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**Description: Querying a Relational Database COMPANY database using Microsoft SQL**

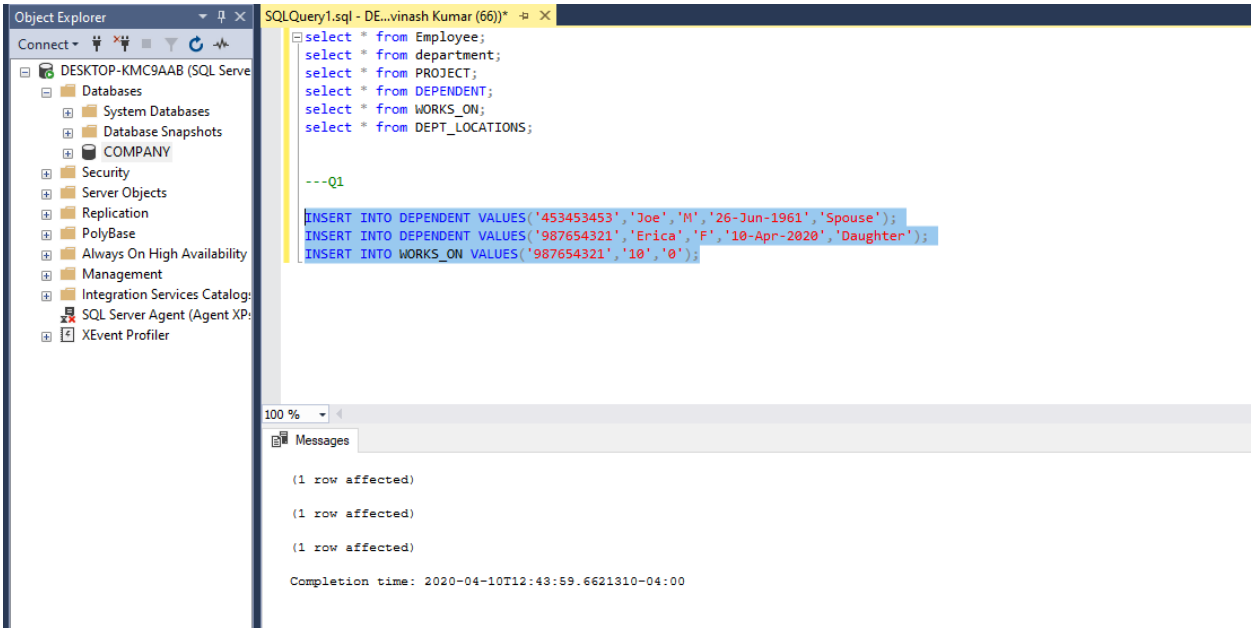
1. Update the following new changes into the database:
   1) Joyce English with SSN = 453453453 got married with Joe Anderson. (Joe is not an employee of the Company and do NOT change the last name of Joyce to Anderson)
   2) Jenifer Wallace with SSN = 987654321 just had a new daughter named Erica.
   3) Jenifer Wallace with SSN = 987654321 is just assigned to a new project number '10' to work on with 0 initial hours.

   Add these new entries into Dependent, Works_On tables in your database then Select * from Dependent and Select * from Works_On to show the updated table content. Note that if you don't insert these data as directed, your query results for Q1 – Q5 won't be correct.

