Assignment :1

(a) Create the following table: DEPARTMENT

Column Name	Data Type	Size	Constraints
DeptCode	Varchar2	4	Primary key
DeptName	Varchar2	40	Not null
StudentAllotted	Number	4	Not null

```
SQL> create table DEPARTMENT(
  2  DeptCode varchar2(4) primary key,
  3  DeptName varchar2(40) not null,
  4  StudentAllotted number(4) not null);

Table created.
```

(b) Display the structure of the table Department

```
SQL> ALTER TABLE DEPARTMENT MODIFY DeptName VARCHAR2(50);

Table altered.

SQL> desc DEPARTMENT
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPTCODE                                  NOT NULL VARCHAR2(4)
 DEPTNAME                                  NOT NULL VARCHAR2(50)
 STUDENTALLOTTED                           NOT NULL NUMBER(4)
```

(c) Insert data into the table.

```
SQL> INSERT into DEPARTMENT      values('CSE','Computer Science and Engineering',120);

1 row created.

SQL> INSERT into DEPARTMENT      values('ECE','Electronics and Communication Engineering',120);

1 row created.

Commit complete.
SQL> INSERT into DEPARTMENT      values('IT','Information Technology',60);

1 row created.

Commit complete.
SQL> SQL> INSERT into DEPARTMENT      values('EE','Electrical Engineering',60);

1 row created.

Commit complete.
```

Showing all row of table:

```
SQL> select * from DEPARTMENT;

DEPT DEPTNAME                                           STUDENTALLOTTED
---- -------------------------------------------------- ---------------
CSE  Computer Science and Engineering                               120
ECE  Electronics and Communication Engineering                      120
IT   Information Technology                                          60
EE   Electrical Engineering                                          60
```

(d) Create the following table: STUDENT

Column Name	Data Type	Size	Constraints
RollNo	Number	6	Primary Key
Name	Varchar2	30	Not null
Address	Varchar2	40	Not null
PhoneNo	Number	10	
YearOfAdm	Number	4	Not null
DeptCode	Varchar2	4	Not null
Semester	Varchar2	4	Not null
BirthDate	Date		Not null

```
SQL> create table STUDENT(
  2  RollNo number(6) primary key,
  3  Name varchar2(30) not null,
  4  Address varchar2(40) not null,
  5  PhoneNo number(10),
  6  YearOfAdm number(4) not null,
  7  DeptCode varchar2(4) not null,
  8  Semester varchar2(4) not null,
  9  BirthDate Date not null);

Table created.
```

(e)Display the structure of the table Student.

```
SQL> desc student;
 Name                                      Null?    Type
 ---------------------------------------- -------- ----------------------------
 ROLLNO                                    NOT NULL NUMBER(6)
 NAME                                      NOT NULL VARCHAR2(30)
 ADDRESS                                   NOT NULL VARCHAR2(40)
 PHONENO                                            NUMBER(10)
 YEAROFADM                                 NOT NULL NUMBER(4)
 DEPTCODE                                  NOT NULL VARCHAR2(4)
 SEMESTER                                  NOT NULL VARCHAR2(4)
 BIRTHDATE                                 NOT NULL DATE
```

(f) Insert data into the table.

```
SQL> INSERT into Student values(1001,'ANKIT DAS','VIP Road, Kolkata',9830675221,2017,'CSE','SEM5','10-FEB-1999');

1 row created.

Commit complete.
SQL> INSERT into Student values(1002,'MOINAK GHOSH','MG Road, Kolkata', 7988822201,2015,'CSE','SEM5','01-MAY-1998');

1 row created.

Commit complete.
SQL> INSERT into Student values(1003,'PARIMAL KUMAR','NSB Road, Birati',8099922211,2016,'CSE','SEM5','17-MAR-2001');

1 row created.

Commit complete.
SQL> INSERT into Student values(2001,'SANCHITA SINGH','Tegharia, Kolkata',9999110011,2017,'ECE','SEM5','20-OCT-2000');

1 row created.

Commit complete.
SQL> INSERT into Student values(2002,'ANANYA BISWAS','MG Road, Kolkata',7667880010,2017,'ECE','SEM5','05-NOV-2001');

1 row created.

Commit complete.
SQL> INSERT into Student values(2101,'ASHISH KUMAR','Baguiati, Kolkata',6544332121,2017,'ECE','SEM5','17-SEP-2001');

1 row created.

Commit complete.
SQL> INSERT into Student values(1029,'NAITIK PRASAD','KGR path, Belgharia',NULL,2018,'CSE','SEM3','08-OCT-2003');

1 row created.

Commit complete.
SQL> INSERT into Student values(4011,'SATNAM JYOTI','Garia, Kolkata',8933322125,2018,'IT','SEM3','21-SEP-2002');

1 row created.

SQL> INSERT into Student values(3002,'SAURAV ROY','Chandannagar',NULL,2017,'EE','SEM5','23-AUG-2000');

1 row created.

Commit complete.
SQL> INSERT into Student values(3005,'MOHAMMAD AZIB','Saltlake',7910000666,2017,'EE','SEM5','20-MAY-2001');

1 row created.

Commit complete.
SQL> INSERT into Student values(2004,'NIKHIL SINGH','Central Howrah',NULL,2016,'ECE','SEM5','21-JUN-1999');

1 row created.

Commit complete.
SQL> INSERT into Student values(1023,'SAMPRIKTA BISWAS','Barrackpore',8877565643,2018,'CSE','SEM3','13-DEC-2003');

1 row created.

Commit complete.
SQL> INSERT into Student values(1011,'RAHUL KHAN','Jadavpur, Kolkata',NULL,2017,'CSE','SEM5','07-JUL-2001');

1 row created.

Commit complete.
SQL> INSERT into Student values(1060,'SHUBHAM','Sealdah, Kolkata',9833221098,2017,'CSE','SEM3','09-AUG-2003');

1 row created.

Commit complete.
SQL> INSERT into Student values(2009,'GAURAV PRAKASH','Saltlake',NULL,2018,'ECE','SEM3','10-APR-2004');

1 row created.

Commit complete.
SQL> INSERT into Student values(3008,'RAHUL JOSHI','AB block, Saltlake',9980765123,2018,'EE','SEM3','20-JUN-2003');

1 row created.

Commit complete.
```

```
SQL> INSERT into Student values(4200,'MRIGENDRA','Belur,Howrah',NULL,2019,'IT','SEM1','01-JUN-2004');

1 row created.

Commit complete.
SQL> INSERT into Student values(1500,'SUBARNA MITRA','Gariahat, Kolkata',6987654322,2017,'CSE','SEM3','02-JAN-2003');

1 row created.

Commit complete.
SQL> INSERT into Student values(1101,'AMARITA DEV','CG Block, Saltlake',NULL,2019,'CSE','SEM1','06-JAN-2004');

1 row created.

Commit complete.
SQL> SET LINESIZE 200
SQL> SELECT * FROM STUDENT;

    ROLLNO NAME               ADDRESS               PHONENO  YEAROFADM DEPT SEME BIRTHDAT
---------- ------------------ -------------------- --------- --------- ---- ---- --------
      1001 ANKIT DAS          VIP Road, Kolkata    9830675221     2017 CSE  SEM5 10-02-99
      1002 MOINAK GHOSH       MG Road, Kolkata     7988822201     2015 CSE  SEM5 01-05-98
      1003 PARIMAL KUMAR      NSB Road, Birati     8099922211     2016 CSE  SEM5 17-03-01
      2001 SANCHITA SINGH     Tegharia, Kolkata    9999110011     2017 ECE  SEM5 20-10-00
      2002 ANANYA BISWAS      MG Road, Kolkata     7667880010     2017 ECE  SEM5 05-11-01
      2101 ASHISH KUMAR       Baguiati, Kolkata    6544332121     2017 ECE  SEM5 17-09-01
      1029 NAITIK PRASAD      KGR path, Belgharia                  2018 CSE  SEM3 08-10-03
      4011 SATNAM JYOTI       Garia, Kolkata       8933322125     2018 IT   SEM3 21-09-02
      3002 SAURAV ROY         Chandannagar                        2017 EE   SEM5 23-08-00
      3005 MOHAMMAD AZIB      Saltlake             7910000666     2017 EE   SEM5 20-05-01
      2004 NIKHIL SINGH       Central Howrah                      2016 ECE  SEM5 21-06-99

    ROLLNO NAME               ADDRESS               PHONENO  YEAROFADM DEPT SEME BIRTHDAT
---------- ------------------ -------------------- --------- --------- ---- ---- --------
      1023 SAMPRIKTA BISWAS   Barrackpore          8877565643     2018 CSE  SEM3 13-12-03
      1011 RAHUL KHAN         Jadavpur, Kolkata                   2017 CSE  SEM5 07-07-01
      1060 SHUBHAM            Sealdah, Kolkata     9833221098     2017 CSE  SEM3 09-08-03
      2009 GAURAV PRAKASH     Saltlake                            2018 ECE  SEM3 10-04-04
      3008 RAHUL JOSHI        AB block, Saltlake   9980765123     2018 EE   SEM3 20-06-03
      4200 MRIGENDRA          Belur,Howrah                        2019 IT   SEM1 01-06-04
      1500 SUBARNA MITRA      Gariahat, Kolkata    6987654322     2017 CSE  SEM3 02-01-03
      1101 AMARITA DEV        CG Block, Saltlake                  2019 CSE  SEM1 06-01-04

19 rows selected.
```

