RAJALAKSHMI ENGINEERING COLLEGE
RAJALAKSHMI NAGAR, THANDALAM – 602 105

CS23332 DATABASE MANAGEMENT SYSTEMS LAB

Laboratory Record Note Book

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Semester : IV

Academic Year : 2025 - 2026

RAJALAKSHMI
ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY, Chennai

BONAFIDE CERTIFICATE

NAME ...... HARISH VIDYARTH N ......

ACADEMIC YEAR ..2025-26.. SEMESTER ..... Ĩu ...... BRANCH...CSE - 4.

UNIVERSITY REGISTER No.   211624190103S

Certified that this is the bonafide record of work done by the above student in the
Database
Management System ...... Laboratory during the year 2025 - 2026

Signature of Faculty - in - Charge

Submitted for the Practical Examination held on ....

Internal Examiner   **External Examiner**

INDEX

Name: Harish Vidyarth   Branch: CSE-CS Sec: _____   Roll No: 241901035

Definition of a Relational Database

A relational database is a collection of relations or two-dimensional tables. **Terminologies Used in a Relational Database**

1. A single ▮▮▮ or table representing all data required for a particular employee. Each row should be identified by a primary key which allows no duplicate rows.

2. A ▮▮▮▮▮ or attribute containing the employee number which identifies a unique employee. Here Employee number is designated as a primary key ,must contain a value and must be unique.

3. A column may contain foreign key. Here Dept_ID is a foreign key in employee table and it is a primary key in Department table.

4. A Field can be found at the intersection of a row and column. There can be only one value in it. Also it may have no value. This is called a null value.

▮▮▮▮	FIRST NAME	LAST NAME	EMAIL
▮▮	King	Steven	Sking
▮▮	▮▮▮	▮▮▮	▮▮▮
▮▮	Neena	Bai	Neenba
▮▮	Eex	De Haan	Ldehaan

Relational Database Properties

A relational database :
• Can be accessed and modified by executing structured query language (SQL) statements. •
Contains a collection of tables with no physical pointers.
• Uses a set of operators

Relational Database Management Systems

RDBMS refers to a relational database plus supporting software for managing users and processing SQL queries, performing backups/restores and associated tasks. (Relational Database Management System) Software for storing data using SQL (structured query language). A relational database uses SQL to store data in a series of tables that not only record existing relationships between data items, but which also permit the data to be joined in new relationships. SQL (pronounced 'sequel') is based on a system of algebra developed by E F Codd, an IBM scientist who first defined the relational model in 1970. Relational databases are optimized for storing transactional data, and the majority of modern business software applications therefore use an RDBMS as their data store. The leading RDBMS vendors are Oracle, IBM and Microsoft. The first commercial RDBMS was the Multics Relational Data Store, first sold in 1978. INGRES, Oracle, Sybase, Inc., Microsoft Access, and Microsoft SQL Server are well known database products and companies.Others include PostgreSQL, SQL/DS, and RDB. A relational database

management system (RDBMS) is a program that lets you create, update, and administer a relational database. Most commercial RDBMS's use the Structured Query Language (SQL) to access the database, although SQL was invented after the development of the relational model and is not necessary for its use.

The leading RDBMS products are Oracle, IBM's DB2 and Microsoft's SQL Server. Despite repeated challenges by competing technologies, as well as the claim by some experts that no current RDBMS has fully implemented relational principles, the majority of new corporate databases are still being created and managed with an RDBMS.

SQL Statements

1. Data Retrieval(DR)
2. Data Manipulation Language(DML)
3. Data Definition Language(DDL)
4. Data Control Language(DCL)
5. Transaction Control Language(TCL)

TYPE	STATEMENT	DESCRIPTION
DR	SELECT	Retrieves the data from the database
DML	1.INSERT 2.UPDATE 3.DELETE 4.MERGE	Enter new rows, changes existing rows, removes unwanted rows from tables in the database respectively.
DDL	1.CREATE 2.ALTER 3.DROP 4.RENAME 5.TRUNCATE	Sets up, changes and removes data structures from tables.
TCL	1.COMMIT 2.ROLLBA CK 3.SAVEPOI NT	Manages the changes made by DML statements. Changes to the data can be grouped together into logical transactions.
DCL	1.GRANT 2.RREVOKE	Gives or removes access rights to both the oracle database and the structures within it.

