Experiment - 6

Student Name: Charu Singla **UID:** 23BCS12553
Branch: BE-CSE **Section/Group:** KRG_1A
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Subject Name: Advanced Database and Management System
Subject Code: 23CSP-333

1. **Problem Description/Aim:**

Medium-Problem Title: Gender Diversity Tracking-Create a PostgreSQL stored procedure to track gender diversity in the workforce. The procedure takes a gender as input and returns the total number of employees of that gender, providing HR with instant and secure reporting.

Procedure (Step-by-Step):

1. Create a table employees with columns like emp_id,emp_name and gender.
2. Insert sample data with varying genders.
3. Create a stored procedure 'count_employees_by_gender' that:
   - Takes a gender as input.
   - Counts the number of employees with that gender.
   - Returns the result as an OUT parameter.
4. Call the procedure in a DO block to capture and display the result.

Sample Output Description:

- Input: 'Male' --- Output: 3
- Input: 'Female' --- Output: 2
-HR sees results instantly without accessing full employee data.

Hard-Problem Title: Order Placement and Inventory Management-Automate the ordering process in a retail company. The procedure validates stock availability, logs sales, updates inventory, and provides real-time confirmation or rejection messages.

Procedure (Step-by-Step):

1. Create products table with columns: product_id, product_name, price, quantity_remaining, quantity_sold.
2. Create sales table with columns: sale_id, product_id,

quantity, total_price, sale_date.

3. Create a stored procedure place_order that: - Takes product_id and quantity as input.
   - Checks if quantity_remaining is sufficient.
   - If yes:
   - Logs the sale in sales table.
   - Updates products(decrease quantity_remaining, increase quantity_sold).
   - Display "Product sold successfully!!".
   - If no:
   - Display "Insufficient quantity available!!"
4. Call the procedure for different orders to validate functionality.

Sample Output Description:

- Order 5 units of Smartphone (stock available): "Product sold successfully!".
- Order 100 units of Tablet (insufficient stock): "Insufficient Quantity Available!".
- Inventory updates automatically for successful orders.

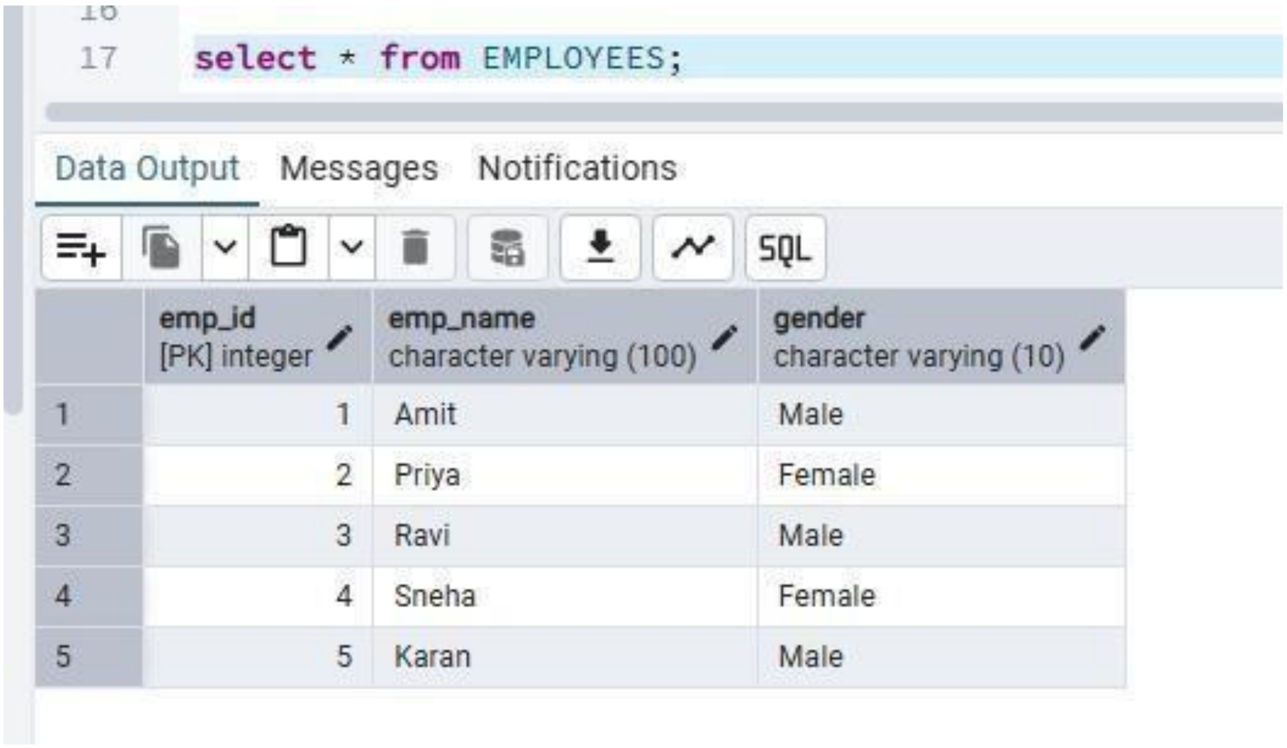
2. **Objective:** The objective is to automate critical business operations using PostgreSQL stored procedures. For HR, it tracks gender diversity by returning the total count of employees by gender. For retail, it manages orders by validating stock, logging sales, updating inventory, and providing real-time confirmation or rejection messages. This ensures efficiency, accuracy, and real-time insights in both workforce and inventory management.

