

بہ نام خدا کہ یکتا

گزارش تمرین سوم درس پایگاہ دادہ پیشرفتہ

نام و نام خانوادگی :

مبین رمضانے خرم آبادک 40311415016

نام استاد :

آفاق دکتر آرمین رشنو

۱) یک پایگاه داده به نام LorestanUniv ایجاد کنید.

```
postgres=# CREATE DATABASE lorestanuniv;
CREATE DATABASE
postgres=# \l
```

Name	Owner	Encoding	Locale Provider	Collate	Ctype	Locale	ICU Rules	Access privileges
lorestanuniv	postgres	UTF8	libc	English_United States.1256	English_United States.1256			
postgres	postgres	UTF8	libc	English_United States.1256	English_United States.1256			
template0	postgres	UTF8	libc	English_United States.1256	English_United States.1256			=c/postgres +
template1	postgres	UTF8	libc	English_United States.1256	English_United States.1256			=c/postgres +

(4 rows)

برای اتصال به دیتابیس، از دستور زیر استفاده میکنیم :

```
postgres=# \c lorestanuniv
You are now connected to database "lorestanuniv" as user "postgres".
```

۲) جداول student، lecturer و course را در پایگاه داده براساس فیلدهای مشخص شده در جداول فوق ایجاد کنید.

ایجاد جدول student :

```
CREATE TABLE student ( STID CHAR(11) PRIMARY KEY CHECK (STID ~ '^'[0-9]{3}114150[0-9]{2}$'), FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, Father VARCHAR(50) NOT NULL, Birth CHAR(10) CHECK (Birth ~ '^'[0-9]{4}/[0-9]{2}/[0-9]{2}$'), SerialID CHAR(9), BornCity VARCHAR(50) CHECK (BornCity IN ( 'Tehran', 'Mashhad', 'Isfahan', 'Shiraz', 'Tabriz', 'Ahvaz', 'Kermanshah', 'Urmia', 'Rasht', 'Zahedan', 'Kerman', 'Yazd', 'Hamadan', 'Arak', 'Ardabil', 'Bandar Abbas', 'Khorramabad', 'Bojnord', 'Semnan', 'Qazvin', 'Sanandaj', 'Shahrekord', 'Gorgan', 'Ilam', 'Zanjan' )), Address VARCHAR(200), PostalCode CHAR(10) CHECK (PostalCode ~ '^'[0-9]{10}$'), CPhone CHAR(11) CHECK (CPhone ~ '^09[0-9]{9}$'), HPhone CHAR(11) CHECK (HPhone ~ '^'[0-9]{11}$'), Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Major VARCHAR(50) CHECK (Major IN ( 'Electrical Engineering-Electronics', 'Electrical Engineering-Power', 'Computer Engineering', 'Civil Engineering', 'Mining Engineering', 'Mechanical Engineering', 'Polymer Engineering' )), Married BOOLEAN, ID CHAR(10) CHECK (ID ~ '^'[0-9]{10}$'));
```

```
lorestanuniv=# CREATE TABLE student ( STID CHAR(11) PRIMARY KEY CHECK (STID ~ '^'[0-9]{3}114150[0-9]{2}$'), FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, Father VARCHAR(50) NOT NULL, Birth CHAR(10) CHECK (Birth ~ '^'[0-9]{4}/[0-9]{2}/[0-9]{2}$'), SerialID CHAR(9), BornCity VARCHAR(50) CHECK (BornCity IN ( 'Tehran', 'Mashhad', 'Isfahan', 'Shiraz', 'Tabriz', 'Ahvaz', 'Kermanshah', 'Urmia', 'Rasht', 'Zahedan', 'Kerman', 'Yazd', 'Hamadan', 'Arak', 'Ardabil', 'Bandar Abbas', 'Khorramabad', 'Bojnord', 'Semnan', 'Qazvin', 'Sanandaj', 'Shahrekord', 'Gorgan', 'Ilam', 'Zanjan' )), Address VARCHAR(200), PostalCode CHAR(10) CHECK (PostalCode ~ '^'[0-9]{10}$'), CPhone CHAR(11) CHECK (CPhone ~ '^09[0-9]{9}$'), HPhone CHAR(11) CHECK (HPhone ~ '^'[0-9]{11}$'), Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Major VARCHAR(50) CHECK (Major IN ( 'Electrical Engineering-Electronics', 'Electrical Engineering-Power', 'Computer Engineering', 'Civil Engineering', 'Mining Engineering', 'Mechanical Engineering', 'Polymer Engineering' )), Married BOOLEAN, ID CHAR(10) CHECK (ID ~ '^'[0-9]{10}$'));
CREATE TABLE
lorestanuniv=# \dt
```

Schema	Name	Type	Owner
public	student	table	postgres

(1 row)

: ایجاد جدول lecturer

```
CREATE TABLE lecturer ( LID CHAR(6) CHECK (LID ~ '^'[0-9]{6}$') PRIMARY KEY, FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, ID CHAR(10) CHECK (ID ~ '^'[0-9]{10}$'), Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Major VARCHAR(50) CHECK (Major IN ( 'Electrical Engineering-Electronics', 'Electrical Engineering-Power', 'Computer Engineering', 'Civil Engineering', 'Mining Engineering', 'Mechanical Engineering', 'Polymer Engineering' )), Birth CHAR(10) CHECK (Birth ~ '^'[0-9]{4}/[0-9]{2}/[0-9]{2}$'), BornCity VARCHAR(50) CHECK (BornCity IN ( 'Tehran', 'Mashhad', 'Isfahan', 'Shiraz', 'Tabriz', 'Ahvaz', 'Kermanshah', 'Urmia', 'Rasht', 'Zahedan', 'Kerman', 'Yazd', 'Hamadan', 'Arak', 'Ardabil', 'Bandar Abbas', 'Khorramabad', 'Bojnord', 'Semnan', 'Qazvin', 'Sanandaj', 'Shahrekord', 'Gorgan', 'Ilam', 'Zanjan' )), Address VARCHAR(200), PostalCode CHAR(10) CHECK (PostalCode ~ '^'[0-9]{10}$'), CPhone CHAR(11) CHECK (CPhone ~ '^'09[0-9]{9}$'), HPhone CHAR(11) CHECK (HPhone ~ '^'[0-9]{11}$'));
```

```
lorestanuniv=# CREATE TABLE lecturer ( LID CHAR(6) CHECK (LID ~ '^'[0-9]{6}$') PRIMARY KEY, FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, ID CHAR(10) CHECK (ID ~ '^'[0-9]{10}$'), Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Major VARCHAR(50) CHECK (Major IN ( 'Electrical Engineering-Electronics', 'Electrical Engineering-Power', 'Computer Engineering', 'Civil Engineering', 'Mining Engineering', 'Mechanical Engineering', 'Polymer Engineering' )), Birth CHAR(10) CHECK (Birth ~ '^'[0-9]{4}/[0-9]{2}/[0-9]{2}$'), BornCity VARCHAR(50) CHECK (BornCity IN ( 'Tehran', 'Mashhad', 'Isfahan', 'Shiraz', 'Tabriz', 'Ahvaz', 'Kermanshah', 'Urmia', 'Rasht', 'Zahedan', 'Kerman', 'Yazd', 'Hamadan', 'Arak', 'Ardabil', 'Bandar Abbas', 'Khorramabad', 'Bojnord', 'Semnan', 'Qazvin', 'Sanandaj', 'Shahrekord', 'Gorgan', 'Ilam', 'Zanjan' )), Address VARCHAR(200), PostalCode CHAR(10) CHECK (PostalCode ~ '^'[0-9]{10}$'), CPhone CHAR(11) CHECK (CPhone ~ '^'09[0-9]{9}$'), HPhone CHAR(11) CHECK (HPhone ~ '^'[0-9]{11}$'));
```

```
lorestanuniv=# \dt
          List of relations
Schema | Name      | Type | Owner
-----+-----+-----+-----
public | lecturer  | table | postgres
public | student   | table | postgres
(2 rows)
```