Assignment 2

- Display the entire department information.

```
SQL> select * from department;

DEPT DEPTNAME                                        STUDENTALLOTTED
---- ---------------------------------------------- ----------------
CSE  Computer Science and Engineering                            120
ECE  Electronics and Communication Engineering                   120
IT   Information Technology                                        60
EE   Electrical Engineering                                        60
```

- Display the department with allotted student number more than 100.

```
SQL> select * from department where STUDENTALLOTTED > 100;

DEPT DEPTNAME                                        STUDENTALLOTTED
---- ---------------------------------------------- ----------------
CSE  Computer Science and Engineering                            120
ECE  Electronics and Communication Engineering                   120
```

- Display all students' detail of CSE.

```
SQL> SELECT * FROM STUDENT WHERE DEPTCODE LIKE '%CSE%';

    ROLLNO NAME               ADDRESS               PHONENO  YEAROFADM DEPT SEME BIRTHDAT
---------- ------------------ -------------------- --------- --------- ---- ---- --------
      1001 ANKIT DAS          VIP Road, Kolkata    9830675221     2017 CSE  SEM5 10-02-99
      1002 MOINAK GHOSH       MG Road, Kolkata     7988822201     2015 CSE  SEM5 01-05-98
      1003 PARIMAL KUMAR      NSB Road, Birati     8099922211     2016 CSE  SEM5 17-03-01
      1029 NAITIK PRASAD      KGR path, Belgharia                  2018 CSE  SEM3 08-10-03
      1023 SAMPRIKTA BISWAS   Barrackpore          8877565643     2018 CSE  SEM3 13-12-03
      1011 RAHUL KHAN         Jadavpur, Kolkata                   2017 CSE  SEM5 07-07-01
      1060 SHUBHAM            Sealdah, Kolkata     9833221098     2017 CSE  SEM3 09-08-03
      1500 SUBARNA MITRA      Gariahat, Kolkata    6987654322     2017 CSE  SEM3 02-01-03
      1101 AMARITA DEV        CG Block, Saltlake                  2019 CSE  SEM1 06-01-04
```

- Display students name along with department code and semester who admitted in 2018.

```
SQL> SELECT NAME, DEPTCODE, SEMESTER FROM STUDENT WHERE YEAROFADM = 2018;

NAME                            DEPT SEME
------------------------------- ---- ----
NAITIK PRASAD                   CSE  SEM3
SATNAM JYOTI                    IT   SEM3
SAMPRIKTA BISWAS                CSE  SEM3
GAURAV PRAKASH                  ECE  SEM3
RAHUL JOSHI                     EE   SEM3
```

- Show the name and semester of the CSE students who do not have phone numbers.

```
SQL> SELECT NAME, SEMESTER FROM STUDENT WHERE PHONENO IS NULL AND DEPTCODE='CSE';

NAME                            SEME
------------------------------- ----
NAITIK PRASAD                   SEM3
RAHUL KHAN                      SEM5
AMARITA DEV                     SEM1
```

- Show name and phone numbers students whose name starts with 'R'.

```
SQL> SELECT NAME, PHONENO FROM STUDENT WHERE NAME LIKE '%R%';

NAME                               PHONENO
------------------------------- ----------
PARIMAL KUMAR                   8099922211
ASHISH KUMAR                    6544332121
NAITIK PRASAD
SAURAV ROY
SAMPRIKTA BISWAS                8877565643
RAHUL KHAN
GAURAV PRAKASH
RAHUL JOSHI                     9980765123
MRIGENDRA
SUBARNA MITRA                   6987654322
AMARITA DEV

11 rows selected.
```

- Show name and phone numbers of the students with Surname 'Kumar'.

```
SQL> SELECT NAME, PHONENO FROM STUDENT WHERE REGEXP_LIKE ( NAME, '.*KUMAR$' );

NAME                               PHONENO
------------------------------- ----------
PARIMAL KUMAR                   8099922211
ASHISH KUMAR                    6544332121
```

- Show name, year of admission, deptcode of the student with second alphabet of name is 'A'.

```
SQL> SELECT NAME, YEAROFADM, DEPTCODE FROM STUDENT WHERE NAME LIKE '_A%';

NAME                           YEAROFADM DEPT
------------------------------ ---------- ----
PARIMAL KUMAR                       2016 CSE
SANCHITA SINGH                      2017 ECE
NAITIK PRASAD                       2018 CSE
SATNAM JYOTI                        2018 IT
SAURAV ROY                          2017 EE
SAMPRIKTA BISWAS                    2018 CSE
RAHUL KHAN                          2017 CSE
GAURAV PRAKASH                      2018 ECE
RAHUL JOSHI                         2018 EE

9 rows selected.
```

USING REGEXP_LIKE():

```
SQL> SELECT NAME, YEAROFADM, DEPTCODE FROM STUDENT WHERE REGEXP_LIKE(NAME, '^[[:alpha:]]A.*$');

NAME                           YEAROFADM DEPT
------------------------------ ---------- ----
PARIMAL KUMAR                       2016 CSE
SANCHITA SINGH                      2017 ECE
NAITIK PRASAD                       2018 CSE
SATNAM JYOTI                        2018 IT
SAURAV ROY                          2017 EE
SAMPRIKTA BISWAS                    2018 CSE
RAHUL KHAN                          2017 CSE
GAURAV PRAKASH                      2018 ECE
RAHUL JOSHI                         2018 EE

9 rows selected.
```

- **Show student details of CSE resident of KOLKATA, who born before 2000.**

```
SQL> SELECT * FROM STUDENT WHERE DEPTCODE='CSE' AND ADDRESS LIKE '%Kolkata%' AND BIRTHDATE < TO_DATE('2000-01-01','YYYY-MM-DD');

    ROLLNO NAME                    ADDRESS                         PHONENO YEAROFADM DEPT SEME BIRTHDAT
---------- ----------------------- ------------------------------ -------- ---------- ---- ---- --------
      1001 ANKIT DAS               VIP Road, Kolkata             9830675221     2017 CSE  SEM5 10-02-99
      1002 MOINAK GHOSH            MG Road, Kolkata              7988822201     2015 CSE  SEM5 01-05-98
```

- **Show student details of 2nd year who born in first day of a month.**

```
SQL> SELECT * FROM STUDENT WHERE (SEMESTER = 'SEM3' OR SEMESTER = 'SEM4') AND TO_NUMBER(TO_CHAR(BIRTHDATE,'DD')) = 01;

no rows selected
```

- **Display the students list of IT department who resides in 'KOLKATA' and admitted in 2017.**

```
SQL> SELECT * FROM STUDENT WHERE ADDRESS LIKE '%Kolkata%' AND DEPTCODE = 'IT' AND YEAROFADM = 2017;

no rows selected
```

- **Show the phone no, year of admission and birth date of CSE students born in 'JUNE'.**

```
SQL> SELECT PHONENO, YEAROFADM, BIRTHDATE FROM STUDENT WHERE DEPTCODE = 'CSE' AND TO_NUMBER(TO_CHAR(BIRTHDATE,'MM')) = 06;

no rows selected
```

- **Display the list of ECE 3rd year students whose birthday is 20 th October.**

```
SQL> SELECT * FROM STUDENT WHERE DEPTCODE = 'ECE' AND ( SEMESTER = 'SEM5' OR SEMESTER = 'SEM6' ) AND TO_CHAR(BIRTHDATE,'MM-DD') = '10-20';

    ROLLNO NAME                    ADDRESS                         PHONENO YEAROFADM DEPT SEME BIRTHDAT
---------- ----------------------- ------------------------------ -------- ---------- ---- ---- --------
      2001 SANCHITA SINGH          Tegharia, Kolkata             9999110011     2017 ECE  SEM5 20-10-00
```

