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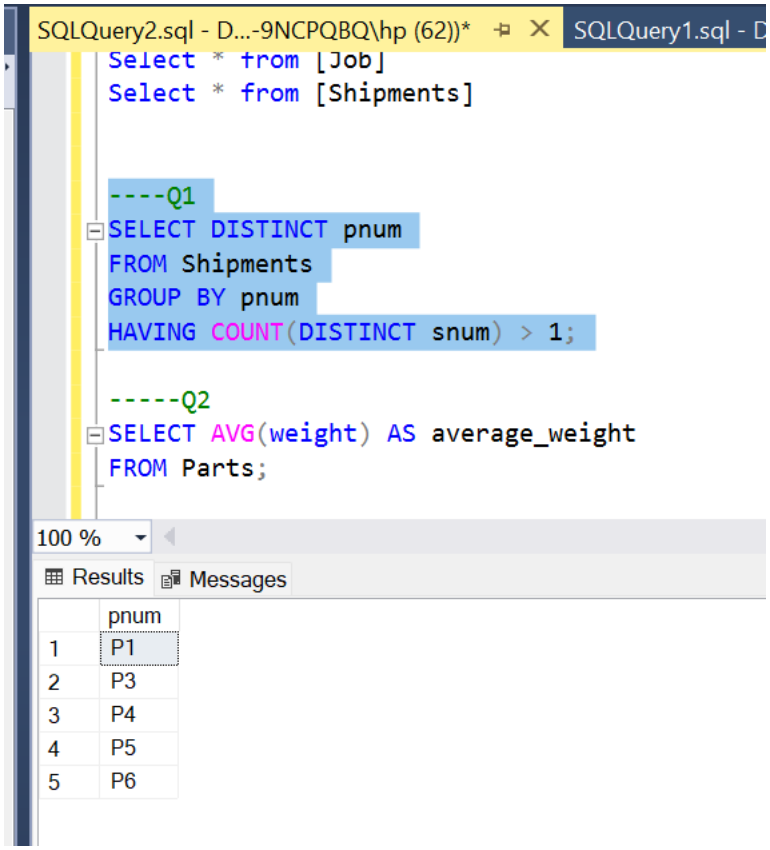
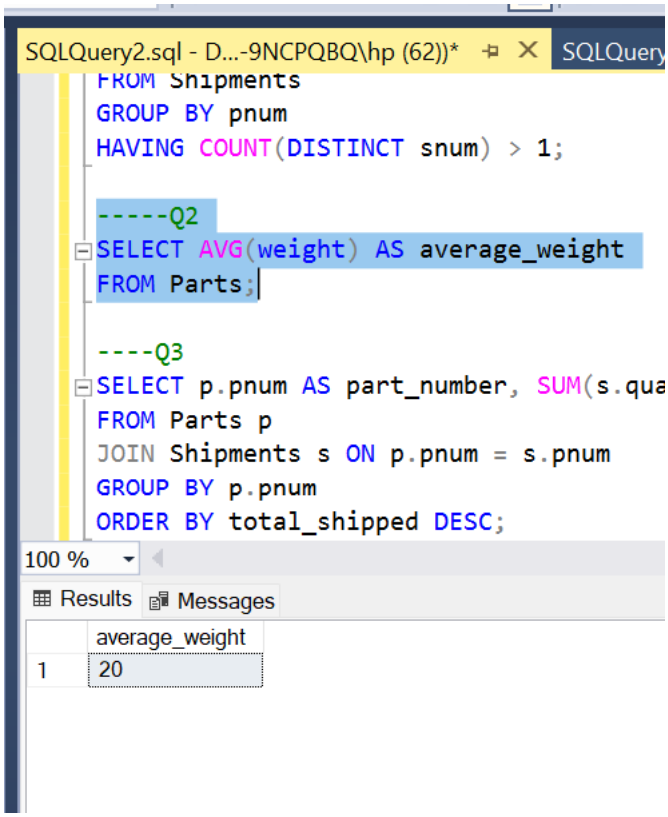
ASSIGNMENT 2+3