: ایجاد جدول course

```
CREATE TABLE course ( CID CHAR(5) PRIMARY KEY CHECK (CID ~ '^'[0-9]{5}$'), CName VARCHAR(25) NOT NULL, Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Credit INT CHECK (Credit BETWEEN 1 AND 4));
```

```
lorestanuniv=# CREATE TABLE course ( CID CHAR(5) PRIMARY KEY CHECK (CID ~ '^'[0-9]{5}$'), CName VARCHAR(25) NOT NULL, Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Credit INT CHECK (Credit BETWEEN 1 AND 4));
```

```
lorestanuniv=# \dt
          List of relations
Schema | Name      | Type | Owner
-----+-----+-----+-----
public | course    | table | postgres
public | lecturer  | table | postgres
public | student   | table | postgres
(3 rows)
```

جدول انتخاب واحد CourseRegister:

```
CREATE TABLE CourseRegister (Credit INT CHECK (Credit BETWEEN 1 AND 4), Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), CName VARCHAR(25) NOT NULL, FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, STID CHAR(11) REFERENCES student(STID) ON DELETE CASCADE, CID CHAR(5) REFERENCES course(CID) ON DELETE CASCADE, PRIMARY KEY (STID, CID));
```

```
lorestanuniv=# CREATE TABLE CourseRegister (Credit INT CHECK (Credit BETWEEN 1 AND 4), Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), CName VARCHAR(25) NOT NULL, FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, STID CHAR(11) REFERENCES student(STID) ON DELETE CASCADE, CID CHAR(5) REFERENCES course(CID) ON DELETE CASCADE, PRIMARY KEY (STID, CID));
lorestanuniv=# \dt
          List of relations
Schema |      Name      | Type  | Owner
-----+-----+-----+-----
public | course         | table | postgres
public | courseregister | table | postgres
public | lecturer       | table | postgres
public | student        | table | postgres
(4 rows)
```

جدول انتخاب واحد PresentedCourses:

```
CREATE TABLE PresentedCourses ( CName VARCHAR(25) NOT NULL, Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Credit INT CHECK (Credit BETWEEN 1 AND 4), FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, CID CHAR(5) NOT NULL REFERENCES course(CID) ON DELETE CASCADE, LID CHAR(6) NOT NULL REFERENCES lecturer(LID) ON DELETE CASCADE, PRIMARY KEY (LID, CID));
```

```
lorestanuniv=# CREATE TABLE PresentedCourses ( CName VARCHAR(25) NOT NULL, Department VARCHAR(50) CHECK (Department IN ( 'Basic Sciences', 'Engineering', 'Literature and Humanities', 'Economics', 'Agriculture and Natural Resources', 'Veterinary Medicine' )), Credit INT CHECK (Credit BETWEEN 1 AND 4), FName VARCHAR(50) NOT NULL, LName VARCHAR(50) NOT NULL, CID CHAR(5) NOT NULL REFERENCES course(CID) ON DELETE CASCADE, LID CHAR(6) NOT NULL REFERENCES lecturer(LID) ON DELETE CASCADE, PRIMARY KEY (LID, CID));
lorestanuniv=# \dt
          List of relations
Schema |      Name      | Type  | Owner
-----+-----+-----+-----
public | course         | table | postgres
public | courseregister | table | postgres
public | lecturer       | table | postgres
public | presentedcourses | table | postgres
public | student        | table | postgres
(5 rows)
```

۳) عمل درج رکورد در هر جدول را انجام دهید به گونه ای که اعتبارسنجی روی همه فیلدها وجود داشته باشد و مقادیر غیرمجاز را برای درج قبول نکند.

درج سه رکورد در جدول student :

```
INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('40311415016', 'Mobin', 'Ramezani', 'Shahram', '1381/04/11', '12b145844', 'Khorramabad', 'lorestan-----123 St.', '6814617137', '09121234567', '02112345678', 'Engineering', 'Computer Engineering', FALSE, '1234567890'), ('40311415071', 'Sara', 'Rezaei', 'Mohammad', '1382/07/20', '987654321', 'Shiraz', 'shiraz-----456 St.', '9876543210', '09123456789', '03123456789', 'Economics', 'Polymer Engineering', FALSE, '0987654321'), ('40311415052', 'Reza', 'Karimi', 'Ali', '1382/09/10', '741852963', 'Mashhad', ' mashad-----789 St.', '7418529630', '09187654321', '05112345678', 'Basic Sciences', 'Electrical Engineering-Electronics', TRUE, '1122334455');
```

```
lorestanuniv=# INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('40311415016', 'Mobin', 'Ramezani', 'Shahram', '1381/04/11', '12b145844', 'Khorramabad', 'lorestan-----123 St.', '6814617137', '09121234567', '02112345678', 'Engineering', 'Computer Engineering', FALSE, '1234567890'), ('40311415071', 'Sara', 'Rezaei', 'Mohammad', '1382/07/20', '987654321', 'Shiraz', 'shiraz-----456 St.', '9876543210', '09123456789', '03123456789', 'Economics', 'Polymer Engineering', FALSE, '0987654321'), ('40311415052', 'Reza', 'Karimi', 'Ali', '1382/09/10', '741852963', 'Mashhad', ' mashad-----789 St.', '7418529630', '09187654321', '05112345678', 'Basic Sciences', 'Electrical Engineering-Electronics', TRUE, '1122334455');
INSERT 0 3
lorestanuniv=# select * from student;
 stid | fname | lname | father | birth | serialid | borncity | address | postalcode | cphone | hphone | department | major | married | id
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
 40311415016 | Mobin | Ramezani | Shahram | 1381/04/11 | 12b145844 | Khorramabad | lorestan-----123 St. | 6814617137 | 09121234567 | 02112345678 | Engineering | Computer Engineering | f | 1234567890
 40311415071 | Sara | Rezaei | Mohammad | 1382/07/20 | 987654321 | Shiraz | shiraz-----456 St. | 9876543210 | 09123456789 | 03123456789 | Economics | Polymer Engineering | f | 0987654321
 40311415052 | Reza | Karimi | Ali | 1382/09/10 | 741852963 | Mashhad | mashad-----789 St. | 7418529630 | 09187654321 | 05112345678 | Basic Sciences | Electrical Engineering-Electronics | t | 1122334455
(3 rows)
```

