEE;
```

Results   Explain   Describe   Saved SQL   History

Difference
4200

6) Create a query that will display the total number of employees and, of that total, the number of employees hired in 1995, 1996, 1997, and 1998

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   Display 10

```
SELECT TO_CHAR(HIREDATE,'YYYY') "year",
COUNT(*) "employees"
FROM employee
GROUP BY TO_CHAR(HIREDATE,'YYYY');
```

Results   Explain   Describe   Saved SQL   History

Year	Employees
1997	3
1995	1
1996	2
1998	1

7) Find the average salaries for each department without displaying the respective department numbers.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   Display 10

```
SELECT AVG(emp_sal) "salary"
FROM employee
GROUP BY dept_no;
```

Results   Explain   Describe   Saved S

Salary
1600
2975
1100
2812.5

8) Write a query to display the total salary being paid to each job title, within each department.

User: 19DCS098

Home > SQL > **SQL Commands**

☑Autocommit   Display [10   ˅]

```
SELECT SUM(emp_sal) "salary"
FROM employee
GROUP BY dept_no;
```

Results   Explain   Describe   Saved

Salary
1600
2975
1100
11250

9) Find the average salaries > 2000 for each department without displaying the respective department numbers.

User: 19DCS098

Home > SQL > **SQL Commands**

☑Autocommit   Display [10   ˅]

```
SELECT AVG(emp_sal) "salary"
FROM employee
GROUP BY dept_no HAVING AVG(emp_sal)>2000;
```

Results   Explain   Describe   Saved SQL   History

Salary
2975
2812.5

11)List the branches having sum of deposit more than 5000 and located in city bombay.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   **Display** 10

```
SELECT DEPOSIT.BNAME
FROM DEPOSIT,BRANCH
WHERE BRANCH.BNAME=DEPOSIT.BNAME
AND BRANCH.CITY='BOMBAY'
GROUP BY DEPOSIT.BNAME
HAVING  SUM(DEPOSIT.AMOUNT)>5000;
```

Results   **Explain**   **Describe**   **Saved SQL**

BNAME
POWAI

CONCLUSION:

In the above practical, we learned to aggregate data by using GROUP BY.

PRACTICAL-9

To solve queries using the concept of sub query

(1) Write a query to display the last name and hire date of any employee in the same department as smith. Exclude smith

(2) Give name of customers who are depositors having same branch city of mr. sunil.

(3) Give deposit details and loan details of customer in same city where pramod is living

(4) Create a query to display the employee numbers and last names of all employees who earn more than the average salary. Sort the results in ascending order of salary.

(5) Give names of depositors having same living city as mr. anil and having deposit amount greater than 2000

(6) Display the last name and salary of every employee who reports to ford.

(7) Display the department number, name, and job for every employee in the Accounting department.

(8) **List the name of branch having highest number of depositors**.

Home > SQL > SQL Commands

☑ Autocommit Display 10 ⌄

```
SELECT bname FROM deposit
GROUP BY bname HAVING COUNT(bname)=
(SELECT MAX(COUNT(bname)) FROM deposit GROUP BY bname);
```

Results Explain Describe Saved SQL History

BNAME
VRCE
AJNI
KAROLBAGH
M.G.ROAD
VIRAR
POWAI
CHANDI
ANDHERI
NEHRU PLACE

(9) **Give the name of cities where in which the maximum numbers of branches are located.**

Home > SQL > SQL Commands

☑ Autocommit Display 10 ⌄

```
SELECT CITY FROM BRANCH GROUP BY CITY HAVING
COUNT(BNAME)=(SELECT MAX(COUNT(BNAME)) FROM BRANCH GROUP BY
CITY);
```

Results Explain Describe Saved SQL History

CITY
NAGPUR
DELHI
BOMBAY

(10)Give name of customers living in same city where maximum depositors are located.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit   Display 10