DATA TYPES

1. Character Data types:
• Char – fixed length character string that can varies between 1-2000 bytes • Varchar / Varchar2 – variable length character string, size ranges from 1-4000 bytes.it saves the disk space(only length of the entered value will be assigned as the size of column) • Long - variable length character string, maximum size is 2 GB

2. Number Data types : Can store +ve,-ve,zero,fixed point, floating point with 38 precission. ▪ Number – {p=38,s=0}
▪ Number(p) - fixed point
▪ Number(p,s) –floating point (p=1 to 38,s= -84 to 127)

3. Date Time Data type: used to store date and time in the table.
▪ DB uses its own format of storing in fixed length of 7 bytes for century, date, month, year, hour, minutes, and seconds.
▪ Default data type is "dd-mon-yy"
▪ New Date time data types have been introduced. They are
TIMESTAMP-Date with fractional seconds
INTERVAL YEAR TO MONTH-stored as an interval of years and months INTERVAL

DAY TO SECOND-stored as o interval of days to hour's minutes and seconds **4. Raw**

Data type: used to store byte oriented data like binary data and byte string.

5. Other :
▪ CLOB – stores character object with single byte character.
▪ BLOB – stores large binary objects such as graphics, video, sounds. ▪
BFILE – stores file pointers to the LOB's.

EXERCISE-1
Creating and Managing Tables

OBJECTIVE

After the completion of this exercise, students should be able to do the
following: ⌐ Create tables
⌐ Describing the data types that can be used when specifying column definition ⌐
Alter table definitions
⌐ Drop, rename, and truncate tables

NAMING RULES

Table names and column names:
- Must begin with a letter
- Must be 1-30 characters long
- Must contain only A-Z, a-z, 0-9, _, $, and #
- Must not duplicate the name of another object owned by the same user •
Must not be an oracle server reserve words
- 2 different tables should not have same name.
- Should specify a unique column name.
- Should specify proper data type along with width
- Can include "not null" condition when needed. By default it is 'null'. **The**

CREATE TABLE Statement

Table: Basic unit of storage; composed of rows and columns

Syntax: 1 Create table table_name (column_name1 data_ type (size)
column_name2 data_ type (size)....);

Syntax: 2 Create table table_name (column_name1 data_ type (size) constraints,
column_name2 data_ type constraints ...);

Example:

Create table employlees (employee_id number(6), first_name varchar2(20), ..job_id varchar2(10),
CONSTRAINT emp_emp_id_pk PRIMARY KEY (employlee_id));

Tables Used in this course

Creating a table by using a Sub query

SYNTAX
// CREATE TABLE table_name(column_name type(size)...);

Create table table_name **as** select column_name1,column_name2,......colmn_namen from
table_name where predicate;

AS Subquery
Subquery is the select statement that defines the set of rows to be inserted into the new table.

Example

Create table dept80 as select employee_id, last_name, salary*12 Annsal, hire_date
from employees where dept_id=80;

The ALTER TABLE Statement

The ALTER statement is used to
- Add a new column
- Modify an existing column
- Define a default value to the new column
- Drop a column
- To include or drop integrity constraint.

SYNTAX

ALTER TABLE table_name ADD /MODIFY(Column_name type(size));

ALTER TABLE table_name DROP COLUMN (Column_nname);

ALTER TABLE ADD CONSTRAINT Constraint_name PRIMARY KEY (Colum_Name);
Example:

Alter table dept80 add (jod_id varchar2(9));
Alter table dept80 modify (last_name varchar2(30));
Alter table dept80 drop column job_id;

NOTE: Once the column is dropped it cannot be recovered.

DROPPING A TABLE

- All data and structure in the table is deleted.
- Any pending transactions are committed.
- All indexes are dropped.
- Cannot roll back the drop table statement.

Syntax:

Drop table *tablename*;

Example:

Drop table dept80;

RENAMING A TABLE

To rename a table or view.
Syntax

RENAME old_name to new_name
Example:

Rename dept to detail_dept;

TRUNCATING A TABLE

Removes all rows from the table.

Releases the storage space used by that table.

**Syntax**
TRUNCATE TABLE *table_name*;
Example:

TRUNCATE TABLE copy_emp;

Find the Solution for the following:

Create the following tables with the given structure.