3. **SQL QUERY AND OUTPUTS -**

-------------------------------------MEDIUM PROBLEM---

```
CREATE TABLE employees ( emp_id
   SERIAL       PRIMARY       KEY,
   emp_name VARCHAR(100),
   gender VARCHAR(10)
);

-- Sample data
INSERT INTO employees (emp_name, gender) VALUES
('Amit', 'Male'),
('Priya', 'Female'),
('Ravi', 'Male'),
('Sneha', 'Female'),
('Karan', 'Male');
```

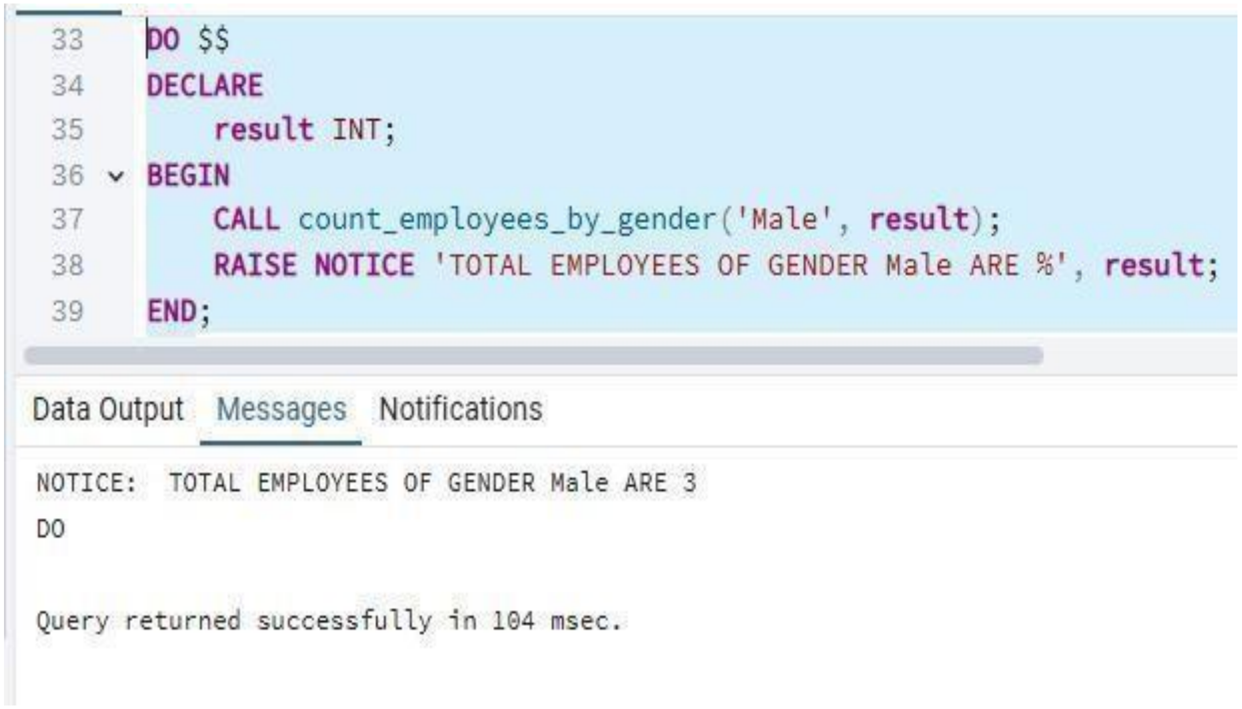
```
select * from EMPLOYEES; ----CREATING
A PROCEDURE----
CREATE OR REPLACE PROCEDURE
    count_employees_by_gender( IN input_gender VARCHAR,
         OUT total_count int
)
LANGUAGE plpgsql
AS $$
BEGIN
   SELECT COUNT(*) INTO total_count
   FROM employees
   WHERE gender = input_gender;
END;
$$;

---CALLING   THE   PROCEDURE-----
DO
$$ DECLA
RE
   result INT;
BEGIN
   CALL count_employees_by_gender('Male', result);
   RAISE NOTICE 'TOTAL EMPLOYEES OF GENDER Male ARE %', result;
END;
$$;
```



```sql
select * from EMPLOYEES;
```

