Sheet 2

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SUBJECT: DBMS Lab

Assignment No: 4

1. Retrieve the name of the students whose name starts with ‘S’ and contains ‘r’ as the second last character:

query:

```
SELECT
  name,
  RIGHT(name, 2)
FROM
  students
WHERE
  RIGHT(name, 2) LIKE 'r_'
  AND name LIKE 'S%';
```

```
lab=> SELECT name FROM students WHERE  RIGHT(name, 2) LIKE 'r_' AND name LIKE 'S%';
             name
------------------------------
 Shakira
(1 row)
```

2. Retrieve the name of the youngest student(s) from the ‘CSE’ department along with the total marks obtained by him (them).

query:

```
SELECT
  s1.name,
  SUM(marks)
FROM
  students AS s1,
  crs_regd
WHERE
  s1.rollno = crs_regd.crs_rollno
  AND s1.deptcode = 'CSE'
  AND s1.bdate = (
    SELECT
      MAX(bdate)
    FROM
      students
    WHERE
      deptcode = 'CSE'
  )
GROUP BY
  s1.rollno;
```

```
lab=> SELECT
  s1.name,
  SUM(marks),
  bdate
FROM
  students AS s1,
  crs_regd
WHERE
  s1.rollno = crs_regd.crs_rollno
  AND s1.deptcode = 'CSE'
  AND s1.bdate = (
    SELECT
      MAX(bdate)
    FROM
      students
    WHERE
      deptcode = 'CSE'
  )
GROUP BY
  s1.rollno;
             name              |  sum   |   bdate
-------------------------------+--------+------------
 Keya                          | 517.00 | 2001-07-25
(1 row)
```

3. Find the age of all the students:

query:

```
SELECT
  name,
  DATE_PART('year', AGE(bdate)) AS age
FROM
  students;
```

name	age
Jayant	21
Shaan	21
Chirag	21
Ehsaan	21
Shanaya	20
Divij	21
Seher	21
Parinaaz	20
Riya	20
Onkar	20
Yakshit	20
Ranbir	21
Divyansh	20
Aayush	20
Ayesha	20
Zain	20
Shanaya	21
Vihaan	20
Rania	21
Adah	20
Pranay	21
Elakshi	20
Vritika	20
Parinaaz	21
Rati	21
Hunar	20
Keya	20
Pari	20
Anay	20
Misha	20
Jayesh	20
Aniruddh	21

Assignment No: 5

1. Retrieve the name of the student(s) who obtained SECOND highest marks IN ‘ETC_1 ’.

query:

```
SELECT
  name,
  marks
FROM
  students,
  crs_regd
WHERE
  rollno = crs_rollno
  AND crs_cd = 'ETC_1'
  AND marks = (
    SELECT
      marks
    FROM
      crs_regd
    WHERE
      crs_cd = 'ETC_1'
    ORDER BY
      marks DESC OFFSET 1
    LIMIT
      1
  );
```

```
lab=> SELECT
  name,
  marks
FROM
  students,
  crs_regd
WHERE
  rollno = crs_rollno
  AND crs_cd = 'ETC_1'
  AND marks = (
    SELECT
      marks
    FROM
      crs_regd
    WHERE
      crs_cd = 'ETC_1'
    ORDER BY
      marks DESC OFFSET 1
    LIMIT
      1
  );
             name              | marks
-------------------------------+-------
 Keya                          | 95.00
(1 row)
```

2. Find out the differences between highest and lowest marks obtained in each subject.

query:

```
SELECT
  crs_cd,
  MAX(marks) - MIN(marks) AS diff
```

```
FROM
  crs_regd
GROUP BY
  crs_cd;
```

crs_cd	diff
CHE_2	17.00
IT_4	13.00
PHY_2	23.00
CHE_1	14.00
PHY_3	18.00
ETC_2	27.00
IT_2	22.00
CSE_4	15.00
ELE_2	28.00
ETC_4	28.00
CHE_3	27.00
ELE_4	24.00
ELE_1	29.00
IT_1	20.00
PHY_1	23.00
MEC_2	27.00
IT_3	7.00
ELE_3	23.00
CHE_4	23.00
CSE_2	23.00
ETC_1	28.00
CSE_1	19.00
MEC_4	16.00
CSE_3	14.00
MEC_3	6.00
ETC_3	24.00
PHY_4	15.00
MEC_1	30.00

