



Faculty of Technology and Engineering

Chandubhai S. Patel Institute of Technology (CSPIT)

Department of Computer Science & Engineering

Date: / /

Laboratory Manual

Academic Year	:	2024-25	Semester	:	4
Course code	:	CSE206	Course name	:	DATABASE MANAGEMENT SYSTEM

Practical - 4

- **Aim:** - You are a database administrator for a multinational bank. The bank requires insights and maintenance of its employee and customer databases to ensure data consistency and retrieval of relevant information for various operations. Your tasks involve applying constraints and writing SQL queries to retrieve specific data based on given conditions. Below are the tasks to be performed:

The bank maintains the following schemas:

Employee Schema

- Emp_ID (Primary Key)
- Emp_Name (Not Null)
- Emp_Salary (Not Null, Check: Greater than zero)
- Job_ID (Unique)
- Other attributes you can add as needed

Customer Schema

- Cust_ID (Primary Key)
- Cust_Name (Not Null)
- Branch (Not Null)
- Other attributes you can add as needed

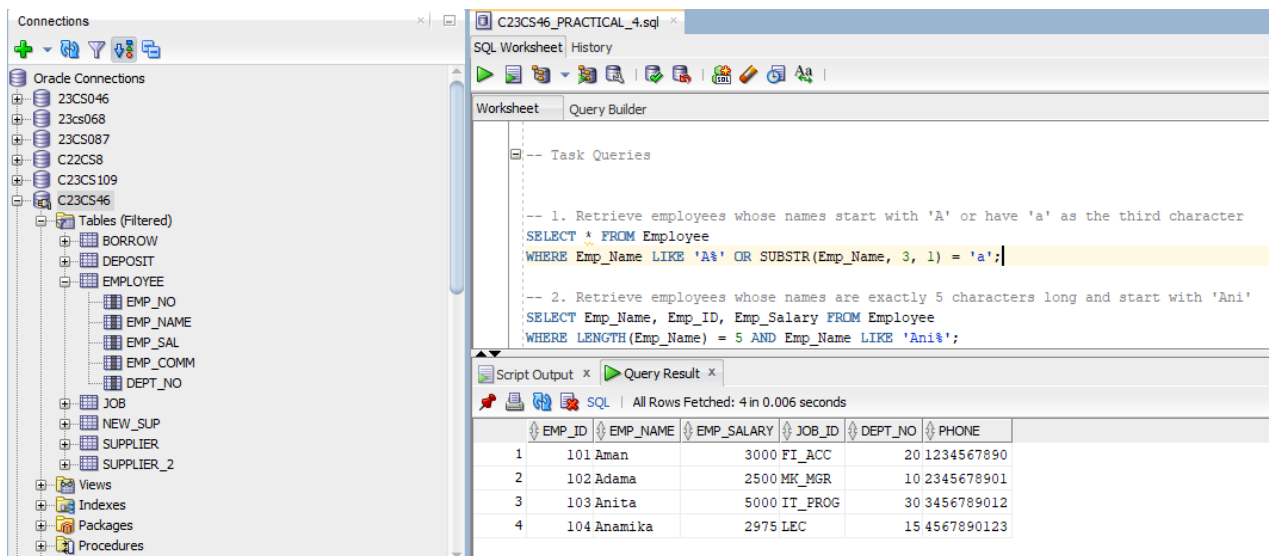
Constraints –

- **Not Null Constraints:** Ensure critical fields are not null.
- **Unique Constraints:** Ensure data integrity by limiting column values.
- **Check Constraints:** Ensure columns have unique values where required.