```
SELECT CNAME FROM CUSTOMERS WHERE CITY IN (SELECT CITY
FROM BRANCH WHERE BNAME IN (SELECT BNAME FROM DEPOSIT GROUP BY
BNAME HAVING COUNT(BNAME)=(SELECT MAX(COUNT(BNAME)) FROM
DEPOSIT GROUP BY BNAME)));
```

Results   Explain   Describe   Saved SQL   History

CNAME
SANDIP
PRAMOD
SUNIL
MADHURI
NAREN
KRANTI
SHIVANI

CONCLUSION:

We learned the concept of sub query.

PRACTICAL-10

Manipulating Data

(1) Give 10% interest to all depositors

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
ALTER TABLE deposit ADD interest NUMBER(8);

UPDATE deposit SET interest=ROUND(0.10*amount);

SELECT * FROM deposit;
```

Results Explain Describe Saved SQL History

ACTNO	CNAME	BNAME	AMOUNT	ADATE	INTEREST
100	ANIL	VRCE	1000	01-MAR-95	100
101	SUNIL	AJNI	5000	04-JAN-96	500
102	MEHUL	KAROLBAGH	3500	17-NOV-95	350
104	MADHURI	CHANDI	1200	17-DEC-95	120
105	PRAMOD	M.G.ROAD	3000	27-MAR-96	300
106	SANDIP	ANDHERI	2000	31-MAR-96	200
107	SHIVANI	VIRAR	1000	05-SEP-95	100
108	KRANTI	NEHRU PLACE	5000	02-JUL-95	500
109	MINU	POWAI	7000	10-AUG-95	700

(2) Give 10% interest to all depositors having branch vrce

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10

```
UPDATE deposit SET interest= interest+ROUND(.10*amount)
WHERE bname='VRCE';
SELECT * FROM deposit;
```

Results Explain Describe Saved SQL History

ACTNO	CNAME	BNAME	AMOUNT	ADATE	INTEREST
100	ANIL	VRCE	1000	01-MAR-95	200
101	SUNIL	AJNI	5000	04-JAN-96	500
102	MEHUL	KAROLBAGH	3500	17-NOV-95	350
104	MADHURI	CHANDI	1200	17-DEC-95	120
105	PRAMOD	M.G.ROAD	3000	27-MAR-96	300
106	SANDIP	ANDHERI	2000	31-MAR-96	200
107	SHIVANI	VIRAR	1000	05-SEP-95	100
108	KRANTI	NEHRU PLACE	5000	02-JUL-95	500
109	MINU	POWAI	7000	10-AUG-95	700

(3) Give 10% interest to all depositors living in nagpur and having branch city Bombay

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
SELECT D.ACTNO , D.CNAME , D.BNAME , (D.AMOUNT * 0.10 + D.AMOUNT) "NEW AMOUNT"
FROM DEPOSIT D INNER JOIN CUSTOMERS C ON C.CNAME = D.CNAME
INNER JOIN BRANCH B ON D.BNAME=B.BNAME
WHERE B.CITY = 'BOMBAY'  AND C.CITY = 'NAGPUR';
```

Results Explain Describe Saved SQL History

ACTNO	CNAME	BNAME	NEW AMOUNT
106	SANDIP	ANDHERI	2200

(4) Write a query which changes the department number of all employees with empno 7788's job to employee 7844'current department number.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
UPDATE employee SET
dept_no=200 WHERE dept_no=105;

SELECT * FROM employee;
```

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	PHONE_NUMBER
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	-
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	-
103	mohit	1100	500	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	-
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	-
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	-
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	-
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	-

(5) Transfer 10 Rs from account of anil to sunil if both are having same branch.

User: 19DCS098

Home > SQL > **SQL Commands**

☑ Autocommit Display 10 ⌄

```
UPDATE deposit SET amount=amount-10
WHERE cname='ANIL';

UPDATE deposit SET amount=amount+10
WHERE cname='SUNIL';
```

Results Explain Describe Saved SQL History

ACTNO	CNAME	BNAME	AMOUNT	ADATE	INTEREST
100	ANIL	VRCE	990	01-MAR-95	200
101	SUNIL	AJNI	5010	04-JAN-96	500
102	MEHUL	KAROLBAGH	3500	17-NOV-95	350
104	MADHURI	CHANDI	1200	17-DEC-95	120
105	PRAMOD	M.G.ROAD	3000	27-MAR-96	300
106	SANDIP	ANDHERI	2000	31-MAR-96	200
107	SHIVANI	VIRAR	1000	05-SEP-95	100
108	KRANTI	NEHRU PLACE	5000	02-JUL-95	500
109	MINU	POWAI	7000	10-AUG-95	700

(6) Delete depositors of branches having number of customers between 1 to 3.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10 ⌄

```
DELETE FROM deposit WHERE cname IN (SELECT cname FROM deposit GROUP BY cname
HAVING count(cname) BETWEEN 1 AND 3);
```

Results   Explain   Describe   Saved SQL   History

9 row(s) deleted.

