**Task 1: Algorithm Development Task: Inventory Recording System**

Start

For each item in inventory

Item id=1 , Current stock =30

Forecasted demand =105,

reorder cost/unit=3 , Reorder batch size=20

Item\_id , current\_stock, forecasted\_demand,reorder\_cost\_per\_unit,reorder\_batch\_size

Calculate Shortage:

Shortage=forecasted\_demand – current stock

Shortage =105-30 = 75

Shortage > 0

Yes No

Calculate units\_to\_order

Units\_to\_order = 0

Reorder\_cost = units\_to\_order \* reorder\_cost\_per\_unit

Reorder cost =

80 \* 3= 240( 75 rounded to 80)

Store reorder plan for item

Repeat for all items

Return order plan

End

**Algorithm Explanation**

Let explain the algorithm with an example

Begin the process for analyzing the inventory to calculate reorder quantities.

Each item in the inventory

item\_id

current\_stock (number of items currently in stock)

forecasted\_demand (estimated demand for the item)

reorder\_cost\_per\_unit (cost per unit to reorder)

reorder\_batch\_size (minimum units that must be ordered in one batch).

Here,

Item id=1 , Current stock =30

Forecasted demand =105,

reorder cost/unit=3 , Reorder batch size=20

To Calculate shortage:

Shortage = Forecasted\_demand – Current stock

Shortage = 105 - 30 = 75

Units to Order = Round 75 to next multiple of 20(Reorder batch size) → 80

If units\_to\_order > 0:

Use the formula:  
reorder\_cost = units\_to\_order \* reorder\_cost\_per\_unit

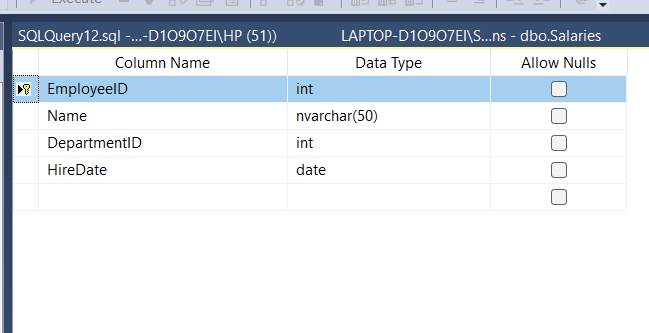
Reorder Cost = 80 \* 3 = 240

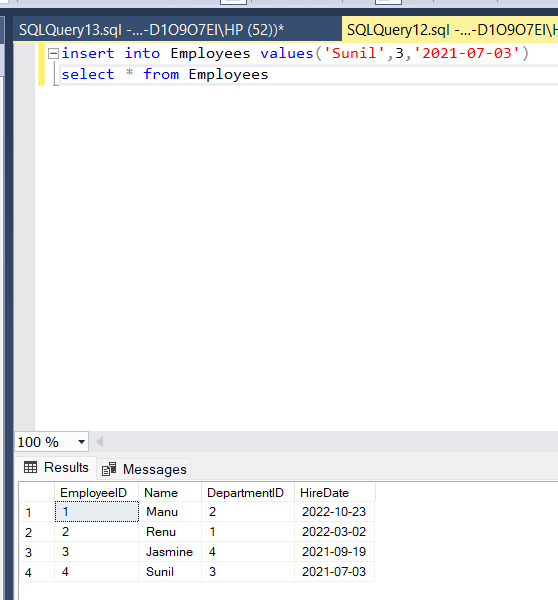
End  
Terminate the process after processing all inventory items.

