PRACTICAL 2: Working with Data Definition Language (DDL) commands.

   I.

1. **Create 5 tables.**

   Create command is used to create a database object in DBMS such as table, view, synonym, procedure, trigger etc.

   Syntax: create table tablename(column_name datatype [constraint], …)
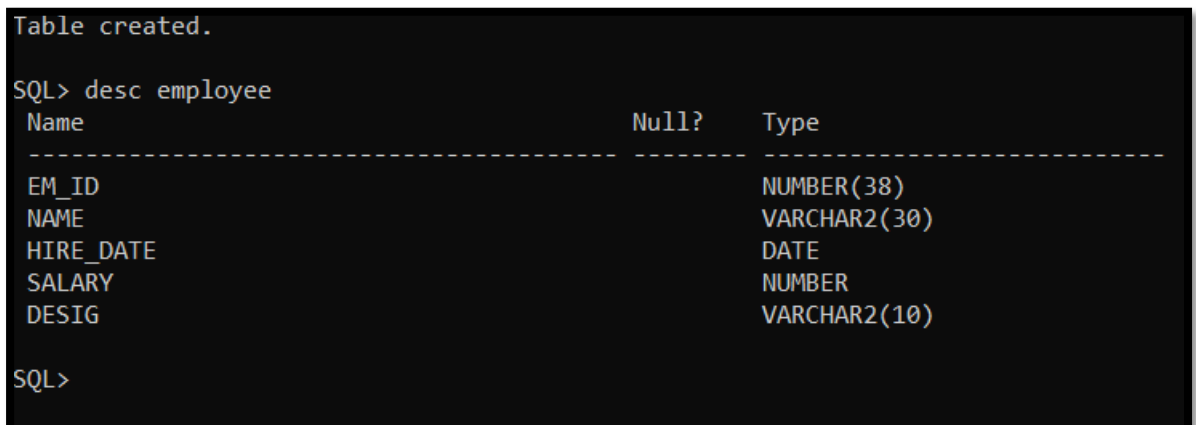
   a. First table of employee:

```
Run SQL Command Line                                                          —    □    ×

SQL*Plus: Release 11.2.0.2.0 Production on Fri Jan 21 17:10:35 2022

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SQL> connect arbaz
Enter password:
Connected.
SQL> create table employee(em_id int, name varchar(30), hire_date date, salary number, desig varchar(10));

Table created.
```

   Displaying table using disc command:

   Syntax: desc table_name

```
Table created.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EM_ID                                              NUMBER(38)
 NAME                                               VARCHAR2(30)
 HIRE_DATE                                          DATE
 SALARY                                             NUMBER
 DESIG                                              VARCHAR2(10)

SQL>
```
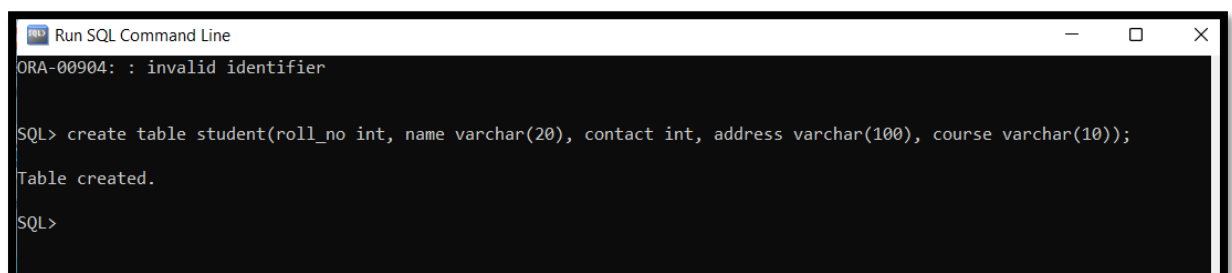
   b. Second table of Student:

```
Run SQL Command Line                                                          —    □    ×
ORA-00904: : invalid identifier

SQL> create table student(roll_no int, name varchar(20), contact int, address varchar(100), course varchar(10));

Table created.
SQL>
```