Question 1 (1 – 10 Queries)




SQLQuery2.sql - D...-9NCPQBQ\hp (62))*
SQLQuery
FROM Shipments
GROUP BY pnum
HAVING COUNT(DISTINCT snum) > 1;
-----Q2
SELECT AVG(weight) AS average_weight
FROM Parts;
----Q3
SELECT p.pnum AS part_number, SUM(s.qua
FROM Parts p
JOIN Shipments s ON p.pnum = s.pnum
GROUP BY p.pnum
ORDER BY total_shipped DESC;
100 %
Results
Messages
average_weight
1
20

SQLQuery2.sql - D...-9NCPQBQ\hp (62))* | SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | DESKTOP-9NCPQBQ...3 - dbo.Employee

```sql
----Q3
SELECT p.pnum AS part_number, SUM(s.quantity) AS total_shipped
FROM Parts p
JOIN Shipments s ON p.pnum = s.pnum
GROUP BY p.pnum
ORDER BY total_shipped DESC;
```

177 %

Results | Messages

	average_weight
1	20

SQLQuery2.sql - D...-9NCPQBQ\hp (62))* | SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | DESK

```sql
----Q4
SELECT DISTINCT s.sname
FROM Suppliers s
JOIN Shipments sh ON s.snum = sh.snum
JOIN Parts p ON sh.pnum = p.pnum
WHERE p.weight > 200;
-----q5
```

177 %

Results | Messages

sname

```
WHERE p.weight > 200;
-----q5
SELECT DISTINCT s.city
FROM Suppliers s
JOIN Job j ON s.city = j.city;

----Q6
```

177 %

Results | Messages

	city
1	Athens
2	London
3	Paris

```
----Q6
SELECT DISTINCT j.jname
FROM Shipments sh
JOIN Job j ON sh.jnum = j.jnum
WHERE sh.snum = 'S1';

---Q7
```

esults | Messages

city
Athens
London
Paris

```sql
---Q7
SELECT DISTINCT p.pname
FROM Parts p
LEFT JOIN Shipments sh ON p.pnum = sh.pnum
WHERE sh.jnum IS NULL;
```