**Database Task: Employee Management System**

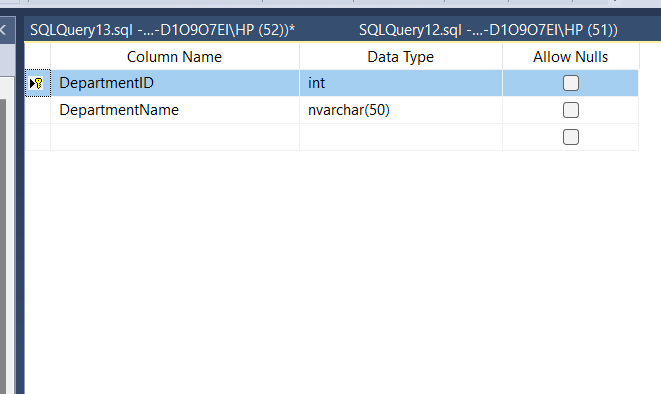
**1.Database Schema :**

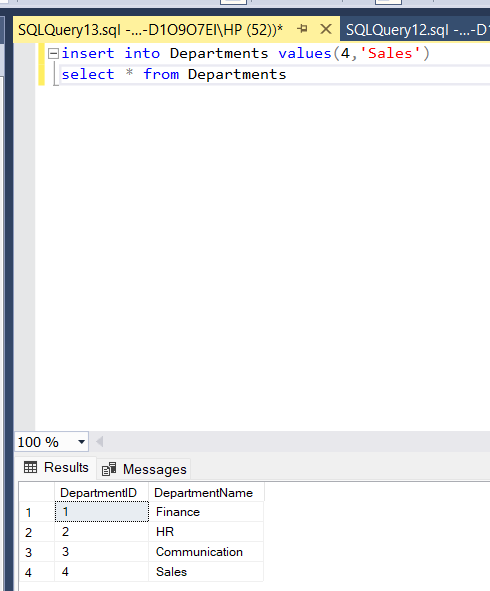
**Employee Table**

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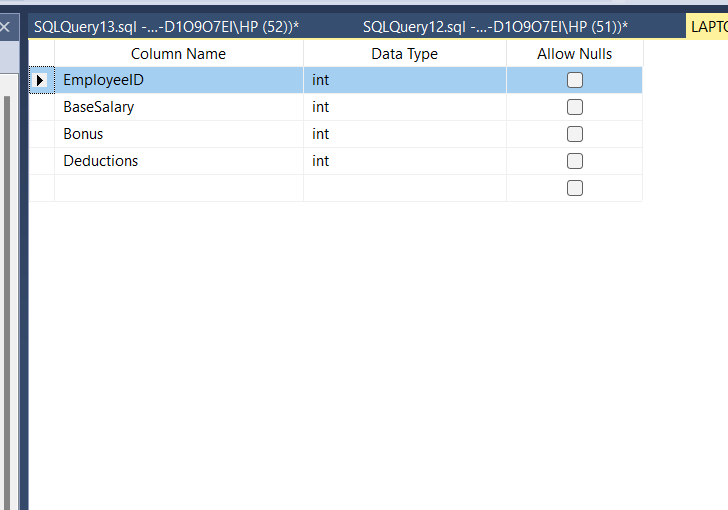
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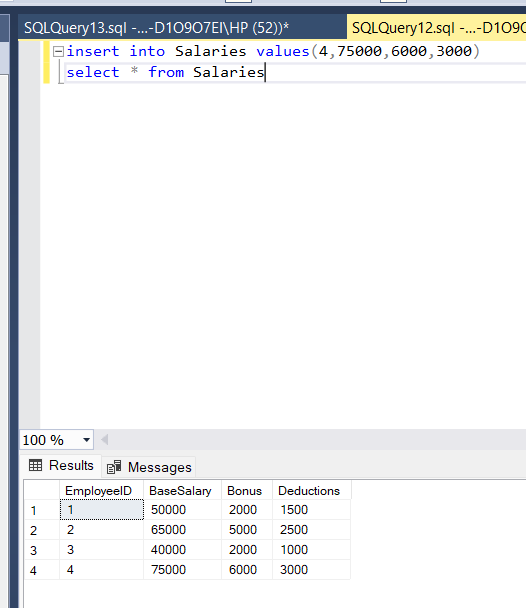
**Departments Table**