- **Show student details who born in either May, June, September or December.**

```
SQL> SELECT * FROM STUDENT WHERE ( TO_CHAR(BIRTHDATE,'MM') = '05' OR TO_CHAR(BIRTHDATE,'MM') = '06' OR TO_CHAR(BIRTHDATE,'MM') = '09' OR TO_CHAR(BIRTHDATE,'MM') = '12');

    ROLLNO NAME                    ADDRESS                         PHONENO YEAROFADM DEPT SEME BIRTHDAT
---------- ----------------------- ------------------------------ -------- ---------- ---- ---- --------
      1002 MOINAK GHOSH            MG Road, Kolkata              7988822201     2015 CSE  SEM5 01-05-98
      2101 ASHISH KUMAR            Baguiati, Kolkata             6544332121     2017 ECE  SEM5 17-09-01
      4011 SATNAM JYOTI            Garia, Kolkata                8933322125     2018 IT   SEM3 21-09-02
      3005 MOHAMMAD AZIB           Saltlake                      7910000666     2017 EE   SEM5 20-05-01
      2004 NIKHIL SINGH            Central Howrah                               2016 ECE  SEM5 21-06-99
      1023 SAMPRIKTA BISWAS        Barrackpore                   8877565643     2018 CSE  SEM3 13-12-03
      3008 RAHUL JOSHI             AB block, Saltlake            9980765123     2018 EE   SEM3 20-06-03
      4200 MRIGENDRA               Belur,Howrah                                 2019 IT   SEM1 01-06-04

8 rows selected.
```

- **Display the students name, department, semester whose age is more than 20 year.**

```
SQL> SELECT NAME, DEPTCODE, SEMESTER FROM STUDENT WHERE (MONTHS_BETWEEN(SYSDATE, BIRTHDATE)/12) > 20;

NAME                          DEPT SEME
----------------------------- ---- ----
ANKIT DAS                     CSE  SEM5
MOINAK GHOSH                  CSE  SEM5
PARIMAL KUMAR                 CSE  SEM5
SANCHITA SINGH               ECE  SEM5
ANANYA BISWAS                ECE  SEM5
ASHISH KUMAR                 ECE  SEM5
SATNAM JYOTI                 IT   SEM3
SAURAV ROY                   EE   SEM5
MOHAMMAD AZIB                EE   SEM5
NIKHIL SINGH                 ECE  SEM5
RAHUL KHAN                   CSE  SEM5

NAME                          DEPT SEME
----------------------------- ---- ----
SUBARNA MITRA                 CSE  SEM3

12 rows selected.
```

Assignment 3

(a)   Create table **SUBJECT** and insert appropriate values.

Column Name	Data Type	Size	Constraints
SubjectCode	Varchar2	6	Not null, Primary key
SubjectName	Varchar2	15	Not null
DeptCode	Varchar2	3	Foreign key Department(DeptCode)
Semester	Varchar2	4	Not Null

```
SQL> create table SUBJECT(
  2  SubjectCode varchar2(6) not null primary key,
  3  SubjectName varchar2(15) not null,
  4  DeptCode varchar2(3) references DEPARTMENT(DeptCode),
  5  Semster varchar2(4) not null);

Table created.

SQL> desc SUBJECT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SUBJECTCODE                               NOT NULL VARCHAR2(6)
 SUBJECTNAME                               NOT NULL VARCHAR2(15)
 DEPTCODE                                           VARCHAR2(3)
 SEMSTER                                   NOT NULL VARCHAR2(4)

SQL> alter table SUBJECT modify SUBJECTNAME varchar2(30);

Table altered.

SQL> insert into SUBJECT values('CS301','Data Structure','CSE','SEM3');

1 row created.

SQL> insert into SUBJECT values('CS302','Computer Organization','CSE','SEM3');

1 row created.

Commit complete.
SQL> insert into SUBJECT values('CS501','Discrete Mathematics', 'CSE', 'SEM5');

1 row created.

Commit complete.
SQL> insert into SUBJECT values('CS502','Data Communication','CSE','SEM5');

1 row created.

Commit complete.
SQL> insert into SUBJECT values('ECS501','Data Base System','ECE','SEM5');

1 row created.
SQL> insert into SUBJECT values('EC501','Analog Signals','ECE','SEM5');

1 row created.
```

```
SQL> insert into SUBJECT values('CS503','Operating Systems', 'CSE', 'SEM5');

1 row created.
SQL> select * from subject;

SUBJEC SUBJECTNAME              DEP SEMS
------ ------------------------ --- ----
CS301  Data Structure           CSE SEM3
CS302  Computer Organization    CSE SEM3
CS501  Discrete Mathematics     CSE SEM5
CS502  Data Communication       CSE SEM5
ECS501 Data Base System         ECE SEM5
EC501  Analog Signals           ECE SEM5
CS503  Operating Systems        CSE SEM5

7 rows selected.
```

(b) Create table: **RESULT**

Column Name	Data Type	Size	Constraints
RollNo	Number	6	Not Null, Foreign key Student
Sub_code	Varchar2	8	Not null
Marks	Number	3	<=100
Pass Marks	Number	2	

Primary key (rollno,Sub_code)

```
SQL> create table RESULT( RollNo number(6) not null references STUDENT(RollNo),Sub_code varchar2(8) not null, Marks number(3),CHECK( Marks <= 100),Pass_Marks number(2),
PRIMARY KEY(RollNo, Sub_code));

Table created.

SQL> desc RESULT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ROLLNO                                    NOT NULL NUMBER(6)
 SUB_CODE                                  NOT NULL VARCHAR2(8)
 MARKS                                              NUMBER(3)
 PASS_MARKS                                         NUMBER(2)

SQL> SELECT TABLE_NAME FROM USER_TABLES;

TABLE_NAME
------------------------------
DEPARTMENT
STUDENT
SUBJECT
RESULT

SQL> set linesize 200;
SQL> insert into Result values(1002,'CS501',76,40);

1 row created.
```

```
SQL> insert into Result values(1003,'CS501',91,40);

1 row created.

Commit complete.
SQL> insert into Result values(1001,'CS502',38,40);

1 row created.

Commit complete.
SQL> insert into Result values(1002,'CS502',81,40);

1 row created.

Commit complete.
SQL> insert into Result values(1003,'CS502',82,40);

1 row created.

Commit complete.
SQL> insert into Result values(1023,'CS301',92,40);

1 row created.

Commit complete.
SQL> insert into Result values(1029,'CS301',83,40);

1 row created.

Commit complete.
SQL> insert into Result values(1500,'CS301',65,40);

1 row created.

Commit complete.

SQL> insert into Result values(1500,'CS301',65,40);

1 row created.

Commit complete.
SQL> insert into Result values(1023,'CS302',75,40);

1 row created.

Commit complete.
SQL> insert into Result values(1029,'CS302',71,40);

1 row created.

Commit complete.
SQL> insert into Result values(1500,'CS302',65,40);

1 row created.

Commit complete.
SQL> insert into Result values(2001,'ECS501',67,30);

1 row created.

Commit complete.
SQL> insert into Result values(2002,'ECS501',72,30);

1 row created.

Commit complete.
SQL> insert into Result values(2101,'EC501',77,40);

1 row created.

Commit complete.
```

```
SQL> insert into Result values(1001, 'CS501', 68, 40);

1 row created.

Commit complete.
SQL> select * from Result;

    ROLLNO SUB_CODE      MARKS PASS_MARKS
---------- -------- ---------- ----------
      1002 CS501           76         40
      1003 CS501           91         40
      1001 CS502           38         40
      1002 CS502           81         40
      1003 CS502           82         40
      1023 CS301           92         40
      1029 CS301           83         40
      1500 CS301           65         40
      1023 CS302           75         40
      1029 CS302           71         40
      1500 CS302           65         40

    ROLLNO SUB_CODE      MARKS PASS_MARKS
---------- -------- ---------- ----------
      2001 ECS501          67         30
      2002 ECS501          72         30
      2101 EC501           77         40
      1001 CS501           68         40

15 rows selected.
```