177 %

Results | Messages

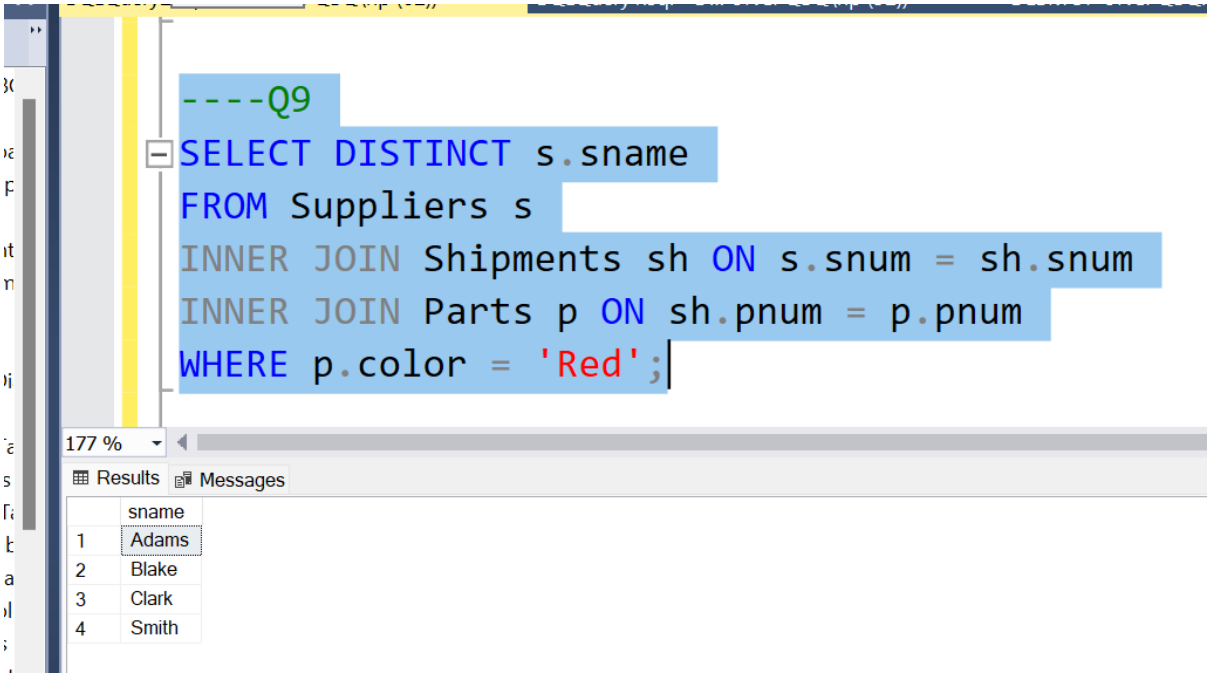
pname

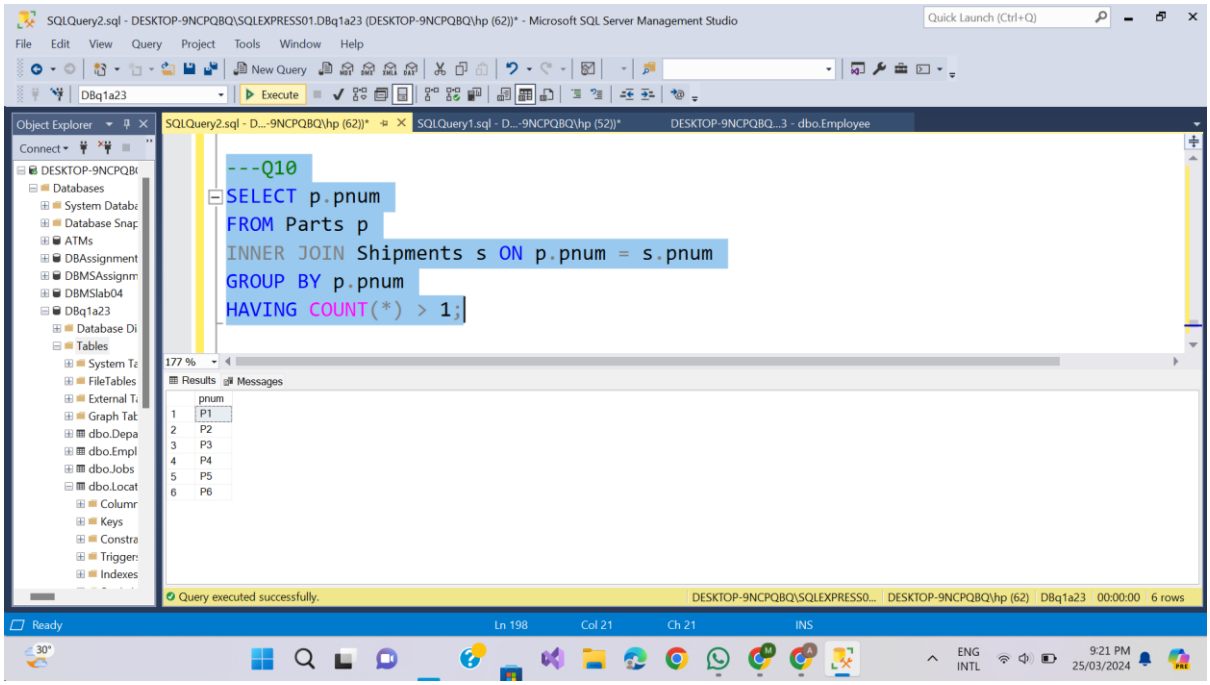
```sql
---Q8
SELECT DISTINCT s.sname
FROM Suppliers s
INNER JOIN Shipments sh ON s.snum = sh.snum
WHERE sh.pnum = 'P2';

----Q9
```

