WORKSHEET 6

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Branch: CSE(3rd Year) **Section/Group: Krg-1-A**

Semester: 5th **Date of Performance: 25/09/25**

Subject Name: ADBMS **Subject Code: 23CSP-333**

1. **AIM:**

i) Stored Procedures: HR-Analytics: Employee count based on dynamic gender passing (Medium)

TechSphere Solutions, a growing IT services company with offices across India, wants to track and monitor
gender diversity within its workforce. The HR department frequently needs to know the total number of
employees by gender (Male or Female).
To solve this problem, the company needs an automated database-driven solution that can instantly return
the count of employees by gender through a stored procedure that:
1. Create a PostgreSQL stored procedure that:
2. Takes a gender (e.g., 'Male' or 'Female') as input.
3. Calculates the total count of employees for that gender.
4. Returns the result as an output parameter.
5. Displays the result clearly for HR reporting purposes.

ii) Stored Procedures: SmartStore Automated Purchase System (Hard)

SmartShop is a modern retail company that sells electronic gadgets like smartphones, tablets, and laptops.
The company wants to automate its ordering and inventory management process.
Whenever a customer places an order, the system must:
1. Verify stock availability for the requested product and quantity.
2. If sufficient stock is available:
- Log the order in the sales table with the ordered quantity and total price.
- Update the inventory in the products table by reducing quantity_remaining and increasing quantity_sold.

- Display a real-time confirmation message: "Product sold successfully!"
3. If there is insufficient stock, the system must:
- Reject the transaction and display: Insufficient Quantity Available!"

2. **Tools Used :** SQL Server Management Studio

Solutions:

Q1)
```
CREATE TABLE employee_info (
    id SERIAL PRIMARY KEY,
    name VARCHAR(50) NOT NULL,
    gender VARCHAR(10) NOT NULL,
    salary NUMERIC(10,2) NOT NULL,
    city VARCHAR(50) NOT NULL
);
INSERT INTO employee_info (name, gender, salary, city)
VALUES
('Alok', 'Male', 50000.00, 'Delhi'),
('Priya', 'Male', 60000.00, 'Mumbai'),
('Rajesh', 'Female', 45000.00, 'Bangalore'),
('Sneha', 'Male', 55000.00, 'Chennai'),
('Anil', 'Male', 52000.00, 'Hyderabad'),
('Sunita', 'Female', 48000.00, 'Kolkata'),
('Vijay', 'Male', 47000.00, 'Pune'),
('Ritu', 'Male', 62000.00, 'Ahmedabad'),
('Amit', 'Female', 51000.00, 'Jaipur');

CREATE OR REPLACE PROCEDURE sp_get_employees_by_gender(
    IN p_gender VARCHAR(50),
    OUT p_employee_count INT
)
LANGUAGE plpgsql
AS $$
BEGIN
    -- Count total employees by gender
    SELECT COUNT(id)
    INTO p_employee_count
    FROM employee_info
    WHERE gender = p_gender;

    -- Display the result
    RAISE NOTICE 'Total employees with gender %: %', p_gender, p_employee_count;
END;
$$;


CALL sp_get_employees_by_gender('Male', NULL);
```

Q2) CREATE TABLE products (
    product_code VARCHAR(10) PRIMARY KEY,
    product_name VARCHAR(100) NOT NULL,
    price NUMERIC(10,2) NOT NULL,
    quantity_remaining INT NOT NULL,
    quantity_sold INT DEFAULT 0
);

CREATE TABLE sales (
    order_id SERIAL PRIMARY KEY,
    order_date DATE NOT NULL,
    product_code VARCHAR(10) NOT NULL,
    quantity_ordered INT NOT NULL,
    sale_price NUMERIC(10,2) NOT NULL,
    FOREIGN KEY (product_code) REFERENCES products(product_code)
);

INSERT INTO products (product_code, product_name, price, quantity_remaining, quantity_sold)
VALUES
('P001', 'iPHONE 13 PRO MAX', 109999.00, 10, 0),
('P002', 'Samsung Galaxy S23 Ultra', 99999.00, 8, 0),
('P003', 'iPAD AIR', 55999.00, 5, 0),
('P004', 'MacBook Pro 14"', 189999.00, 3, 0),
('P005', 'Sony WH-1000XM5 Headphones', 29999.00, 15, 0);

INSERT INTO sales (order_date, product_code, quantity_ordered, sale_price)
VALUES
('2025-09-15', 'P001', 1, 109999.00),
('2025-09-16', 'P002', 2, 199998.00),
('2025-09-17', 'P003', 1, 55999.00),
('2025-09-18', 'P005', 2, 59998.00),
('2025-09-19', 'P001', 1, 109999.00);

SELECT * FROM PRODUCTS;
SELECT * FROM SALES;

---SOLUTION:

