Database Management Systems Lab
Assignment 1

Name: Aryan Mahawar
Registration Number: 23BDS1095
Course Code: BCSE302P (Lab)
Slot: L49+L50 (Lab)

NOTE: ALL TABLES END WITH MY REGISTRATION NUMBER (23BDS1095)

DDL Commands

1. Create the following Tables or schemas:
Stud(sname, regno, dept, year, Mark1, Mark2, Mark3, Sum) - datatype of the regno is NUMBER
Faculty(fname, fid, designation)
Course(cname, ccode)

Command:
To create Stud - create table Stud_23BDS1095(sname varchar2(20), regno number, dept varchar2(10), year number, Mark1 number, Mark2 number, Mark3 number, Sum number);
To create Faculty - create table Faculty_23BDS1095(fname varchar2(20), fid number, designation varchar2(20));
To create Course - create table Course_23BDS1095(cname varchar2(20), ccode varchar2(20));

Output Screenshot:

```
SQL> create table Stud_23BDS1095(sname varchar2(20), regno number, dept varchar2(10)
 year number, Mark1 number, Mark2 number, Mark3 number, Sum number);

Table created.

SQL> create table Faculty_23BDS1095(fname varchar(2), fid number, designation varcha
2(20));

Table created.

SQL> create table Course_23BDS1095(cname varchar2(20), ccode varchar2(20));

Table created.

SQL>
```

2. View the structure of each table

Command:
To describe Stud - desc Stud_23BDS1095;
To describe Faculty - desc Faculty_23BDS1095;
To describe Course - desc Course_23BDS1095;

Output Screenshot:

```
SQL> desc Stud_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SNAME                                              VARCHAR2(20)
 REGNO                                              NUMBER
 DEPT                                               VARCHAR2(10)
 YEAR                                               NUMBER
 MARK1                                              NUMBER
 MARK2                                              NUMBER
 MARK3                                              NUMBER
 SUM                                                NUMBER

SQL> desc Faculty_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 FNAME                                              VARCHAR2(2)
 FID                                                NUMBER
 DESIGNATION                                        VARCHAR2(20)

SQL> desc Course_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CNAME                                              VARCHAR2(20)
 CCODE                                              VARCHAR2(20)

SQL>
```

3. Change the data type of the column regno as varchar2(10) in stud table

Command:
alter table Stud_23BDS1095 modify (regno varchar2(10));

Output Screenshot:

```
SQL> alter table Stud_23BDS1095 modify (regno varchar2(10));

Table altered.

SQL>
```

4. View the structure of stud table

Command:
desc Stud_23BDS1095;

Output Screenshot:

```
SQL> desc Stud_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SNAME                                               VARCHAR2(20)
 REGNO                                               VARCHAR2(10)
 DEPT                                                VARCHAR2(10)
 YEAR                                                NUMBER
 MARK1                                               NUMBER
 MARK2                                               NUMBER
 MARK3                                               NUMBER
 SUM                                                 NUMBER

SQL>
```

5. Add columns such as Total and Average in stud table

Command:
alter table Stud_23BDS1095 add (Total number, Average number);

Output Screenshot:

```
SQL> alter table Stud_23BDS1095 add (Total number, Average number);

Table altered.

SQL>
```

6. View the structure of stud table

Command:
desc Stud_23BDS1095;

Output Screenshot:

```
SQL> desc Stud_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SNAME                                              VARCHAR2(20)
 REGNO                                              VARCHAR2(10)
 DEPT                                               VARCHAR2(10)
 YEAR                                               NUMBER
 MARK1                                              NUMBER
 MARK2                                              NUMBER
 MARK3                                              NUMBER
 SUM                                                NUMBER
 TOTAL                                              NUMBER
 AVERAGE                                            NUMBER

SQL>
```

7. Delete the column sum from stud table

Command:
alter table Stud_23BDS1095 drop column Sum;

Output Screenshot:

```
SQL> alter table Stud_23BDS1095 drop column Sum;

Table altered.

SQL>
```

8. View the structure of stud table

Command:
desc Stud_23BDS1095;

Output Screenshot:

```
SQL> desc Stud_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SNAME                                               VARCHAR2(20)
 REGNO                                               VARCHAR2(10)
 DEPT                                                VARCHAR2(10)
 YEAR                                                NUMBER
 MARK1                                               NUMBER
 MARK2                                               NUMBER
 MARK3                                               NUMBER
 TOTAL                                               NUMBER
 AVERAGE                                             NUMBER

SQL>
```