Assignment 4

i. Find the names of subjects for students of CSE 5th semester.

```
select subjectname from subject where semester='SEM5';
```

```
SUBJECTNAME
-------------------------------
Analog Signals
Discreat Mathematics
Data Communication
Data Base System
Operating System
```

ii. Find the roll numbers who got marks between 61 to 70 in CS501.

```
select rollno from result where marks >= 61 and marks <= 70 and sub_code =
'CS501';
```

```
    ROLLNO
----------
      1001
```

iii. Change the address of the student whose roll number is given.

```
update student set ADDRESS = 'Jessore road kolkata' where rollno = 1001;
```

```
    ROLLNO NAME                ADDRESS                              PHONENO  YEAROFADM DEPT SEME BIRTHDDATE
---------- ------------------- -----------------------------      --------- --------- ---- ---- -----------------
      1001 ANKIT DAS           Jessore road kolkata               9830675221     2017 CSE  SEM5 10-FEB-99
```

iv. Increase the total number of student allocation of IT to 75.

```
update department set studentalloted =75 where deptcode = 'IT';
```

```
DEPT DEPTNAME                               STUDENTALLOTED
---- ------------------------------------- --------------
IT   Information Technology                            75
```

v. Increase the total number of student allocation of CSE by 15.

```
update department set studentalloted = studentalloted + 15 where deptcode =
'CSE';
```

vi. Increase the marks of all students of subject CS302 by 5.

```
update result set marks = marks + 5 where sub_code = 'CS302';
```

```
    ROLLNO SUB_CODE      MARKS PASS_MARKS
---------- -------- ---------- ----------
      1023 CS302           80         40
      1029 CS302           76         40
      1500 CS302           70         40
```

vii.   Add a default phone number to all CSE 5th semester students who do not have phone number.

```
update student set phoneno = 1112223334 where semester = 'SEM5' and phoneno
is null and deptcode = 'CSE';
```

```
1011 RAHUL KHAN          Jadavpur Kolkata              1112223334    2017 CSE  SEM5 07-JUL-01
```

viii.   Display the rows from RESULT where a student failed to obtain pass marks.

```
select * from result where marks < pass_marks;
```

```
    ROLLNO SUB_CODE      MARKS PASS_MARKS
---------- -------- ---------- ----------
      1001 CS502           38         40
```

ix. Add 2 marks to the students who failed for maximum 2 marks to any the subjects with CS code.

```
update result set marks = marks+2 where (pass_marks - marks)>0 and
(pass_marks - marks) <= 2 and sub_code like 'CS%';
```

```
      1001 CS502           40         40
```

x.   Delete the student with given roll number from student table.

```
delete from result where rollno = 1001;
delete from student where rollno = 1001;
```

```
SQL> delete from result where rollno = 1001;
delete from student where rollno = 1001;
2 rows deleted.


1 row deleted.
```

xi. Display the students name, deptcode, semester who admitted before 2017 in alphabetical order of name.

```
select name,deptcode,semester from student where yearofadm<2017 order by
name;
```

```
NAME                             DEPT SEME
-------------------------------- ---- ----
MOINAK GHOSH                     CSE  SEM5
NIKHIL SINGH                     ECE  SEM5
PARIMAL KUMAR                    CSE  SEM5
```

xii.   Display the roll number, subject code who got more than 90 in either CS301 or CS302.

```
select rollno, sub_code from result where marks>90 and (sub_code='CS301' or
sub_code='CS302');
```

```
    ROLLNO SUB_CODE
---------- --------
      1023 CS301
```

xiii.   Insert two students in students table.

```
insert into student values(3006, 'RUHUL AMIN SARDAR','Kolkata',
7003157077,2020, 'CSE', 'SEM6', '15-JUN-2001');
```

```
insert into student values(3009, 'SAMRAT GANGULY','Kolkata',
7003157078,2020, 'CSE', 'SEM6', '17-JUL-2001');
```

```
SQL> select * from student;

    ROLLNO NAME                    ADDRESS                          PHONENO YEAROFADM DEPT SEME BIRTHDDATE
---------- ----------------------- ------------------------- -------------- --------- ---- ---- ----------
      1002 MOINAK GHOSH            MG Road Kolkata               7988822201      2015 CSE  SEM5 01-MAY-98
      1003 PARIMAL KUMAR           NSB Road Birati               8099922211      2016 CSE  SEM5 17-MAR-01
      2001 SANCHITA SINGH          Tegharia Kolkata              9999110011      2017 ECE  SEM5 20-OCT-00
      2002 ANANYA BISWAS           MG Road Howrah                7667880010      2017 ECE  SEM5 05-NOV-01
      2101 ASHISH KUMAR            Baguiati Kolkata              6544332121      2017 ECE  SEM5 17-SEP-01
      1029 NAITIk PRASAD           KGRR path belgharia                           2018 CSE  SEM3 08-OCT-03
      4011 SATNAM JYOTI            Garia Kolkata                 8933322125      2018 IT   SEM3 21-SEP-02
      3002 SAURAV ROY              Chandannagar                                  2017 EE   SEM3 23-AUG-00
      3005 MOHAMMAD AZIB           Saltlake                      7910000666      2017 EE   SEM3 20-MAY-01
      2004 NIKHIL SINGH            Central Howrah                         0      2016 ECE  SEM5 21-JUN-99
      1023 SAMPRATIKA BISWAS       Barrackpore                   8877565643      2018 CSE  SEM3 13-DEC-03

    ROLLNO NAME                    ADDRESS                          PHONENO YEAROFADM DEPT SEME BIRTHDDATE
---------- ----------------------- ------------------------- -------------- --------- ---- ---- ----------
      1011 RAHUL KHAN              Jadavpur Kolkata              1112223334      2017 CSE  SEM5 07-JUL-01
      1060 SHUBHAM                 Sealdah Kolkata               9833221098      2017 CSE  SEM3 09-AUG-03
      2009 GAURAV PRAKASH          Saltlake                                      2018 ECE  SEM3 10-APR-04
      3008 ROHAN JOSHI             AB block Saltlake             9980765123      2018 EE   SEM3 20-JUN-03
      4200 MRIGENDRA               Belur Howrah                                  2019 IT   SEM1 01-JUL-04
      1500 SUBARNA MITRA           Gariahat Kolkata              6987654322      2017 CSE  SEM3 02-JAN-03
      1101 AMRITA DEV              CG block Saltlake                             2019 CSE  SEM1 06-JAN-04
      3006 RUHUL AMIN SARDAR       Kolkata                       7003157077      2020 CSE  SEM6 15-JUN-01
      3009 SAMRAT GANGULY          Kolkata                       7003157078      2020 CSE  SEM6 17-JUL-01
```

xiv.   Delete phone number of a given student.

```
update student set phoneno = null where rollno=1011;
```

```
1011 RAHUL KHAN              Jadavpur Kolkata                              2017 CSE  SEM5 07-JUL-01
```

xv. Display the roll number, subject code who got more than 40 from pass marks in either CS501 or CS502.

```
SELECT ROLLNO , SUB_CODE FROM RESULT WHERE ((MARKS - PASS_MARKS>=40) AND
(SUB_CODE LIKE 'CS501' OR SUB_CODE LIKE 'CS502'));
```

```
    ROLLNO SUB_CODE
---------- --------
      1003 CS501
      1002 CS502
      1003 CS502
```

Assignment 5
Topic 3 : Use of DDL - Add columns, constraints after table creation

(i) Add constraint : DeptCode of Student is foreign key with reference to DeptCode in Department.

```
SQL> alter table student add foreign key(DEPTCODE) references DEPARTMENT(DEPTCODE);

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'STUDENT';

CONSTRAINT_NAME              SEARCH_CONDITION                                              C
--------------------------- -------------------------------------------------------- -
SYS_C004054                 "NAME" IS NOT NULL                                            C
SYS_C004055                 "ADDRESS" IS NOT NULL                                         C
SYS_C004056                 "YEAROFADM" IS NOT NULL                                       C
SYS_C004057                 "DEPTCODE" IS NOT NULL                                        C
SYS_C004058                 "SEMESTER" IS NOT NULL                                        C
SYS_C004059                 "BIRTHDATE" IS NOT NULL                                       C
SYS_C004060                                                                               P
SYS_C004130                                                                               R

8 rows selected.
```

(ii) Add an attribute **Block** to the department table (data type - Char).

```
SQL> alter table department add block char(1);

Table altered.

SQL> desc department;
 Name                                                                Null?    Type
 ----------------------------------------------------------------- -------- -----------------
 DEPTCODE                                                          NOT NULL VARCHAR2(4)
 DEPTNAME                                                          NOT NULL VARCHAR2(50)
 STUDENTALLOTTED                                                   NOT NULL NUMBER(4)
 BLOCK                                                                      CHAR(1)
```