Data Output   Messages   Notifications

	emp_id [PK] integer	emp_name character varying (100)	gender character varying (10)
1	1	Amit	Male
2	2	Priya	Female
3	3	Ravi	Male
4	4	Sneha	Female
5	5	Karan	Male



```sql
DO $$
DECLARE
    result INT;
BEGIN
    CALL count_employees_by_gender('Male', result);
    RAISE NOTICE 'TOTAL EMPLOYEES OF GENDER Male ARE %', result;
END;
```

Data Output   Messages   Notifications

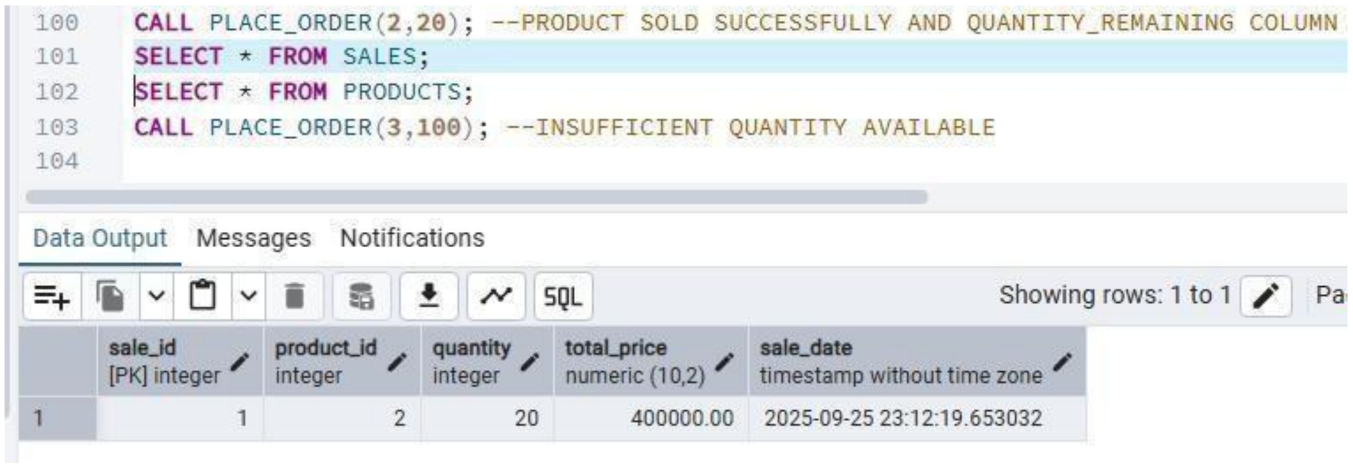
```
NOTICE:  TOTAL EMPLOYEES OF GENDER Male ARE 3
DO

Query returned successfully in 104 msec.
```

