(i) Add constraint : DeptCode of Student is foreign key with reference to DeptCode in Department.
Code :
```
ALTER TABLE STUDENT
ADD CONSTRAINT FK_STUDENT
FOREIGN KEY (DEPTCODE)
REFERENCES DEPARTMENT(DEPTCODE);
```

Output:
```
SQL> SELECT table_name,constraint_name,constraint_type,search_condition from all_constraints
 where table_name='STUDENT' and owner='B1_2024';

TABLE_NAME                          CONSTRAINT_NAME                      C SEARCH_CONDITION
----------------------------------  -----------------------------------  - -----------------------------
-------------------------------------------------
STUDENT                             SYS_C004274                          C "NAME" IS NOT NULL
STUDENT                             SYS_C004275                          C "ADDRESS" IS NOT NULL
STUDENT                             SYS_C004276                          C "YEAROFADM" IS NOT NULL
STUDENT                             SYS_C004277                          C "DEPTCODE" IS NOT NULL
STUDENT                             SYS_C004278                          C "SEMESTER" IS NOT NULL
STUDENT                             SYS_C004279                          C "BIRTHDATE" IS NOT NULL
STUDENT                             SYS_C004280                          P
STUDENT                             FK_STUDENT                           R
```

(ii) Add an attribute *Block* to the department table (data type - Char).
Code :
```
ALTER TABLE DEPARTMENT
ADD BLOCK CHAR;
```
Output:
```
SQL> DESC DEPARTMENT;
 Name                                                                   Null?      Type
 ----------------------------------------------------------------------------------------------------
 ----------------------------------------------------------------------------------------------------
 --- ----------------------------------------------------------------------------------------------
 --------------------------------------------------------
 DEPTCODE                                                               NOT NULL VARCHAR2(4)
 DEPTNAME                                                               NOT NULL VARCHAR2(50)
 STUDENT_ALLOTED                                                        NOT NULL NUMBER(4)
 BLOCK                                                        CHAR(1)
```

(iii) Insert data to this attribute.
Code :
```
UPDATE DEPARTMENT
SET BLOCK ='C'
WHERE  DEPTCODE='CSE' OR DEPTCODE='IT';

UPDATE DEPARTMENT
SET BLOCK ='B'
WHERE  DEPTCODE ='ECE' OR DEPTCODE ='EE';
```

Output:

```
DEPT DEPTNAME                                         STUDENT_ALLOTED 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.

Code :

```
ALTER TABLE SUBJECT
MODIFY SUBJECTCODE
VARCHAR(8);
```

Output:

```
SQL> DESC SUBJECT;
 Name                                                    Null?    Type
 ------------------------------------------------------- -------- ------------
 ------------------------------
 SUBJECTCODE                                             NOT NULL VARCHAR2(8)
 SUBJECTNAME                                             NOT NULL VARCHAR2(25)
 DEPTCODE                                                         VARCHAR2(3)
 SEMESTER                                                NOT NULL VARCHAR2(4)
```

(v) Delete primary key of table of Subject.

Code :

```
ALTER TABLE SUBJECT
DROP PRIMARY KEY;
```

Output:

```
TABLE_NAME                CONSTRAINT_NAME             C SEARCH_CONDITION
------------------------- --------------------------- - -------------------------
SUBJECT                   SYS_C004291                 C "SUBJECTNAME" IS NOT NULL
SUBJECT                   SYS_C004292                 C "SEMESTER" IS NOT NULL
SUBJECT                   SYS_C004294                 R
```

(vi) Add primary key to the table subject.

Code :

```
ALTER TABLE SUBJECT
ADD CONSTRAINT PK_SUBJECT
PRIMARY KEY(SUBJECTCODE);
```

Output:

```
TABLE_NAME                CONSTRAINT_NAME             C SEARCH_CONDITION
------------------------- --------------------------- - -------------------------
SUBJECT                   SYS_C004291                 C "SUBJECTNAME" IS NOT NULL
SUBJECT                   SYS_C004292                 C "SEMESTER" IS NOT NULL
SUBJECT                   PK_SUBJECT                  P
SUBJECT                   SYS_C004294                 R
```

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

```
ALTER TABLE RESULT
ADD CONSTRAINT FK_RESULT
FOREIGN KEY(SUB_CODE)
REFERENCES SUBJECT(SUBJECTCODE);
```

Output:

```
SQL> SELECT table_name,constraint_name,constraint_type,search_condition from all_constraints
 where table_name='RESULT' and owner='B1_2024';

TABLE_NAME                      CONSTRAINT_NAME                 C SEARCH_CONDITION
------------------------------- ------------------------------- - -------------------------
-----------------------------------------------------
RESULT                          SYS_C004315                     C "ROLLNO" IS NOT NULL
RESULT                          SYS_C004316                     C "SUB_CODE" IS NOT NULL
RESULT                          SYS_C004317                     C Marks <= 100
RESULT                          SYS_C004318                     P
RESULT                          SYS_C004319                     R
RESULT                          FK_RESULT                       R

6 rows selected
```

(viii) Add constraint that marks cannot be negative.
Code :

```
ALTER TABLE RESULT
ADD CONSTRAINT CHK_RES
CHECK (MARKS >= 0);
```

Output:

```
SQL> SELECT table_name,constraint_name,constraint_type,search_condition from all_constraints
 where table_name='RESULT' and owner='B1_2024';

TABLE_NAME                      CONSTRAINT_NAME                 C SEARCH_CONDITION
------------------------------- ------------------------------- - -------------------------
-----------------------------------------------------
RESULT                          SYS_C004315                     C "ROLLNO" IS NOT NULL
RESULT                          SYS_C004316                     C "SUB_CODE" IS NOT NULL
RESULT                          SYS_C004317                     C Marks <= 100
RESULT                          SYS_C004318                     P
RESULT                          SYS_C004319                     R
RESULT                          FK_RESULT                       R
RESULT                          CHK_RES                         C MARKS >= 0
```

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

```
ALTER TABLE SUBJECT
ADD CONSTRAINT CHK_DEPT
CHECK (DEPTCODE='CSE' OR DEPTCODE='IT' OR DEPTCODE='MCA' OR
DEPTCODE='EE' OR DEPTCODE='ECE');
```

Output:

```
SQL> SELECT table_name,constraint_name,constraint_type,search_condition from all_constraints where table_name='SUBJECT' and owner='B1_2024';

TABLE_NAME                    CONSTRAINT_NAME              C SEARCH_CONDITION
----------------------------- ---------------------------- - --------------------------------------------------------------
SUBJECT                       SYS_C004291                  C "SUBJECTNAME" IS NOT NULL
SUBJECT                       SYS_C004292                  C "SEMESTER" IS NOT NULL
SUBJECT                       PK_SUBJECT                   P
SUBJECT                       SYS_C004294                  R
SUBJECT                       CHK_DEPT                     C DEPTCODE='CSE' OR DEPTCODE='IT' OR DEPTCODE='MCA' OR DEPTCODE='EE' OR DEPTCODE='
```

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

Code :

```
ALTER TABLE STUDENT
ADD COLLEGE_PHONE_NO
NUMBER(10) DEFAULT 25739607;
```

Output:

```
SQL> select * from STUDENT;

    ROLLNO NAME              ADDRESS              PHONENO   YEAROFADM DEPT SEME BIRTHDAT COLLEGE_PHONE_NO
---------- ----------------- ----------------- ---------- --------- ---- ---- -------- ----------------
      1001 ANKIT DAS         VIP Road kolkata  9830675221      2017 CSE  SEM5 10-02-99          25739607
      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 7667880010      2017 ECE  SEM5 20-10-00          25739607
      2002 ANANYA BISWAS     MG Road, Howrah   9830675221      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
      2004 NIKHIL SINGH      Central Howrah                    2016 ECE  SEM5 21-06-99          25739607
      1023 SAMPRIKTA BISWAS  Barrackpore       8877565643      2018 CSE  SEM3 13-12-03          25739607