9. Add new columns Department and Salary in the Faculty table

Command:
alter table Faculty_23BDS1095 add (Department varchar2(20), Salary number);

Output Screenshot:

```
SQL> alter table Faculty_23BDS1095 add (Department varchar2(20), Salary number);

Table altered.

SQL>
```

10. View the structure of Faculty table

Command:
desc Faculty_23BDS1095;

Output Screenshot:

```
SQL> desc Faculty_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 FNAME                                              VARCHAR2(2)
 FID                                                NUMBER
 DESIGNATION                                        VARCHAR2(20)
 DEPARTMENT                                         VARCHAR2(20)
 SALARY                                             NUMBER

SQL>
```

11. Drop the table course

Command:
drop table Course_23BDS1095;

Output Screenshot:

```
SQL> drop table Course_23BDS1095;

Table dropped.

SQL>
```

12. View the structure of course table

Command:
desc Course_23BDS1095

Output Screenshot:
(We do expect an error in this case since the table has been dropped in question 11 already)

```
SQL> desc Course_23BDS1095;
ERROR:
ORA-04043: object Course_23BDS1095 does not exist


SQL>
```

13. Rename the table stud as Student

Command:
alter table Stud_23BDS1095 rename to Student_23BDS1095;

Output Screenshot:

```
SQL> alter table Stud_23BDS1095 rename to Student_23BDS1095;

Table altered.

SQL>
```

14. Create the table Course

Command:
create table Course_23BDS1095(cname varchar2(20), ccode number);

Output Screenshot:

```
SQL> create table Course_23BDS1095(cname varchar(20), ccode number);

Table created.

SQL>
```

DML Commands

15. Insert 3 records in each table

Command:
insert command as shown in the below screenshot for each of the tables

Output Screenshots:

```
SQL> insert into Student_23BDS1095 (sname, regno, dept, year, Mark1, Mark2, Mark3, Total, Average) values ('Ranjeet', '23BDS1045', 'CSE', 2, 75,
 80, 85, 240, 80);

1 row created.

SQL> insert into Student_23BDS1095 (sname, regno, dept, year, Mark1, Mark2, Mark3, Total, Average) values ('Rishadd', '22BDS1850', 'ECE', 3, 85,
 90, 80, 255, 85);

1 row created.

SQL> insert into Student_23BDS1095 (sname, regno, dept, year, Mark1, Mark2, Mark3, Total, Average) values ('Siraj', '23BDS1020', 'CSE', 2, 70, 6
5, 80, 215, 72);

1 row created.
```

```
SQL> insert into Faculty_23BDS1095 (fname, fid, designation, Department, Salary) values ('Dr. Divya', 564, 'Associate Professor', 'CSE', 600000)
;

1 row created.

SQL> insert into Faculty_23BDS1095 (fname, fid, designation, Department, Salary) values ('Dr. Prakash', 664, 'Professor', 'CSE', 700000);

1 row created.

SQL> insert into Faculty_23BDS1095 (fname, fid, designation, Department, Salary) values ('Dr. Dev', 124, 'Assistant Professor', 'CSE', 500000);

1 row created.

SQL> insert into Course_23BDS1095 (cname, ccode) values ('DBMS', 202);

1 row created.

SQL> insert into Course_23BDS1095 (cname, ccode) values ('OS', 102);

1 row created.

SQL> insert into Course_23BDS1095 (cname, ccode) values ('DSA', 302);

1 row created.

SQL>
```

16. Display the content of all the schemas

Command:
To display content of Student table - select * from Student_23BDS1095;
To display content of Faculty table - select * from Faculty_23BDS1095;
To display content of Course table - Select * from Course_23BDS1095;

Output Screenshot:

```
SQL> select * from Student_23BDS1095;

SNAME                REGNO      DEPT             YEAR      MARK1      MARK2      MARK3      TOTAL    AVERAGE
-------------------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
Ranjeet              23BDS1045  CSE                 2         75         80         85        240         80
Rishadd              22BDS1850  ECE                 3         85         90         80        255         85
Siraj                23BDS1020  CSE                 2         70         65         80        215         72

SQL> select * from Faculty_23BDS1095;

FNAME                       FID DESIGNATION          DEPARTMENT              SALARY
-------------------- ---------- -------------------- -------------------- ----------
Dr. Divya                   564 Associate Professor  CSE                      600000
Dr. Prakash                 664 Professor            CSE                      700000
Dr. Dev                     124 Assistant Professor  CSE                      500000

SQL> select * from Course_23BDS1095;

CNAME                    CCODE
-------------------- ----------
DBMS                        202
OS                          102
DSA                         302

SQL>
```