EMPLOYEES TABLE

NAME	NULL?	TYPE
Employee_id	Not null	Number(6)
First_Name		Varchar(20)
Last_Name	Not null	Varchar(25)
Email	Not null	Varchar(25)
Phone_Number		Varchar(20)
Hire_date	Not null	Date
Job_id	Not null	Varchar(10)
Salary		Number(8,2)
Commission_pct		Number(2,2)
Manager_id		Number(6)
Department_id		Number(4)
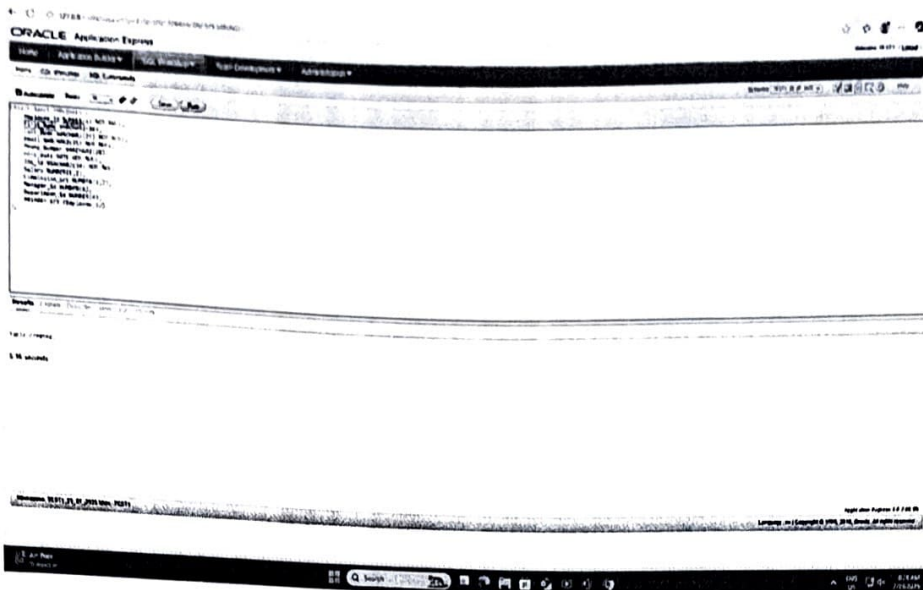
DEPARTMENT TABLE

NAME	NULL?	TYPE
Dept_id	Not null	Number(6)
Dept_name	Not null	Varchar(20)
Manager_id		Number(6)
Location_id		Number(4)
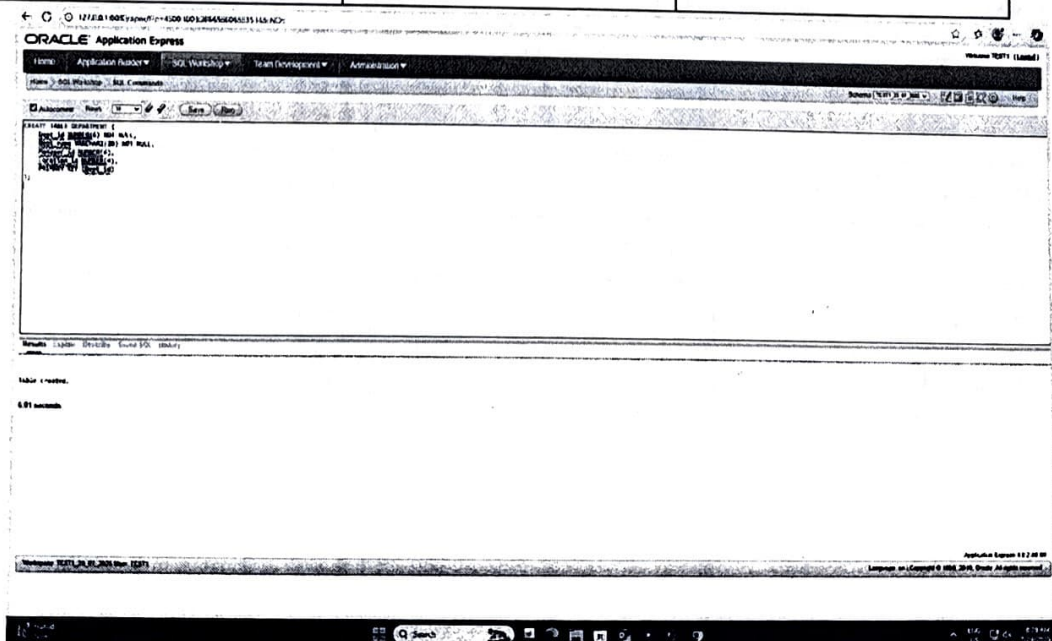
JOB_GRADE TABLE