    ROLLNO NAME              ADDRESS              PHONENO   YEAROFADM DEPT SEME BIRTHDAT COLLEGE_PHONE_NO
---------- ----------------- ----------------- ---------- --------- ---- ---- -------- ----------------
      1011 RAHUL KHAN        Jadavpur, Kolkata 8910793249      2017 CSE  SEM5 07-07-01          25739607
      1060 SHUBHAM           Sealdah, Kolkata  9833221098      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 01-07-04          25739607
      1500 SUBARNA MITRA     Gariahat, Kolkata 6987654322      2017 CSE  SEM3 02-01-03          25739607
      1101 AMARITA DEV       Gariahat, Kolkata                 2019 CSE  SEM1 06-01-04          25739607
      3005 MOHAMMAD AZIB     Saltlake          7910000666      2017 EE   SEM5 20-05-01          25739607
      3055 CHONK PRAMANIK    Dunlop                            2021 CSE  SEM5 24-02-03          25739607
```

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

Code :

```
CREATE TABLE FACULTY(
FID VARCHAR2(4),
NAME VARCHAR2(20),
CONSTRAINT CHK_FAC CHECK (FID LIKE 'F%')
);
```

Output:

```
SQL> DESC FACULTY;
 Name                                                                    Null?    Type
 ----------------------------------------------------------------------- -------- ------------
 -------------------------------------------
 FID                                                                              VARCHAR2(4)
 NAME                                                                             VARCHAR2(20)
```

(xii) Insert values to the table Faculty.
Code :
```
INSERT INTO FACULTY VALUES('F01','Aloke Kumar Dutta');
INSERT INTO FACULTY VALUES('F02','Abhijit Roy');
INSERT INTO FACULTY VALUES('F03','Probal Kumar');
INSERT INTO FACULTY VALUES('F04','Mousumi Dey');
INSERT INTO FACULTY VALUES('F05','Sharmistha Nag');
INSERT INTO FACULTY VALUES('F06','Dipti Bhattacharya');
INSERT INTO FACULTY VALUES('F07','Sanjay Kumar Das');
INSERT INTO FACULTY VALUES('F08','Partha Pratim Ba');
INSERT INTO FACULTY VALUES('F09','Rakesh Chouhan');
INSERT INTO FACULTY VALUES('F10','Srija Paul');
```
Output:
```
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
```

(xiii) Insert column pass marks in subject table and add values to this column.
Code :
```
ALTER TABLE SUBJECT
ADD PASSMARKS NUMBER(3)
DEFAULT 30;

UPDATE SUBJECT
SET PASSMARKS=40
WHERE SUBJECTCODE LIKE 'CS%' OR SUBJECTCODE='EC501';
```

Output:

```
SQL> SELECT * FROM SUBJECT;

SUBJECTC SUBJECTNAME                DEP SEME  PASSMARKS
-------- -------------------------- --- ----  ---------
CS301    Data Structure             CSE SEM3         40
CS302    Computer Organization      CSE SEM3         40
CS501    Discrete Mathematics       CSE SEM5         40
CS502    Data Communication         CSE SEM5         40
ECS501   Data Base Systems          ECE SEM5         30
EC501    Analog Signals             ECE SEM5         40
CS503    Operating Systems          CSE SEM5         40
```

(xiv) Delete the column pass marks from Result.

Code :

ALTER TABLE RESULT DROP COLUMN PASS_MARKS;

Output:

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

Notes:

SELECT table_name,constraint_name,constraint_type,search_condition from all_constraints where table_name='STUDENT' and owner='B1_2024';

SELECT table_name,constraint_name,constraint_type,search_condition from all_constraints where table_name='SUBJECT' and owner='B1_2024';