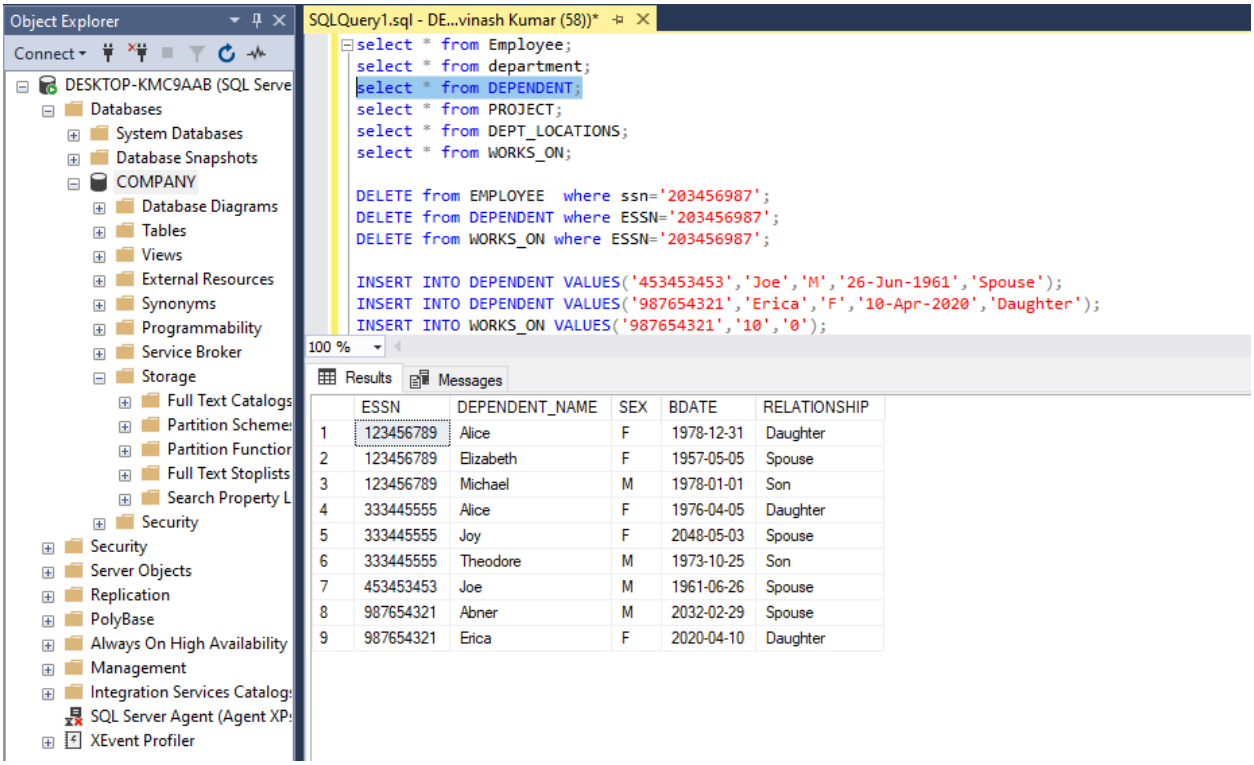
   **Answer:**

```
---Q1

INSERT INTO DEPENDENT VALUES('453453453','Joe','M','26-Jun-1961','Spouse');
INSERT INTO DEPENDENT VALUES('987654321','Erica','F','10-Apr-2020','Daughter');
INSERT INTO WORKS_ON VALUES('987654321','10','0');
```