%

Results | Messages

sname
Adams





Question 1 (1 – 10 RA)

1. π(pnum)(σCOUNT(DISTINCT snum) > 1(Shipments))

2. ρ(average_weight)(π(weight)Parts ÷ ρ(count)(πCOUNT(weight)(Parts)))

3. ρ(part_number, total_shipped)(π(pnum, SUM(quantity))(Parts ⋈ Shipments))

4. π(sname)(σweight > 200(Suppliers ⋈ Shipments ⋈ Parts))

5. π(city)(Suppliers ⋈ city=j.city Job)

6. π(jname)(σ(snum='S1')(Shipments ⋈ jnum=j.jnum Job))

7. π(pname)((Parts ⋈left pnum=pnum Shipments) - π(p.pnum)(Shipments))

8. π(sname)(σ(pnum='P2')(Suppliers ⋈ snum=snum Shipments))

9. π(sname)(σ(color='Red')(Suppliers ⋈ snum=snum Shipments ⋈ pnum=pnum Parts))

10. π(pnum)(σ(pnum=spnum)(γ(pnum; COUNT(*) > 1)(Parts ⋈ pnum=pnum Shipments)))

Question 2 (1 – 18 RA)

1. π (FIRST_NAME || ' ' || LAST_NAME, SALARY)(σ(SALARY > (ρ(SALARY_Bull)(σ(LAST_NAME = 'Bull')(Employee)))(Employee)))
2. π(FIRST_NAME, LAST_NAME)(σ(DEPARTMENT_ID = (π(DEPARTMENT_ID)(σ(DEPARTMENT_NAME = 'IT')(Departments))))(Employee))

3. π(FIRST_NAME, LAST_NAME)

(σ(MANAGER_ID ≠ NULL AND country_id = 'US')

(Employee ⋈ (σ(DEPARTMENT_ID = DEPARTMENT_ID)

(Departments ⋈ Locations))))

4. π (EMPLOYEE_ID, FIRST_NAME, LAST_NAME)

(σ (SALARY > AVG_SALARY)

(Employee ⋈ ρ(AVG_SALARY) (π(AVG(SALARY)(Employee))))

5. π(FIRST_NAME, LAST_NAME, EMPLOYEE_ID, JOB_ID)(

σ(city = 'Toronto')(Employee ⋈ (Departments ⋈ Locations)))

6. π(FIRST_NAME, LAST_NAME, EMPLOYEE_ID, SALARY)(

σ(MANAGER_ID = (π(EMPLOYEE_ID)(σ(FIRST_NAME = 'Payam')(Employee)))))

7. π(DEPARTMENT_NAME)(σ(DEPARTMENT_ID ∈ (π(DEPARTMENT_ID)(Employee))))

8. Employee - (π(Employee)⋈(π(MANAGER_ID)(σ(100 ≤ MANAGER_ID ≤ 200)(Departments))))

9. π(FIRST_NAME, LAST_NAME, DEPARTMENT_ID)(

σ(SALARY = MIN_SALARY)(

ρ(MIN_SALARY, MIN_SALARY)(

π(MIN_SALARY)(

σ(d.DEPARTMENT_ID = e.DEPARTMENT_ID)(

Jobs ⋈ (d.DEPARTMENT_ID = e.DEPARTMENT_ID) Departments)))))

10. π(FIRST_NAME, LAST_NAME)(

σ(EMPLOYEE_ID ∈ ρ(MANAGER_ID)(σ(MANAGER_ID ≠ NULL)(Employee))))