17. Apply and identify the difference between Truncate and Drop command on Course table (DDL commands)

Command:
To truncate Course table - truncate table Course_23BDS1095;
To drop Course table - drop table Course_23BDS1095;

Difference:
Truncate - removes all the rows from the table but retains the table structure for future use
Drop - completely removes the table and its structure from the database

Output Screenshot:

```
SQL> -- trucate command removes all the rows from the table but retains the table structure for future use
SQL> truncate table Course_23BDS1095;

Table truncated.

SQL> -- drop command completely removes the table and its structure from the database
SQL> drop table Course_23BDS1095;

Table dropped.

SQL>
```

18. Insert 2 records (read the data from user) in each table

Command:

using the insert command with the '&' symbol as shown for each of the existing tables

Output Screenshots:

```
SQL> insert into Student_23BDS1095 values ('&sname', '&regno', '&dept', &year, &Mark1, &Mark2, &Mark3, &Total, &Average);
Enter value for sname: Faizal
Enter value for regno: 22BME2254
Enter value for dept: ECM
Enter value for year: 3
Enter value for mark1: 80
Enter value for mark2: 80
Enter value for mark3: 80
Enter value for total: 240
Enter value for average: 80
old   1: insert into Student_23BDS1095 values ('&sname', '&regno', '&dept', &year, &Mark1, &Mark2, &Mark3, &Total, &Average)
new   1: insert into Student_23BDS1095 values ('Faizal', '22BME2254', 'ECM', 3, 80, 80, 80, 240, 80)

1 row created.

SQL> insert into Student_23BDS1095 values ('&sname', '&regno', '&dept', &year, &Mark1, &Mark2, &Mark3, &Total, &Average);
Enter value for sname: Rishi
Enter value for regno: 23BCE1151
Enter value for dept: CSE
Enter value for year: 2
Enter value for mark1: 80
Enter value for mark2: 80
Enter value for mark3: 80
Enter value for total: 240
Enter value for average: 80
old   1: insert into Student_23BDS1095 values ('&sname', '&regno', '&dept', &year, &Mark1, &Mark2, &Mark3, &Total, &Average)
new   1: insert into Student_23BDS1095 values ('Rishi', '23BCE1151', 'CSE', 2, 80, 80, 80, 240, 80)

1 row created.

SQL>
```

```
SQL> insert into Faculty_23BDS1095 values ('&fname', &fid, '&designation', '&Department', &Salary);
Enter value for fname: Dr. Kishore
Enter value for fid: 200
Enter value for designation: Professor
Enter value for department: CSE
Enter value for salary: 500000
old   1: insert into Faculty_23BDS1095 values ('&fname', &fid, '&designation', '&Department', &Salary)
new   1: insert into Faculty_23BDS1095 values ('Dr. Kishore', 200, 'Professor', 'CSE', 500000)

1 row created.

SQL> insert into Faculty_23BDS1095 values ('&fname', &fid, '&designation', '&Department', &Salary);
Enter value for fname: Dr. Jagdish
Enter value for fid: 554
Enter value for designation: Associate Professor
Enter value for department: ECM
Enter value for salary: 400000
old   1: insert into Faculty_23BDS1095 values ('&fname', &fid, '&designation', '&Department', &Salary)
new   1: insert into Faculty_23BDS1095 values ('Dr. Jagdish', 554, 'Associate Professor', 'ECM', 400000)

1 row created.

SQL>
```

19. Display the student details belongs to CSE department

Command:
select * from Student_23BDS1095 where dept = ‘CSE’;

Output Screenshot:

```
SQL> select * from Student_23BDS1095 where dept = 'CSE';

SNAME              REGNO     DEPT           YEAR     MARK1     MARK2     MARK3     TOTAL    AVERAGE
------------------ --------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
Ranjeet            23BDS1045 CSE                 2         75         80         85        240         80
Siraj              23BDS1020 CSE                 2         70         65         80        215         72
Rishi              23BCE1151 CSE                 2         80         80         80        240         80

SQL>
```