NAME	NULL?	TYPE
Grade_level		Varchar(2)
Lowest_sal		Number
Highest_sal		Number
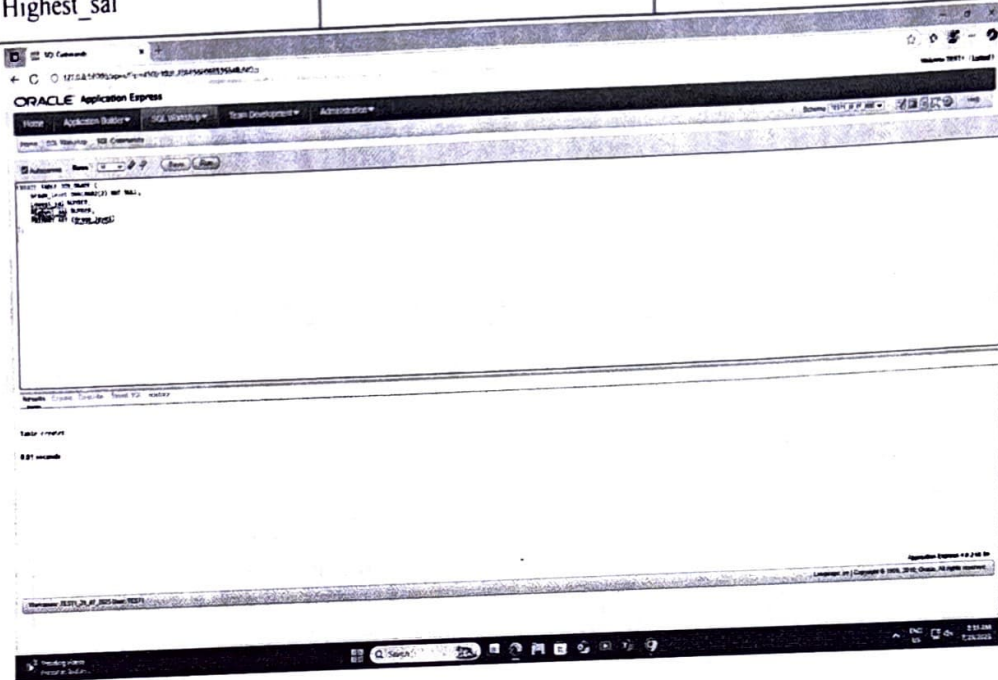
LOCATION TABLE

NAME	NULL?	TYPE
Location_id	Not null	Number(4)
St_addr		Varchar(40)
Postal_code		Varchar(12)
City	Not null	Varchar(30)
State_province		Varchar(25)
Country_id		Char(2)
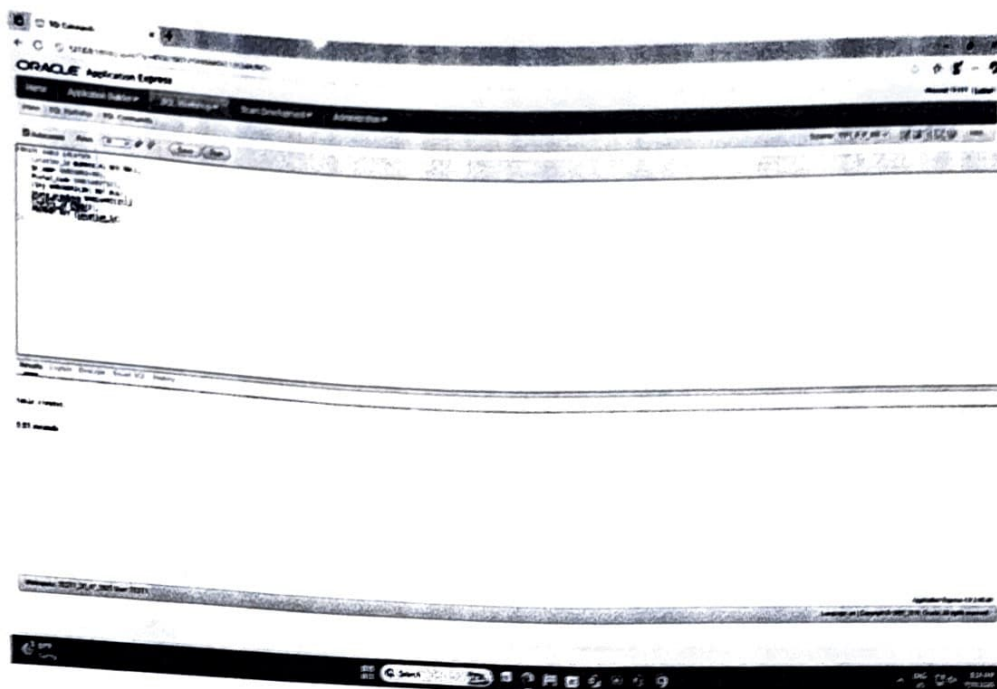
1. Create the DEPT table based on the DEPARTMENT following the table instance chart below. Confirm that the table is created.