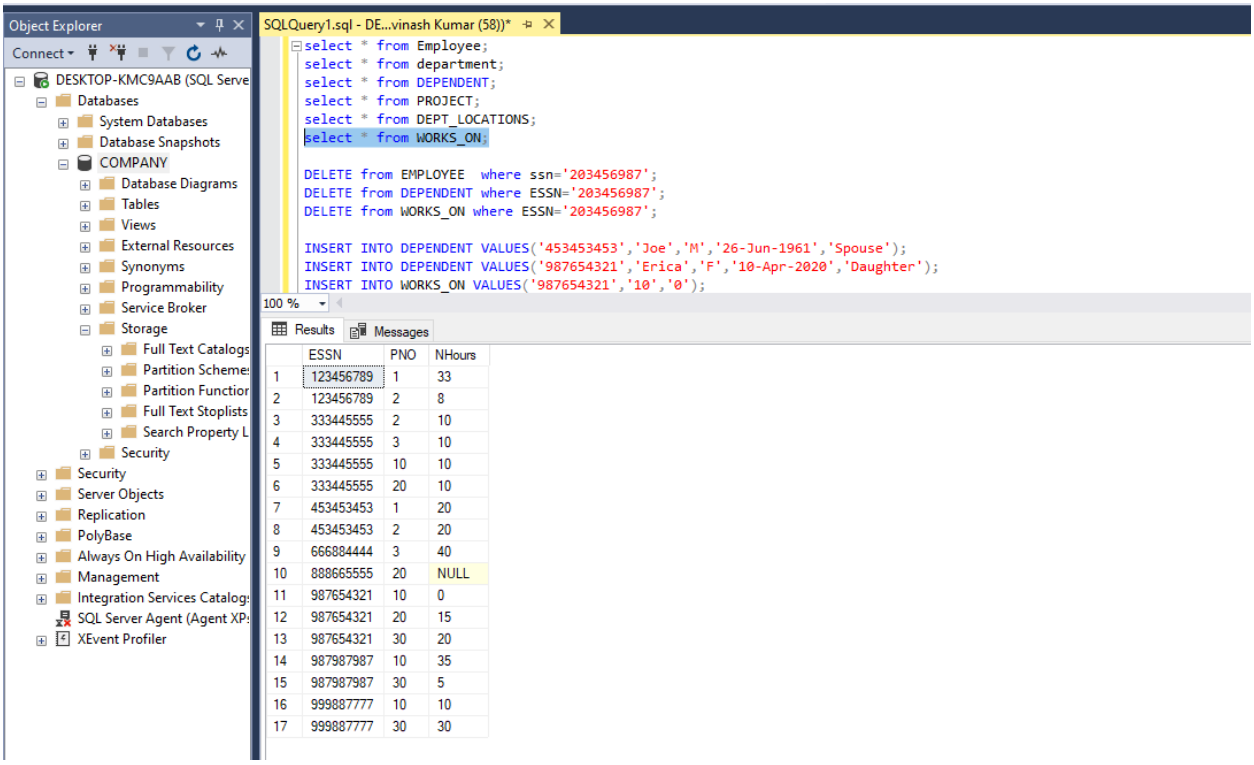


```
select * from DEPENDENT;
```




| | ESSN | DEPENDENT_NAME | SEX | BDATE | RELATIONSHIP |
|---|---|---|---|---|---|
| 1 | 123456789 | Alice | F | 1978-12-31 | Daughter |
| 2 | 123456789 | Elizabeth | F | 1957-05-05 | Spouse |
| 3 | 123456789 | Michael | M | 1978-01-01 | Son |
| 4 | 333445555 | Alice | F | 1976-04-05 | Daughter |
| 5 | 333445555 | Joy | F | 2048-05-03 | Spouse |
| 6 | 333445555 | Theodore | M | 1973-10-25 | Son |
| 7 | 453453453 | Joe | M | 1961-06-26 | Spouse |
| 8 | 987654321 | Abner | M | 2032-02-29 | Spouse |
| 9 | 987654321 | Erica | F | 2020-04-10 | Daughter |

```
select * from WORKS_ON;
```