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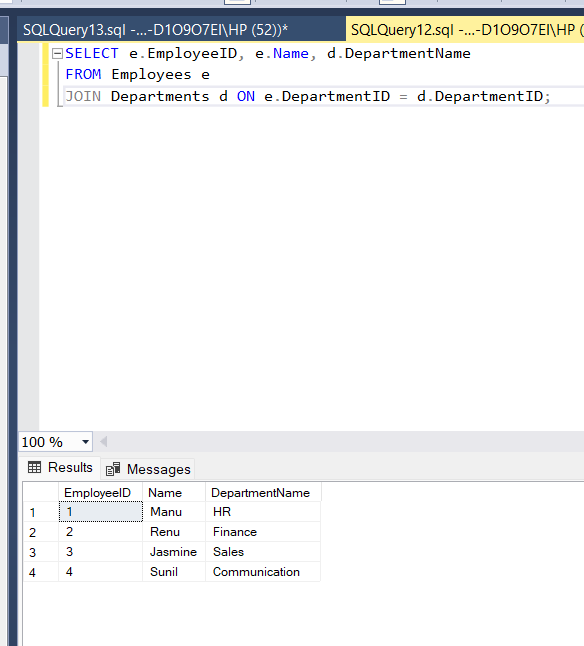
**Salaries Table**

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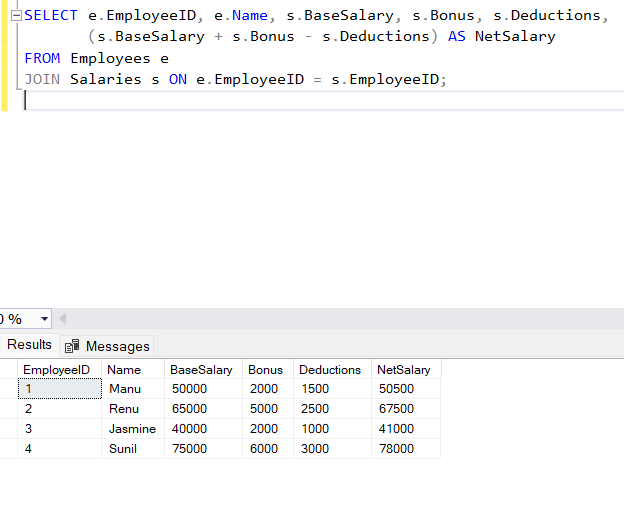
**2.SQL Queries**

* List all employees along with their department names

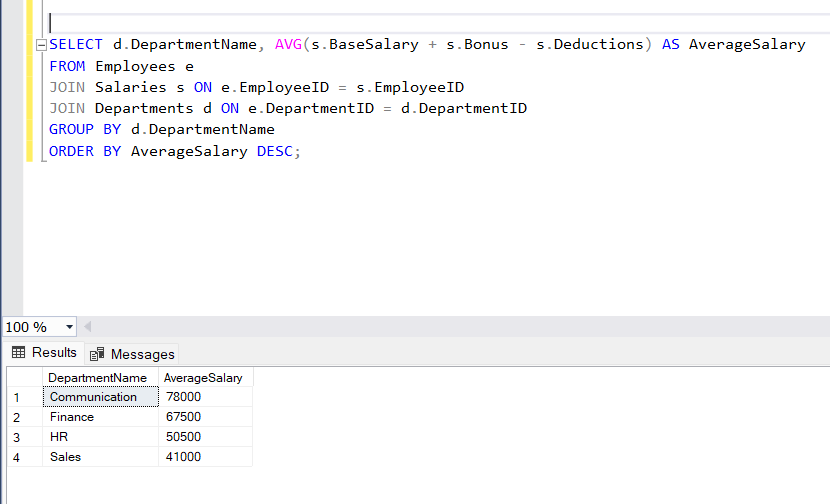


* Calculate the net salary for each employee using:

Net Salary = Base salary + Bonus -Deductions

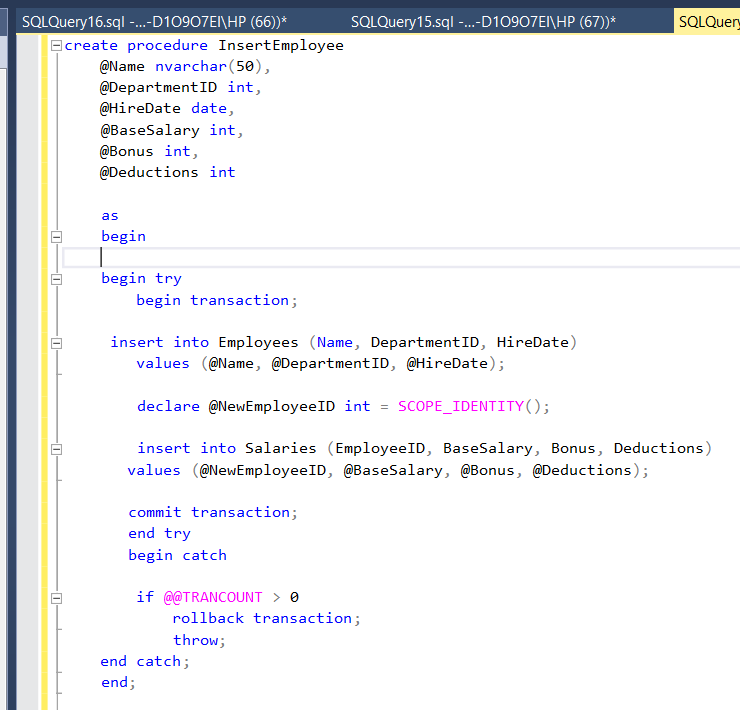


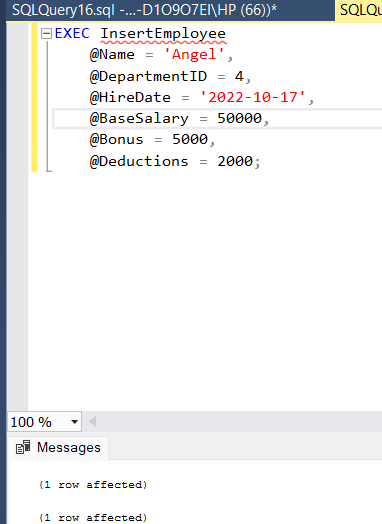
* Identify the department with the highest average salary.