(28 rows)

3. Assuming the existance of several interdepartmental courses, retrieve the name of the student(s) who is(are) studing under at least one faculty from each department.

query:

```
SELECT
  rollno,
  name
FROM
  students,
  crs_regd,
  crs_offrd,
  faculty
WHERE
  rollno = crs_rollno
  AND crs_cd = crs_code
  AND crs_fac_cd = fac_code
GROUP BY
  rollno,
  name
HAVING
  COUNT(DISTINCT fac_dept) = (
    SELECT
      COUNT(*)
    FROM
      depts
  );
```

```
  rollno  |              name
----------+---------------------------------
 51052466 | Misha
(1 row)
```

4. Assuming the existance of several interdepartmental courses, retrieve the name of the student(s) who is(are) studing under the faculties only from his(their) own department.

query:

```
SELECT
  rollno,
  name
FROM
  students
WHERE
  rollno NOT IN (
    SELECT
      rollno
    FROM
      students,
      crs_regd,
      crs_offrd,
      faculty
    WHERE
      rollno = crs_rollno
      AND crs_code = crs_cd
      AND fac_code = crs_fac_cd
      AND deptcode != fac_dept
  )
GROUP BY
  rollno,
  name;
```

```
  rollno  |              name
----------+--------------------------------
 51056947 | Jayesh
 51058476 | Inaaya
 51054793 | Shakira
 51053418 | Keya2.0
 51052803 | Shamik
 51054790 | Nishith
 51055089 | Anvi
 51056320 | Nirvi
 51050564 | Shray
 51054312 | Advik
 51053253 | Aniruddh
(11 rows)
```

Assignment No: 6

1. Display the highest parent incomes, in descending order, for each department excluding ‘MEC' such that only those highest parent incomes will appear that are below `9000000`.

```
SELECT
  deptname,
  MAX(parent_inc)
FROM
  students,
  depts
WHERE
  students.deptcode = depts.deptcode
  AND parent_inc < 9000000
  AND students.deptcode != 'MEC'
GROUP BY
  depts.deptcode;
```

```
          deptname          |    max
----------------------------+-----------
 Electrical                 | 8760000.0
 Computer Science           | 6290000.0
 Electronics                | 8710000.0
 Physics                    | 8060000.0
 Chemistry                  | 6590000.0
 Information Tech           | 4640000.0
(6 rows)
```

2. Retrieve the fifth highest parent income for hostel number 7.

query:

```
SELECT
  DISTINCT parent_inc
FROM
  students
WHERE
  hostel = '7'
ORDER BY
  parent_inc DESC
LIMIT
  1 OFFSET 4;
```

```
 parent_inc
------------
  4620000.0
(1 row)
```

3. Find the roll number of the students from each department who obtained highest total marks in their own department.

query:

```
SELECT
  rollno,
  deptcode
FROM
  students
  INNER JOIN (
    SELECT
      crs_rollno,
      SUM(marks) AS total
```

```
    FROM
      crs_regd
    GROUP BY
      crs_rollno
  ) t ON students.rollno = t.crs_rollno
WHERE
  (deptcode, total) IN (
    SELECT
      deptcode,
      MAX(total) AS maxmarks
    FROM
      students
      INNER JOIN (
        SELECT
          crs_rollno,
          SUM(marks) AS total
        FROM
          crs_regd
        GROUP BY
          crs_rollno
      ) s ON students.rollno = s.crs_rollno
    GROUP BY
      deptcode
  );
```

```
  rollno   | deptcode
-----------+----------
 51053017 | IT
 51051159 | ETC
 51058167 | CSE
 51050567 | ELE
 51059178 | PHY
 51054930 | CHE
 51052466 | MEC
(7 rows)
```