درج سه رکورد در جدول Lecturer :

```
INSERT INTO lecturer (LID, FName, LName, ID, Department, Major, Birth, BornCity, Address, PostalCode, CPhone, HPhone) VALUES ('123456', 'Reza', 'Hosseini', '4785136548', 'Engineering', 'Computer Engineering', '1372/03/10', 'Ilam', 'ilam-----123 St.', '7257567890', '09121234567', '02112345678'), ('654321', 'Mina', 'Rastegar', '1548741215', 'Economics', 'Polymer Engineering', '1368/06/25', 'Tehran', 'tehran-----456 St.', '9876773120', '09123456789', '02187654321'), ('789012', 'Ali', 'Shahbazi', '6523526896', 'Basic Sciences', 'Electrical Engineering-Electronics', '1353/09/15', 'Isfahan', 'isfahan-----789 St.', '7418529630', '09187654321', '03112345678');
```

```
lorestanuniv=# INSERT INTO lecturer (LID, FName, LName, ID, Department, Major, Birth, BornCity, Address, PostalCode, CPhone, HPhone) VALUES ('123456', 'Reza', 'Hosseini', '4785136548', 'Engineering', 'Computer Engineering', '1372/03/10', 'Ilam', 'ilam-----123 St.', '7257567890', '09121234567', '02112345678'), ('654321', 'Mina', 'Rastegar', '1548741215', 'Economics', 'Polymer Engineering', '1368/06/25', 'Tehran', 'tehran-----456 St.', '9876773120', '09123456789', '02187654321'), ('789012', 'Ali', 'Shahbazi', '6523526896', 'Basic Sciences', 'Electrical Engineering-Electronics', '1353/09/15', 'Isfahan', 'isfahan-----789 St.', '7418529630', '09187654321', '03112345678');
INSERT 0 3
lorestanuniv=# select * from lecturer;
 lid | fname | lname | id | department | major | birth | borncity | address | postalcode | cph
one | hphone
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
 123456 | Reza | Hosseini | 4785136548 | Engineering | Computer Engineering | 1372/03/10 | Ilam | ilam-----123 St. | 7257567890 | 09121
234567 | 02112345678
 654321 | Mina | Rastegar | 1548741215 | Economics | Polymer Engineering | 1368/06/25 | Tehran | tehran-----456 St. | 9876773120 | 09123
456789 | 02187654321
 789012 | Ali | Shahbazi | 6523526896 | Basic Sciences | Electrical Engineering-Electronics | 1353/09/15 | Isfahan | isfahan-----789 St. | 7418529630 | 09187
654321 | 03112345678
(3 rows)
```

درج سه رکورد در جدول **course** :

```
INSERT INTO course (CID, CName, Department, Credit) VALUES ('12345', 'Database', 'Engineering', 3), ('23456', 'Microeconomic', 'Economics', 4), ('34567', 'Advanced Physic', 'Basic Sciences', 2);
```

```
lorestanuniv=# INSERT INTO course (CID, CName, Department, Credit) VALUES ('12345', 'Database', 'Engineering', 3), ('23456', 'Microeconomic', 'Economics', 4), ('34567', 'Advanced Physic', 'Basic Sciences', 2);
INSERT 0 3
lorestanuniv=# select * from course;
   cid |      cname      | department | credit 
-----+-----+-----+-----
 12345 | Database        | Engineering |      3 
 23456 | Microeconomic   | Economics  |      4 
 34567 | Advanced Physic | Basic Sciences |      2 
(3 rows)
```

درج سه رکورد در جدول **CourseRegister** :

```
INSERT INTO CourseRegister (Credit, Department, CName, FName, LName, STID, CID) VALUES (3, 'Engineering', 'Database', 'Mobin', 'Ramezani', '40311415016', '12345'), (4, 'Economics', 'Microeconomic', 'Sara', 'Rezaei', '40311415071', '23456'), (2, 'Basic Sciences', 'Advanced Physic', 'Reza', 'Karimi', '40311415052', '34567');
```

```
lorestanuniv=# INSERT INTO CourseRegister (Credit, Department, CName, FName, LName, STID, CID) VALUES (3, 'Engineering', 'Database', 'Mobin', 'Ramezani', '40311415016', '12345'), (4, 'Economics', 'Microeconomic', 'Sara', 'Rezaei', '40311415071', '23456'), (2, 'Basic Sciences', 'Advanced Physic', 'Reza', 'Karimi', '40311415052', '34567');
INSERT 0 3
lorestanuniv=# select * from coursereregister;
 credit | department |      cname      | fname | lname |   stid   | cid 
-----+-----+-----+-----+-----+-----+-----
      3 | Engineering | Database        | Mobin | Ramezani | 40311415016 | 12345 
      4 | Economics   | Microeconomic   | Sara  | Rezaei  | 40311415071 | 23456 
      2 | Basic Sciences | Advanced Physic | Reza  | Karimi  | 40311415052 | 34567 
(3 rows)
```

درج سه رکورد در جدول **PresentedCourses** :

```
INSERT INTO PresentedCourses (CName, Department, Credit, FName, LName, CID, LID) VALUES ('Database', 'Engineering', 3, 'Reza', 'Hosseini', '12345', '123456'), ('Microeconomic', 'Economics', 4, 'Mina', 'Rastegar', '23456', '654321'), ('Advanced Physic', 'Basic Sciences', 2, 'Ali', 'Shahbazi', '34567', '789012');
```

```
lorestanuniv=# INSERT INTO PresentedCourses (CName, Department, Credit, FName, LName, CID, LID) VALUES ('Database', 'Engineering', 3, 'Reza', 'Hosseini', '12345', '123456'), ('Microeconomic', 'Economics', 4, 'Mina', 'Rastegar', '23456', '654321'), ('Advanced Physic', 'Basic Sciences', 2, 'Ali', 'Shahbazi', '34567', '789012');
INSERT 0 3
lorestanuniv=# select * from presentedcourses;
   cname      | department | credit | fname | lname |   cid   | lid 
-----+-----+-----+-----+-----+-----+-----
 Database     | Engineering |      3 | Reza  | Hosseini | 12345 | 123456 
 Microeconomic | Economics   |      4 | Mina   | Rastegar | 23456 | 654321 
 Advanced Physic | Basic Sciences |      2 | Ali   | Shahbazi | 34567 | 789012 
(3 rows)
```

۴) عملیات حذف و بروزرسانی را نیز برای ۳ مورد از هر جدول تست کنید.

در جدول student :

آپدیت ها :

تغییر نام خانوادگی و آدرس دانشجوی با 'STID='40311415016'

UPDATE student SET LName = 'Mohammadi', Address = 'Lorestan-----New Address' WHERE STID = '40311415016';

```
lorestanuniv=# UPDATE student SET LName = 'Mohammadi', Address = 'Lorestan-----New Address' WHERE STID = '40311415016';
UPDATE 1
lorestanuniv=# select * from student;
   stid   | fname | lname | father | birth   | serialid | borncity | address | postalcode | cphone | hphone | departm
ent |      | major | married | id      |          |          |          |            |        |        |        |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
40311415071 | Sara | Rezaei | Mohammad | 1382/07/20 | 987654321 | Shiraz | shiraz-----456 St. | 9876543210 | 09123456789 | 03123456789 | Economics
 | Polymer Engineering | f | 0987654321 |
40311415052 | Reza | Karimi | Ali | 1382/09/10 | 741852963 | Mashhad | mashad-----789 St. | 7418529630 | 09187654321 | 05112345678 | Basic Sci
ences | Electrical Engineering-Electronics | t | 1122334455 |
40311415016 | Mobin | Mohammadi | Shahram | 1381/04/11 | 12b145844 | Khorramabad | Lorestan-----New Address | 6814617137 | 09121234567 | 02112345678 | Engineeri
ng | Computer Engineering | f | 1234567890 |
(3 rows)
```

تغییر رشته و وضعیت تاهل دانشجوی با 'STID='40311415071'