Tasks:-

The HR team wants to identify specific employees for a new project. Write SQL queries to:

1. Retrieve the details of employees whose names:
 - Start with the letter 'A'.



Connections: C23CS46_PRACTICAL_4.sql

SQL Worksheet: History

Worksheet: Query Builder

```
-- Task Queries

-- 1. Retrieve employees whose names start with 'A' or have 'a' as the third character
SELECT * FROM Employee
WHERE Emp_Name LIKE 'A%' OR SUBSTR(Emp_Name, 3, 1) = 'a';

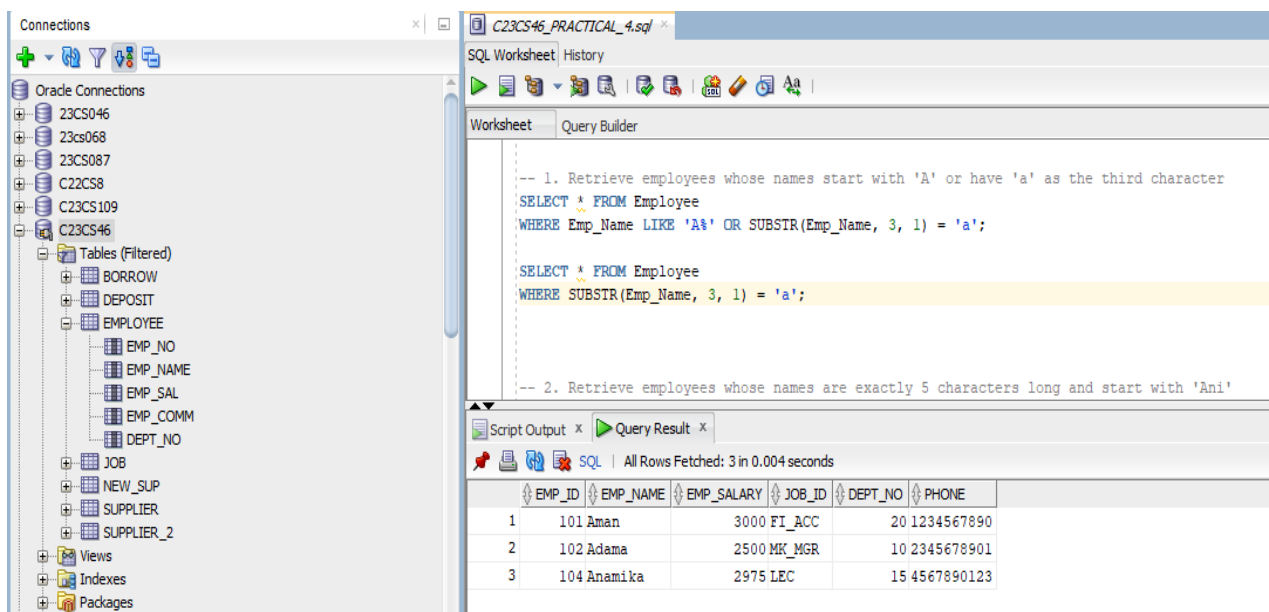
-- 2. Retrieve employees whose names are exactly 5 characters long and start with 'Ani'
SELECT Emp_Name, Emp_ID, Emp_Salary FROM Employee
WHERE LENGTH(Emp_Name) = 5 AND Emp_Name LIKE 'Ani%';
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.006 seconds

EMP_ID	EMP_NAME	EMP_SALARY	JOB_ID	DEPT_NO	PHONE
1	101 Aman	3000	FI_ACC	20	1234567890
2	102 Adama	2500	MK_MGR	10	2345678901
3	103 Anita	5000	IT_PROG	30	3456789012
4	104 Anamika	2975	LEC	15	4567890123

- Have 'a' as the third character.



Connections: C23CS46_PRACTICAL_4.sql

SQL Worksheet: History

Worksheet: Query Builder

```
-- 1. Retrieve employees whose names start with 'A' or have 'a' as the third character
SELECT * FROM Employee
WHERE Emp_Name LIKE 'A%' OR SUBSTR(Emp_Name, 3, 1) = 'a';

SELECT * FROM Employee
WHERE SUBSTR(Emp_Name, 3, 1) = 'a';

