SELECT & AGGREGATE FUNCTIONS

1. Employees who HAVE a supervisor

```
SQL> SELECT Fname, Lname, Super_ssn
  2  FROM EMPLOYEE3305
  3  WHERE Super_ssn IS NOT NULL;

FNAME           LNAME           SUPER_SSN
--------------- --------------- ---------
John            Smith           333445555
Franklin        Wong            888665555
Alicia          Zelaya          987654321
Jennifer        Wallace         888665555
Joyce           English         333445555
Ahmad           Jabbar          987654321

6 rows selected.
```

2. Employees with middle initial

```
SQL> SELECT Fname, Lname, Minit
  2  FROM EMPLOYEE3305
  3  WHERE Minit IS NOT NULL;

FNAME           LNAME           M
--------------- --------------- -
Ramesh          Narayan         K
John            Smith           B
Franklin        Wong            T
Alicia          Zelaya          J
Jennifer        Wallace         S
Joyce           English         A
Ahmad           Jabbar          V
James           Borg            E

8 rows selected.
```

3. Count total number of employees

```
SQL> SELECT COUNT(*) AS Total_Employees
  2  FROM EMPLOYEE3305;

TOTAL_EMPLOYEES
---------------
              8
```

4. Highest and lowest salaries

```
SQL> SELECT MAX(Salary) AS Highest_Salary,
  2         MIN(Salary) AS Lowest_Salary
  3  FROM EMPLOYEE3305;

HIGHEST_SALARY LOWEST_SALARY
-------------- -------------
         55000         25000
```

5. Count employees per department

```
SQL>    SELECT Dno, COUNT(*) AS Employee_Count
  2  FROM EMPLOYEE3305
  3  GROUP BY Dno;

      DNO EMPLOYEE_COUNT
--------- --------------
                       1
        1              1
        5              3
        4              3
```

6. Min and max salary per department

```
SQL> SELECT Dno,
  2         MIN(Salary) AS Min_Salary,
  3         MAX(Salary) AS Max_Salary
  4  FROM EMPLOYEE3305
  5  GROUP BY Dno;

      DNO MIN_SALARY MAX_SALARY
--------- ---------- ----------
               38000      38000
        1      55000      55000
        5      25000      40000
        4      25000      43000
```

7. Count male and female employees

```
SQL> SELECT Sex, COUNT(*) AS Count
  2  FROM EMPLOYEE3305
  3  GROUP BY Sex;

S      COUNT
- ----------
M          5
F          3
```

8. Total hours worked per project

```
SQL> SELECT Pno, SUM(Hours) AS Total_Hours
  2  FROM WORKS_ON3305
  3  GROUP BY Pno;

     PNO TOTAL_HOURS
--------- ----------
       1       52.5
      30         55
       2       37.5
      20         41
       3         50
      10         55

6 rows selected.
```

9. Departments with more than 2 employees

```
SQL> SELECT Dno
  2  FROM EMPLOYEE3305
  3  GROUP BY Dno
  4  HAVING COUNT(*) > 2;

       DNO
---------
         5
         4
```

10. Projects with total hours > 50

```
SQL> SELECT Pno
  2  FROM WORKS_ON3305
  3  GROUP BY Pno
  4  HAVING SUM(Hours) > 50;

       PNO
---------
         1
        30
        10
```

11. Employees with more than 1 dependent

```
SQL> SELECT Essn
  2    FROM DEPENDENT3305
  3    GROUP BY Essn
  4    HAVING COUNT(*) > 1;

ESSN
---------
123456789
333445555
```

12. Convert names to uppercase

```
SQL> SELECT UPPER(Fname) AS FNAME, UPPER(Lname) AS LNAME
  2    FROM EMPLOYEE3305;

FNAME           LNAME
--------------  --------------
RAMESH          NARAYAN
JOHN            SMITH
FRANKLIN        WONG
ALICIA          ZELAYA
JENNIFER        WALLACE
JOYCE           ENGLISH
AHMAD           JABBAR
JAMES           BORG
```

13. Extract city from address

```
SQL> SELECT Fname, Lname,
  2         SUBSTR(Address, INSTR(Address, ',') + 2) AS City
  3    FROM EMPLOYEE3305;

FNAME           LNAME
--------------  --------------
CITY
------------------------------------------------
Ramesh          Narayan
Humble TX

John            Smith
Houston TX

Franklin        Wong
Houston TX


FNAME           LNAME
--------------  --------------
CITY
------------------------------------------------
Alicia          Zelaya
Spring TX

Jennifer        Wallace
Bellaire TX

Joyce           English
Houston TX


FNAME           LNAME
--------------  --------------
CITY
------------------------------------------------
Ahmad           Jabbar
Houston TX

James           Borg
Houston TX
```

14. Calculate employee age

```
SQL> SELECT Fname, Lname,
  2         TRUNC(MONTHS_BETWEEN(SYSDATE, Bdate)/12) AS Age
  3  FROM EMPLOYEE3305;

FNAME           LNAME                  AGE
--------------- --------------- ----------
Ramesh          Narayan                 63
John            Smith                   61
Franklin        Wong                    60
Alicia          Zelaya                  58
Jennifer        Wallace                 84
Joyce           English                 53
Ahmad           Jabbar                  56
James           Borg                    88

8 rows selected.
```