UPDATE student SET Major = 'Electrical Engineering-Power', Married = TRUE WHERE STID = '40311415071';

```
lorestanuniv=# UPDATE student SET Major = 'Electrical Engineering-Power', Married = TRUE WHERE STID = '40311415071';
UPDATE 1
lorestanuniv=# select * from student;
   stid   | fname | lname | father | birth   | serialid | borncity | address | postalcode | cphone | hphone | departm
ent |      | major | married | id      |          |          |          |            |        |        |        |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
40311415052 | Reza | Karimi | Ali | 1382/09/10 | 741852963 | Mashhad | mashad-----789 St. | 7418529630 | 09187654321 | 05112345678 | Basic Sci
ences | Electrical Engineering-Electronics | t | 1122334455 |
40311415016 | Mobin | Mohammadi | Shahram | 1381/04/11 | 12b145844 | Khorramabad | Lorestan-----New Address | 6814617137 | 09121234567 | 02112345678 | Engineeri
ng | Computer Engineering | f | 1234567890 |
40311415071 | Sara | Rezaei | Mohammad | 1382/07/20 | 987654321 | Shiraz | shiraz-----456 St. | 9876543210 | 09123456789 | 03123456789 | Economics
 | Electrical Engineering-Power | t | 0987654321 |
(3 rows)
```

تغییر شماره تماس و کد پستی دانشجوی با 'STID='40311415052'

UPDATE student SET CPhone = '09121111111', PostalCode = '1111111111' WHERE STID = '40311415052';

```
lorestanuniv=# UPDATE student SET CPhone = '09121111111', PostalCode = '1111111111' WHERE STID = '40311415052';
UPDATE 1
lorestanuniv=# select * from student;
   stid   | fname | lname | father | birth   | serialid | borncity | address | postalcode | cphone | hphone | departm
ent |      | major | married | id      |          |          |          |            |        |        |        |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
40311415016 | Mobin | Mohammadi | Shahram | 1381/04/11 | 12b145844 | Khorramabad | Lorestan-----New Address | 6814617137 | 09121234567 | 02112345678 | Engineeri
ng | Computer Engineering | f | 1234567890 |
40311415071 | Sara | Rezaei | Mohammad | 1382/07/20 | 987654321 | Shiraz | shiraz-----456 St. | 9876543210 | 09123456789 | 03123456789 | Economics
 | Electrical Engineering-Power | t | 0987654321 |
40311415052 | Reza | Karimi | Ali | 1382/09/10 | 741852963 | Mashhad | mashad-----789 St. | 1111111111 | 09121111111 | 05112345678 | Basic Sci
ences | Electrical Engineering-Electronics | t | 1122334455 |
(3 rows)
```


حذف ها :

حذف دانشجویی با STID='40311415016'

```
DELETE FROM student WHERE STID = '40311415016';
```

```
lorestanuniv=# DELETE FROM student WHERE STID = '40311415016';
DELETE 1
lorestanuniv=# select * from student;
   stid   | fname | lname | father | birth | serialid | borncity | address | postalcode | cphone | hphone | department
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
|         | major |       | married | id    |         |          |         |            |        |        |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
| 40311415071 | Sara | Rezaei | Mohammad | 1382/07/20 | 987654321 | Shiraz | shiraz-----456 St. | 9876543210 | 09123456789 | 03123456789 | Economics
| Electrical Engineering-Power | t | 0987654321 |
| 40311415052 | Reza | Karimi | Ali | 1382/09/10 | 741852963 | Mashhad | mashad-----789 St. | 1111111111 | 09121111111 | 05112345678 | Basic Sciences
| Electrical Engineering-Electronics | t | 1122334455 |
(2 rows)
```

حذف دانشجویی با `fname = 'Reza'`

```
DELETE FROM student WHERE fname = 'Reza';
```

```
lorestanuniv=# DELETE FROM student WHERE fname = 'Reza';
DELETE 1
lorestanuniv=# select * from student;
      std      | fname | lname | father | birth      | serialid | borncity | address | postalcode | cphone | hphone | department |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
40311415071 | Sara  | Rezaei | Mohammad | 1382/07/20 | 987654321 | Shiraz   | shiraz-----456 St. | 9876543210 | 09123456789 | 03123456789 | Economics | El
ectrical Engineering-Power | t      | 0987654321
(1 row)
```

حذف دانشجوی با 'Shiraz' borncity =

DELETE FROM student WHERE borncity = 'Shiraz';

[illegible]

در جدول Lecturer :

ایدیت ها :

تغییر رشته و آدرس استاد با 'LID=123456'

UPDATE lecturer SET Major = 'Civil Engineering', Address = 'Ilam-----Updated Address' WHERE LID = '123456';

```
lorestanuniv=# UPDATE lecturer SET Major = 'Civil Engineering', Address = 'Ilam-----Updated Address' WHERE LID = '123456';
UPDATE 1
lorestanuniv=# select * from lecturer;
   lid | fname | lname | id | department | major | birth | borncity | address | postalcode |
-----+-----+-----+----+-----+-----+-----+-----+-----+-----+
654321 | Mina | Rastegar | 1548741215 | Economics | Polymer Engineering | 1368/06/25 | Tehran | tehran-----456 St. | 9876773120 |
9123456789 | 02187654321 | 789012 | Ali | Shabbazi | 6523526896 | Basic Sciences | Electrical Engineering-Electronics | 1353/09/15 | Isfahan | isfahan-----789 St. | 7418529630 |
9187654321 | 03112345678 | 123456 | Reza | Hosseini | 4785136548 | Engineering | Civil Engineering | 1372/03/10 | Ilam | Ilam-----Updated Address | 7257567890 |
9121234567 | 02112345678
(3 rows)
```


تغییر نام و شماره تماس استاد با 'LID='654321'

UPDATE lecturer SET FName = 'Maryam', CPhone = '09131111111' WHERE LID = '654321';

```
lorestanuniv=# UPDATE lecturer SET FName = 'Maryam', CPhone = '09131111111' WHERE LID = '654321';
UPDATE 1
lorestanuniv=# select * from lecturer;
   lid | fname | lname |   id   | department |          major          | birth | borncity | address | postalcode |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
  789012 | Ali   | Shahbazi | 6523526896 | Basic Sciences | Electrical Engineering-Electronics | 1353/09/15 | Isfahan | isfahan-----789 St. | 7418529630 |
09187654321 | 03112345678
  123456 | Reza   | Hosseini | 4785136548 | Engineering   | Civil Engineering          | 1372/03/10 | Ilam    | Ilam-----Updated Address | 7257567890 |
09121234567 | 02112345678
  654321 | Maryam | Rastegar | 1548741215 | Economics     | Polymer Engineering        | 1368/06/25 | Tehran  | tehran-----456 St. | 9876773120 |
09131111111 | 02187654321
(3 rows)
```

تغییر محل تولد و کد پستی استاد با 'LID='789012'

UPDATE lecturer SET BornCity = 'Tabriz', PostalCode = '222222222' WHERE LID = '789012';

```
lorestanuniv=# UPDATE lecturer SET BornCity = 'Tabriz', PostalCode = '222222222' WHERE LID = '789012';
UPDATE 1
lorestanuniv=# select * from lecturer;
   lid | fname | lname |   id   | department |          major          | birth | borncity | address | postalcode |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
  123456 | Reza   | Hosseini | 4785136548 | Engineering   | Civil Engineering          | 1372/03/10 | Ilam    | Ilam-----Updated Address | 7257567890 |
09121234567 | 02112345678
  654321 | Maryam | Rastegar | 1548741215 | Economics     | Polymer Engineering        | 1368/06/25 | Tehran  | tehran-----456 St. | 9876773120 |
09131111111 | 02187654321
  789012 | Ali   | Shahbazi | 6523526896 | Basic Sciences | Electrical Engineering-Electronics | 1353/09/15 | Tabriz  | isfahan-----789 St. | 2222222222 |
09187654321 | 03112345678
(3 rows)
```

