



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 - 6

- **Aim:** - You are a database administrator for a manufacturing and consulting company. The company maintains two primary tables: Product and Employee Company (emp_company). You are tasked with solving business queries related to order quantities, employee salaries, and company analysis using SQL grouping and aggregate functions. To manipulate and retrieve meaningful insights using grouping and aggregate functions in SQL while adhering to database constraints and integrity rules.

Constraints –

- **Not Null Constraints:** Critical fields such as product numbers, employee names, and salaries must not contain null values.
- **Unique Constraints:** Ensure the integrity of unique fields like Product_no and ENAME.
- **Check Constraints:** Validate that quantities and salaries have valid positive values.

1. Product Table: Tracks order details for various products.

- Detorder_no (Primary Key)
- Product_no (Not Null, Unique)
- Qty_order (Not Null, Check: Greater than zero)

2. emp_company Table: Tracks employees, their companies, and salaries.

- ENAME (Not Null, Unique)
- CNAME (Not Null)
- SALARY (Not Null, Check: Greater than zero)

Tasks:-

The logistics department has provided the following product order details to be inserted into the Product table:

1. Insert Values:

- Insert the above data into the Product table.

Oracle SQL Developer : C23CS46

The screenshot shows the Oracle SQL Developer interface. The left pane displays the 'Connections' tree with 'C23CS46' selected. The main workspace shows a SQL script with the following content:

```
VALUES ('019005', 'P00005', 2);

-- Insert row 7
INSERT INTO Product (Detorder_no, Product_no, Qty_order)
VALUES ('019006', 'P00004', 7);

-- Step 4: Display all rows from the Product table to verify the data
SELECT * FROM Product;

SELECT Product_no, SUM(Qty_order) AS Total_Quantity
FROM Product
GROUP BY Product_no;
```

The 'Script Output' pane shows the execution status: 'All Rows Fetched: 7 in 0.004 seconds'. The 'Query Result' pane displays the following data:

	DETORDER_NO	PRODUCT_NO	QTY_ORDER
1	019001	P00001	10
2	019001	P00002	3
3	019002	P00001	4
4	019003	P00004	2
5	019004	P00003	6
6	019005	P00005	2
7	019006	P00004	7

2. Total Quantity per Product:

- Retrieve the product numbers and total quantities ordered for each product.

Oracle SQL Developer: C23CS46

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- 23CS087
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Query Builder

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VALUES ('019005', 'P00005', 2);

-- Insert row 7
INSERT INTO Product (Detorder_no, Product_no, Qty_order)
VALUES ('019006', 'P00004', 7);

-- Step 4: Display all rows from the Product table to verify the data
SELECT * FROM Product;

SELECT Product_no, SUM(Qty_order) AS Total_Quantity
FROM Product
GROUP BY Product_no;
```

Script Output x Query Result x

All Rows Fetched: 5 in 0.003 seconds

	PRODUCT_NO	TOTAL_QUANTITY
1	P00002	3
2	P00001	14
3	P00003	6
4	P00004	9
5	P00005	2

3. Filter Specific Products:

- Retrieve the product numbers and total quantities ordered for products P00001 and P00004.

Oracle SQL Developer : C23CS46

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Query Builder

```
SELECT Product_no, SUM(Qty_order) AS Total_Quantity
FROM Product
GROUP BY Product_no;

SELECT Product_no, SUM(Qty_order) AS Total_Quantity
FROM Product
WHERE Product_no IN ('P00001', 'P00004')
GROUP BY Product_no;

-- Create emp_company table
CREATE TABLE emp_company (
  EMPLOYEE_ID NUMBER(4,0) NOT NULL,
  LAST_NAME VARCHAR2(25) NOT NULL,
  FIRST_NAME VARCHAR2(25) NOT NULL,
  EMAIL VARCHAR2(25) NOT NULL,
  PHONE_NUMBER VARCHAR2(20) NOT NULL,
  HIRE_DATE DATE NOT NULL,
  SALARY NUMBER(8,2) NOT NULL,
  COMMISSION_PCT NUMBER(2,1) NOT NULL,
  MANAGER_ID NUMBER(4,0) NOT NULL,
  DEPARTMENT_ID NUMBER(4,0) NOT NULL
);
```

Script Output x Query Result x

SQL | All Rows Fetched: 2 in 0.017 seconds

	PRODUCT_NO	TOTAL_QUANTITY
1	P00001	14
2	P00004	9

Reports

The HR department has provided the following employee data to be inserted into the emp_company table:

1. Insert Values:

- Insert the above data into the emp_company table.

Oracle SQL Developer : C23CS46

The screenshot displays the Oracle SQL Developer interface. The left pane shows the 'Connections' tree with 'C23CS46' selected. The main editor window shows a SQL script in the 'Query Builder' tab. The script contains four INSERT statements for the emp_company table, followed by a comment and a SELECT statement to verify the data. The 'Script Output' and 'Query Result' panes at the bottom right show the execution results, indicating that 8 rows were fetched successfully.