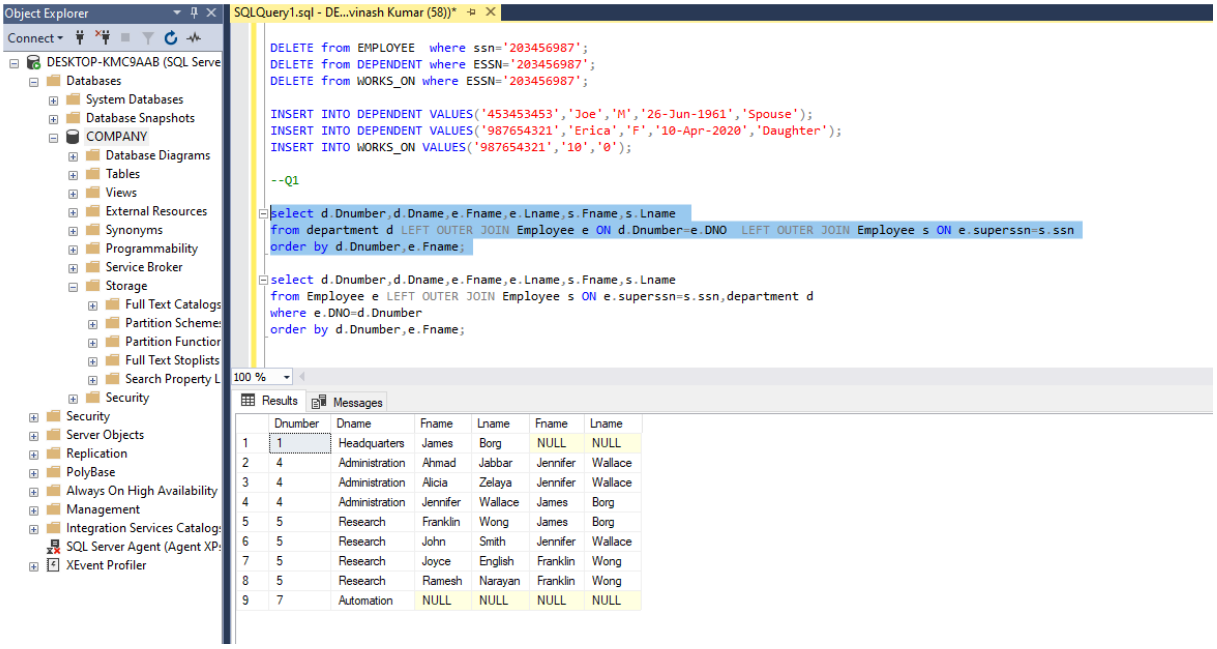

| | ESSN | PNO | NHours |
|---|---|---|---|
| 1 | 123456789 | 1 | 33 |
| 2 | 123456789 | 2 | 8 |
| 3 | 333445555 | 2 | 10 |
| 4 | 333445555 | 3 | 10 |
| 5 | 333445555 | 10 | 10 |
| 6 | 333445555 | 20 | 10 |
| 7 | 453453453 | 1 | 20 |
| 8 | 453453453 | 2 | 20 |
| 9 | 666884444 | 3 | 40 |
| 10 | 888665555 | 20 | NULL |
| 11 | 987654321 | 10 | 0 |
| 12 | 987654321 | 20 | 15 |
| 13 | 987654321 | 30 | 20 |
| 14 | 987987987 | 10 | 35 |
| 15 | 987987987 | 30 | 5 |
| 16 | 999887777 | 10 | 10 |
| 17 | 999887777 | 30 | 30 |

2. Write SQL Select statements to retrieve data in the followings:

Q1: For each department, list the first and last name of each employee who is working in the department with the first and last name of his or her immediate supervisor with the department number and name together. Include all the departments including the departments that do not have any employee and all the employees including the ones who do not have any supervisors. List the result in the order of each department number and the first name of each employee.

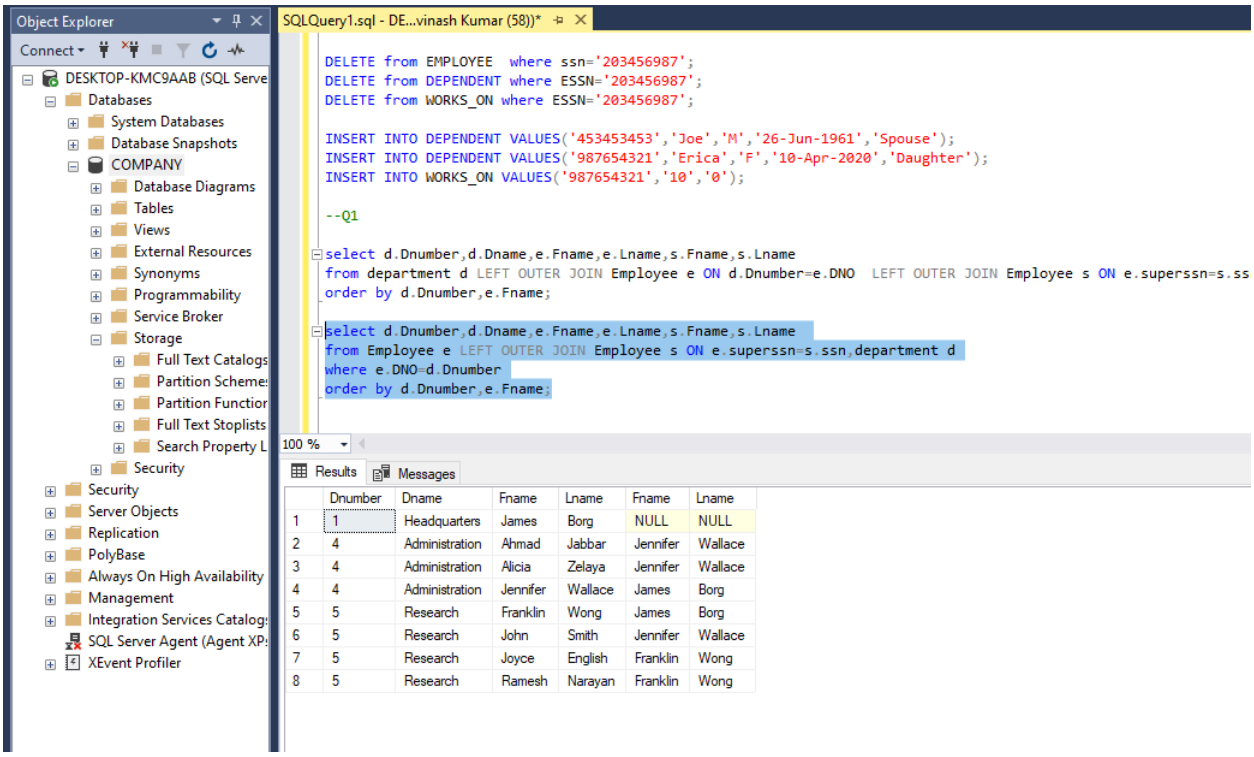
So, your result of Q1 will list all the department 1, 4, 5, 7 and all the related employees with his/her supervisors including the ones who do not have supervisors.

```
select d.Dnumber,d.Dname,e.Fname,e.Lname,s.Fname,s.Lname
from department d LEFT OUTER JOIN Employee e ON d.Dnumber=e.DNO  LEFT OUTER JOIN Employee
s ON e.superssn=s.ssn
   order by d.Dnumber,e.Fname;
```