-------------------------------------HARD PROBLEM ---

```
CREATE TABLE products ( product_id
   SERIAL          PRIMARY          KEY,
   product_name VARCHAR(100), price
   NUMERIC(10,2), quantity_remaining
   INT,
   quantity_sold INT DEFAULT 0
);

INSERT INTO products (product_name, price, quantity_remaining) VALUES
('Smartphone', 30000, 50),
('Tablet', 20000, 30),
('Laptop', 60000, 20);

CREATE   TABLE   sales   (   sale_id
   SERIAL PRIMARY KEY,
   product_id INT REFERENCES products(product_id), quantity
   INT,
   total_price    NUMERIC(10,2),    sale_date
   TIMESTAMP DEFAULT NOW()
);


CREATE OR REPLACE PROCEDURE
   place_order( IN p_product_id INT, IN
   p_quantity INT
)
LANGUAGE plpgsql
AS $$
DECLARE
   available_stock INT;
   product_price NUMERIC(10,2);
BEGIN
   SELECT quantity_remaining, price
   INTO available_stock, product_price
   FROM products
   WHERE product_id = p_product_id;

   IF available_stock IS NULL THEN
```

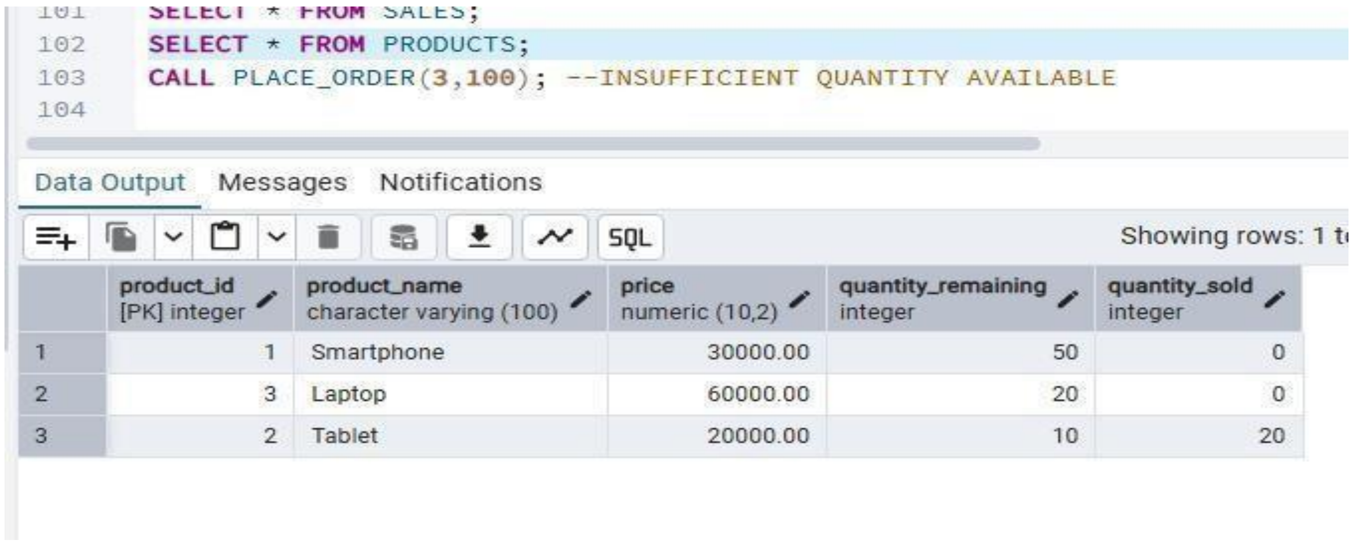
```
        RAISE NOTICE 'Product ID % does not exist!', p_product_id;
    ELSIF available_stock >= p_quantity THEN
        -- LOGGING THE ORDER
        INSERT INTO sales (product_id, quantity, total_price)
        VALUES (p_product_id, p_quantity, p_quantity * product_price);

        UPDATE products
        SET quantity_remaining = quantity_remaining - p_quantity,
        quantity_sold = quantity_sold + p_quantity WHERE
        product_id = p_product_id;

        RAISE NOTICE 'Product sold successfully!';
    ELSE
        RAISE NOTICE 'Insufficient Quantity Available!'; END
    IF;
END;
$$;
```

```
CALL PLACE_ORDER(2,20); --PRODUCT SOLD SUCCESSFULLY AND
QUANTITY_REMAINING COLUMN SET TO -20 AND DATA LOGGED TO SALES
TABLE
SELECT * FROM SALES;
SELECT * FROM PRODUCTS;
CALL PLACE_ORDER(3,100); --INSUFFICIENT QUANTITY AVAILABLE
```



```
CALL PLACE_ORDER(2,20); --PRODUCT SOLD SUCCESSFULLY AND QUANTITY_REMAINING COLUMN
SELECT * FROM SALES;
SELECT * FROM PRODUCTS;
CALL PLACE_ORDER(3,100); --INSUFFICIENT QUANTITY AVAILABLE
```