11. π(EMPLOYEE_ID, FIRST_NAME, LAST_NAME, JOB_ID)(

σ(SALARY < MIN_SALARY AND JOB_ID ≠ 'MK_MAN')(

Employee ⋈ (π(MIN_SALARY)(σ(JOB_ID = 'MK_MAN')(Jobs)))))

12. π(FIRST_NAME, LAST_NAME, SALARY)(

σ(SALARY > AVG_SALARY)(

Employee ⋈ ρ(AVG_SALARY)(π(AVG(SALARY))(Employee))))

13. π(FIRST_NAME, LAST_NAME, SALARY)(

σ(SALARY = MIN_SALARY)(

Employee ⋈_{Employee.JOB_ID = Jobs.JOB_ID} Jobs))

14. π(FIRST_NAME, LAST_NAME, SALARY)(

σ(d.DEPARTMENT_NAME = 'IT' ∧ e.SALARY > AVG_SALARY)(

Employee ⋈_{e.DEPARTMENT_ID = d.DEPARTMENT_ID} Departments))

15. π(FIRST_NAME, LAST_NAME, SALARY)(

σ(e.SALARY > SALARY_BELL)(

Employee

⋈_{e.LAST_NAME = 'Bell'}

(ρ(SALARY_BELL)(σ(LAST_NAME = 'Bell')(Employee)))))

16. π(FIRST_NAME, LAST_NAME, SALARY)(

σ(e.SALARY = MIN_SALARY)(

Employee

⋈_{e.SALARY = MIN_SALARY}(ρ(MIN_SALARY)(γ(MIN(SALARY))(Employee))))**)**

17. π(FIRST_NAME, LAST_NAME, SALARY)(

Employee - (π(FIRST_NAME, LAST_NAME, SALARY)(Employee ⋈ σ(SALARY < AVG_SALARY)(ρ(AVG_SALARY)(γ(JOB_ID, AVG(SALARY))(Employee)))))**)**

18. π(Third_Max_Salary)(

ρ(Third_Max_Salary)(

γ(MAX(SALARY) as Third_Max_Salary)(Employee)

-

ρ(MAX_SALARY)(γ(MAX(SALARY))(Employee))))

SQLQuery1.sql - D...-9NCPQBQ\hp (52))*

```
        GROUP BY JOB_ID
    );
---Q18 3RD HIGHEST SALARY

SELECT MAX(SALARY) AS Third_Max_Salary
FROM Employee
WHERE SALARY <> (
    SELECT MAX(SALARY)
    FROM Employee
    WHERE SALARY <> (SELECT MAX(SALARY)
    FROM Employee
))
AND SALARY NOT IN (
    SELECT MAX(SALARY)
    FROM Employee
);
```

88 %

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* SQL

```
---Q17
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.SALARY
FROM
    Employee e
WHERE
    e.SALARY > all(
        SELECT AVG(SALARY)
        FROM Employee
        GROUP BY JOB_ID
    );
---Q18 3RD HIGHEST SALARY
```

88 %

Results | Messages | Execution plan

FIRST_NAME	LAST_NAME	SALARY

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9N

```
---Q16
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.SALARY
FROM
    Employee e
WHERE
    e.SALARY = (
        SELECT MIN(SALARY)
        FROM Employee
    );
```