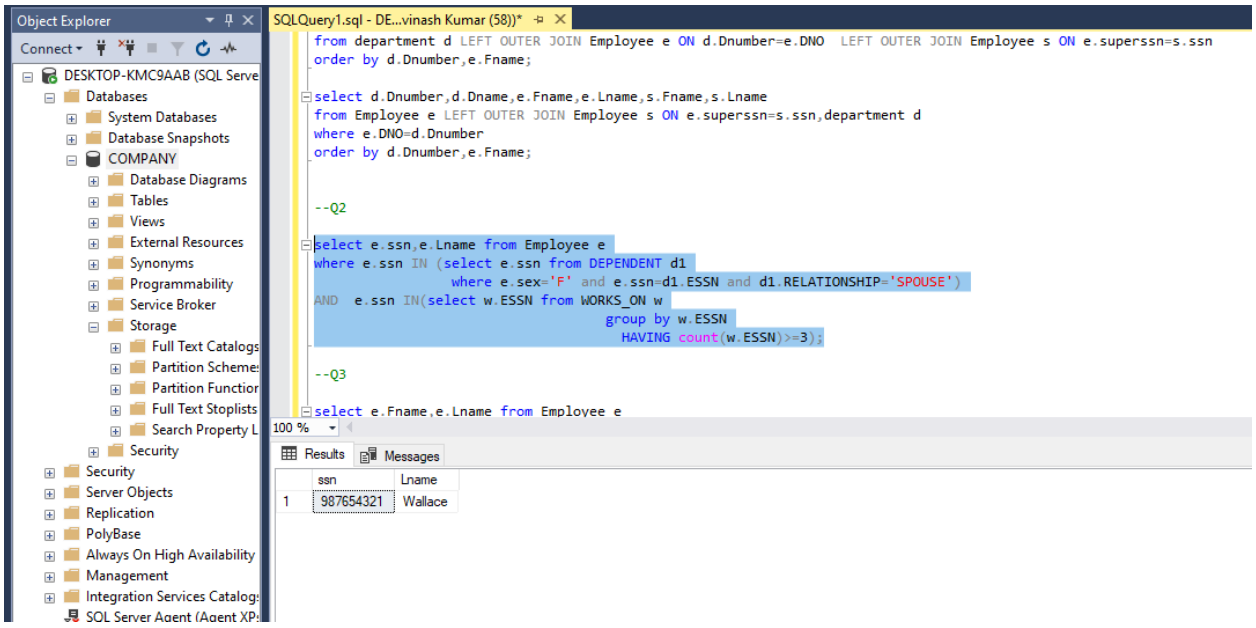

Different version of Q1: Q1_1: List the same information as Q1 with a change: List all the employees including the ones who do not have any supervisor, but do not include the departments that do not have any employee in the output. So, your result of Q1_1 will list the department 1, 4, 5 and all the related employees with his/her supervisors including the ones who do not have supervisors. So it will be the same as Q1 except the department 7 won't be included.

```
select d.Dnumber,d.Dname,e.Fname,e.Lname,s.Fname,s.Lname
from Employee e LEFT OUTER JOIN Employee s ON e.superssn=s.ssn,department d
where e.DNO=d.Dnumber
    order by d.Dnumber,e.Fname;
```