15. Employees born in year 1970

```
SQL> SELECT Fname, Lname, Bdate
  2  FROM EMPLOYEE3305
  3  WHERE EXTRACT(YEAR FROM Bdate) = 1970;

FNAME           LNAME           BDATE
--------------- --------------- ---------
Demo            Student         10-MAY-70
```

SUBQUERY QUESTIONS

1.Employees earning more than average salary

```
SQL> SELECT Fname, Lname, Salary
  2  FROM EMPLOYEE3305
  3  WHERE Salary > (SELECT AVG(Salary) FROM EMPLOYEE3305);

FNAME           LNAME            SALARY
--------------- --------------- ----------
Ramesh          Narayan           38000
Franklin        Wong              40000
Jennifer        Wallace           43000
James           Borg              55000
```

2.Employees working in departments located in Houston

```
SQL> SELECT Fname, Lname
  2  FROM EMPLOYEE3305
  3  WHERE Address LIKE '%Houston%';

FNAME           LNAME
--------------- ---------------
John            Smith
Franklin        Wong
Joyce           English
Ahmad           Jabbar
James           Borg
```

3.Employees with at least one dependent

```
SQL> SELECT Fname, Lname
  2  FROM EMPLOYEE3305
  3  WHERE Ssn IN (SELECT Essn FROM DEPENDENT3305);

FNAME           LNAME
--------------- ---------------
John            Smith
Franklin        Wong
Jennifer        Wallace
```

4.Departments with more than 3 employees

```
SQL> SELECT Essn
  2  FROM WORKS_ON3305
  3  GROUP BY Essn
  4  HAVING COUNT(DISTINCT Pno) =
  5       (SELECT COUNT(*) FROM PROJECT3305);

ESSN
---------
333445555
```

5.Employees who work on ALL projects

```
SQL> SELECT Dno
  2  FROM EMPLOYEE3305
  3  GROUP BY Dno
  4  HAVING COUNT(*) > 3;

      DNO
----------
        5
```

6.Projects with no assigned employees

```
SQL>    SELECT Essn
  2  FROM WORKS_ON3305
  3  GROUP BY Essn
  4  HAVING COUNT(DISTINCT Pno) >
  5       (SELECT 1 FROM dual);

ESSN
---------
333445555
453453453
123456789
999887777
987654321
987987987

6 rows selected.
```

7.Departments with no employees

```
SQL> SELECT Dnumber, Dname
  2  FROM DEPARTMENT3305
  3  WHERE Dnumber NOT IN
  4      (SELECT DISTINCT Dno FROM EMPLOYEE3305);

no rows selected
```

8.Employees who earn more than the minimum salary

```
SQL> SELECT MAX(Salary) AS Second_Highest_Salary
  2  FROM EMPLOYEE3305
  3  WHERE Salary <
  4      (SELECT MAX(Salary) FROM EMPLOYEE3305);

SECOND_HIGHEST_SALARY
---------------------
                43000
```

9.Calculate age of each employee

```
SQL> SELECT Fname, Lname,
  2      TRUNC(MONTHS_BETWEEN(SYSDATE, Bdate)/12) AS Age
  3  FROM EMPLOYEE3305;

FNAME           LNAME                  AGE
--------------- --------------- ----------
Ramesh          Narayan                 63
Demo            Student                 55
Temp            Emp                     36
John            Smith                   61
Franklin        Wong                    60
Alicia          Zelaya                  58
Jennifer        Wallace                 84
Joyce           English                 53
Ahmad           Jabbar                  56
James           Borg                    88

10 rows selected.
```

10. Find employees with more dependents than average

```
SQL> SELECT Essn
  2  FROM DEPENDENT3305
  3  GROUP BY Essn
  4  HAVING COUNT(*) >
  5      (SELECT AVG(cnt)
  6       FROM (SELECT COUNT(*) cnt
  7             FROM DEPENDENT3305
  8             GROUP BY Essn));

ESSN
---------
123456789
333445555
```

11. Find employees working on ALL projects

```
SQL> SELECT Essn
  2  FROM WORKS_ON3305
  3  GROUP BY Essn
  4  HAVING COUNT(DISTINCT Pno) =
  5        (SELECT COUNT(*) FROM PROJECT3305);

ESSN
---------
333445555
```

12. Find department with highest average salary

```
SQL> SELECT Dno
  2  FROM EMPLOYEE3305
  3  GROUP BY Dno
  4  HAVING AVG(Salary) =
  5        (SELECT MAX(AVG(Salary))
  6         FROM EMPLOYEE3305
  7         GROUP BY Dno);

      DNO
----------
        1
```

13. Find employees in Research department

```
SQL> SELECT Fname, Lname
  2  FROM EMPLOYEE3305
  3  WHERE Dno =
  4        (SELECT Dnumber
  5         FROM DEPARTMENT3305
  6         WHERE Dname = 'Research');

FNAME           LNAME
--------------- ---------------
Temp            Emp
John            Smith
Franklin        Wong
Joyce           English
```