حذف ها :

حذف استادی با 'LID='654321'

DELETE FROM lecturer WHERE LID = '654321';

```
lorestanuniv=# DELETE FROM lecturer WHERE LID = '654321';
DELETE 1
lorestanuniv=# select * from lecturer;
   lid | fname | lname |   id   | department |          major          | birth | borncity | address | postalcode |
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
  123456 | Reza   | Hosseini | 4785136548 | Engineering   | Civil Engineering          | 1372/03/10 | Ilam    | Ilam-----Updated Address | 7257567890 | 0
9121234567 | 02112345678
  789012 | Ali   | Shahbazi | 6523526896 | Basic Sciences | Electrical Engineering-Electronics | 1353/09/15 | Tabriz  | isfahan-----789 St. | 2222222222 | 0
9187654321 | 03112345678
(2 rows)
```

حذف استادی با '6523526896' id =

DELETE FROM lecturer WHERE id = '6523526896';

```
lorestanuniv=# DELETE FROM lecturer WHERE id = '6523526896';
DELETE 1
lorestanuniv=# select * from lecturer;
  lid  | fname | lname | id  | department | major | birth | borncity | address | postalcode | cphone | hphone
-----+-----+-----+----+-----+-----+-----+-----+-----+-----+-----+-----
123456 | Reza  | Hosseini | 4785136548 | Engineering | Civil Engineering | 1372/03/10 | Ilam | Ilam-----Updated Address | 7257567890 | 09121234567 | 02112345678
(1 row)
```

حذف استادی با 'Hosseini' lname =

DELETE FROM lecturer WHERE lname = 'Hosseini';

```
lorestanuniv=# DELETE FROM lecturer WHERE lname = 'Hosseini';
DELETE 1
lorestanuniv=# select * from lecturer;
  lid  | fname | lname | id  | department | major | birth | borncity | address | postalcode | cphone | hphone
-----+-----+-----+----+-----+-----+-----+-----+-----+-----+-----+-----
(0 rows)
```

در جدول course :

آپدیت ها:

تغییر نام درس و تعداد واحد درس با '12345' CID=

UPDATE course SET CName = 'Advanced Database', Credit = 4 WHERE CID = '12345';

```
lorestanuniv=# UPDATE course SET CName = 'Advanced Database', Credit = 4 WHERE CID = '12345';
UPDATE 1
lorestanuniv=# select * from course;
  cid  | cname | department | credit
-----+-----+-----+-----
23456 | Microeconomic | Economics | 4
34567 | Advanced Physic | Basic Sciences | 2
12345 | Advanced Database | Engineering | 4
(3 rows)
```

تغییر دیپارتمان درس با '23456' CID=

UPDATE course SET Department = 'Basic Sciences' WHERE CID = '23456';

```
lorestanuniv=# UPDATE course SET Department = 'Basic Sciences' WHERE CID = '23456';
UPDATE 1
lorestanuniv=# select * from course;
  cid  | cname | department | credit
-----+-----+-----+-----
34567 | Advanced Physic | Basic Sciences | 2
12345 | Advanced Database | Engineering | 4
23456 | Microeconomic | Basic Sciences | 4
(3 rows)
```

تغییر تعداد واحد درس با '34567' CID=

```
UPDATE course SET Credit = 3 WHERE CID = '34567';
```

```
lorestanuniv=# UPDATE course SET Credit = 3 WHERE CID = '34567';
UPDATE 1
lorestanuniv=# select * from course;
   cid |      cname      | department | credit
-----+-----+-----+-----
 12345 | Advanced Database | Engineering |      4
 23456 | Microeconomic    | Basic Sciences |      4
 34567 | Advanced Physic  | Basic Sciences |      3
(3 rows)
```

حذف ها :

حذف درسی با '12345' cid =

```
DELETE FROM course WHERE cid = '12345';
```

```
lorestanuniv=# DELETE FROM course WHERE cid = '12345';
DELETE 1
lorestanuniv=# select * from course;
   cid |      cname      | department | credit
-----+-----+-----+-----
 23456 | Microeconomic    | Basic Sciences |      4
 34567 | Advanced Physic  | Basic Sciences |      3
(2 rows)
```

حذف درسی با 'Microeconomic' cname =

```
DELETE FROM course WHERE cname = 'Microeconomic';
```

```
lorestanuniv=# DELETE FROM course WHERE cname = 'Microeconomic';
DELETE 1
lorestanuniv=# select * from course;
   cid |      cname      | department | credit
-----+-----+-----+-----
 34567 | Advanced Physic  | Basic Sciences |      3
(1 row)
```

حذف درسی با **credit = 3**

DELETE FROM course WHERE credit = 3;

```
lorestanuniv=# DELETE FROM course WHERE credit = 3;
DELETE 1
lorestanuniv=# select * from course;
  cid | cname | department | credit
-----+-----+-----+-----
(0 rows)
```

در جدول **CourseRegister**:

آپدیت ها:

تغییر تعداد واحد و نام درس برای ثبت نام با **STID='40311415016'** و **CID='12345'**

UPDATE CourseRegister SET Credit = 4, CName = 'Database Advanced' WHERE STID = '40311415016' AND CID = '12345';

```
lorestanuniv=# UPDATE CourseRegister SET Credit = 4, CName = 'Database Advanced' WHERE STID = '40311415016' AND CID = '12345';
UPDATE 1
lorestanuniv=# select * from coursereregister;
 credit | department |      cname      | fname | lname |      stid      | cid
-----+-----+-----+-----+-----+-----+-----
      4 | Economics  | Microeconomic   | Sara  | Rezaei | 40311415071 | 23456
      2 | Basic Sciences | Advanced Physic | Reza  | Karimi | 40311415052 | 34567
      4 | Engineering | Database Advanced | Mobin | Ramezani | 40311415016 | 12345
(3 rows)
```

تغییر دانشکده و نام دانشجو برای ثبت نام با **STID='40311415071'** و **CID='23456'**

UPDATE CourseRegister SET Department = 'Basic Sciences', FName = 'Sahar' WHERE STID = '40311415071' AND CID = '23456';

```
lorestanuniv=# UPDATE CourseRegister SET Department = 'Basic Sciences', FName = 'Sahar' WHERE STID = '40311415071' AND CID = '23456';
UPDATE 1
lorestanuniv=# select * from coursereregister;
 credit | department |      cname      | fname | lname |      stid      | cid
-----+-----+-----+-----+-----+-----+-----
      2 | Basic Sciences | Advanced Physic | Reza  | Karimi | 40311415052 | 34567
      4 | Engineering  | Database Advanced | Mobin | Ramezani | 40311415016 | 12345
      4 | Basic Sciences | Microeconomic   | Sahar | Rezaei | 40311415071 | 23456
(3 rows)
```