Column name	ID	NAME
Key Type		
Nulls/Unique		
FK table		
FK column		
Data Type	Number	Varchar2
Length	7	25
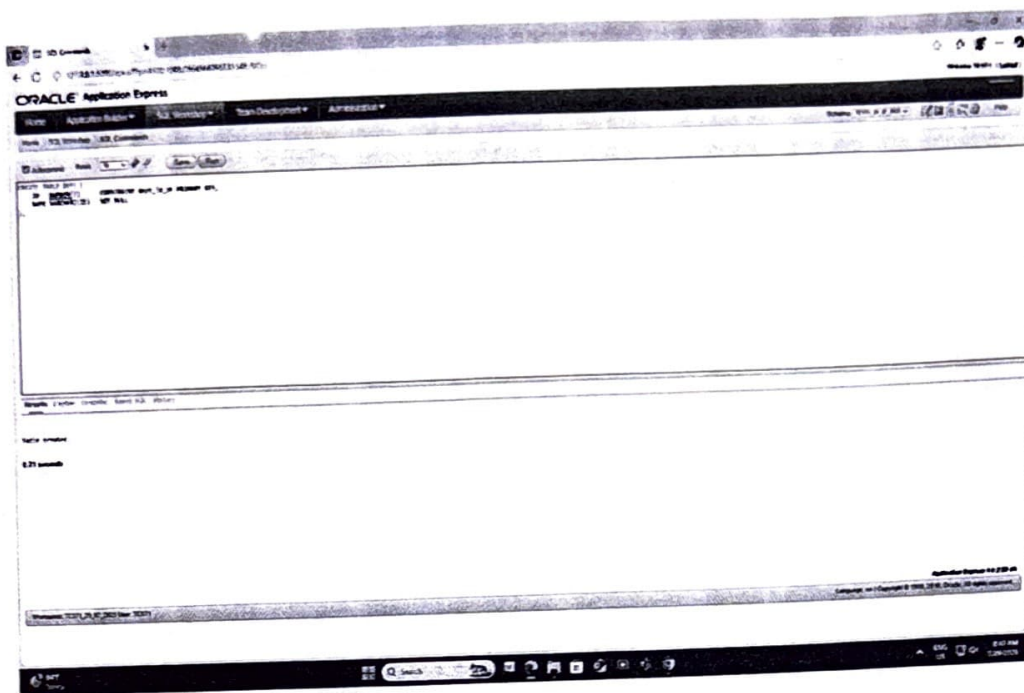
2. Create the EMP table based on the following instance chart. Confirm that the table is created.