(iii) Insert data to this attribute.

```
SQL> update department set block = 'C' where deptcode = 'CSE';

1 row updated.
```

```
SQL> update department set block = 'B' where deptcode = 'ECE';

1 row updated.

SQL> update department set block = 'C' where deptcode = 'IT';

1 row updated.

SQL> update department set block = 'B' where deptcode = 'EE';

1 row updated.

SQL> select * from department;

DEPT DEPTNAME                                    STUDENTALLOTTED B
---- ------------------------------------------- --------------- -
CSE  Computer Science and Engineering                        135 C
ECE  Electronics and Communication Engineering               120 B
IT   Information Technology                                   75 C
EE   Electrical Engineering                                   60 B
```

(iv) Increase the width of the column subject code of SUBJECT table to 8.

```
SQL> alter table subject modify subjectcode varchar2(8);

Table altered.

SQL> desc subject;
 Name                                                                    Null?    Type
 ----------------------------------------------------------------------- -------- ------------

 SUBJECTCODE                                                             NOT NULL VARCHAR2(8)
 SUBJECTNAME                                                             NOT NULL VARCHAR2(30)
 DEPTCODE                                                                         VARCHAR2(3)
 SEMSTER                                                                 NOT NULL VARCHAR2(4)
```

(v) Delete primary key of table of Subject.

```
SQL> alter table subject drop primary key;

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'SUBJECT';

CONSTRAINT_NAME             SEARCH_CONDITION                                                         C
--------------------------- ------------------------------------------------------------------------ -
SYS_C004100                 "SUBJECTCODE" IS NOT NULL                                                C
SYS_C004101                 "SUBJECTNAME" IS NOT NULL                                                C
SYS_C004102                 "SEMSTER" IS NOT NULL                                                    C
SYS_C004104                                                                                          R
```

(vi) Add primary key to the table subject.

```
SQL> alter table subject add primary key(SUBJECTCODE);

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'SUBJECT';

CONSTRAINT_NAME             SEARCH_CONDITION                                                         C
--------------------------- ------------------------------------------------------------------------ -
SYS_C004100                 "SUBJECTCODE" IS NOT NULL                                                C
SYS_C004101                 "SUBJECTNAME" IS NOT NULL                                                C
SYS_C004102                 "SEMSTER" IS NOT NULL                                                    C
SYS_C004131                                                                                          P
SYS_C004104                                                                                          R
```

(vii) Make Sub_code of Result table foreign key with respect to Subject code of SUBJECT table.

```
SQL> alter table result add foreign key(SUB_CODE) references SUBJECT(SUBJECTCODE);

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'RESULT';

CONSTRAINT_NAME             SEARCH_CONDITION                                                         C
--------------------------- ------------------------------------------------------------------------ -
SYS_C004109                 "ROLLNO" IS NOT NULL                                                     C
SYS_C004110                 "SUB_CODE" IS NOT NULL                                                   C
SYS_C004111                  Marks <= 100                                                            C
SYS_C004112                                                                                          P
SYS_C004113                                                                                          R
SYS_C004132                                                                                          R

6 rows selected.
```

(viii) Add constraint that marks cannot be negative.

```
SQL> alter table RESULT add constraint check_positive_value CHECK (MARKS > 0);

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'RESULT';

CONSTRAINT_NAME              SEARCH_CONDITION                                                                      C
--------------------------- ------------------------------------------------------------------------------------- -
SYS_C004109                 "ROLLNO" IS NOT NULL                                                                  C
SYS_C004110                 "SUB_CODE" IS NOT NULL                                                                C
SYS_C004111                  Marks <= 100                                                                         C
SYS_C004112                                                                                                       P
SYS_C004113                                                                                                       R
SYS_C004132                                                                                                       R
CHECK_POSITIVE_VALUE        MARKS > 0                                                                             C
```

(ix) Alter the table SUBJECT and add check constraint such DeptCode is either CSE,IT, MCA, EE, ECE

```
SQL> alter table SUBJECT add constraint check_depts CHECK ((DEPTCODE = 'ECE') OR (DEPTCODE = 'CSE') OR (DEPTCODE = 'IT') OR (DEPTCODE = 'EE') OR (DEPTCODE = 'MCA'));

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'SUBJECT';

CONSTRAINT_NAME          SEARCH_CONDITION                                                    C
----------------------- ------------------------------------------------------------------- -
SYS_C004100             "SUBJECTCODE" IS NOT NULL                                           C
SYS_C004101             "SUBJECTNAME" IS NOT NULL                                           C
SYS_C004102             "SEMSTER" IS NOT NULL                                               C
SYS_C004131                                                                                 P
SYS_C004104                                                                                 R
CHECK_DEPTS             (DEPTCODE = 'ECE') OR (DEPTCODE = 'CSE') OR (DEPTCODE = 'IT') OR (DEPTCODE = 'EE  C

6 rows selected.
```

(x) Add column college phone number and add phone number 25739607 to each student.

```
SQL> ALTER TABLE STUDENT ADD COLLEGE_PHNO NUMBER(10) DEFAULT 25739607;

Table altered.

SQL> SELECT * FROM STUDENT;

    ROLLNO NAME                ADDRESS                    PHONENO YEAROFADM DEPT SEME BIRTHDAT COLLEGE_PHNO
---------- ------------------- ------------------- ------------- --------- ---- ---- -------- ------------
      1002 MOINAK GHOSH        MG Road, Kolkata         7988822201     2015 CSE  SEM5 01-05-98     25739607
      1003 PARIMAL KUMAR       NSB Road, Birati         8099922211     2016 CSE  SEM5 17-03-01     25739607
      2001 SANCHITA SINGH      Tegharia, Kolkata        9999110011     2017 ECE  SEM5 20-10-00     25739607
      2002 ANANYA BISWAS       MG Road, Kolkata         7667880010     2017 ECE  SEM5 05-11-01     25739607
      2101 ASHISH KUMAR        Baguiati, Kolkata        6544332121     2017 ECE  SEM5 17-09-01     25739607
      1029 NAITIK PRASAD       KGR path, Belgharia                     2018 CSE  SEM3 08-10-03     25739607
      4011 SATNAM JYOTI        Garia, Kolkata           8933322125     2018 IT   SEM3 21-09-02     25739607
      3002 SAURAV ROY          Chandannagar                            2017 EE   SEM5 23-08-00     25739607
      3005 MOHAMMAD AZIB       Saltlake                 7910000666     2017 EE   SEM5 20-05-01     25739607
      2004 NIKHIL SINGH        Central Howrah                          2016 ECE  SEM5 21-06-99     25739607
      1023 SAMPRIKTA BISWAS    Barrackpore                             2018 CSE  SEM3 13-12-03     25739607

    ROLLNO NAME                ADDRESS                    PHONENO YEAROFADM DEPT SEME BIRTHDAT COLLEGE_PHNO
---------- ------------------- ------------------- ------------- --------- ---- ---- -------- ------------
      1011 RAHUL KHAN          Jadavpur, Kolkata        9999999999     2017 CSE  SEM5 07-07-01     25739607
      1060 SHUBHAM             Sealdah, Kolkata                        2017 CSE  SEM3 09-08-03     25739607
      2009 GAURAV PRAKASH      Saltlake                                2018 ECE  SEM3 10-04-04     25739607
      3008 RAHUL JOSHI         AB block, Saltlake       9980765123     2018 EE   SEM3 20-06-03     25739607
      4200 MRIGENDRA           Belur,Howrah                            2019 IT   SEM1 01-06-04     25739607
      1500 SUBARNA MITRA       Gariahat, Kolkata        6987654322     2017 CSE  SEM3 02-01-03     25739607
      1101 AMARITA DEV         CG Block, Saltlake                      2019 CSE  SEM1 06-01-04     25739607
      4000 JOHN                DUMDUM ROAD              9999912345     2010 CSE  SEM1 23-07-00     25739607
      5010 TUK                 DUMDUM AIRPORT                          2010 CSE  SEM1 27-06-01     25739607

20 rows selected.
```

(xi) Create a table FACULTY (FID VARCHAR2(4), Name VARCHAR2(20)); Faculty id should start with 'F'.

```
SQL> CREATE TABLE FACULTY(
  2  FID varchar2(4),
  3  NAME varchar2(20));

Table created.
```

(xii) Insert values to the table Faculty.

```
SQL> select * from faculty;

FID   NAME
----  --------------------
F01   Aloke Kumar Dutta
F02   Abhijit Roy
F03   Probal Kumar
F04   Mousumi Dey
F05   Sharmistha Nag
F06   Dipti Bhattacharya
F07   Sanjay Kumar Das
F08   Partha Pratim Ba
F09   Rakesh Chouhan
F10   Srija Paul

10 rows selected.
```