-- 2. Retrieve employees whose names are exactly 5 characters long and start with 'Ani'
```

Script Output x Query Result x

SQL | All Rows Fetched: 3 in 0.004 seconds

EMP_ID	EMP_NAME	EMP_SALARY	JOB_ID	DEPT_NO	PHONE
1	101 Aman	3000	FI_ACC	20	1234567890
2	102 Adama	2500	MK_MGR	10	2345678901
3	104 Anamika	2975	LEC	15	4567890123

2. Display the names, employee numbers, and salaries of employees whose names:
 - Are exactly 5 characters long.
 - Start with 'Ani'.

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane lists several database connections, with 'C23CS46' selected. The 'Tables (Filtered)' pane shows the 'EMPLOYEE' table structure. The main window displays a SQL worksheet with the following query:

```

WHERE SUBSTR(Emp_Name, 3, 1) = 'a';

-- 2. Retrieve employees whose names are exactly 5 characters long and start with 'Ani'
SELECT Emp_Name, Emp_ID, Emp_Salary FROM Employee
WHERE LENGTH(Emp_Name) = 5 AND Emp_Name LIKE 'Ani%';

```

The 'Query Result' pane shows the following data:

EMP_NAME	EMP_ID	EMP_SALARY
1 Anita	103	5000

To analyze naming patterns in the employee database, perform the following:

1. Retrieve the details of employees whose second character is either 'M' or 'N'.

The screenshot shows the Oracle SQL Developer interface. The main window displays a SQL worksheet with the following query:

```

-- 1. Retrieve employees whose second character is 'M' or 'N'
SELECT * FROM Employee
WHERE SUBSTR(Emp_Name, 2, 1) IN ('m', 'n');

```

The 'Query Result' pane shows the following data:

EMP_ID	EMP_NAME	EMP_SALARY	JOB_ID	DEPT_NO	PHONE
1	101 Aman	3000	FI_ACC	20	1234567890
2	103 Anita	5000	IT_PROG	30	3456789012
3	104 Anamika	2975	LEC	15	4567890123
4	105 Snehal	1600	COMP_OP	25	(null)

- Retrieve the details of employees whose second character is 'n', and their names are exactly 5 characters long.

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane lists several database connections, with 'C23CS46' selected. The 'Tables (Filtered)' pane shows the 'EMPLOYEE' table. The main window displays a SQL worksheet with the following queries:

```

1. Retrieve employees whose second character is 'n' or 'N'
SELECT * FROM Employee
WHERE SUBSTR(Emp_Name, 2, 1) IN ('n', 'N');

-- 2. Retrieve employees whose second character is 'n' and names are exactly 5 characters long
SELECT * FROM Employee
WHERE LENGTH(Emp_Name) = 5 AND SUBSTR(Emp_Name, 2, 1) = 'n';

-- 3. Identify employees with incomplete details and third character as 'a'

```

The 'Query Result' pane shows the results of the second query:

EMP_ID	EMP_NAME	EMP_SALARY	JOB_ID	DEPT_NO	PHONE
1	103 Anita	5000	IT_PROG	30	3456789012

- Identify employees whose details are partially incomplete (contain null values) and whose third character in their names is 'a'.

The screenshot shows the Oracle SQL Developer interface. The 'Tables (Filtered)' pane shows the 'EMPLOYEE' table. The main window displays a SQL worksheet with the following queries:

```

-- 2. Retrieve employees whose second character is 'n' and names are exactly 5 characters long
SELECT * FROM Employee
WHERE LENGTH(Emp_Name) = 5 AND SUBSTR(Emp_Name, 2, 1) = 'n';

-- 3. Identify employees with incomplete details and third character as 'a'
SELECT * FROM Employee
WHERE (Emp_Salary IS NULL OR Phone IS NULL) AND SUBSTR(Emp_Name, 3, 1) = 'a';

```

The 'Query Result' pane shows the results of the third query:

EMP_ID	EMP_NAME	EMP_SALARY	JOB_ID	DEPT_NO	PHONE
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The marketing department plans a special campaign for customers in specific branches. Write a query to:

- Retrieve the names of all customers whose branch is either 'Andheri', 'Dadar', or 'Virar'.

The screenshot shows the Oracle SQL Developer interface. The 'Tables (Filtered)' pane shows the 'CUSTOMER' table. The main window displays a SQL worksheet with the following queries:

```

-- 1. Retrieve names of customers in 'Andheri', 'Dadar', or 'Virar'
SELECT Cust_Name FROM Customer
WHERE Branch IN ('Andheri', 'Dadar', 'Virar');

```

The 'Query Result' pane shows the results of the first query:

CUST_NAME
1 Anil
2 Sunil
3 Keyur

To optimize the workforce and their roles, retrieve the following:

1. Job names whose job IDs begin with 'FI_'.

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane lists several database connections, with 'C23CS46' selected. The main window displays a SQL worksheet with the following query:

```
-- 1. Retrieve job titles with Job_IDs starting with 'FI_'
SELECT Job_ID FROM Job
WHERE Job_ID LIKE 'FI_%';
```

The 'Query Result' pane shows the following output:

JOB_ID
1 FI_ACC
2 FI_MGR

2. Titles of jobs that end with '_MGR' and have a maximum salary greater than ₹12,000.

The screenshot shows the Oracle SQL Developer interface. The SQL worksheet contains the following query:

```
-- 2. Retrieve job titles ending with '_MGR' and max salary > 12000
SELECT job_title FROM Job
WHERE job_title LIKE '%_MGR' AND max_sal > 12000;
```

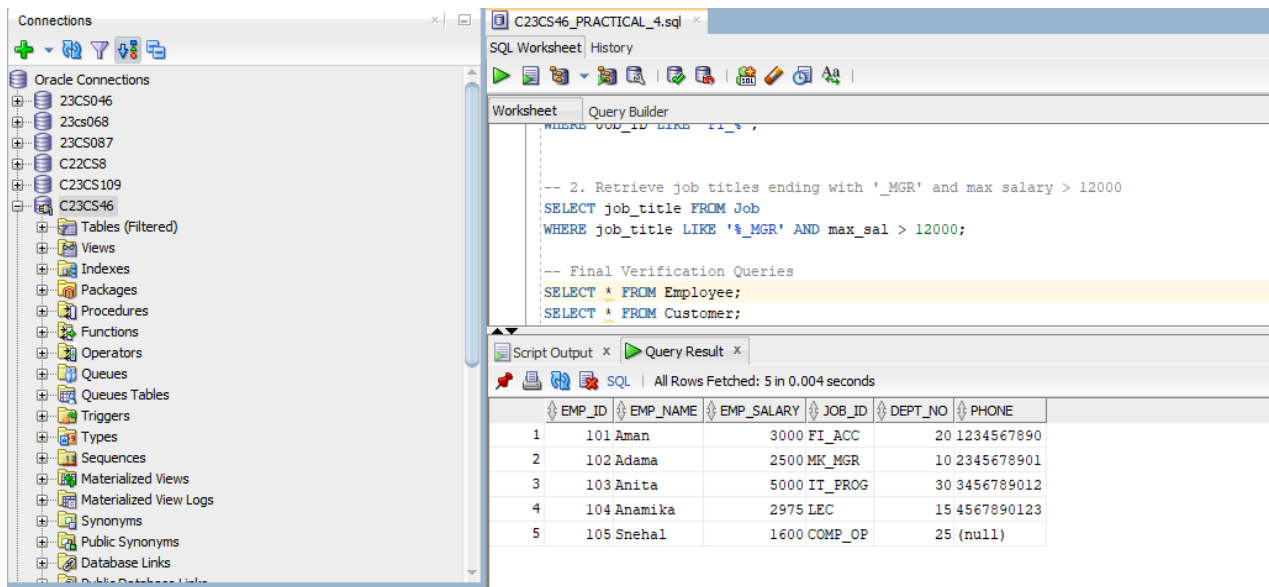
The 'Query Result' pane shows the following output:

JOB_TITLE

Below the query, there are 'Final Verification Queries' listed:

```
SELECT * FROM Employee;
SELECT * FROM Customer;
```

1. Employee



The screenshot shows the Oracle SQL Developer interface. The left pane displays the database schema for 'C23CS46'. The main window shows a SQL worksheet with the following queries:

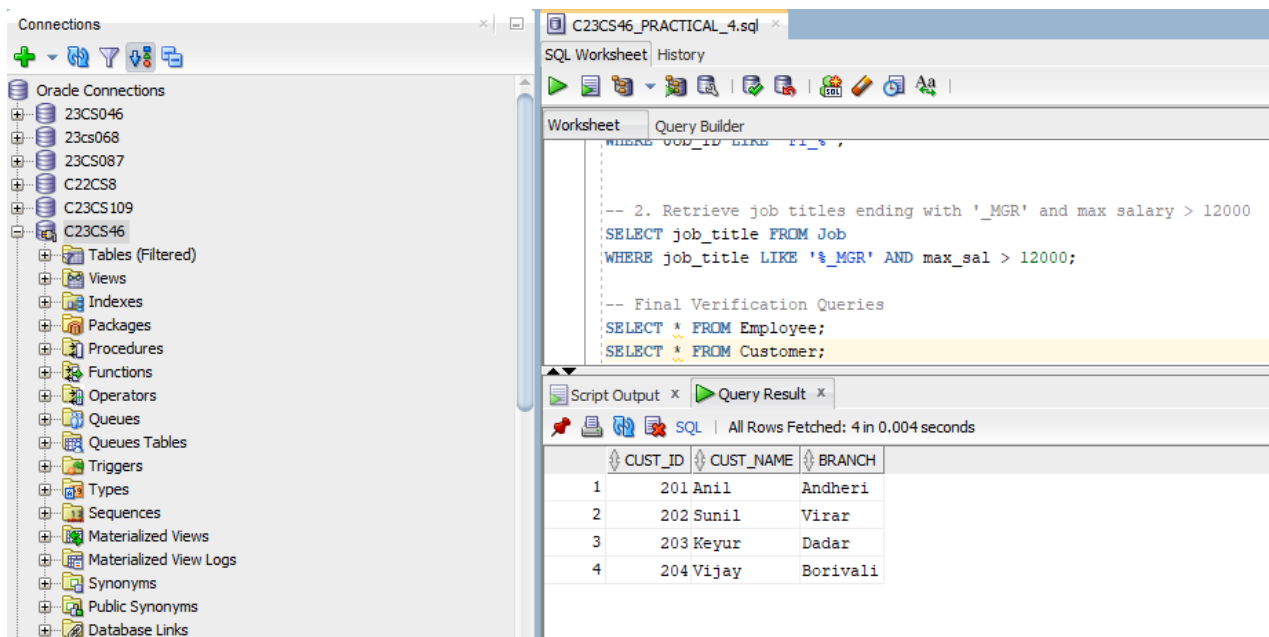
```
-- 2. Retrieve job titles ending with '_MGR' and max salary > 12000
SELECT job_title FROM Job
WHERE job_title LIKE '%_MGR' AND max_sal > 12000;

-- Final Verification Queries
SELECT * FROM Employee;
SELECT * FROM Customer;
```

The 'Query Result' pane shows the results of the first query, displaying 5 rows of employee data:

EMP_ID	EMP_NAME	EMP_SALARY	JOB_ID	DEPT_NO	PHONE
1	101 Aman	3000	FI_ACC	20	1234567890
2	102 Adama	2500	MK_MGR	10	2345678901
3	103 Anita	5000	IT_PROG	30	3456789012
4	104 Anamika	2975	LEC	15	4567890123
5	105 Snehal	1600	COMP_OP	25	(null)

2. Customer



The screenshot shows the Oracle SQL Developer interface. The left pane displays the database schema for 'C23CS46'. The main window shows a SQL worksheet with the following queries:

```
-- 2. Retrieve job titles ending with '_MGR' and max salary > 12000
SELECT job_title FROM Job
WHERE job_title LIKE '%_MGR' AND max_sal > 12000;

-- Final Verification Queries
SELECT * FROM Employee;
SELECT * FROM Customer;
```

The 'Query Result' pane shows the results of the first query, displaying 4 rows of customer data:

CUST_ID	CUST_NAME	BRANCH
1	201 Anil	Andheri
2	202 Sunil	Virar
3	203 Keyur	Dadar
4	204 Vijay	Borivali