Table:

```
SQL> desc student
 Name                                            Null?    Type
 ---------------------------------------------   -------- -------------------------
 ROLL_NO                                                  NUMBER(38)
 NAME                                                     VARCHAR2(20)
 CONTACT                                                  NUMBER(38)
 ADDRESS                                                  VARCHAR2(100)
 COURSE                                                   VARCHAR2(10)
```

c. Third table of Customer:

```
SQL> create table customer(cust_name varchar(20), cust_no number(10), cust_email varchar(20), address varchar(100));

Table created.

SQL>
```

Table:

```
SQL> desc customer
 Name                                            Null?    Type
 ---------------------------------------------   -------- -------------------------
 CUST_NAME                                                VARCHAR2(20)
 CUST_NO                                                  NUMBER(10)
 CUST_EMAIL                                               VARCHAR2(20)
 ADDRESS                                                  VARCHAR2(100)
```

d. Fourth table of Car

```
SQL> create table car(model_no varchar(6), price int, sitter number(8), engine varchar(10));

Table created.

SQL>
```

Table:

```
SQL> desc car
 Name                                            Null?    Type
 ---------------------------------------------   -------- -------------------------
 MODEL_NO                                                 VARCHAR2(6)
 PRICE                                                    NUMBER(38)
 SITTER                                                   NUMBER(8)
 ENGINE                                                   VARCHAR2(10)
```

e. Fifth table of teacher:

```
SQL> create table teacher(teach_name varchar(20), subject_taught varchar(10), experience int, degree varchar(10));

Table created.

SQL> desc teacher
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TEACH_NAME                                         VARCHAR2(20)
 SUBJECT_TAUGHT                                     VARCHAR2(10)
 EXPERIENCE                                         NUMBER(38)
 DEGREE                                             VARCHAR2(10)
```

2. **Drop a table.**
    Used to delete a table or any database object.
    Syntax: drop table tablename

    Deleting table of teacher which was created above:

```
SQL> drop table teacher
  2  ;

Table dropped.

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

3. **Alter a table.**
    Alter command is used to alter or update the structure of database table.

    a. Add a column:
        Syntax: alter table tablename add columnname datatype

```
 NAME                                               VARCHAR2(30)
 HIRE_DATE                                          DATE
 SALARY                                             NUMBER
 DESIG                                              VARCHAR2(10)

SQL> alter table employee add contac_no number(10);

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EM_ID                                              NUMBER(38)
 NAME                                               VARCHAR2(30)
 HIRE_DATE                                          DATE
 SALARY                                             NUMBER
 DESIG                                              VARCHAR2(10)
 CONTAC_NO                                          NUMBER(10)
```

b. Delete/drop a column:
Syntax: alter table tablename drop column columnname

```
SQL> alter table employee drop column contac_no
  2  ;

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ---------------------------------------- -------- ----------------------------
 EM_ID                                              NUMBER(38)
 NAME                                               VARCHAR2(30)
 HIRE_DATE                                          DATE
 SALARY                                             NUMBER
 DESIG                                              VARCHAR2(10)
```

c. Modify column:
To modify/change the datatype of column.
Syntax: alter table tablename modify columnname datatype

```
SQL> desc employee
 Name                                      Null?    Type
 ---------------------------------------- -------- ----------------------------
 EM_ID                                              NUMBER(38)
 NAME                                               VARCHAR2(30)
 HIRE_DATE                                          DATE
 SALARY                                             NUMBER
 DESIG                                              VARCHAR2(10)

SQL> alter table employee modify em_id varchar(10);

Table altered.

SQL> desc employee
 Name                                      Null?    Type
 ---------------------------------------- -------- ----------------------------
 EM_ID                                              VARCHAR2(10)
 NAME                                               VARCHAR2(30)
 HIRE_DATE                                          DATE
 SALARY                                             NUMBER
 DESIG                                              VARCHAR2(10)
```

d. Rename a column:
   Syntax: alter table tablename rename column old_column_name to new_columnname

```
SQL> desc employee
 Name                                          Null?    Type
 ----------------------------------------- -------- ----------------------------
 EM_ID                                                  VARCHAR2(10)
 NAME                                                   VARCHAR2(30)
 HIRE_DATE                                              DATE
 SALARY                                                 NUMBER
 DESIG                                                  VARCHAR2(10)

SQL> alter table employee rename column em_id to employee_id
  2  ;

Table altered.