تغییر نام خانوادگی دانشجو و نام درس با **STID='40311415052'** و **CID='34567'**

UPDATE CourseRegister SET LName = 'Kiani', CName = 'Physics - Quantum' WHERE STID = '40311415052' AND CID = '34567';

```
lorestanuniv=# UPDATE CourseRegister SET LName = 'Kiani', CName = 'Physics - Quantum' WHERE STID = '40311415052' AND CID = '34567';
UPDATE 1
lorestanuniv=# select * from coursereregister;
 credit | department |      cname      | fname | lname |      stid      | cid
-----+-----+-----+-----+-----+-----+-----
      4 | Engineering | Database Advanced | Mobin | Ramezani | 40311415016 | 12345
      4 | Basic Sciences | Microeconomic   | Sahar | Rezaei | 40311415071 | 23456
      2 | Basic Sciences | Physics - Quantum | Reza  | Kiani  | 40311415052 | 34567
(3 rows)
```

حذف ها :

حذف ثبت نام دانشجويي با 'stdid = '40311415052'

```
DELETE FROM CourseRegister WHERE stdid = '40311415052';
```

```
lorestanuniv=# DELETE FROM CourseRegister WHERE stdid = '40311415052';
DELETE 1
lorestanuniv=# select * from courserregister;
 credit | department | cname | fname | lname | stdid | cid
-----+-----+-----+-----+-----+-----+-----
      4 | Engineering | Database Advanced | Mobin | Ramezani | 40311415016 | 12345
      4 | Basic Sciences | Microeconomic | Sahar | Rezaei | 40311415071 | 23456
(2 rows)
```

حذف ثبت نام دانشجويي با 'lname = 'Ramezani' و department = 'Engineering'

```
DELETE FROM CourseRegister WHERE department = 'Engineering' and lname = 'Ramezani';
```

```
lorestanuniv=# DELETE FROM CourseRegister WHERE department = 'Engineering' and lname = 'Ramezani';
DELETE 1
lorestanuniv=# select * from courserregister;
 credit | department | cname | fname | lname | stdid | cid
-----+-----+-----+-----+-----+-----+-----
      4 | Basic Sciences | Microeconomic | Sahar | Rezaei | 40311415071 | 23456
(1 row)
```

حذف ثبت نام دانشجويي با 'lname = 'Rezaei' و fname = 'Sahar'

```
DELETE FROM CourseRegister WHERE fname = 'Sahar' and lname = 'Rezaei';
```

```
lorestanuniv=# DELETE FROM CourseRegister WHERE fname = 'Sahar' and lname = 'Rezaei';
DELETE 1
lorestanuniv=# select * from courserregister;
 credit | department | cname | fname | lname | stdid | cid
-----+-----+-----+-----+-----+-----+-----
(0 rows)
```

در جدول PresentedCourses :

آپديت ها :

تغيير نام درس و تعداد واحد براي درس ارائه شده با 'LID='123456' و CID='12345'

```
UPDATE PresentedCourses SET CName = 'Advanced Databases', Credit = 4 WHERE LID = '123456' AND CID = '12345';
```

```
lorestanuniv=# UPDATE PresentedCourses SET CName = 'Advanced Databases', Credit = 4 WHERE LID = '123456' AND CID = '12345';
UPDATE 1
lorestanuniv=# select * from presentedcourses;
  cname | department | credit | fname | lname | cid | lid
-----+-----+-----+-----+-----+-----+-----
Microeconomic | Economics | 4 | Mina | Rastegar | 23456 | 654321
Advanced Physic | Basic Sciences | 2 | Ali | Shahbazi | 34567 | 789012
Advanced Databases | Engineering | 4 | Reza | Hosseini | 12345 | 123456
(3 rows)
```

تغییر نام استاد و دپارتمان برای درس ارائه شده با LID='654321' و CID='23456'

UPDATE PresentedCourses SET FName = 'Maryam', Department = 'Basic Sciences' WHERE LID = '654321' AND CID = '23456';

```
lorestanuniv=# UPDATE PresentedCourses SET FName = 'Maryam', Department = 'Basic Sciences' WHERE LID = '654321' AND CID = '23456';
UPDATE 1
lorestanuniv=# select * from presentedcourses;
   cname      | department | credit | fname | lname | cid | lid |
-----+-----+-----+-----+-----+-----+-----+
Advanced Physic | Basic Sciences |      2 | Ali   | Shahbazi | 34567 | 789012 |
Advanced Databases | Engineering |      4 | Reza  | Hosseini | 12345 | 123456 |
Microeconomic   | Basic Sciences |      4 | Maryam | Rastegar | 23456 | 654321 |
(3 rows)
```

تغییر نام درس و دپارتمان برای درس ارائه شده با LID='789012' و CID='34567'

UPDATE PresentedCourses SET CName = 'Quantum Physics', Department = 'Engineering' WHERE LID = '789012' AND CID = '34567';

```
lorestanuniv=# UPDATE PresentedCourses SET CName = 'Quantum Physics', Department = 'Engineering' WHERE LID = '789012' AND CID = '34567';
UPDATE 1
lorestanuniv=# select * from presentedcourses;
   cname      | department | credit | fname | lname | cid | lid |
-----+-----+-----+-----+-----+-----+-----+
Advanced Databases | Engineering |      4 | Reza  | Hosseini | 12345 | 123456 |
Microeconomic     | Basic Sciences |      4 | Maryam | Rastegar | 23456 | 654321 |
Quantum Physics   | Engineering |      2 | Ali   | Shahbazi | 34567 | 789012 |
(3 rows)
```

حذف ها :

حذف درس ارائه شده با LID = '123456' و CID = '12345'

DELETE FROM PresentedCourses WHERE LID = '123456' AND CID = '12345';

```
lorestanuniv=# DELETE FROM PresentedCourses WHERE LID = '123456' AND CID = '12345';
DELETE 1
lorestanuniv=# select * from presentedcourses;
   cname      | department | credit | fname | lname | cid | lid |
-----+-----+-----+-----+-----+-----+-----+
Microeconomic   | Basic Sciences |      4 | Maryam | Rastegar | 23456 | 654321 |
Quantum Physics | Engineering |      2 | Ali   | Shahbazi | 34567 | 789012 |
(2 rows)
```

حذف درس ارائه شده با cid = '23456' و lname = 'Rastegar'

DELETE FROM PresentedCourses WHERE lname = 'Rastegar' AND cid = '23456';

```
lorestanuniv=# DELETE FROM PresentedCourses WHERE lname = 'Rastegar' AND cid = '23456';
DELETE 1
lorestanuniv=# select * from presentedcourses;
   cname      | department | credit | fname | lname | cid | lid |
-----+-----+-----+-----+-----+-----+-----+
Quantum Physics | Engineering |      2 | Ali   | Shahbazi | 34567 | 789012 |
(1 row)
```

حذف درس ارائه شده با 'Quantum Physics' cname =

```
DELETE FROM PresentedCourses WHERE cname = 'Quantum Physics';
```

```
lorestanuniv=# DELETE FROM PresentedCourses WHERE cname = 'Quantum Physics';
DELETE 1
lorestanuniv=# select * from presentedcourses;
  cname | department | credit | fname | lname | cid | lid
-----+-----+-----+-----+-----+-----+-----
(0 rows)
```

۵) ۳ کاربر به این صورت ایجاد کنید : ۱- **Saman** با دسترسی کامل (ادمین). ۲- **Armin** با دسترسی فقط خواندنی.
۳- **Sara** با دسترسی نوشتن بر روی جدول **student** و خواندن از بقیه جدول ها. برای هر کاربر هر سه عملیات
درج، حذف، بروز رسانی و خواندن را برای ۱ نمونه پرس و جو تست روی همه جداول تست کنید.