20. Display the list of professors with department from faculty table

Command:
select fname, Department from Faculty_23BDS1095 where designation = ‘Professor’;

Output Screenshot:

```
SQL> select fname, Department from Faculty_23BDS1095 where designation = 'Professor';

FNAME              DEPARTMENT
------------------ ------------------
Dr. Prakash        CSE
Dr. Kishore        CSE

SQL>
```

21. Display the list of professors from CSE department

Command:
select fname from Faculty_23BDS1095 where Department = ‘CSE’ and designation = ‘Professor’;

Output Screenshot:

```
SQL> select fname from Faculty_23BDS1095 where Department = 'CSE' and designation = 'Professor';

FNAME
--------------------
Dr. Prakash
Dr. Kishore

SQL>
```

22. Display the list of faculty whose salary is greater than Rs.55,000

Command:
select * from Faculty_23BDS1095 where Salary > 55000;

Output Screenshot:

```
SQL> select * from Faculty_23BDS1095 where Salary > 55000;

FNAME                FID DESIGNATION         DEPARTMENT             SALARY
-------------------- ---------- -------------------- -------------------- ----------
Dr. Divya                   564 Associate Professor  CSE                    600000
Dr. Prakash                 664 Professor            CSE                    700000
Dr. Dev                     124 Assistant Professor  CSE                    500000
Dr. Kishore                 200 Professor            CSE                    500000
Dr. Jagdish                 554 Associate Professor  ECM                    400000

SQL>
```

23. Compute total and average of all the students

Command:
select sum(Mark1 + Mark2 + Mark3) as Total, Avg((Mark1 + Mark2 + Mark3) / 3) as Average
from Student_23BDS1095;

Output Screenshot:

```
SQL> select sum(Mark1 + Mark2 + Mark3) as Total, Avg((Mark1 + Mark2 + Mark3) / 3) as Average from Student_23BDS1095;

     TOTAL    AVERAGE
---------- ----------
      1190 79.3333333

SQL>
```

24. View the content of student table

Command:
select * from Student_23BDS1095;

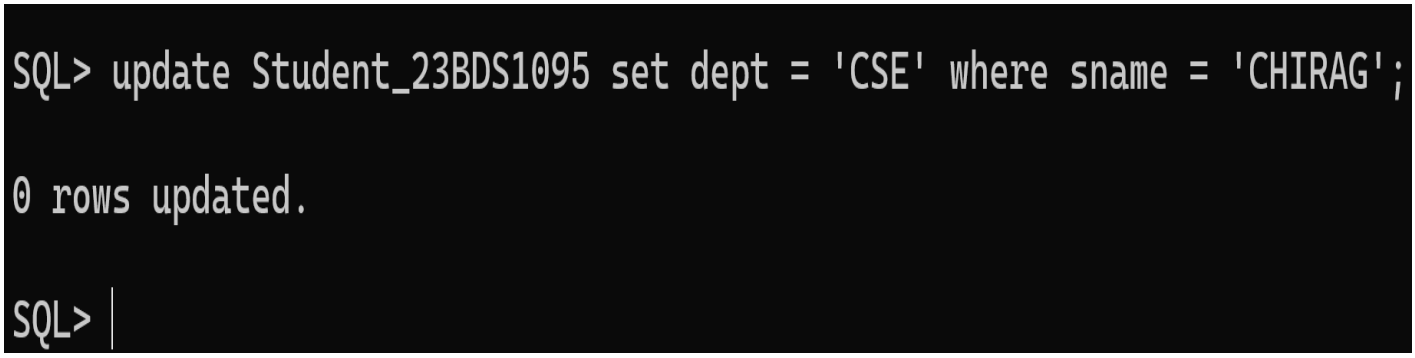
Output Screenshot:

```
SQL> select * from Student_23BDS1095;

SNAME                REGNO      DEPT            YEAR      MARK1      MARK2      MARK3      TOTAL    AVERAGE
-------------------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
Ranjeet              23BDS1045  CSE                 2         75         80         85        240         80
Rishadd              22BDS1850  ECE                 3         85         90         80        255         85
Siraj                23BDS1020  CSE                 2         70         65         80        215         72
Faizal               22BME2254  ECM                 3         80         80         80        240         80
Rishi                23BCE1151  CSE                 2         80         80         80        240         80

SQL>
```