| Column name	ID	LAST_NAME	FIRST_NAME	DEPT_ID
Key Type				
Nulls/Unique				
FK table				
FK column				
Data Type	Number	Varchar2	Varchar2	Number
Length	7	25	25	7
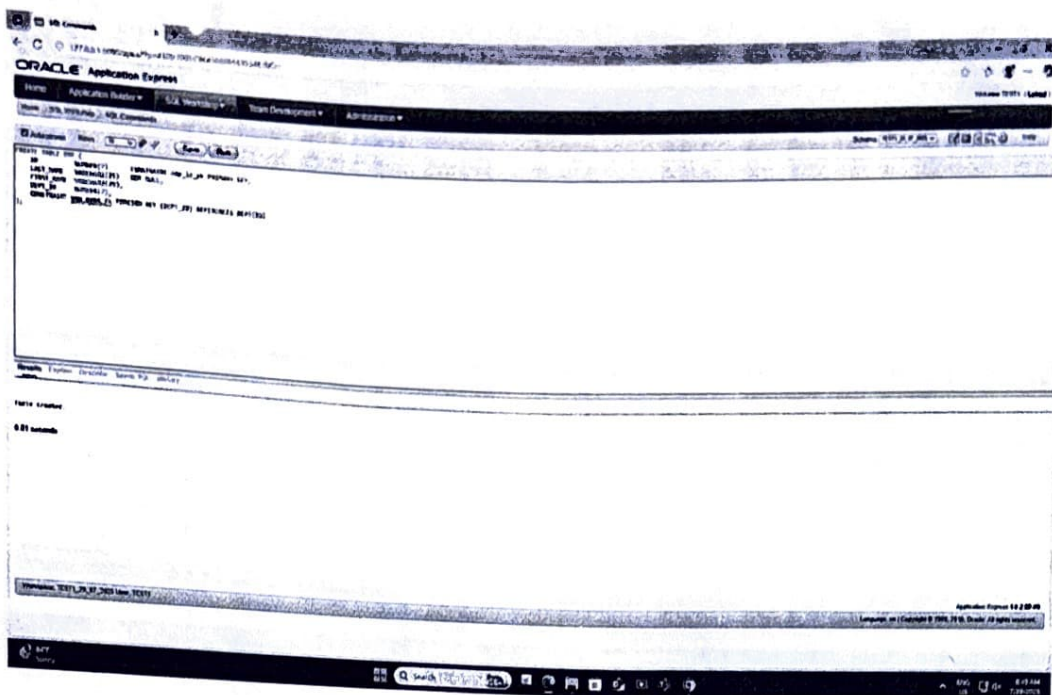
3. Modify the EMP table to allow for longer employee last names. Confirm the modification.(Hint: Increase the size to 50)
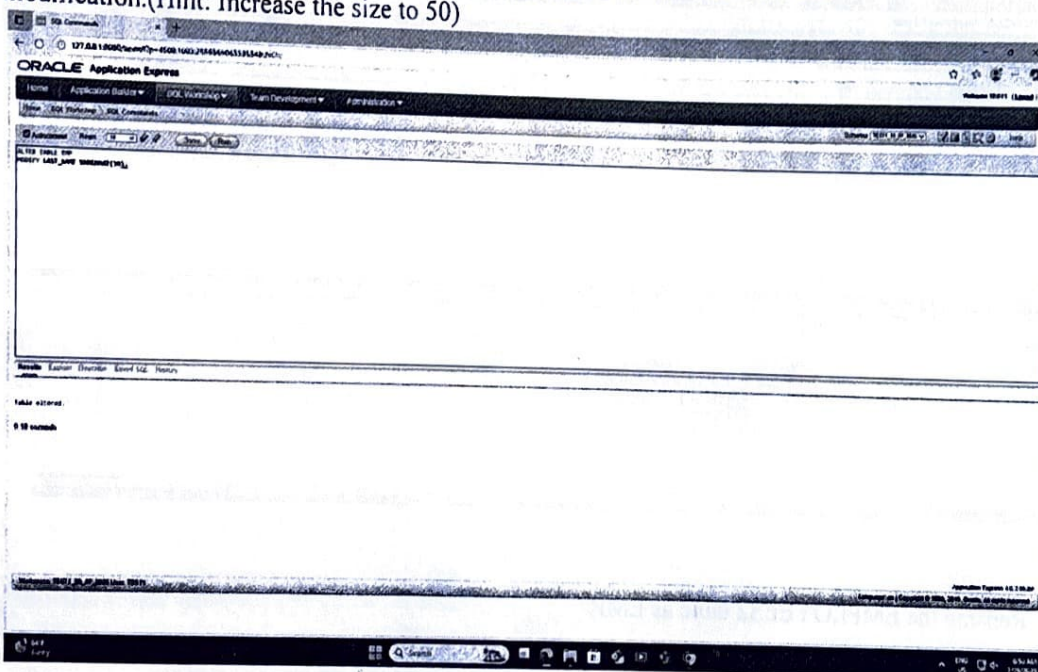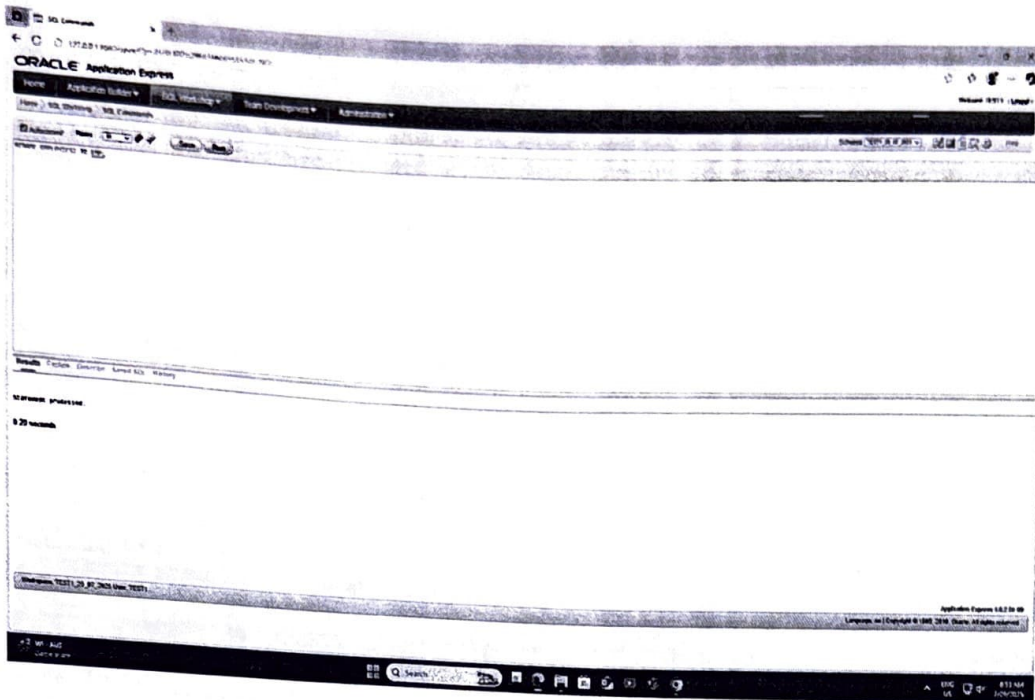