88 %

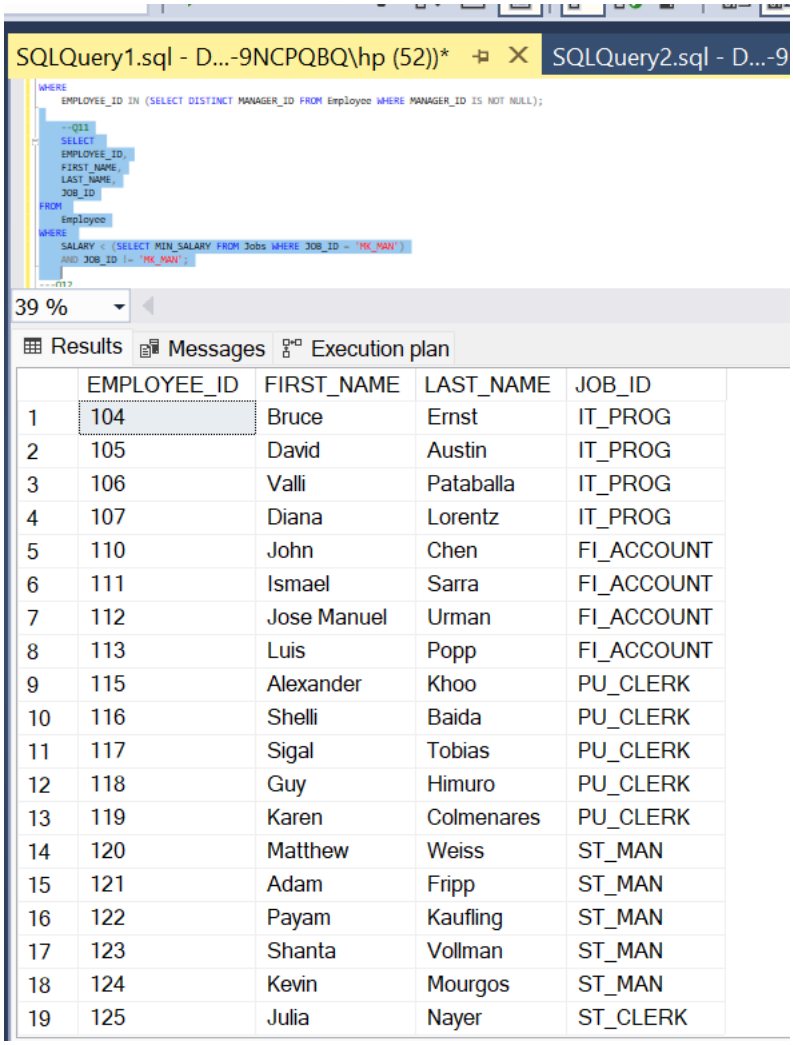
Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	SALARY
1	Karen	Colmenares	2500

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9NCPQBQ\hp (62))*

```
        WHERE
         d.DEPARTMENT_NAME = 'IT'
    );
---Q15
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.SALARY
FROM
    Employee e

WHERE
    e.SALARY >
    (select SALARY FROM Employee where LAST_NAME = 'Bell');
```

88 %



	EMPLOYEE_ID	FIRST_NAME	LAST_NAME	JOB_ID
1	104	Bruce	Ernst	IT_PROG
2	105	David	Austin	IT_PROG
3	106	Valli	Pataballa	IT_PROG
4	107	Diana	Lorentz	IT_PROG
5	110	John	Chen	FI_ACCOUNT
6	111	Ismael	Sarra	FI_ACCOUNT
7	112	Jose Manuel	Urman	FI_ACCOUNT
8	113	Luis	Popp	FI_ACCOUNT
9	115	Alexander	Khoo	PU_CLERK
10	116	Shelli	Baida	PU_CLERK
11	117	Sigal	Tobias	PU_CLERK
12	118	Guy	Himuro	PU_CLERK
13	119	Karen	Colmenares	PU_CLERK
14	120	Matthew	Weiss	ST_MAN
15	121	Adam	Fripp	ST_MAN
16	122	Payam	Kaufling	ST_MAN
17	123	Shanta	Vollman	ST_MAN
18	124	Kevin	Mourgos	ST_MAN
19	125	Julia	Nayer	ST_CLERK

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9NCPQBQ\hp (62))* | DESKTOP-9NCPQBQ...3 - dbo.Emp

```sql
---Q10
SELECT
    FIRST_NAME,
    LAST_NAME
FROM
    Employee
WHERE
    EMPLOYEE_ID IN (SELECT DISTINCT MANAGER_ID FROM Employee WHERE MANAGER_ID IS NOT NULL);

    --Q11
    SELECT
    EMPLOYEE_ID,
    FIRST_NAME,
    LAST_NAME,
```