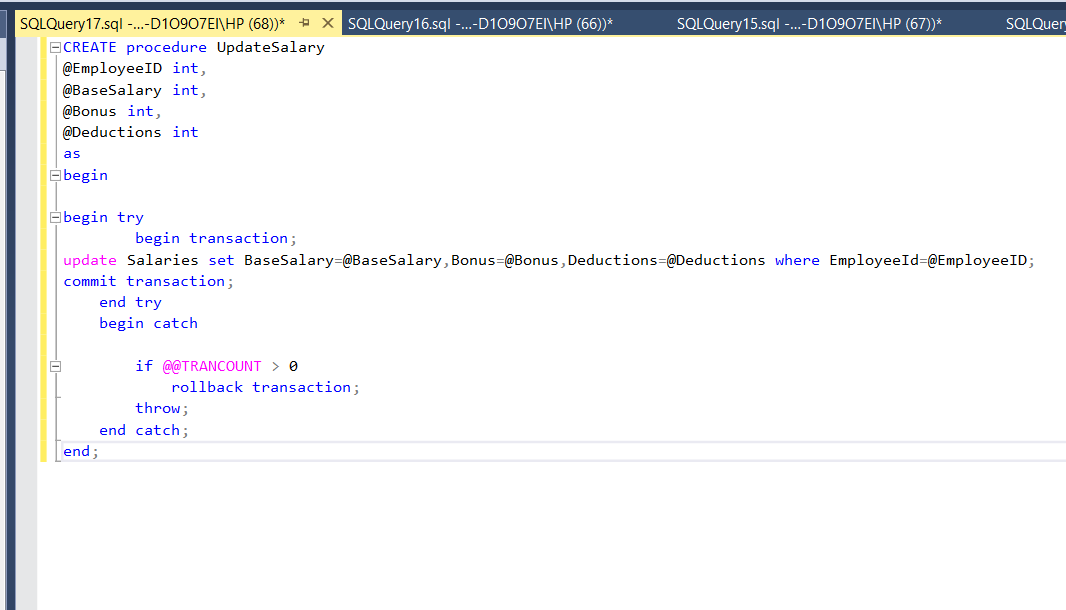
**3.Stored Procedure**

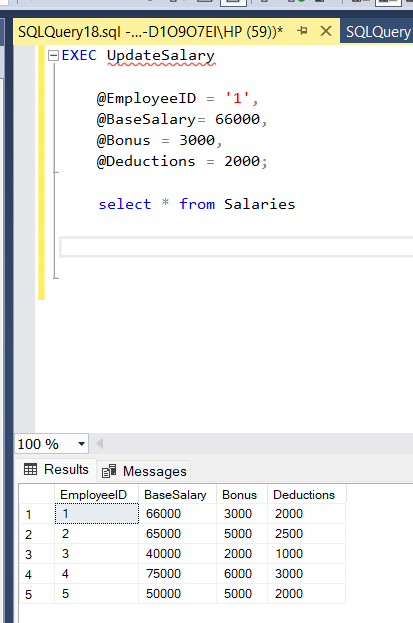
A procedure to insert a new employee into the Employees table ,ensuring valid DepartmentID and other constarints





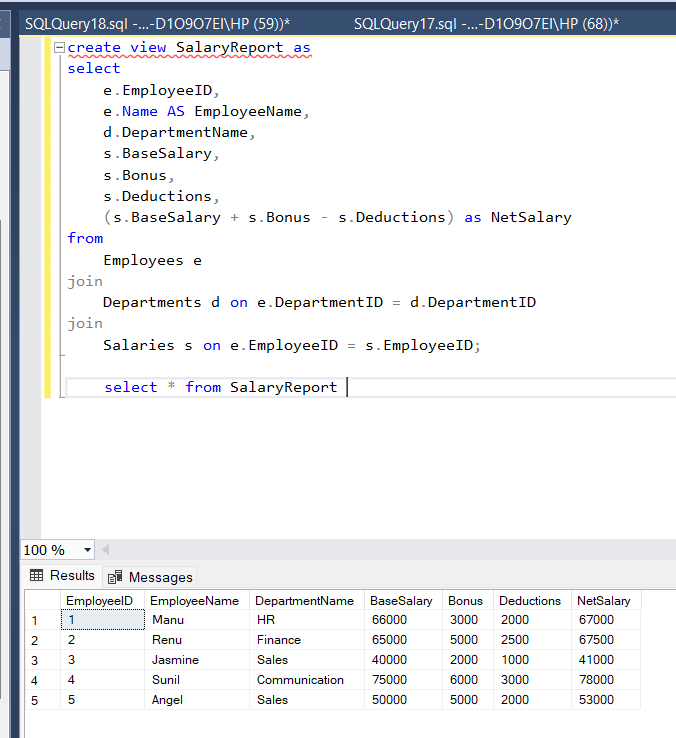
* A procedure to update the salary details of an employee





**4.Views:**

A view that combines Employees ,Departments, and Salaries to provide a detailed report of employee salaries with department name and net salaries



* A view that lists employees earning above a certain threshold