(7) Delete deposit of vijay.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10 ⌄

```
DELETE FROM deposit
WHERE cname='VIJAY';
```

Results   Explain   Describe   Saved SQL   His

0 row(s) deleted.

(8) Delete borrower of branches having average loan less than 1000

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit   Display 10 ⌄

```
DELETE FROM borrow
WHERE cname IN
(SELECT cname FROM borrow GROUP BY cname
HAVING AVG(borrow.AMOUNT)<1000);
```

Results   Explain   Describe   Saved SQL   History

0 row(s) deleted.

CONCLUSION:

In the above practical, we learned the concept of data manipulation.

PRACTICAL-11

Add and Remove constraint

(1)Add primary key constraint on job_id in job table.

(2)Add foreign key constraint on employee table referencing job table.

(4)Remove primary key constraint on job_id

ALTER TABLE job DROP CONSTRAINT job_id ;

(5)Remove foreign key constraint on employee table

ALTER TABLE EMPLOYEE DROP CONSTRAINT job_id ;

CONCLUSION:

In the above practical, we learned how to add and remove constraints.

PRACTICAL-12

Data Dictionary and E-R Diagram

Considering the descriptions given above, draw an ER diagram for the database, representing entities, attributes, and relationships. Hint: Pay attention to clear identification of different kinds of attributes (e.g. multi-valued, derived, and Primary key), the total participation for the relationship sets and generalization (or specialization) of entities
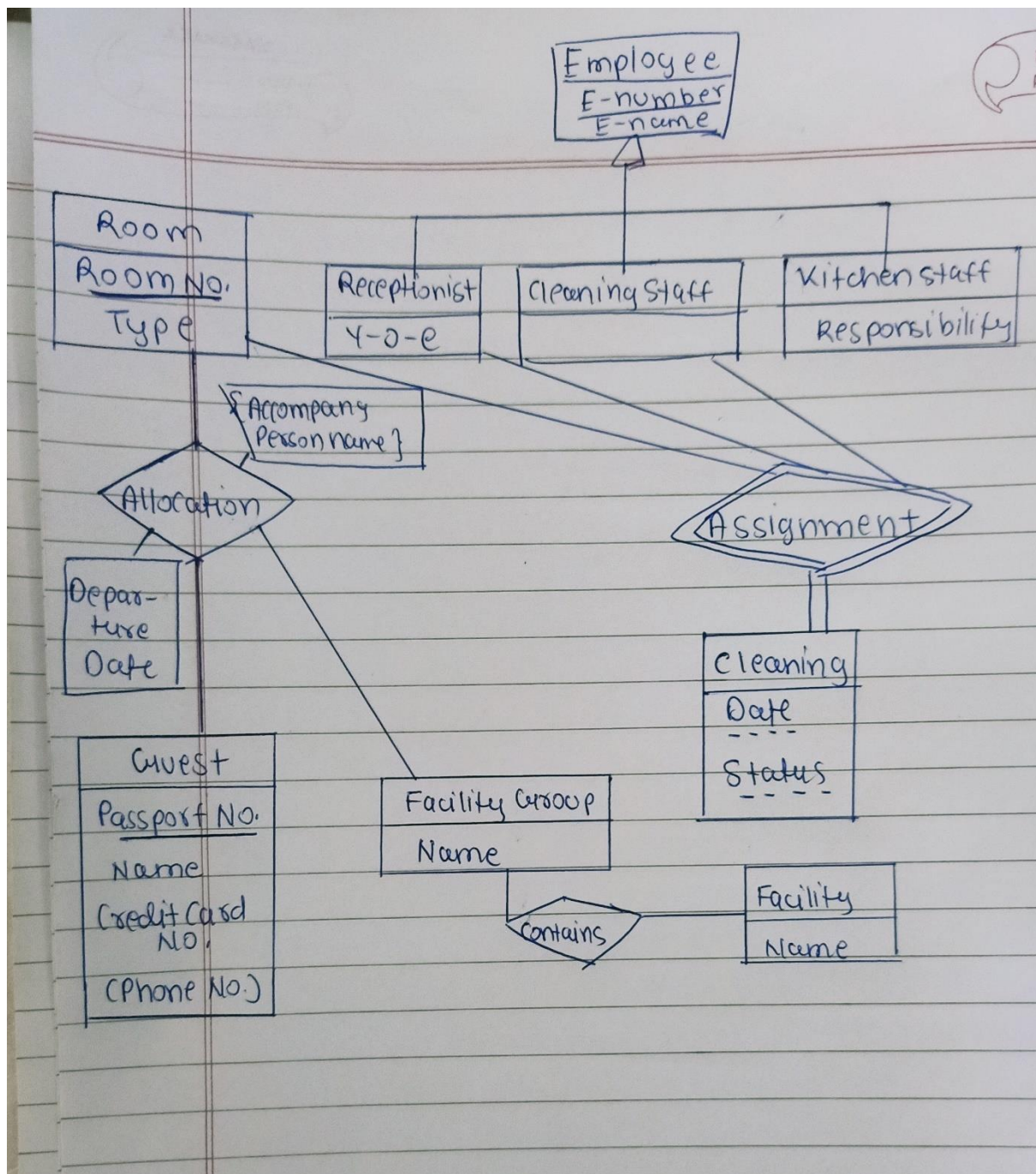
CONCLUSION:

In the above practical, we learned the concept of E-R diagram.

PRACTICAL-13

Write a PL-SQL block to find Sum and average of three numbers.

```
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Home > SQL > SQL Commands

☑ Autocommit   Display 10 ▾

DECLARE
a NUMBER:=20;
b NUMBER:=30;
c NUMBER:=50;
s NUMBER;
ag NUMBER;
BEGIN
s :=a+b+c;
ag := (a+b+c) / 3;
DBMS_OUTPUT.PUT_LINE('sum of three numbers is : '||s);
DBMS_OUTPUT.PUT_LINE('average of three numbers is : '||ag);
```

Results   Explain   Describe   Saved SQL   History

```
sum of three numbers is : 100
average of three numbers is : 33.333333333333333333333333333333333333

Statement processed.
```

CONCLUSION:

In the above practical, we learned the concept of PL/SQL

PRACTICAL-14

Find the factorial of a number in pl/sql using for, While and Simple Loop

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Home > SQL > SQL Commands

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```
DECLARE
a NUMBER:=5;
fact NUMBER:=1;
BEGIN
WHILE a>0
LOOP
fact:=fact*a;
a:=a-1;
END LOOP;
DBMS_OUTPUT.PUT_LINE('FACTORIAL IS  : '||fact);
END;
```

Results Explain Describe Saved SQL History

```
FACTORIAL IS  : 120
```

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Home > SQL > SQL Commands

☑ Autocommit **Display** 10

```
DECLARE
a NUMBER:=6;
fact NUMBER:=1;
BEGIN
FOR i IN 1..a
LOOP
fact:=fact*i;
END LOOP;
DBMS_OUTPUT.PUT_LINE('FACTORIAL IS  : '||fact);
END;
```

Results Explain Describe Saved SQL History

```
FACTORIAL IS  : 720
```

CONCLUSION:

In the above practical, we learned the concept of loops using PL/SQL

PRACTICAL-15

To understand the concept of "select into" and "% type" attribute.

Create an EMPLOYEES table that is a replica of the EMP table. Add a new column, STARS, of VARCHAR2 data type and length of 50 to the EMPLOYEES table for storing asterisk (*). Create a PL/SQL block that rewards an employee by appending an asterisk in the STARS column for every Rs1000/- of the employee's salary. For example, if the employee has a salary amount of Rs8000/-, the string of asterisks should contain eight asterisks. If the employee has a salary amount of Rs12500/-, the string of asterisks should contain 13 asterisks. Update the STARS column for the employee with the string of asterisks.

PROGRAM CODE:

```
DECLARE
EMPS_NO EMPLOYEE.EMP_NO%TYPE;
EMPS_NAME EMPLOYEE.EMP_NAME%TYPE;
EMPS_SAL EMPLOYEE.EMP_SAL%TYPE;
EMPS_COMM EMPLOYEE.EMP_COMM%TYPE;
DEPT_NO1 EMPLOYEE.DEPT_NO%TYPE;
EMPS_STAR VARCHAR2(50);
i number;
BEGIN
for i in 101..107
loop
select NVL( ROUND (EMP_SAL/1000),0) INTO EMPS_SAL FROM EMPLOYEE WHERE EMP_NO=i;
EMPS_STAR:=NULL;
FOR J IN 1..EMPS_SAL
```

LOOP

EMPS_STAR:=EMPS_STAR || '*' ;

END LOOP;

UPDATE employee SET stars=emps_star WHERE emp_no=i;

END LOOP;

END;

OUTPUT:

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display [10 ▼]

`SELECT * FROM employee;`

Results Explain Describe Saved SQL History

EMP_NO	EMP_NAME	EMP_SAL	EMP_COMM	DEPT_NO	L_NAME	DEPT_NAME	JOB_ID	LOCATION	MANAGER_ID	HIREDATE	STARS
101	Smith	800	-	10	shah	machine learning	fi_mgr	toronto	105	09-AUG-96	*
102	Snehal	1600	300	25	gupta	data science	lec	las vegas	-	14-MAR-96	**
103	mohit	1100	500	20	wales	machine learning	mk_mgr	ontario	105	30-NOV-95	*
104	Aman	3000	-	10	sharma	virtual reality	comp_op	mexico	12	02-OCT-97	***
105	Anita	5000	50000	10	patel	big data analytics	comp_op	germany	107	01-JAN-98	*****
106	Sneha	2450	24500	10	joseph	big data analytics	fi_acc	melbourne	105	26-SEP-97	**
107	Anamika	2975	-	30	jha	artificial intelligence	it_prog	new york	-	15-JUL-97	***

CONCLUSION:

In the above practical, we learned the concept of "select into" and "% type" attribute.

PRACTICAL-16

To perform the concept of cursor (a) Display all the information of EMP table using %ROWTYPE.

DECLARE

employee_rec employee%rowtype;

CURSOR c_employee is

SELECT * FROM employee;

BEGIN

OPEN c_employee;

LOOP

FETCH c_employee into employee_rec;

EXIT WHEN c_employee%notfound;

dbms_output.put_line('employee ID: ' || employee_rec.emp_no || ' employee Name: ' || employee_rec.emp_name || ' employee Salary: ' || employee_rec.emp_sal);

END LOOP;

CLOSE c_employee;

END;

```
User: 19DCS098

Home > SQL > SQL Commands

☑Autocommit  Display 10    ⌄

employee_rec_employee%rowtype;

Results   Explain   Describe   Saved SQL   History


employee ID: 101   employee Name: Smith   employee Salary: 800
employee ID: 102   employee Name: Snehal   employee Salary: 1600
employee ID: 103   employee Name: mohit   employee Salary: 1100
employee ID: 104   employee Name: Aman   employee Salary: 3000
employee ID: 105   employee Name: Anita   employee Salary: 5000
employee ID: 106   employee Name: Sneha   employee Salary: 2450
employee ID: 107   employee Name: Anamika   employee Salary: 2975
```

CONCLUSION:

In the above practical, we learnt the concept of cursor

PRACTICAL-17

Write a PL/SQL block to update the salary where deptno is 10. Generate trigger that will store the original record in other table before updation take place

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Home > SQL > **SQL Commands**

☑ Autocommit **Display** 10 ▾

```
CREATE OR REPLACE TRIGGER a
BEFORE DELETE OR INSERT OR UPDATE ON employee
FOR EACH ROW
WHEN (NEW.EMP_NO > 0)
DECLARE
sal_diff number;
BEGIN
sal_diff:= :new.emp_sal - :old.emp_sal;
dbms_output.put_line('salarydifference'||sal_diff);
END;


UPDATE employee SET emp_sal = emp_sal + 500.00 WHERE dept_no = 10
```

Results Explain Describe Saved SQL History

```
salarydifference500
salarydifference500
salarydifference500
salarydifference500