(xiii) Insert column pass marks in subject table and add values to this column.

```
SQL> alter table subject add PASS_MARKS number(3) default 40;

Table altered.

SQL> select constraint_name, search_condition, constraint_type from user_constraints where table_name = 'SUBJECT';

CONSTRAINT_NAME              SEARCH_CONDITION                                                             C
--------------------------- ------------------------------------------------------------------------ -
SYS_C004100                 "SUBJECTCODE" IS NOT NULL                                                    C
SYS_C004101                 "SUBJECTNAME" IS NOT NULL                                                    C
SYS_C004102                 "SEMSTER" IS NOT NULL                                                        C
SYS_C004131                                                                                              P
SYS_C004104                                                                                              R
CHECK_DEPTS                 (DEPTCODE = 'ECE') OR (DEPTCODE = 'CSE') OR (DEPTCODE = 'IT') OR (DEPTCODE = 'EE C
```

(xiv) Delete the column pass marks from Result.

```
SQL> alter table result drop column pass_marks;

Table altered.

SQL> select * from result;

    ROLLNO SUB_CODE      MARKS
---------- -------- ----------
      1002 CS501          76
      1003 CS501          91
      1002 CS502          81
      1003 CS502          82
      1023 CS301          92
      1029 CS301          83
      1500 CS301          65
      1023 CS302          80
      1029 CS302          76
      1500 CS302          70
      2001 ECS501         67

    ROLLNO SUB_CODE      MARKS
---------- -------- ----------
      2002 ECS501         72
      2101 EC501          77

13 rows selected.
```

Assignment 6
NESTED IN

i. Display name, phone number of students with 'a' as the second letter in their names who read subject CS301.

```
SQL> select name, phoneno from student where name like '_A%' and rollno in (select rollno from result where sub_code like 'CS301');

NAME                         PHONENO
--------------------------- ----------
NAITIK PRASAD
SAMPRIKTA BISWAS
```

ii. Display the marks for all available subjects for the students who born in JUNE.

```
SQL> select rollno, marks from result where rollno in (select rollno from student where TO_CHAR(BIRTHDATE,'MM') = '06');

no rows selected
```

iii. Show the student details of 5th semester Computer science and engineering Department.

```
SQL> select * from student where semester = 'SEM5' and deptcode = 'CSE';

    ROLLNO NAME            ADDRESS                          PHONENO   YEAROFADM DEPT SEME BIRTHDAT COLLEGE_PHNO
---------- --------------- -------------------------------- --------- --------- ---- ---- -------- ------------
      1002 MOINAK GHOSH    MG Road, Kolkata                 7988822201     2015 CSE  SEM5 01-05-98    25739607
      1003 PARIMAL KUMAR   NSB Road, Birati                 8099922211     2016 CSE  SEM5 17-03-01    25739607
      1011 RAHUL KHAN      Jadavpur, Kolkata                9999999999     2017 CSE  SEM5 07-07-01    25739607
```

iv. Show the subject details of 3rd semester Computer science and engineering Department.

```
SQL> select * from subject where deptcode = 'CSE' and semster = 'SEM3';

SUBJECTC  SUBJECTNAME                      DEP SEMS PASS_MARKS
--------  ------------------------------   --- ---- ----------
CS301     Data Structure                   CSE SEM3         40
CS302     Computer Organization            CSE SEM3         40
```

v. Display the department name for which some student get more than 90.

```
SQL> select deptcode from student where rollno in (select rollno from result where marks > 90);

DEPT
----
CSE
CSE
```

vi. Display the student name who reads in 5th semester and get more than 80 in any subject.

```
SQL> select name from student where rollno in (select rollno from result where marks > 80) and semester = 'SEM5';

NAME
------------------------------
PARIMAL KUMAR
MOINAK GHOSH
```

vii. Display the name of CSE student who born in 2000 and get more than 80 in CS301.

```
SQL> select name from student where rollno in (select rollno from result where sub_code = 'CS301' and marks > 80) and TO_CHAR(BIRTHDATE,'YYYY') = '2000';

no rows selected
```

viii. Display the department details with less than 80 students which has subject name Data Communication.

```
SQL> select * from department where deptcode in (select deptcode from subject where subjectname = 'Data Communication') and studentallotted < 80;

no rows selected
```

ix. Display subject name, subject code of the department with allotted student less than 100.

```
SQL> select subjectname, subjectcode from subject where deptcode in(select deptcode from department where studentallotted < 100);

no rows selected
```

x. Show Roll number, subject code and marks for CSE 3rd year students where subject name starts with D

```
SQL> select rollno, sub_code, marks from result where sub_code in(select subjectcode from subject where subjectname like 'D%' and  deptcode = 'CSE' and semster = 'SEM5');

    ROLLNO SUB_CODE      MARKS
---------- --------- ----------
      1002 CS501            76
      1003 CS501            91
      1002 CS502            81
      1003 CS502            82
SQL>
```

xi. Display roll number, subject and marks of students who took admission in the year 2017 and read subject CS505.

```
SQL> select rollno, sub_code, marks from result where rollno in(select rollno from student where yearofadm = 2017) and sub_code = 'CS505';

no rows selected
SQL>
```

xii. Find the student details of CSE students whose marks are not available in result.

```
SQL> select * from student where rollno not in (select rollno from result) and deptcode = 'CSE';

    ROLLNO NAME           ADDRESS               PHONENO   YEAROFADM DEPT SEME BIRTHDAT COLLEGE_PHNO
---------- -------------- --------------------  --------- --------- ---- ---- -------- ------------
      1011 RAHUL KHAN     Jadavpur, Kolkata     9999999999     2017 CSE  SEM5 07-07-01     25739607
      1060 SHUBHAM        Sealdah, Kolkata                     2017 CSE  SEM3 09-08-03     25739607
      1101 AMARITA DEV    CG Block, Saltlake                   2019 CSE  SEM1 06-01-04     25739607
      4000 JOHN           DUMDUM ROAD           9999912345     2010 CSE  SEM1 23-07-00     25739607
      5010 TUK            DUMDUM AIRPORT                        2010 CSE  SEM1 27-06-01     25739607
```

xiii. Find the subject name, subject code which is not included in result.

```
SQL> select subjectname, subjectcode from subject where subjectcode not in(select sub_code from result);

SUBJECTNAME                      SUBJECTC
------------------------------   --------
Operating Systems                CS503
```

ASSIGNMENT 7

JOIN OPERATIONS, CARTESIAN PRODUCT, NATURAL JOIN, OUTER JOIN

i. Display student names along with the department name.

```
SQL> select name, deptcode from student join department using (deptcode);

NAME                            DEPT
------------------------------- ----
MOINAK GHOSH                    CSE
PARIMAL KUMAR                   CSE
SANCHITA SINGH                  ECE
ANANYA BISWAS                   ECE
ASHISH KUMAR                    ECE
NAITIK PRASAD                   CSE
SATNAM JYOTI                    IT
SAURAV ROY                      EE
MOHAMMAD AZIB                   EE
NIKHIL SINGH                    ECE
SAMPRIKTA BISWAS                CSE

NAME                            DEPT
------------------------------- ----
RAHUL KHAN                      CSE
SHUBHAM                         CSE
GAURAV PRAKASH                  ECE
RAHUL JOSHI                     EE
MRIGENDRA                       IT
SUBARNA MITRA                   CSE
AMARITA DEV                     CSE
JOHN                            CSE
TUK                             CSE

20 rows selected.
```

ii. Display student names, subject code and marks of students who took admission in the year 2017 and read subject CS502.

```
SQL> select name, sub_code, marks from student join result using (rollno) where sub_code = 'CS502' and yearofadm = 2017;

no rows selected
```

iii. Find the name of the students who got marks between 70 to 89 in CS501.

```
SQL> select name from student join result using (rollno) where sub_code = 'CS501' and marks >= 70 and marks <= 81;

NAME
---------------------------
MOINAK GHOSH
```

iv. Find the student name, roll no who appeared in the examination for paper DBMS.

```
SQL> select st.name, st.rollno from student st join result r on st.rollno = r.rollno join subject sb on r.sub_code = sb.subjectcode where sb.subjectname = 'Data Base System';

NAME                 ROLLNO
-------------------- ----------
SANCHITA SINGH       2001
ANANYA BISWAS        2002
```