25. Change the department as CSE whose name is CHIRAG in student table

Command:
update Student_23BDS1095 as dept = ‘CSE’ where sname = ‘CHIRAG’;

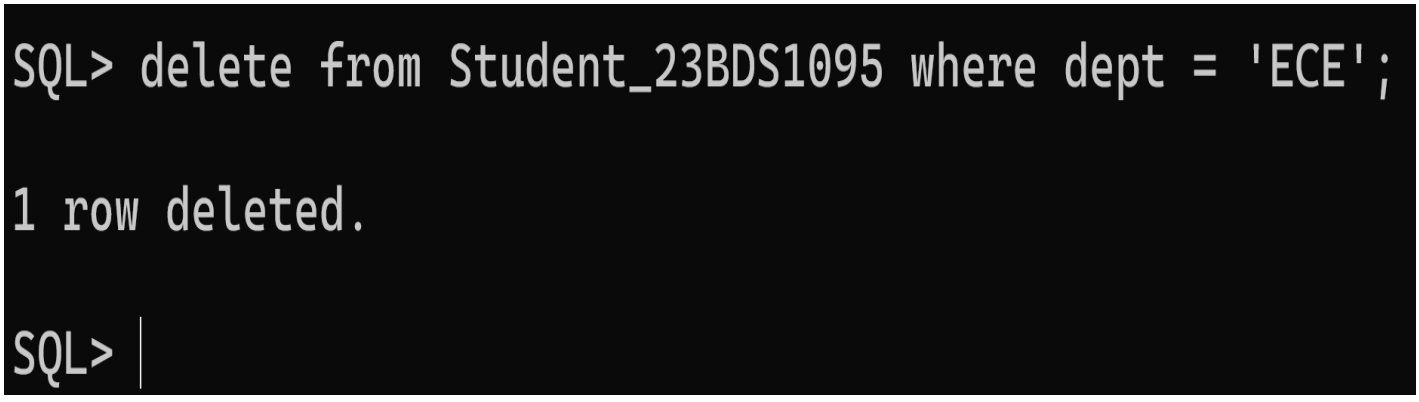
Output Screenshot:



26. Delete the students details belongs to ECE department

Command:
delete from Student_23BDS1095 where dept = ‘ECE;

Output Screenshot:



27. Display the course detail of the course DBMS

Command:
select * from Course_23BDS1095 where cname = ‘DBMS’;

Output Screenshot:
(the above command will result in an error since the table is no longer available to be referenced because it was completely removed in question 17)

```
SQL> select * from Course_23BDS1095 where cname = 'DBMS';
select * from Course_23BDS1095 where cname = 'DBMS'
              *
ERROR at line 1:
ORA-00942: table or view does not exist


SQL> -- the above command gave us an error because the Course_23BDS1095 no longer exists
because it was completely dropped in question number 17
SQL>
```

Database Management Systems Lab
Assignment 1

Name: Aryan Mahawar
Registration Number: 23BDS1095
Course Code: BCSE302P (Lab)
Slot: L49+L50 (Lab)

1. Create a table students and set sname column with NOT NULL constraint
Students(sname, regno, dept, year,ccode,
Mark,average, grade)
Sname – NOT NULL

1.
```
SQL> create table students_23BDS1095 (sname varchar2(20) NOT NULL, regno varchar2(20), dept varchar2(20)
, year number, ccode varchar2(20), Mark number, average number, grade varchar2(1));

Table created.

SQL>
```

2. Display the structure of the table students

2.
```
SQL> desc students_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SNAME                                     NOT NULL VARCHAR2(20)
 REGNO                                              VARCHAR2(20)
 DEPT                                               VARCHAR2(20)
 YEAR                                               NUMBER
 CCODE                                              VARCHAR2(20)
 MARK                                               NUMBER
 AVERAGE                                            NUMBER
 GRADE                                              VARCHAR2(1)

SQL>
```

3. Insert a record in the students table with 23BDS1001

3.
```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average, grade) values
 ('Raj', '23BDS1001', 'SCOPE', 2, 'BCSE210P', 80, 80, 'A');

1 row created.

SQL>
```