4. Create the EMPLOYEES2 table based on the structure of EMPLOYEES table. Include Only the Employee_id, First_name, Last_name, Salary and Dept_id coloumns. Name the columns Id, First_name, Last_name, salary and Dept_id respectively.
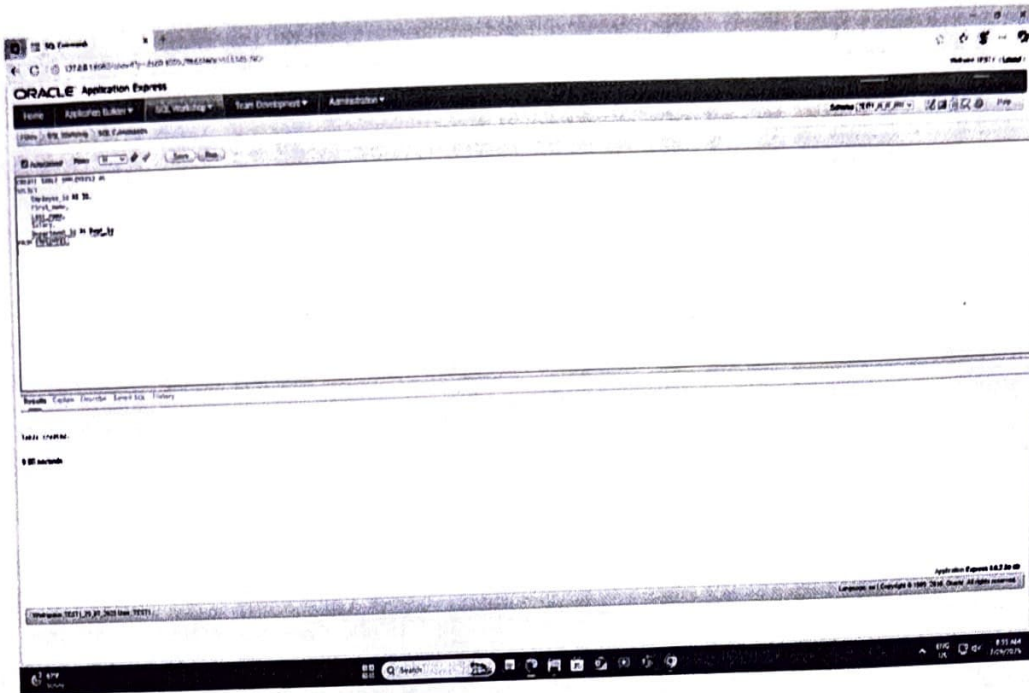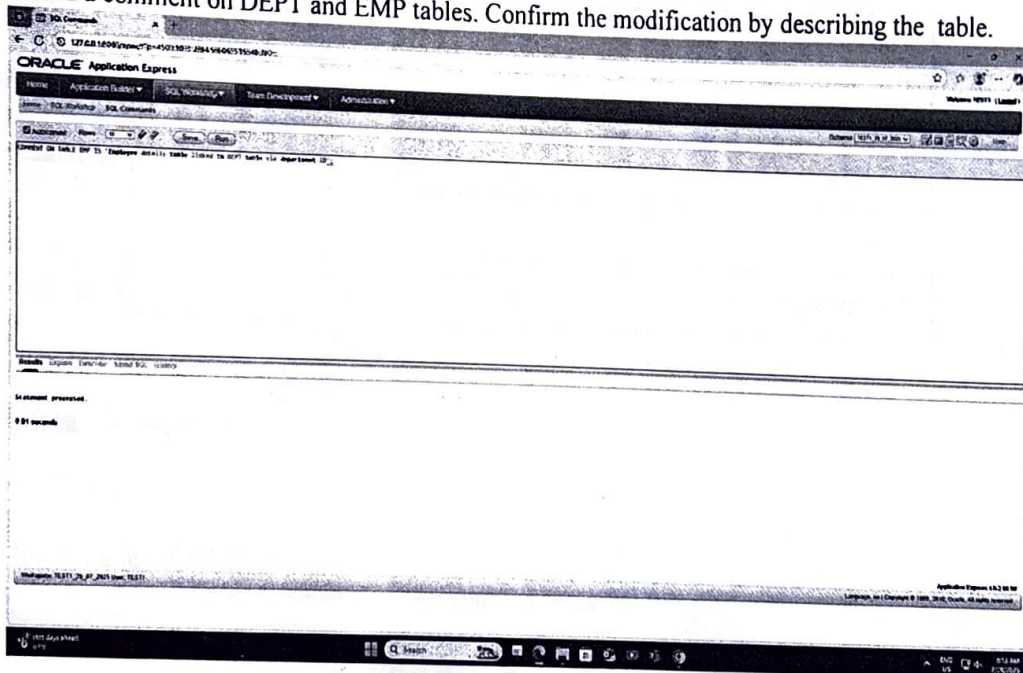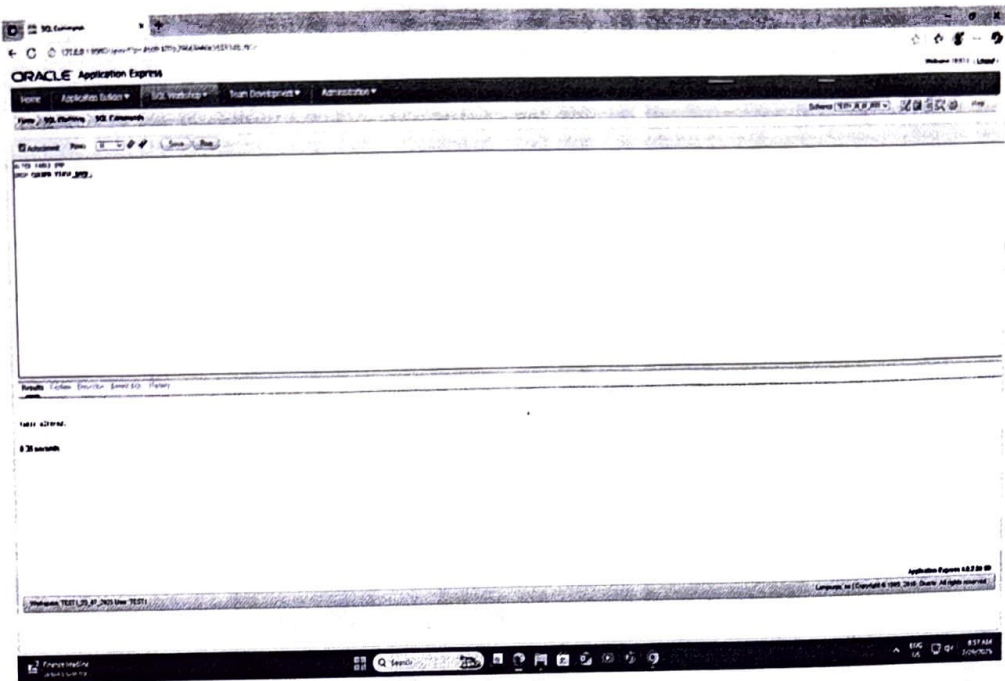
5. Drop the EMP table.