4 row(s) updated.
```

CONCLUSION:

In the above practical, we learned the concept of cursor.

PRACTICAL-18

To solve queries using the concept of View.

(1) Write a query to create a view for those employee belongs to the location New York.

CONCLUSION:

In the above practical, we learnt the concept of views.

PRACTICAL-19

To perform the concept of function and procedure

Write a PL/SQL block to update the salary of employee specified by empid. If record exist, then update the salary otherwise display appropriate message. Write a function as well as procedure for updating salary.

FUNCTION:

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Home > SQL > SQL Commands

☑ Autocommit Display 10 ⌄   Save

```
CREATE OR REPLACE FUNCTION UPDATE_FUN(emp_id NUMBER,salary NUMBER)
RETURN NUMBER
IS
NUM NUMBER;
BEGIN
 IF(emp_id<108) THEN
    UPDATE EMPLOYEE SET emp_sal=salary WHERE emp_no=emp_id;
    RETURN 1;
    DBMS_OUTPUT.PUT_LINE('ID IS INVALID');
    RETURN 0;
 END IF;
END
```

Results   Explain   Describe   Saved SQL   History

Function created.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit Display 10 ⌄   Save

```
DECLARE
r NUMBER;
BEGIN
r:= UPDATE_FUN(102,20000);
IF(r=1) THEN
DBMS_OUTPUT.PUT_LINE('PROCEDURE IMPLIMENTED SUCESSFULLY');
ELSE
DBMS_OUTPUT.PUT_LINE('INVALID ID');
END IF;
END
```
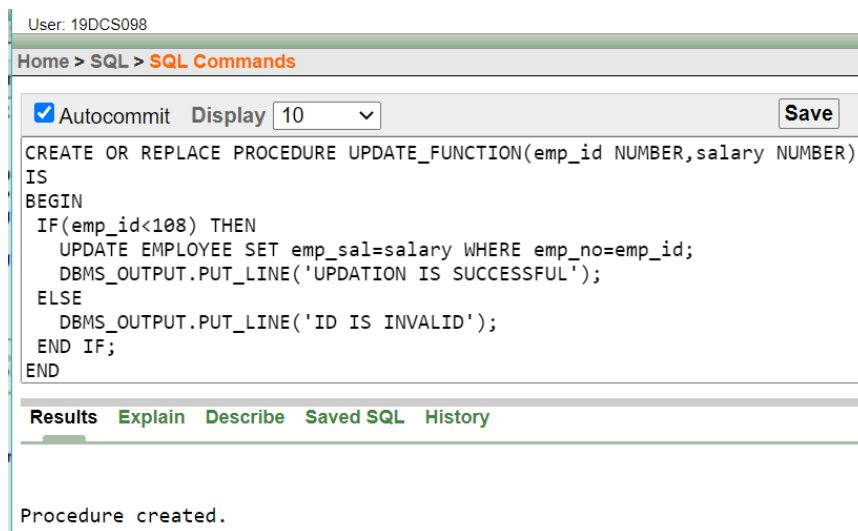
Results   Explain   Describe   Saved SQL   History
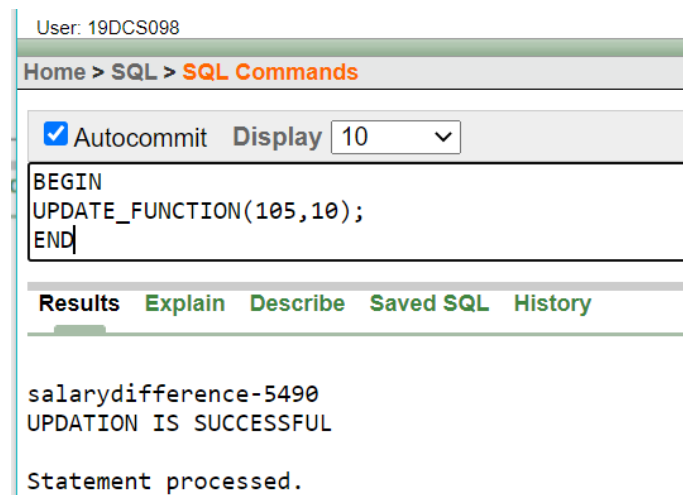
salarydifference18400
PROCEDURE IMPLIMENTED SUCESSFULLY

PROCEDURE:

```
User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit  Display  10      ▽                          Save
CREATE OR REPLACE PROCEDURE UPDATE_FUNCTION(emp_id NUMBER,salary NUMBER)
IS
BEGIN
 IF(emp_id<108) THEN
   UPDATE EMPLOYEE SET emp_sal=salary WHERE emp_no=emp_id;
   DBMS_OUTPUT.PUT_LINE('UPDATION IS SUCCESSFUL');
 ELSE
   DBMS_OUTPUT.PUT_LINE('ID IS INVALID');
 END IF;
END

Results  Explain  Describe  Saved SQL  History


Procedure created.
```

```
User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit  Display  10      ▽
BEGIN
UPDATE_FUNCTION(105,10);
END

Results  Explain  Describe  Saved SQL  History


salarydifference-5490
UPDATION IS SUCCESSFUL

Statement processed.
```

CONCLUSION:

In the above practical, we learned the concept of functions and procedure.

PRACTICAL-20

To perform the concept of exception handler

Write a PL/SQL block that will accept the employee code, amount and operation. Based on specified operation amount is added or deducted from salary of said employee. Use user defined exception handler for handling the exception.

```
SELECT * FROM employee;
DECLARE
CURSOR c IS SELECT * FROM employee;
greater exception Exception;
emp_code employee.emp_no%type :=101;
V c%rowtype;
amount NUMBER(5):=900;
operation NUMBER(2):=1;
newsl NUMBER(5);
BEGIN
OPEN c;
LOOP
FETCH c INTO v;
EXIT WHEN c%notfound;
IF(v.emp_no=emp_code) THEN
CASE OPERATION
  WHEN 0 THEN
  IF amount>v.emp_sal THEN
  RAISE greater exception;
ELSE
  new_sal=v.emp_sal-amount;
```

```
  DBMS_OUTPUT.PUT_LINE('AMOUNT : '||amount);

  DBMS_OUTPUT.PUT_LINE('NEW SALARY : '||new_sal);

END IF;

  WHEN 1 THEN

  new_sal=v.emp_sal+amount;

  DBMS_OUTPUT.PUT_LINE('AMOUNT : '||amount);

  DBMS_OUTPUT.PUT_LINE('NEW SALARY : '||new_sal);

ELSE

  DBMS_OUTPUT.PUT_LINE('INVALID EXPRESSION');

END CASE;

END IF;

END LOOP;

CLOSE c;


exception

WHEN greater exception THEN

DBMS_OUTPUT.PUT_LINE('AMOUNT : '||amount||' BALANCE : '||v.emp_sal);

DBMS_OUTPUT.PUT_LINE('WITHDRAW!!');

WHEN OTHERS THEN DBMS_OUTPUT.PUT_LINE('ERROR');

END;
```

CONCLUSION:

In the above practical, we learned the concept of exceptional handling.

PRACTICAL-21

To perform the concept of package

Create and invoke a package that contains private and public constructs.

User: 19DCS098

Home > SQL > SQL Commands

☑ Autocommit **Display** 10 ⌄

```
CREATE OR REPLACE PACKAGE EMP_package AS
 -- Adds a customer
 PROCEDURE addCustomer(
 EMPS_NO "EMPLOYEE".EMP_NO%TYPE,
 EMPS_NAME "EMPLOYEE".EMP_NAME%TYPE,
 EMPS_SAL "EMPLOYEE".EMP_SAL%TYPE,
 EMPS_COMM "EMPLOYEE".EMP_COMM%TYPE,
 DEPT_NO1 "EMPLOYEE".DEPT_NO%TYPE,
 HIREDATE1 "EMPLOYEE".HIREDATE%TYPE,
 STARZ "EMPLOYEE".STARS%TYPE);
 -- Removes a customer
 PROCEDURE delCustomer(EMPS_NO "EMPLOYEE".EMP_NO%TYPE);
 --Lists all customers
 PROCEDURE listCustomer;

END EMP_package; |
```

Results   Explain   Describe   Saved SQL   History

Package created.

CONCLUSION:

In the above practical, we learnt the concept of packages.