4. Insert a record with empty value in sname column and identify the kind of error

4.
```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average,
grade) values ('', '23BDS4545', 'SAS', 2, 'BMAT454K', 90, 90, 'S');
insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average, grade
) values ('', '23BDS4545', 'SAS', 2, 'BMAT454K', 90, 90, 'S')

          *
ERROR at line 1:
ORA-01400: cannot insert NULL into ("SYSTEM"."STUDENTS_23BDS1095"."SNAME")


SQL> -- the error is there due to NOT NULL constraint on the sname column because an
empty value is being inserted...
SQL>
```

5. Add primary key constraint - Regno column as Primary Key

5.
```
SQL> alter table students_23BDS1095 add CONSTRAINT pk_regno PRIMARY KEY (regno);

Table altered.

SQL>
```

6. Insert a record with same reg.no 23BDS1001 and identify the violation

6.
```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average,
grade) values ('Kanishk', '23BDS1001', 'MECH', 2, 'BMCK4454', 90, 90, 'S');
insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average, grade
) values ('Kanishk', '23BDS1001', 'MECH', 2, 'BMCK4454', 90, 90, 'S')
*
ERROR at line 1:
ORA-00001: unique constraint (SYSTEM.PK_REGNO) violated


SQL> -- here we get an error due to violation of PRIMARY KEY constraint | because the
regno 23BDS1001 already exists as a primary key
```

7. Add check constraint for Mark column with constraint name and mark between
1 and 100

7.
```
SQL> alter table students_23BDS1095 add CONSTRAINT marks_valid_range CHECK (Mark between 1 AND 100);

Table altered.

SQL>
```

8. Insert two records in students table with mark as -5 in one record and 110 in another record. Find the appropriate violation.

8.
```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average,
grade) values ('Shree', '23BDS7878', 'MECH', 2, 'BMCK4454', -5, -5, 'S');
insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average, grade
) values ('Shree', '23BDS7878', 'MECH', 2, 'BMCK4454', -5, -5, 'S')
*
ERROR at line 1:
ORA-02290: check constraint (SYSTEM.MARKS_VALID_RANGE) violated


SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average,
grade) values ('Sahay', '23BDS4578', 'MECH', 2, 'BMCK4454', 110, 110, 'S');
insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, average, grade
) values ('Sahay', '23BDS4578', 'MECH', 2, 'BMCK4454', 110, 110, 'S')
*
ERROR at line 1:
ORA-02290: check constraint (SYSTEM.MARKS_VALID_RANGE) violated


SQL> -- error because Marks are not in range as specified for the CHECK constraint
SQL>
```

9. Add default constraint (0 as default value) to the column Average in the students table

9.

```
SQL> alter table students_23BDS1095 modify average DEFAULT 0;

Table altered.

SQL>
```

10. Insert a record into students without giving any value in Average column

10.

```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, grade) values
 ('Sanjeev', '23BDS1111', 'AIML', 2, 'BAI54744', 95, 'S');

1 row created.

SQL>
```

11. Display the students detail and to know the functionality of default constraint
with default value

11.

```
SQL> select * from students_23BDS1095;

SNAME                REGNO                DEPT                      YEAR CCODE                    MARK    AVERAGE G
-------------------- -------------------- -------------------- ---------- -------------------- ---------- ---------- -
Raj                  23BDS1001            SCOPE                         2 BCSE210P                     80         80 A
Sanjeev              23BDS1111            AIML                          2 BAI54744                     95          0 S

SQL>
```

12. Create another table course as per the schema,
Course(cname,ccode)
Cname- Not null constraint
Ccode – Primary key constraint with constraint name

12.

```
SQL> create table course_23BDS1095 (cname varchar2(20) NOT NULL, ccode varchar2(20) CONSTRAINT pk_code PRIMARY KEY);

Table created.

SQL>
```

13. Display the structure of the course table

13.

```
SQL> desc course_23BDS1095;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------------------------------------------------------
 CNAME                                     NOT NULL VARCHAR2(20)
 CCODE                                     NOT NULL VARCHAR2(20)

SQL>
```

14. Insert 5 records in the course table

```
SQL> insert into course_23BDS1095 (cname, ccode) values ('DSA', 'BCSE101L');

1 row created.

SQL> insert into course_23BDS1095 (cname, ccode) values ('OS', 'BCSE201L');

1 row created.

SQL> insert into course_23BDS1095 (cname, ccode) values ('OOPS', 'BCSE301L');

1 row created.

SQL> insert into course_23BDS1095 (cname, ccode) values ('Compilers', 'BCSE401L');

1 row created.

SQL> insert into course_23BDS1095 (cname, ccode) values ('Game Engines', 'BCSE501L');

1 row created.

SQL>
```

14.