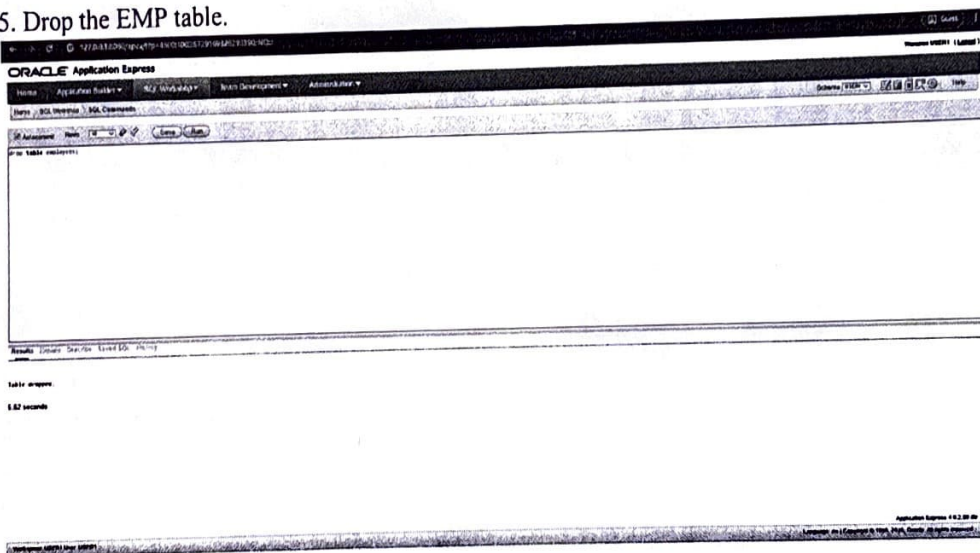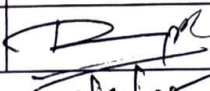

6. Rename the EMPLOYEES2 table as EMP.

7. Add a comment on DEPT and EMP tables. Confirm the modification by describing the table.

8. Drop the First_name column from the EMP table and confirm it.

Evaluation Procedure	Marks awarded
Query(5)	5
Execution (5)	5
Viva(5)	5
Total (15)	15
Faculty Signature	

2/9/25

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