```
VALUES ('Vijay', 'TATA', 5000);

INSERT INTO emp_company (ENAME, CNAME, SALARY)
VALUES ('Prakash', 'TATA', 3000);

INSERT INTO emp_company (ENAME, CNAME, SALARY)
VALUES ('Ajay', 'ACC', 8000);

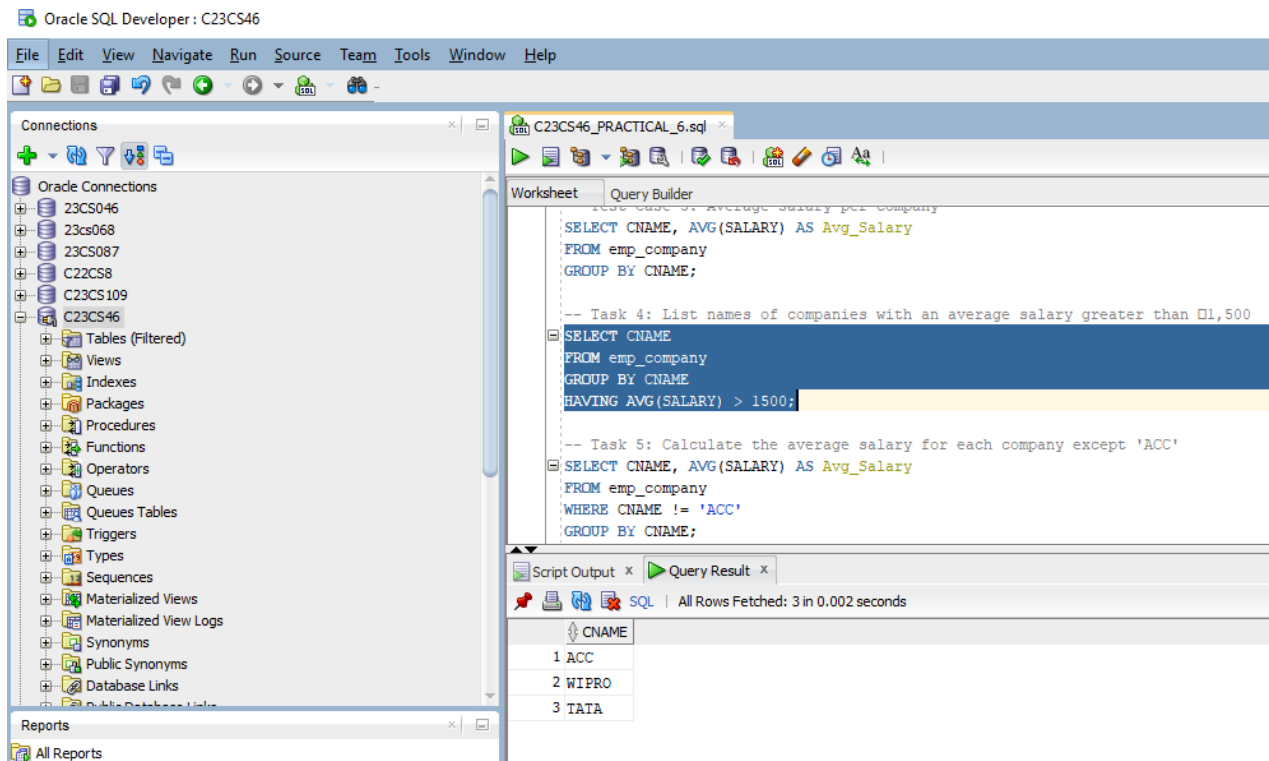
INSERT INTO emp_company (ENAME, CNAME, SALARY)
VALUES ('Abhay', 'ACC', 1800);

-- Test Case 1: Display all rows from the emp_company table
SELECT * FROM emp_company;
```

	ENAME	CNAME	SALARY
1	Anil	ACC	1500
2	Shankar	TATA	2000
3	Jay	WIPRO	1800
4	Sunil	WIPRO	1700
5	Vijay	TATA	5000
6	Prakash	TATA	3000
7	Ajay	ACC	8000
8	Abhay	ACC	1800

4. Filter Companies by Average Salary:

- List the names of companies with an average salary greater than ₹1,500.



5. Exclude a Specific Company:

- Calculate the average salary for each company except ACC.