SQL> desc employee
 Name                                          Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMPLOYEE_ID                                           VARCHAR2(10)
 NAME                                                  VARCHAR2(30)
 HIRE_DATE                                             DATE
 SALARY                                                NUMBER
 DESIG                                                 VARCHAR2(10)
```

e. Rename a Table:
   Syntax: alter table tablename rename to new_table_name

```
SQL> alter table employee rename to changed
  2  ;

Table altered.

SQL> desc employee
ERROR:
ORA-04043: object employee does not exist


SQL> desc changed
 Name                                          Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMPLOYEE_ID                                           VARCHAR2(10)
 NAME                                                  VARCHAR2(30)
 HIRE_DATE                                             DATE
 SALARY                                                NUMBER
 DESIG                                                 VARCHAR2(10)
```

II. Write the query for the following

1. **Create the following tables and include the necessary constraints NOT NULL, DEFAULT, CHECK, PRIMARY KEY, UNIQUE.**

   a. Student (sid, sname, gender, dob, remark,marks, class, email)

   SQL> create table student(sid int constraint id primary key, sname varchar(20) not null, gender varchar(10) not null, dob date not null, remark varchar(10), marks number(5,2), class varchar(8) DEFAULT 'FYIT', email varchar(30) unique);

```
SQL> create table student(sid int constraint id primary key, sname varchar(20) not null, gender varchar(10) not null, do
b date not null, remark varchar(10), marks number(5,2), class varchar(8) DEFAULT 'FYIT', email varchar(30) unique);

Table created.

SQL>
```

```
SQL> desc student;
 Name                                      Null?    Type
 ---------------------------------------- -------- -------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 REMARK                                             VARCHAR2(10)
 MARKS                                              NUMBER(5,2)
 CLASS                                              VARCHAR2(8)
 EMAIL                                              VARCHAR2(30)
```

   b. Course (cid, cname, credits)

   SQL> create table course(cid int constraint cid primary key, cname varchar(20) not null, credits int not null);

```
SQL> create table course(cid int constraint cid primary key, cname varchar(20) not null, credits int not null );

Table created.

SQL> desc course;
 Name                                      Null?    Type
 ---------------------------------------- -------- --------------------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL VARCHAR2(20)
 CREDITS                                   NOT NULL NUMBER(38)
```

2. **Alter the structure of the Course table.**
   a. Modify datatype od cname.

   SQL> alter table course modify cname int;

```
SQL> desc course;
 Name                                        Null?    Type
 ------------------------------------------- -------- -------------
 CID                                         NOT NULL NUMBER(38)
 CNAME                                       NOT NULL VARCHAR2(20)
 CREDITS                                     NOT NULL NUMBER(38)

SQL> alter table course modify cname int;

Table altered.

SQL> desc course;
 Name                                        Null?    Type
 ------------------------------------------- -------- -------------
 CID                                         NOT NULL NUMBER(38)
 CNAME                                       NOT NULL NUMBER(38)
 CREDITS                                     NOT NULL NUMBER(38)
```

b. Add a column coursehours with minimum course hours greater than 45.

SQL> alter table course add coursehours int check (coursehours > 45);

```
SQL> alter table course add coursehours int check (coursehours > 45);

Table altered.

SQL> desc course
 Name                                        Null?    Type
 ------------------------------------------- -------- -----------------
 CID                                         NOT NULL NUMBER(38)
 CNAME                                       NOT NULL NUMBER(38)
 CREDITS                                     NOT NULL NUMBER(38)
 COURSEHOURS                                          NUMBER(38)
```

c. Add a column cdesc.

SQL> alter table course add cdesc varchar(30) not null;

```
SQL> alter table course add cdesc varchar(30) not null;

Table altered.