	sale_id [PK] integer	product_id integer	quantity integer	total_price numeric (10,2)	sale_date timestamp without time zone
1	1	2	20	400000.00	2025-09-25 23:12:19.653032



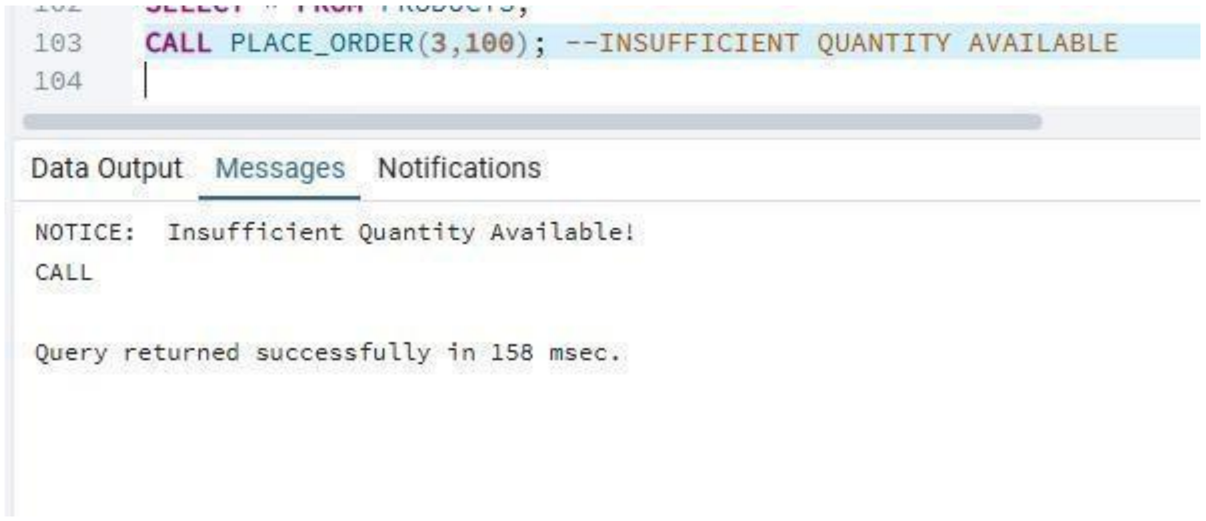
```sql
SELECT * FROM SALES;
SELECT * FROM PRODUCTS;
CALL PLACE_ORDER(3,100); --INSUFFICIENT QUANTITY AVAILABLE
```

Data Output Messages Notifications

Showing rows: 1 t

	product_id [PK] integer	product_name character varying (100)	price numeric (10,2)	quantity_remaining integer	quantity_sold integer
1	1	Smartphone	30000.00	50	0
2	3	Laptop	60000.00	20	0
3	2	Tablet	20000.00	10	20

--Here in above output, After selling 20 tablets (id==2) we are left with 10 and the selling data is logged into sales table.



```sql
SELECT * FROM PRODUCTS;
CALL PLACE_ORDER(3,100); --INSUFFICIENT QUANTITY AVAILABLE
```

Data Output Messages Notifications

```
NOTICE:  Insufficient Quantity Available!
CALL

Query returned successfully in 158 msec.
```

ID ==3 means laptop are 20 only and we place order for 100 …so we get notice - for insufficient quantity!!