v. Show student names, subject code and marks for CSE 3rd year students.

```
SQL> select name, sub_code, marks from student join result using (rollno) where semester = 'SEM5' or semester = 'SEM6';

NAME                        SUB_CODE   MARKS
--------------------------- -------- ----------
MOINAK GHOSH                CS501         76
PARIMAL KUMAR               CS501         91
MOINAK GHOSH                CS502         81
PARIMAL KUMAR               CS502         82
SANCHITA SINGH              ECS501        67
ANANYA BISWAS               ECS501        72
ASHISH KUMAR                EC501         77

7 rows selected.
```

vi. Show student names, department name for 5 th semester students who born in MAY.

```
SQL> select name, deptname from student join department using (deptcode) where TO_CHAR(BIRTHDATE, 'MM') = '05';

NAME                          DEPTNAME
----------------------------- ---------------------------------------------------
MOINAK GHOSH                  Computer Science and Engineering
MOHAMMAD AZIB                 Electrical Engineering
```

vii. Show student names, subject name for 5th semester student where subject name contains the word 'DATA'

```
SQL> select st.name, sb.subjectname, r.marks from student st join result r on st.rollno = r.rollno join subject sb on r.sub_code = sb.subjectcode where lower(sb.subjectn
ame) like '%data%';

NAME                          SUBJECTNAME                  MARKS
----------------------------- ---------------------------- ----------
MOINAK GHOSH                  Data Communication
PARIMAL KUMAR                 Data Communication           81
SANCHITA SINGH                Data Base System             82
ANANYA BISWAS                 Data Base System             67
NAITIK PRASAD                 Data Structure               72
SAMPRIKTA BISWAS              Data Structure               83
SUBARNA MITRA                 Data Structure               92
                                                           65

7 rows selected.
```

viii. Show student names, subject name and marks for 5th semester students.

```
SQL> select st.name, sb.subjectname, r.marks from student st join result r on st.rollno = r.rollno join subject sb on r.sub_code = sb.subjectcode where st.semester = 'SE
M5';

NAME                          SUBJECTNAME                  MARKS
----------------------------- ---------------------------- ----------
MOINAK GHOSH                  Discrete Mathematics         76
PARIMAL KUMAR                 Discrete Mathematics         91
MOINAK GHOSH                  Data Communication           81
PARIMAL KUMAR                 Data Communication           82
SANCHITA SINGH                Data Base System             67
ANANYA BISWAS                 Data Base System             72
ASHISH KUMAR                  Analog Signals               77

7 rows selected.
```

ix. Find the roll number, student names and marks for CSE students who get more than 80 in Data Structure.

```
SQL> select st.rollno, st.name, r.marks from student st join result r on st.rollno = r.rollno join subject sb on r.sub_code = sb.subjectcode where sb.subjectname = 'Data
 Structure' and r.marks > 80;

    ROLLNO NAME                         MARKS
---------- ---------------------------- ----------
      1023 SAMPRIKTA BISWAS             92
      1029 NAITIK PRASAD                83
```

x. Show student names, department name, subject name and subject wise marks for which the student get more than 90.

```
SQL> select st.name, d.deptname, sb.subjectname, r.marks from student st join result r on st.rollno = r.rollno join subject sb on r.sub_code = sb.subjectcode join depart
ment d on st.deptcode = d.deptcode where r.marks > 90;

NAME                          DEPTNAME                          SUBJECTNAME                  MARKS
----------------------------- --------------------------------- ---------------------------- ----------
SAMPRIKTA BISWAS              Computer Science and Engineering  Data Structure               92
PARIMAL KUMAR                 Computer Science and Engineering  Discrete Mathematics         91
```

xi. Add column HOD in DEPARTMENT. Insert faculty id in place of HoD.

```
SQL> alter table DEPARTMENT add HOD varchar2(4);

Table altered.
```

```
SQL> desc department;
 Name                                                          Null?    Type
 ------------------------------------------------------------- -------- ------------
 DEPTCODE                                                      NOT NULL VARCHAR2(4)
 DEPTNAME                                                      NOT NULL VARCHAR2(50)
 STUDENTALLOTTED                                               NOT NULL NUMBER(4)
 BLOCK                                                                  CHAR(1)
 HOD                                                                    VARCHAR2(4)
```

```
SQL> update department set HOD = 'F01' where deptcode = 'CSE';

1 row updated.

Commit complete.
SQL> update department set HOD = 'F02' where deptcode = 'ECE';

1 row updated.

Commit complete.
SQL> update department set HOD = 'F03' where deptcode = 'IT';

1 row updated.

Commit complete.
SQL> update department set HOD = 'F04' where deptcode = 'EE';

1 row updated.
```

xii. Add column TEACHER in table SUBJECT. Insert faculty id in this column.

```
SQL> alter table SUBJECT add TEACHER varchar2(4);

Table altered.

SQL> update subject set teacher = 'F01' where subjectcode = 'CS301';

1 row updated.

Commit complete.
SQL> update subject set teacher = 'F05' where subjectcode = 'CS302';

1 row updated.

Commit complete.
SQL> update subject set teacher = 'F06' where subjectcode = 'CS501';

1 row updated.

Commit complete.
SQL> update subject set teacher = 'F07' where subjectcode = 'CS502';

1 row updated.

Commit complete.
SQL> update subject set teacher = 'F08' where subjectcode = 'ECS501';

1 row updated.

Commit complete.
SQL> update subject set teacher = 'F02' where subjectcode = 'EC501';

1 row updated.

Commit complete.
SQL> update subject set teacher = 'F09' where subjectcode = 'CS503';

1 row updated.
```

xiii. Show the department name, semester, subject name along with faculty name.

```
SQL> select d.deptname, sb.subjectname, sb.semster, f.name from department d join subject sb on d.deptcode = sb.deptcode join faculty f on d.hod = f.fid;

DEPTNAME                                   SUBJECTNAME                      SEMS NAME
------------------------------------------ -------------------------------- ---- --------------------
Computer Science and Engineering           Data Structure                   SEM3 Aloke Kumar Dutta
Computer Science and Engineering           Computer Organization            SEM3 Aloke Kumar Dutta
Computer Science and Engineering           Discrete Mathematics             SEM5 Aloke Kumar Dutta
Computer Science and Engineering           Data Communication               SEM5 Aloke Kumar Dutta
Electronics and Communication Engineering  Data Base System                 SEM5 Abhijit Roy
Electronics and Communication Engineering  Analog Signals                   SEM5 Abhijit Roy
Computer Science and Engineering           Operating Systems                SEM5 Aloke Kumar Dutta

7 rows selected.
```

xiv. Find the names of all faculties whose HOD name is given.

```
SQL> select f.fid, f.name from faculty f join department d on f.fid = d.hod;

FID  NAME
---- --------------------
F01  Aloke Kumar Dutta
F02  Abhijit Roy
F03  Probal Kumar
F04  Mousumi Dey
```

xv. Display subject name, subject code, marks including all subjects.[Outer join]

```
SQL> select subject.subjectcode, subject.subjectname, result.marks from subject left outer join result on subject.subjectcode = result.sub_code;

SUBJECTC SUBJECTNAME                    MARKS
-------- ----------------------------- ----------
CS501    Discrete Mathematics              76
CS501    Discrete Mathematics              91
CS502    Data Communication                81
CS502    Data Communication                82
CS301    Data Structure                    92
CS301    Data Structure                    83
CS301    Data Structure                    65
CS302    Computer Organization             80
CS302    Computer Organization             76
CS302    Computer Organization             70
ECS501   Data Base System                  67

SUBJECTC SUBJECTNAME                    MARKS
-------- ----------------------------- ----------
ECS501   Data Base System                  72
EC501    Analog Signals                    77
CS503    Operating Systems

14 rows selected.
```

xvi. Display students name, subject code, marks. Include all students.[Outer join]

```
SQL> select st.name, r.sub_code, r.marks from student st left outer join result r on st.rollno = r.rollno;

NAME                          SUB_CODE    MARKS
----------------------------- -------- ----------
MOINAK GHOSH                  CS501        76
PARIMAL KUMAR                 CS501        91
MOINAK GHOSH                  CS502        81
PARIMAL KUMAR                 CS502        82
SAMPRIKTA BISWAS              CS301        92
NAITIK PRASAD                 CS301        83
SUBARNA MITRA                 CS301        65
SAMPRIKTA BISWAS              CS302        80
NAITIK PRASAD                 CS302        76
SUBARNA MITRA                 CS302        70
SANCHITA SINGH                ECS501       67

NAME                          SUB_CODE    MARKS
----------------------------- -------- ----------
ANANYA BISWAS                 ECS501       72
ASHISH KUMAR                  EC501        77
RAHUL JOSHI
SHUBHAM
TUK
MOHAMMAD AZIB
SAURAV ROY
GAURAV PRAKASH
MRIGENDRA
AMARITA DEV
NIKHIL SINGH

NAME                          SUB_CODE    MARKS
----------------------------- -------- ----------
RAHUL KHAN
SATNAM JYOTI
JOHN

25 rows selected.
```