SQL> desc course;
 Name                                        Null?    Type
 ------------------------------------------- -------- ---------------
 CID                                         NOT NULL NUMBER(38)
 CNAME                                       NOT NULL NUMBER(38)
 CREDITS                                     NOT NULL NUMBER(38)
 COURSEHOURS                                          NUMBER(38)
 CDESC                                       NOT NULL VARCHAR2(30)
```

3. Alter the structure of student table.
 a. Add column age with minimum age as 17.

  SQL> alter table student add age int constraint chk check(age >= 17);

```
SQL> alter table student add age int constraint chk check(age >= 17);

Table altered.

SQL> desc student;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 DOB                                       NOT NULL DATE
 REMARK                                             VARCHAR2(10)
 MARKS                                              NUMBER(5,2)
 CLASS                                              VARCHAR2(8)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
```

 b. Delete the column dob.

  SQL> alter table student drop column dob;

```
SQL> alter table student drop column dob;

Table altered.

SQL> desc student;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(10)
 MARKS                                              NUMBER(5,2)
 CLASS                                              VARCHAR2(8)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
```

 c. Add a column phoneno.

  SQL> alter table student add phoneno number(10) constraint num unique;

```
SQL> alter table student add phoneno number(10) constraint num unique;

Table altered.
```

d. Rename phoneno to contactno.

SQL> alter table student rename column phoneno to contactno;

```
SQL> alter table student rename column phoneno to contactno;

Table altered.
```

4. Rename student table as student_details.

SQL> alter table student rename to student_details;

```
SQL> alter table student rename to student_details;

Table altered.
```

5. Describe the structure of both tables.

SQL> desc student_details;

```
SQL> desc student_details;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
 SID                                       NOT NULL NUMBER(38)
 SNAME                                     NOT NULL VARCHAR2(20)
 GENDER                                    NOT NULL VARCHAR2(10)
 REMARK                                             VARCHAR2(10)
 MARKS                                              NUMBER(5,2)
 CLASS                                              VARCHAR2(8)
 EMAIL                                              VARCHAR2(30)
 AGE                                                NUMBER(38)
 CONTACTNO                                          NUMBER(10)
```

SQL> desc course;

```
SQL> desc course;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------
 CID                                       NOT NULL NUMBER(38)
 CNAME                                     NOT NULL NUMBER(38)
 CREDITS                                   NOT NULL NUMBER(38)
 COURSEHOURS                                        NUMBER(38)
 CDESC                                     NOT NULL VARCHAR2(30)
```

6. Drop table student_details and Course.

SQL> drop table student_details;

```
SQL> drop table student_details;

Table dropped.
```

SQL> drop table course;

```
SQL> drop table course;

Table dropped.
```

III. Apply Foreign key in given relation.

Table of DISTRIBUTER:

```
SQL> create table distributer(distid varchar(6) constraint dis_id primary key, distributor varchar(20) constraint dist n
ot null, city varchar(30) default 'Mumbai', dicount varchar(30) default 15, credit varchar(15) constraint cred_chk check
(credit > 0));

Table created.
```

```
SQL> desc distributer;
 Name                    Null?      Type
 ----------------        --------   ------------
 DISTID                  NOT NULL   VARCHAR2(6)
 DISTRIBUTOR             NOT NULL   VARCHAR2(20)
 CITY                               VARCHAR2(30)
 DICOUNT                            VARCHAR2(30)
 CREDIT                             VARCHAR2(15)
```

```
SQL> select * from distributer;

DISTID DISTRIBUTOR          CITY                            DICOUNT                         CREDIT
------ -------------------- ------------------------------- ------------------------------- ---------------
D342   mukesh               Mumbai                          3000rupeees                     5
```

ORDERS table:

```
SQL> create table orders(orderno varchar(20) constraint ord primary key, title varchar(30) not null,
distid varchar(30) constraint frnk references distributer(distid), qty varchar(15) check(qty>0), book
id varchar(10));

Table created.
```

```
SQL> insert into orders values('A45Y1', 'Stationary', 'D342', '5', 'B0789K');

1 row created.

SQL> select * from orders;

ORDERNO              TITLE                        DISTID                          QTY               BOOKID
-------------------- ---------------------------- ------------------------------- ----------------- ----------
A45Y1                Stationary                   D342                            5                 B0789K
```