CREATE OR REPLACE PROCEDURE pr_buy_products(
    IN p_product_name VARCHAR,
    IN p_quantity INT
)
LANGUAGE plpgsql
AS $$

```
DECLARE
   v_product_code VARCHAR(20);
   v_price FLOAT;
   v_count INT;
BEGIN

   -- Step 1: Check if product exists and has enough quantity
   SELECT COUNT(*)
   INTO v_count
   FROM products
   WHERE product_name = p_product_name
   AND quantity_remaining >= p_quantity;

   -- Step 2: If sufficient stock
   IF v_count > 0 THEN

      -- Fetch product code and price
      SELECT product_code, price
      INTO v_product_code, v_price
      FROM products
      WHERE product_name = p_product_name;

      -- Insert a new record into the sales table
      INSERT INTO sales (order_date, product_code, quantity_ordered, sale_price)
      VALUES (CURRENT_DATE, v_product_code, p_quantity, (v_price * p_quantity));

      -- Update stock details
      UPDATE products
      SET quantity_remaining = quantity_remaining - p_quantity,
         quantity_sold = quantity_sold + p_quantity
      WHERE product_code = v_product_code;

      -- Confirmation message
      RAISE NOTICE 'PRODUCT SOLD..! Order placed successfully for % unit(s) of %.',
p_quantity, p_product_name;

   ELSE
      -- Step 3: If stock is insufficient
      RAISE NOTICE 'INSUFFICIENT QUANTITY..! Order cannot be processed for % unit(s)
of %.', p_quantity, p_product_name;
   END IF;
END;
$$;


CALL pr_buy_products ('MacBook Pro 14"', 1);
```

3. Output:

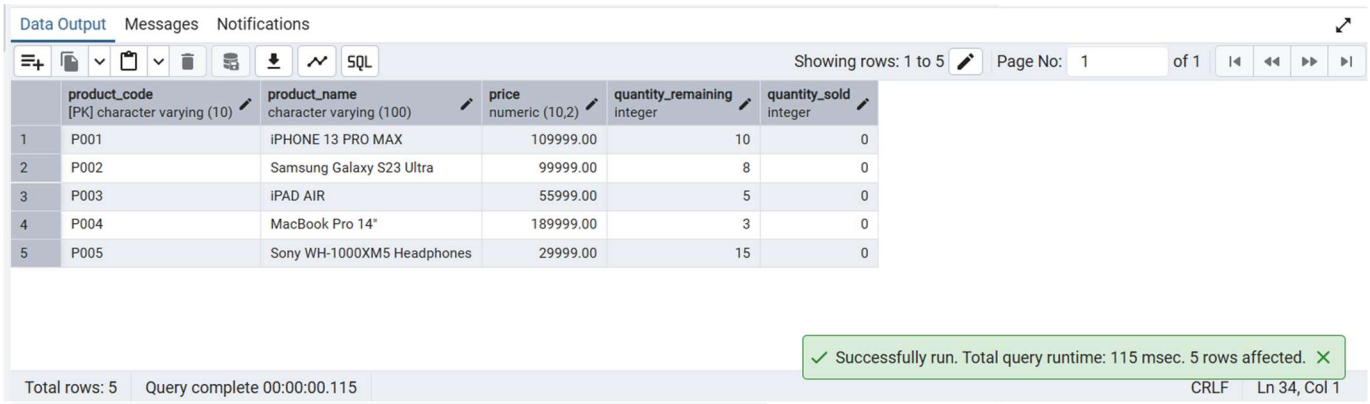
Data Output | Messages | Notifications

Showing rows: 1 to 1 | Page No: 1 of 1

	p_employee_count integer
1	6

Successfully run. Total query runtime: 57 msec. 1 rows affected.