ASSIGNMENT 8
QUERIES USING AGGREGATE FUNCTIONS

i. Find the number of student in CSE second year.

```
SQL> select count(name) from student where deptcode = 'CSE' and semester = 'SEM3' or semester = 'SEM4';

COUNT(NAME)
-----------
          4
```

ii. Find the number of students whose marks of any subject is available.

```
SQL> select count(name) from student where rollno in (select rollno from result where marks is not null);

COUNT(NAME)
-----------
          8
```

iii. Find total number of faculty.

```
SQL> select count(FID) from faculty;

COUNT(FID)
-----------
         10
```

iv. Find the 5th semester student(s) who got maximum marks in a subject.

```
SQL> select distinct (student.name),result.marks,result.sub_code from student join result on student.rollno=result.rollno where student.semester='SEM5' and marks in (sel
ect max(marks) from result group by sub_code);

NAME                          MARKS SUB_CODE
----------------------------- ----- --------
PARIMAL KUMAR                    91 CS501
ASHISH KUMAR                     77 EC501
PARIMAL KUMAR                    82 CS502
ANANYA BISWAS                    72 ECS501
```

v. Find the roll number of a student who got maximum marks in CS501.

```
SQL> select student.rollno from student join result on student.rollno=result.rollno where sub_code='CS501' and marks in (select max(marks) from result group by sub_code)
;

    ROLLNO
----------
      1003
```

vi. Display average marks of CS502.

```
SQL> select sub_code, avg(marks) from result where sub_code = 'CS502' group by sub_code;

SUB_CODE AVG(MARKS)
-------- ----------
CS502         81.5
```

vii. Find the number of students in each department with their department code.

```
SQL> select count(rollno), deptcode from student group by deptcode;

COUNT(ROLLNO) DEPT
------------- ----
            2 IT
            3 EE
           10 CSE
            5 ECE
```

viii. Find the number of students in each department with their department name.

```
SQL> select count(rollno), department.deptname from student join department using (deptcode) group by deptname;

COUNT(ROLLNO) DEPTNAME
------------- ------------------------------------------------
            5 Electronics and Communication Engineering
            2 Information Technology
            3 Electrical Engineering
           10 Computer Science and Engineering
```

ix. Find the Department with more than three faculty.

```
SQL> select deptname from department where deptcode in(select deptcode from subject group by deptcode having count(teacher)> 3);

DEPTNAME
------------------------------------------------
Computer Science and Engineering
```

x. Find the student name and roll no who get more than 80 in at least two subject.

```
SQL> select rollno, name from student where rollno in(select rollno from result where marks > 80 group by rollno having count(sub_code) >= 2);

    ROLLNO NAME
---------- ----------------------------
      1003 PARIMAL KUMAR
```

xi. Find the student name and roll no who get more than 70 in average.

```
SQL> select rollno, name from student where rollno in(select rollno from result group by rollno having avg(marks) > 70);

    ROLLNO NAME
---------- ------------------------------
      1002 MOINAK GHOSH
      1003 PARIMAL KUMAR
      2002 ANANYA BISWAS
      2101 ASHISH KUMAR
      1029 NAITIK PRASAD
      1023 SAMPRIKTA BISWAS

6 rows selected.
```

xii. Display number of subject semester wise in dept CSE.

```
SQL> select semster, count(subjectcode) from subject where deptcode = 'CSE' group by semster;

SEMS COUNT(SUBJECTCODE)
---- ------------------
SEM5                  3
SEM3                  2
```

xiii. Find the department name with maximum number of student.

```
SQL> select deptname, studentallotted from department where studentallotted in (select max(studentallotted) from department);

DEPTNAME                                         STUDENTALLOTTED
------------------------------------------------ ---------------
Computer Science and Engineering                             135
```

xiv. Find the second highest marks of the result table.

```
SQL> select max(marks) from result where marks not in (select max(marks) from result);

MAX(MARKS)
----------
        91
```

xv. Find the students name who got highest marks, subjectwise.

```
SQL> select rollno, sub_code from result where marks in(select max(marks) from result group by sub_code);

    ROLLNO SUB_CODE
---------- --------
      1003 CS501
      1003 CS502
      1023 CS301
      1023 CS302
      2002 ECS501
      2101 EC501

6 rows selected.
```

Assignment 9
Creation, Manipulation and Dropping of views

1. Create view V_MARKS with roll no, student name, subject code, marks of all CSE students.

```
SQL> CREATE VIEW V_MARKS AS SELECT st.rollno, st.name, r.sub_code, r.marks from student st join result r on st.rollno = r.rollno where st.deptcode = 'CSE';

View created.

SQL> select * from v_marks;

    ROLLNO NAME                    SUB_CODE    MARKS
---------- ----------------------- -------- --------
      1002 MOINAK GHOSH            CS501          76
      1003 PARIMAL KUMAR           CS501          91
      1002 MOINAK GHOSH            CS502          81
      1003 PARIMAL KUMAR           CS502          82
      1023 SAMPRIKTA BISWAS        CS301          92
      1029 NAITIK PRASAD           CS301          83
      1500 SUBARNA MITRA           CS301          65
      1023 SAMPRIKTA BISWAS        CS302          80
      1029 NAITIK PRASAD           CS302          76
      1500 SUBARNA MITRA           CS302          70

10 rows selected.
```

2. Create view V_CLASSTAKEN with subject code, subject name, Faculty code, faculty name where the subject is taught by that faculty.

```
SQL> create view v_classtaken as select sb.subjectcode, sb.subjectname, sb.teacher, f.name from subject sb join faculty f on sb.teacher = f.fid;

View created.

SQL> select * from v_classtaken;

SUBJECTC SUBJECTNAME                  TEAC NAME
-------- ---------------------------- ---- -------------------
CS301    Data Structure               F01  Aloke Kumar Dutta
EC501    Analog Signals               F02  Abhijit Roy
CS302    Computer Organization        F05  Sharmistha Nag
CS501    Discrete Mathematics         F06  Dipti Bhattacharya
CS502    Data Communication           F07  Sanjay Kumar Das
ECS501   Data Base System             F08  Partha Pratim Ba
CS503    Operating Systems            F09  Rakesh Chouhan

7 rows selected.
```

3. Create view V_SUBJECT with subject_code, subject_name, teacher name where number of student in the subject is more than 1.

```
SQL> create view v_subject as select sb.subjectcode, sb.subjectname, f.name from subject sb join faculty f on sb.teacher = f.fid where sb.subjectcode in (select sub_code
  from result group by sub_code having count(rollno) > 1);

View created.

SQL> select * from v_subject;

SUBJECTC SUBJECTNAME                  NAME
-------- ---------------------------- -------------------
ECS501   Data Base System             Partha Pratim Ba
CS302    Computer Organization        Sharmistha Nag
CS501    Discrete Mathematics         Dipti Bhattacharya
CS502    Data Communication           Sanjay Kumar Das
CS301    Data Structure               Aloke Kumar Dutta
```

4. Create view V_STUDENT with student name, roll number, department who appeared in at least one examination.

```
SQL> create view v_student as select st.name, st.rollno, d.deptname from student st join department d on st.deptcode = d.deptcode where st.rollno in (select rollno from
result group by rollno having count(sub_code) > 1);

View created.

SQL> select * from v_student;

NAME                            ROLLNO DEPTNAME
------------------------------- ------ ---------------------------------------------------
PARIMAL KUMAR                     1003 Computer Science and Engineering
MOINAK GHOSH                      1002 Computer Science and Engineering
NAITIK PRASAD                     1029 Computer Science and Engineering
SAMPRIKTA BISWAS                  1023 Computer Science and Engineering
SUBARNA MITRA                     1500 Computer Science and Engineering
```

5. Create view V_DEPT with dept code, semester, number of student with more than 75 marks in at least one subject.

```
SQL> create view v_dept as select deptcode, semester, count(rollno) as "No. of Students" from student where rollno in (select rollno from result where marks > 75 group b
y (rollno) having count(sub code) >= 1 ) group by deptcode, semester;
SQL> select * from v_dept
  2  ;

DEPT SEME No. of Students
---- ---- ---------------
CSE  SEM3               2
CSE  SEM5               2
ECE  SEM5               1
```