Q2: Get SSN and the last name of married female employees who work on three or more projects

```
select e.ssn,e.Lname from Employee e
where e.ssn IN (select e.ssn from DEPENDENT d1
                where e.sex='F' and e.ssn=d1.ESSN and d1.RELATIONSHIP='SPOUSE')
AND  e.ssn IN(select w.ESSN from WORKS_ON w
                                        group by w.ESSN
                                                HAVING count(w.ESSN)>=3);
```



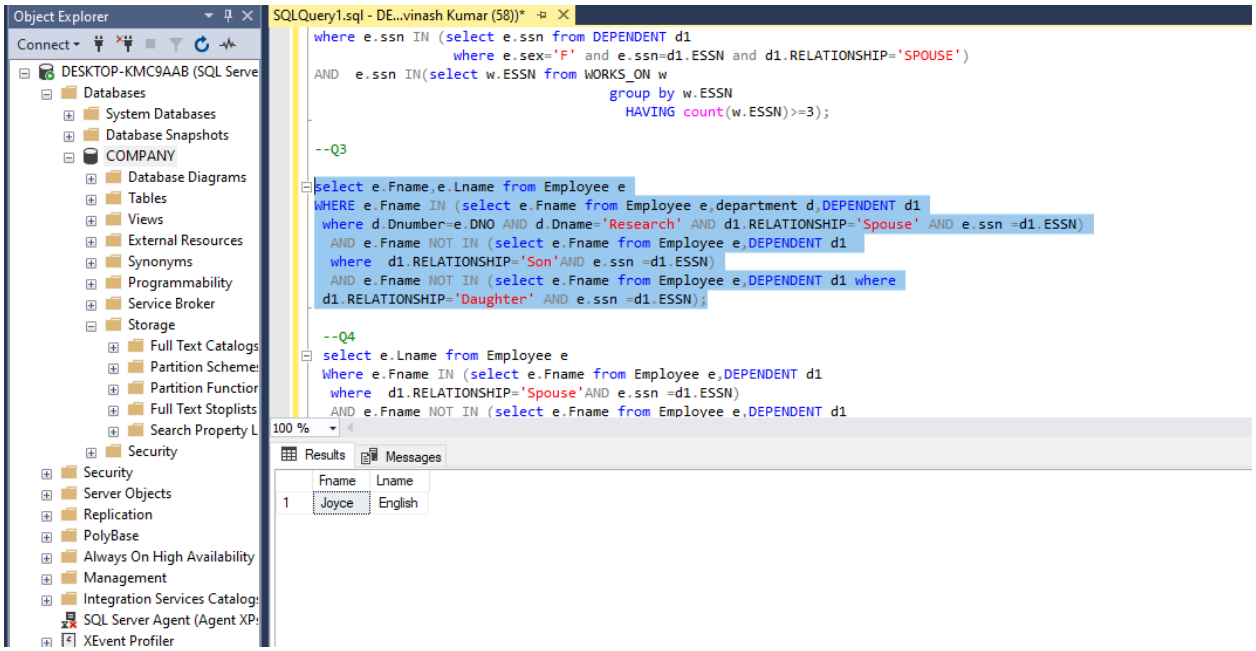

Q3: List the name of employees who is working for 'Research' department and are married but have no children.

--Married = Select ESSN From Dependent Where relationship = 'spouse';

--Girls = Select ESSN From Dependent Where relationship = 'daughter';