Total rows: 1 | Query complete 00:00:00.057 | CRLF | Ln 40, Col 1



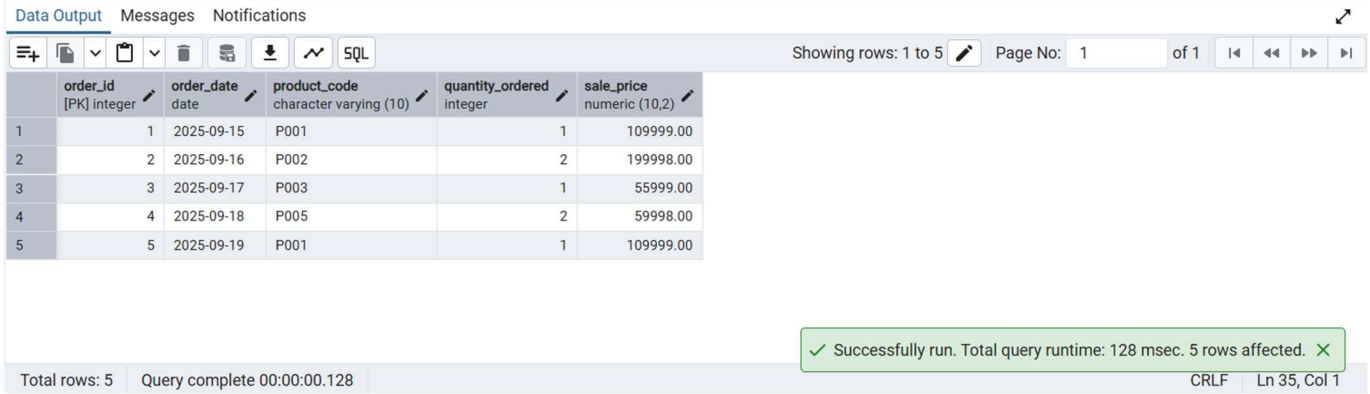
Data Output | Messages | Notifications

Showing rows: 1 to 5 | Page No: 1 of 1

	product_code [PK] character varying (10)	product_name character varying (100)	price numeric (10,2)	quantity_remaining integer	quantity_sold integer
1	P001	iPHONE 13 PRO MAX	109999.00	10	0
2	P002	Samsung Galaxy S23 Ultra	99999.00	8	0
3	P003	iPAD AIR	55999.00	5	0
4	P004	MacBook Pro 14"	189999.00	3	0
5	P005	Sony WH-1000XM5 Headphones	29999.00	15	0

Successfully run. Total query runtime: 115 msec. 5 rows affected.

Total rows: 5 | Query complete 00:00:00.115 | CRLF | Ln 34, Col 1



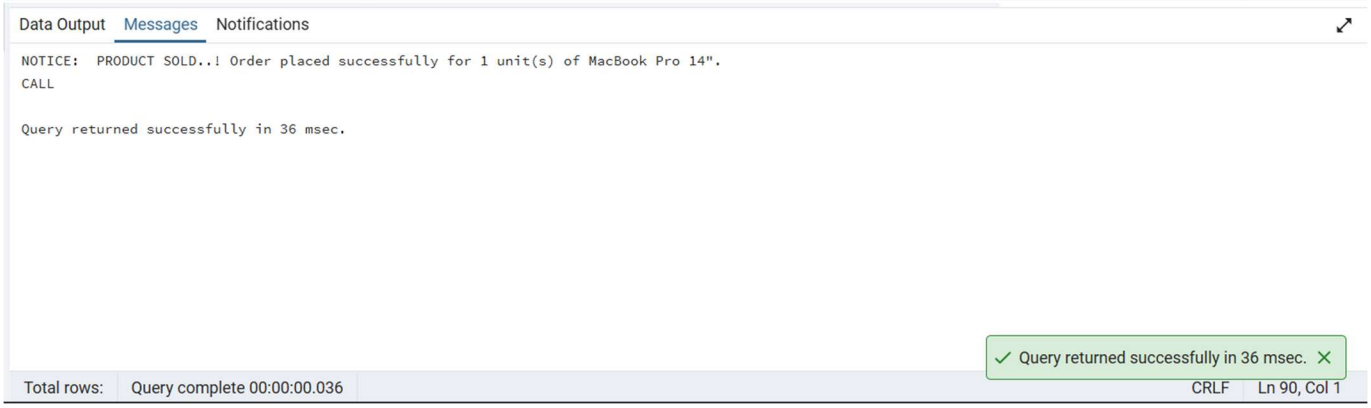
Data Output | Messages | Notifications

Showing rows: 1 to 5 | Page No: 1 of 1

	order_id [PK] integer	order_date date	product_code character varying (10)	quantity_ordered integer	sale_price numeric (10,2)
1	1	2025-09-15	P001	1	109999.00
2	2	2025-09-16	P002	2	199998.00
3	3	2025-09-17	P003	1	55999.00
4	4	2025-09-18	P005	2	59998.00
5	5	2025-09-19	P001	1	109999.00

Successfully run. Total query runtime: 128 msec. 5 rows affected.

Total rows: 5 | Query complete 00:00:00.128 | CRLF | Ln 35, Col 1



Data Output | Messages | Notifications

```
NOTICE:  PRODUCT SOLD..! Order placed successfully for 1 unit(s) of MacBook Pro 14".
CALL

Query returned successfully in 36 msec.
```


Query returned successfully in 36 msec.

Total rows: | Query complete 00:00:00.036 | CRLF | Ln 90, Col 1

4. Learning Outcomes:

i) Understanding Stored Procedures in PostgreSQL

- Learned how to **create and execute stored procedures** (CREATE PROCEDURE, CALL) using plpgsql language for handling business logic inside the database.

ii) **Working with Parameters (IN, OUT)**

- Gained practical knowledge of using **input (IN) and output (OUT) parameters** in procedures for dynamic queries, such as filtering employees by gender and returning counts.

iii)**Conditional Logic and Flow Control**

- Developed the ability to implement **conditional checks (IF...ELSE)** and validations (e.g., checking product availability before purchase) inside procedures.

iv)**Integration of DML Operations in Procedures**

- Learned how to combine **INSERT, UPDATE, and SELECT** queries within stored procedures to automate tasks like recording sales and updating stock in real time.

v)**Practical Application of Transactional Business Rules**

- Understood how procedures can enforce **business logic and constraints** at the database level (e.g., ensuring sufficient stock before confirming a sale, or counting employees by gender).