15. Display the records from course table

15.

```
SQL> select * from course_23BDS1095;

CNAME                CCODE
-------------------- --------------------
DSA                  BCSE101L
OS                   BCSE201L
OOPS                 BCSE301L
Compilers            BCSE401L
Game Engines         BCSE501L

SQL>
```

16. Now, add foreign key constraint to the column Ccode in the table students.

16.

```
SQL> alter table students_23BDS1095 add CONSTRAINT fk_ccode FOREIGN KEY (ccode) REFERENCES course_23BDS1095 (ccode);
alter table students_23BDS1095 add CONSTRAINT fk_ccode FOREIGN KEY (ccode) REFERENCES course_23BDS1095 (ccode)
                                              *
ERROR at line 1:
ORA-02298: cannot validate (SYSTEM.FK_CCODE) - parent keys not found


SQL> -- the output is an error message to this query
SQL>
```

17. Identify the type of error from the previous query and find the solution to add
foreign key

17.

```
SQL> -- there will be an error in the previous query because t
he foreign key will fail if there are any existing values in t
he students table where the ccode doesn't match any value in t
he course table
SQL> -- we need to make sure that all the values in the ccode
column in students match a value in the ccode column of course
SQL> -- a solution to the error could be to insert valid ccode
 values into the students table before adding the foreign key
SQL>
```

After solution

```
SQL> insert into course_23BDS1095 (cname, ccode) values ('Game Engines', 'BCSE210P');

1 row created.

SQL> insert into course_23BDS1095 (cname, ccode) values ('Game Engines', 'BAI54744');

1 row created.

SQL> alter table students_23BDS1095 add CONSTRAINT fk_ccode FOREIGN KEY (ccode) REFERENCE
S course_23BDS1095 (ccode);

Table altered.

SQL>
```

18. Insert 2 records in the students table. Enter the value of ccode of student table
that matches the value of ccode of Course table.

18.

```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, grade) values ('Sanjeev', '23BDS7415', 'AIML', 2,
 'BCSE101L', 95, 'S');

1 row created.

SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, grade) values ('Sanjeev', '23BDS1097', 'AIML', 2,
 'BCSE201L', 95, 'S');

1 row created.

SQL>
```

19. Insert 1 record in the students table. Enter the value of ccode of student table
that does not match the value of ccode of Course table. Recognize the type of
violation

19.

```
SQL> insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, grade) va
lues ('Sanjeev', '23BDS1095', 'AIML', 2, 'BCSE444L', 95, 'S');
insert into students_23BDS1095 (sname, regno, dept, year, ccode, Mark, grade) values
('Sanjeev', '23BDS1095', 'AIML', 2, 'BCSE444L', 95, 'S')
*
ERROR at line 1:
ORA-02291: integrity constraint (SYSTEM.FK_CCODE) violated - parent key not found


SQL> -- this is a foreign key constrain violation since the ccode 'BCSE444l' does not
 previously exits in the course table
```

20. Drop the check constraint

20.

```
SQL> alter table students_23BDS1095 drop CONSTRAINT marks_valid_range;

Table altered.

SQL>
```

21. Delete all the records from course table.

21.

```
SQL> delete from course_23BDS1095;
delete from course_23BDS1095
*
ERROR at line 1:
ORA-02292: integrity constraint (SYSTEM.FK_CCODE) violated - child record found


SQL> -- an error message is the output to the above query
SQL>
```

22. Identify the type of violation from the previous query and find the solution to

delete all the records from course table

Error:

- A foreign key violation will occur because there are records in the `students` table that reference the `ccode` in the `course` table.

Solution:

- You must either delete the dependent records in `students` first or modify the foreign key constraint to `ON DELETE CASCADE`, which automatically deletes the dependent records in `students` when a record in `course` is deleted.

```
SQL> alter table students_23BDS1095 drop CONSTRAINT fk_ccode;

Table altered.
```

```
SQL> alter table students_23BDS1095 add CONSTRAINT fk_ccode FOREIGN
 KEY (ccode) REFERENCES course_23BDS1095 (ccode) ON DELETE CASCADE;

Table altered.

SQL> delete from course_23BDS1095;

7 rows deleted.

SQL>
```