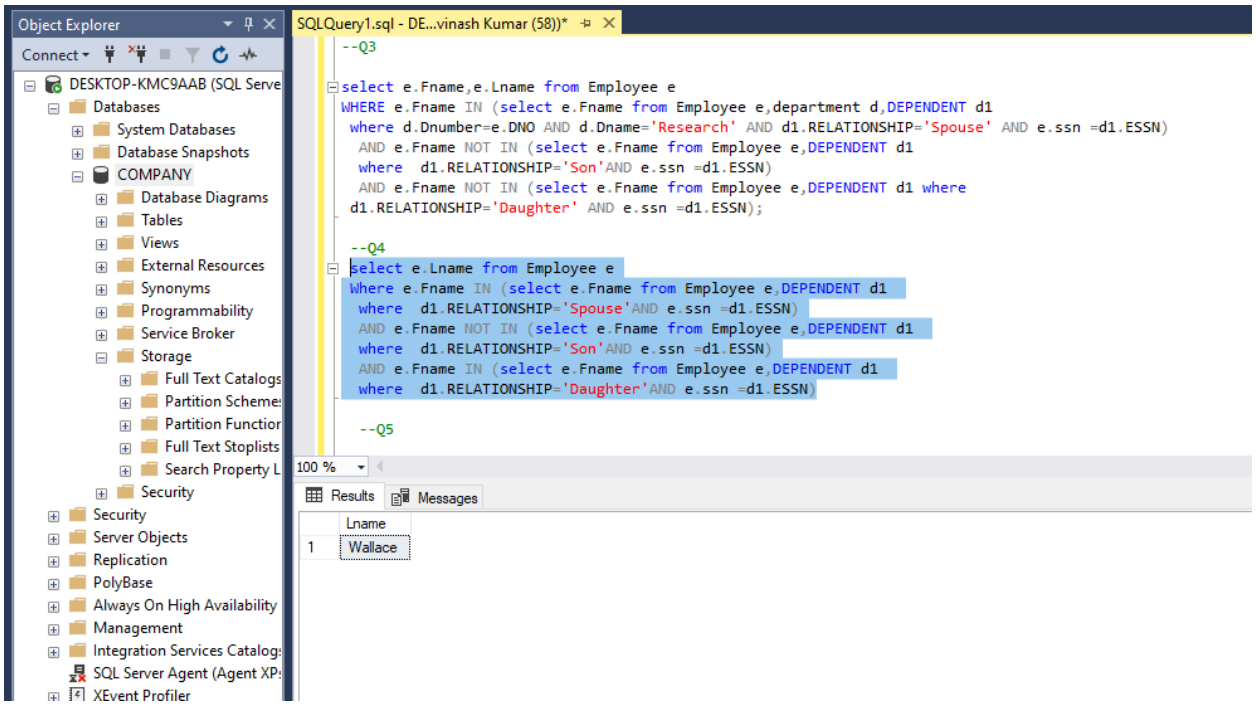
--Boys = Select ESSN From Dependent Where relationship = 'son';

```
select e.Fname,e.Lname from Employee e
WHERE e.Fname IN (select e.Fname from Employee e,department d,DEPENDENT d1
 where d.Dnumber=e.DNO AND d.Dname='Research' AND d1.RELATIONSHIP='Spouse' AND e.ssn
=d1.ESSN)
  AND e.Fname NOT IN (select e.Fname from Employee e,DEPENDENT d1
  where  d1.RELATIONSHIP='Son'AND e.ssn =d1.ESSN)
  AND e.Fname NOT IN (select e.Fname from Employee e,DEPENDENT d1 where
    d1.RELATIONSHIP='Daughter' AND e.ssn =d1.ESSN);
```




Q4: Get the last name of married employees who only have daughters. Married = Select ESSN From Dependent Where relationship = ‘spouse’; Girls = Select ESSN From Dependent Where relationship = ‘daughter’; Boys = Select ESSN From Dependent Where relationship = ‘son’;

```
select e.Lname from Employee e
 Where e.Fname IN (select e.Fname from Employee e,DEPENDENT d1
  where  d1.RELATIONSHIP='Spouse'AND e.ssn =d1.ESSN)
  AND e.Fname NOT IN (select e.Fname from Employee e,DEPENDENT d1
  where  d1.RELATIONSHIP='Son'AND e.ssn =d1.ESSN)
  AND e.Fname IN (select e.Fname from Employee e,DEPENDENT d1
     where  d1.RELATIONSHIP='Daughter'AND e.ssn =d1.ESSN)
```




Q5: Give the last name and ssn of those employees who work in any project(s) where there are more female than male employees.

```
select e.Lname,e.ssn from WORKS_ON w join Employee e on e.ssn=w.ESSN
  Where (select Count(*)
   from Employee e1, WORKS_ON w1
   where e1.ssn=w1.ESSN AND e1.sex='F' AND w1.PNO=w.PNO)
         >
         (select Count(*)
   from Employee e2, WORKS_ON w2
   where e2.ssn=w2.ESSN AND e2.sex='M' AND w2.PNO=w.PNO);
```

**SS CHUNG**
**LAB ASSIGNMENT 4**