برای کاربر **Saman** :

ابتدا ایجاد کاربر و اعطای دسترسی کامل :

```
CREATE ROLE saman WITH LOGIN PASSWORD 'saman' SUPERUSER CREATEDB CREATEROLE;
```

```
lorestanuniv=# CREATE ROLE saman WITH LOGIN PASSWORD 'saman' SUPERUSER CREATEDB CREATEROLE;
CREATE ROLE
```

سپس با دستور زیر، دسترسی کامل به پایگاه داده **LorestanUniv** به کاربر **Saman** اعطا می کنیم :

```
GRANT ALL PRIVILEGES ON DATABASE LorestanUniv TO Saman;
```

```
lorestanuniv=# GRANT ALL PRIVILEGES ON DATABASE LorestanUniv TO Saman;
GRANT
```


سپس انجام دستورها برای saman :

ابتدا ورود از طریق کاربر saman به دیتابیس :

```
Server [localhost]:
Database [postgres]: lorestanuniv
Port [5432]:
Username [postgres]: saman
Password for user saman:
psql (17.0)
Type "help" for help.

lorestanuniv=#
```

درج :

```
INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('40311415066', 'Nima', 'Ahmadi', 'Hassan', '1381/04/15', '123123123', 'Tehran', 'Tehran-----123 St.', '1231231234', '09121111111', '02122222222', 'Engineering', 'Computer Engineering', FALSE, '3213213210');
```

```
lorestanuniv=# INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('40311415066', 'Nima', 'Ahmadi', 'Hassan', '1381/04/15', '123123123', 'Tehran', 'Tehran-----123 St.', '1231231234', '09121111111', '02122222222', 'Engineering', 'Computer Engineering', FALSE, '3213213210');
INSERT 0 1
lorestanuniv=# select * from student;
```

stid	fname	lname	father	birth	serialid	borncity	address	postalcode	cphone	hphone	departme
40311415016	Mobin	Ramezani	Shahram	1381/04/11	12b145844	Khorramabad	lorestan-----123 St.	6814617137	09121234567	02112345678	Engineerin
40311415071	Sara	Rezaei	Mohammad	1382/07/20	987654321	Shiraz	shiraz-----456 St.	9876543210	09123456789	03123456789	Economics
40311415052	Reza	Karimi	Ali	1382/09/10	741852963	Mashhad	mashad-----789 St.	7418529630	09187654321	05112345678	Basic Scie
40311415066	Nima	Ahmadi	Hassan	1381/04/15	123123123	Tehran	Tehran-----123 St.	1231231234	09121111111	02122222222	Engineerin

(4 rows)

آپدیت :

```
UPDATE lecturer SET FName = 'Ali' WHERE LID = '123456';
```

```
lorestanuniv=# UPDATE lecturer SET FName = 'Ali' WHERE LID = '123456';
UPDATE 1
lorestanuniv=# select * from lecturer;
```

lid	fname	lname	id	department	major	birth	borncity	address	postalcode	cph
654321	Mina	Rastegar	1548741215	Economics	Polymer Engineering	1368/06/25	Tehran	tehran-----456 St.	9876773120	09123456789
789012	Ali	Shahbazi	6523526896	Basic Sciences	Electrical Engineering-Electronics	1353/09/15	Isfahan	isfahan-----789 St.	7418529630	09187654321
123456	Ali	Hosseini	4785136548	Engineering	Computer Engineering	1372/03/10	Ilam	ilam-----123 St.	7257567890	09121234567

(3 rows)

حذف :

```
DELETE FROM course WHERE CID = '12345';
```

```
lorestanuniv=# DELETE FROM course WHERE CID = '12345';
DELETE 1
lorestanuniv=# select * from course;
```

cid	cname	department	credit
23456	Microeconomic	Economics	4
34567	Advanced Physic	Basic Sciences	2

(2 rows)

خواندن :

```
SELECT * FROM PresentedCourses;
```

```
lorestanuniv=# SELECT * FROM PresentedCourses;
   cname   | department | credit | fname | lname  | cid  | lid
-----+-----+-----+-----+-----+-----+-----
Microeconomic | Economics |      4 | Mina   | Rastegar | 23456 | 654321
Advanced Physic | Basic Sciences |      2 | Ali   | Shahbazi | 34567 | 789012
(2 rows)
```

برای کاربر **Armin** :

دستور زیر نقش (کاربر) جدیدی به نام **Armin** و قابلیت ورود به سیستم با رمز عبور **armin** ایجاد می کند :

```
CREATE ROLE Armin WITH LOGIN PASSWORD 'armin';
```

```
lorestanuniv=# CREATE ROLE Armin WITH LOGIN PASSWORD 'armin';
CREATE ROLE
```

دستور زیر به کاربر **Armin** اجازه می دهد که به پایگاه داده **LorestanUniv** متصل شود :

```
GRANT CONNECT ON DATABASE LorestanUniv TO Armin;
```

```
lorestanuniv=# GRANT CONNECT ON DATABASE LorestanUniv TO Armin;
GRANT
```

دستور زیر به کاربر **Armin** اجازه می دهد که از اسکیمای **public** استفاده کند:

```
GRANT USAGE ON SCHEMA public TO Armin;
```

```
lorestanuniv=# GRANT USAGE ON SCHEMA public TO Armin;
GRANT
```

دستور زیر به کاربر **Armin** اجازه می دهد تا به تمام جداول موجود در اسکیمای **public** دسترسی خواندن (**SELECT**) داشته باشد :

```
GRANT SELECT ON ALL TABLES IN SCHEMA public TO Armin;
```

```
lorestanuniv=# GRANT SELECT ON ALL TABLES IN SCHEMA public TO Armin;
GRANT
```

سپس انجام دستورها برای armin :

ابتدا ورود از طریق کاربر armin به دیتابیس :

```
Server [localhost]:
Database [postgres]: lorestanuniv
Port [5432]:
Username [postgres]: armin
Password for user armin:
psql (17.0)
Type "help" for help.

lorestanuniv=>
```

درج (ارور دسترسی) :

```
INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('40311415078', 'Ali', 'Karimi', 'Mohammad', '1380/02/15', '456456456', 'Mashhad', 'Mashhad-----123 St.', '4564564567', '0913222222', '0513333333', 'Basic Sciences', 'Physics', TRUE, '6546546541');
```

```
lorestanuniv=> INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES (
'40311415078', 'Ali', 'Karimi', 'Mohammad', '1380/02/15', '456456456', 'Mashhad', 'Mashhad-----123 St.', '4564564567', '0913222222', '0513333333', 'Basic Science
s', 'Physics', TRUE, '6546546541');
ERROR: permission denied for table student
```

اپدیت (ارور دسترسی) :

```
UPDATE lecturer SET FName = 'Ali' WHERE LID = '123456';
```

```
lorestanuniv=> UPDATE lecturer SET FName = 'Ali' WHERE LID = '123456';
ERROR: permission denied for table lecturer
```

حذف (ارور دسترسی) :

```
DELETE FROM course WHERE CID = '12345';
```

```
lorestanuniv=> DELETE FROM course WHERE CID = '12345';
ERROR: permission denied for table course
```