100 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME
1	Steven	King
2	Neena	Kochhar
3	Lex	De Haan
4	Alexander	Hunold
5	Nancy	Greenberg
6	Den	Raphaely
7	Matthew	Weiss

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9NCPQBQ\hp (62))*

```sql
---Q9
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.DEPARTMENT_ID
FROM
    Employee e
WHERE
    e.SALARY = (
        SELECT
            MIN_SALARY
        FROM
            Jobs j
        JOIN
            Departments d ON j.JOB_ID = e.JOB_ID
        WHERE
            d.DEPARTMENT_ID = e.DEPARTMENT_ID
    );
    select * from Employee
```

100 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	DEPARTMENT_ID
1	Karen	Colmenares	30

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql

```sql
---Q12
SELECT
    FIRST_NAME,
    LAST_NAME,
    SALARY
FROM
    Employee
WHERE
    SALARY > (SELECT AVG(SALARY) FROM Employee);

-----Q13
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.SALARY
```

88 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	SALARY
1	Steven	King	24000
2	Neena	Kochhar	17000
3	Lex	De Haan	17000
4	Alexander	Hunold	9000
5	Nancy	Greenberg	12000
6	Daniel	Faviet	9000
7	John	Chen	8200
8	Den	Raphaely	11000
9	Matthew	Weiss	8000
10	Adam	Fripp	8200
11	Payam	Kaufling	7900

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D.

```
    LAST_NAME,
    SALARY
FROM
    Employee
WHERE
    SALARY > (SELECT AVG(SALARY) FROM Employee);

-----Q13
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.SALARY
FROM
    Employee e
JOIN
    Jobs j ON e.JOB_ID = j.JOB_ID
WHERE
    e.SALARY = j.MIN_SALARY;

------Q14
SELECT
```

88 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	SALARY
1	Karen	Colmenares	2500

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9N

```
WHERE
    e.SALARY = j.MIN_SALARY;

-----Q14
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.SALARY

FROM
    Employee e
JOIN
    Departments d ON e.DEPARTMENT_ID = d.DEPARTMENT_ID

    AND e.SALARY > (
        SELECT AVG(SALARY)
        FROM Employee
        WHERE
         d.DEPARTMENT_NAME = 'IT'
    );
---Q15
SELECT
```

88 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	SALARY
1	Alexander	Hunold	9000

```sql
select * from Departments;
----Q8
SELECT *
FROM
   Employee
  EXCEPT
  SELECT *
FROM
   Employee
WHERE
 MANAGER_ID IN (
 SELECT MANAGER_ID FROM Departments
 WHERE
 MANAGER_ID BETWEEN 100 AND 200);
```

Results | Messages | Execution plan

	EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
1	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
2	100	Steven	King	SKING	515.123.4567	17-06-87	AD_PRES	24000	0	0	90
3	103	Alexander	Hunold	AHUNOLD	590.423.4567	20-06-87	IT_PROG	9000	0	102	60
4	108	Nancy	Greenberg	NGREENBE	515.124.4569	25-06-87	FI_MGR	12000	0	101	100
5	125	Julia	Nayer	JNAYER	650.124.1214	07/12/1987	ST_CLERK	3200	0	120	50

```sql
    select *from Employee;
-----Q7
SELECT
    DEPARTMENT_NAME
FROM
    Departments
WHERE
    DEPARTMENT_ID IN (SELECT DISTINCT DEPARTMENT_ID FROM Employee);
--select * from Employee;
select * from Departments;
----Q8
```

Results | Messages | Execution plan

	DEPARTMENT_NAME
1	Purchasing
2	Shipping
3	IT
4	Executive
5	Finance

```sql
WHERE
    l.city = 'Toronto';

-----Q6
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.EMPLOYEE_ID,
    e.SALARY
FROM
    Employee e
WHERE
    e.MANAGER_ID = (SELECT EMPLOYEE_ID FROM Employee WHERE FIRST_NAME = 'Payam');
    select *from Employee;
-----Q7
```

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	EMPLOYEE_ID	SALARY

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9NCPQBQ\hp

```
------Q5
SELECT
    e.FIRST_NAME,
    e.LAST_NAME,
    e.EMPLOYEE_ID,
    e.JOB_ID
FROM
    Employee e
JOIN
    Departments d ON e.DEPARTMENT_ID = d.DEPARTMENT_ID
JOIN
    Locations l ON d.LOCATION_ID = l.location_id
WHERE
    l.city = 'Toronto';
```

100 %

Results | Messages | Execution plan

FIRST_NAME	LAST_NAME	EMPLOYEE_ID	JOB_ID

Execute

SQLQuery1.sql - D...-9NCPQBQ\hp (52))* | SQLQuery2.sql - D...-9NCPQ

```
    AND l.country_id = 'US';
----Q4
SELECT
    EMPLOYEE_ID,
    FIRST_NAME,
    LAST_NAME
FROM
    Employee
WHERE
    SALARY > (SELECT AVG(SALARY) FROM Employee);

------Q5
```

100 %

Results | Messages | Execution plan

	EMPLOYEE_ID	FIRST_NAME	LAST_NAME
1	100	Steven	King
2	101	Neena	Kochhar
3	102	Lex	De Haan
4	103	Alexander	Hunold
5	108	Nancy	Greenberg
6	109	Daniel	Faviet
7	110	John	Chen
8	114	Den	Raphaely
9	120	Matthew	Weiss
10	121	Adam	Fripp
11	122	Payam	Kaufling

```
WHERE LAST_NAME = 'Bull' );
---Q2.find the name (first_name, last_name) of all employees who works in the IT department.
SELECT e. FIRST_NAME, e.LAST_NAME FROM
Employee e
JOIN
Departments AS d ON e.DEPARTMENT_ID = d.DEPARTMENT_ID
where d.DEPARTMENT_ID = (SELECT DEPARTMENT_ID FROM Departments WHERE DEPARTMENT_NAME = 'IT');
SELECT
```

124 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME
1	Alexander	Hunold
2	Bruce	Ernst
3	David	Austin
4	Valli	Pataballa
5	Diana	Lorentz

```
----------QUESTION 1--------
---find the name (first_name, last_name) and the salary of the employees who have a higher
--salary than the employee whose last_name='Bull'
SELECT
    CONCAT(FIRST_NAME, ' ', LAST_NAME) AS Employee_Name,
    SALARY
FROM
    Employee
WHERE
    SALARY > (SELECT SALARY
              FROM Employee
              WHERE LAST_NAME = 'Bull');
---Q2.find the name (first_name, last_name) of all employees who works in the IT department.
```

90 %

Results | Messages | Execution plan

Employee_Name	SALARY

```sql
select * from Employee;
---Q3.
SELECT FIRST_NAME,LAST_NAME , DEPARTMENT_ID
FROM
   Employee
WHERE
    MANAGER_ID <>0 AND DEPARTMENT_ID IN(
    SELECT DEPARTMENT_ID
    FROM
    Departments WHERE LOCATION_ID IN(
    SELECT LOCATION_ID
    FROM
    Locations WHERE country_id = 'US'));
    --------
```

100 %

Results | Messages | Execution plan

	FIRST_NAME	LAST_NAME	DEPARTMENT_ID
1	Neena	Kochhar	90
2	Lex	De Haan	90
3	Alexander	Hunold	60
4	Bruce	Ernst	60
5	David	Austin	60
6	Valli	Pataballa	60
7	Diana	Lorentz	60
8	Nancy	Greenberg	100
9	Daniel	Faviet	100
10	John	Chen	100
11	Ismael	Sarra	100

Query executed successfully.