خواندن :

```
SELECT * FROM PresentedCourses;
```

```
lorestanuniv=> SELECT * FROM PresentedCourses;
  cname      | department | credit | fname | lname  | cid  | lid
-----+-----+-----+-----+-----+-----+-----
Microeconomic | Economics  |      4 | Mina   | Rastegar | 23456 | 654321
Advanced Physic | Basic Sciences |      2 | Ali   | Shahbazi | 34567 | 789012
(2 rows)
```

برای کاربر Sara :

دستور زیر نقش (کاربر) جدیدی به نام **Sara** و قابلیت ورود به سیستم با رمز عبور **sara** ایجاد می کند :

```
CREATE ROLE Sara WITH LOGIN PASSWORD 'sara';
```

```
postgres=# CREATE ROLE Sara WITH LOGIN PASSWORD 'sara';  
CREATE ROLE
```

دستور زیر به کاربر **Sara** اجازه می دهد به پایگاه داده **LorestanUniv** متصل شود :

```
GRANT CONNECT ON DATABASE LorestanUniv TO Sara;
```

```
postgres=# GRANT CONNECT ON DATABASE LorestanUniv TO Sara;  
GRANT
```

دستور زیر به کاربر **Sara** اجازه می دهد از اسکیمای **public** استفاده کند :

```
GRANT USAGE ON SCHEMA public TO Sara;
```

```
postgres=# GRANT USAGE ON SCHEMA public TO Sara;  
GRANT
```

دستور زیر به کاربر **Sara** اجازه می دهد داده های تمام جداول موجود در اسکیمای **public** را بخواند :

```
GRANT SELECT ON ALL TABLES IN SCHEMA public TO Sara;
```

```
postgres=# GRANT SELECT ON ALL TABLES IN SCHEMA public TO Sara;  
GRANT
```

دستور زیر به کاربر **Sara** اجازه انجام عملیات درج را فقط روی جدول **student** می دهد :

```
GRANT INSERT, UPDATE, DELETE ON TABLE student TO Sara;
```

```
lorestanuniv=# GRANT INSERT, UPDATE, DELETE ON TABLE student TO Sara;  
GRANT
```

سپس انجام دستورها برای sara :

ابتدا ورود از طریق کاربر sara به دیتابیس :

```
Server [localhost]:  
Database [postgres]: lorestanuniv  
Port [5432]:  
Username [postgres]: sara  
Password for user sara:  
psql (17.0)  
Type "help" for help.  
  
lorestanuniv=>
```

درج (ارور دسترسی برای غیر از student) :

```
INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('39911415056', 'Reza', 'Darvishi', 'MohammadAli', '1371/02/10', '456456456', 'Mashhad', 'Mashhad-----123 St.', '4564564567', '0913222222', '0513333333', 'Engineering', 'Computer Engineering', TRUE, '6546546541');
```

```
lorestanuniv=> INSERT INTO student (STID, FName, LName, Father, Birth, SerialID, BornCity, Address, PostalCode, CPhone, HPhone, Department, Major, Married, ID) VALUES ('39911415056', 'Reza', 'Darvishi', 'MohammadAli', '1371/02/10', '456456456', 'Mashhad', 'Mashhad-----123 St.', '4564564567', '0913222222', '0513333333', 'Engineering', 'Computer Engineering', TRUE, '6546546541');  
INSERT 0 1
```

اپدیت (ارور دسترسی) :

```
UPDATE student SET FName = 'Ali' WHERE STID = '39911415056';
```

```
lorestanuniv=> UPDATE student SET FName = 'Ali' WHERE STID = '39911415056';  
ERROR: permission denied for table student
```

حذف (ارور دسترسی) :

```
DELETE FROM student WHERE CID = '39911415056';
```

```
lorestanuniv=> DELETE FROM student WHERE stid = '39911415056';  
ERROR: permission denied for table student
```

خواندن (ارور دسترسی فقط برای student) :

```
SELECT * FROM student;
```

```
lorestanuniv=> SELECT * FROM student;  
ERROR: permission denied for table student
```

۶) تراکنش زیر را پیاده سازی کنید : ۱- حذف رکورد یک درس از جدول **course** ۲- حذف همه رکوردهای مرتبط با رکورد مرحله ۱ از جدول انتخاب واحد ۳- حذف همه رکوردهای مرتبط با رکورد مرحله ۱ از جدول دروس ارائه شده. برای این تراکنش از دستورات **commit** ، استفاده کنید. اجرای همه مراحل تراکنش را با **commit** نشان دهید. لغو تراکنش را با دستورات **abort** و **rollback** انجام دهید و نشان دهید لغو یکی از مراحل فوق چگونه منجر به لغو خودکار بقیه موارد می شود. همچنین از **savepoint** های مختلف استفاده کنید تا بعد از لغو به یک نقطه خاص برگردد و همه عملیات را لغو نکند.

تراکنش ما به صورت زیر هست :

```
lorestanuniv=# BEGIN;
BEGIN
lorestanuniv=# DELETE FROM course WHERE CID = '23456';
DELETE 1
lorestanuniv=# SAVEPOINT step1;
SAVEPOINT
lorestanuniv=# DELETE FROM CourseRegister WHERE CID = '23456';
DELETE 0
lorestanuniv=# SAVEPOINT step2;
SAVEPOINT
lorestanuniv=# DELETE FROM PresentedCourses WHERE CID = '23456';
DELETE 0
lorestanuniv=# SAVEPOINT step3;
SAVEPOINT
lorestanuniv=# COMMIT;
COMMIT
```

حالا ما اگر بخواهیم کل تراکنش را لغو کنیم، از **ROLLBACK** یا **ABORT** استفاده می کنیم. مثال :

```
lorestanuniv=# BEGIN;
BEGIN
lorestanuniv=# DELETE FROM course WHERE CID = '23456';
DELETE 1
lorestanuniv=# SAVEPOINT step1;
SAVEPOINT
lorestanuniv=# DELETE FROM CourseRegister WHERE CID = '23456';
DELETE 0
lorestanuniv=# ROLLBACK;
ROLLBACK
lorestanuniv=# select * from course;
cid |      cname      | department | credit
-----+-----+-----+-----
12345 | Database        | Engineering |      3
23456 | Microeconomic   | Economics  |      4
34567 | Advanced Physic | Basic Sciences |      2
(3 rows)
```

```

lorestanuniv=# BEGIN;
BEGIN
lorestanuniv=# DELETE FROM course WHERE CID = '23456';
DELETE 1
lorestanuniv=# SAVEPOINT step1;
SAVEPOINT
lorestanuniv=# DELETE FROM CourseRegister WHERE CID = '23456';
DELETE 0
lorestanuniv=# ABORT;
ROLLBACK
lorestanuniv=# select * from course;
  cid |      cname      | department | credit
-----+-----+-----+-----
 12345 | Database        | Engineering |      3
 23456 | Microeconomic   | Economics  |      4
 34567 | Advanced Physic | Basic Sciences |      2
(3 rows)

```

نحوه استفاده از **SAVEPOINT** (مثال لغو مرحله ۳ و ادامه از مرحله ۲) :

```

lorestanuniv=# BEGIN;
BEGIN
lorestanuniv=# DELETE FROM course WHERE CID = '12345';
DELETE 1
lorestanuniv=# SAVEPOINT step1;
SAVEPOINT
lorestanuniv=# DELETE FROM CourseRegister WHERE CID = '12345';
DELETE 0
lorestanuniv=# SAVEPOINT step2;
SAVEPOINT
lorestanuniv=# DELETE FROM PresentedCourses WHERE CID = '12345';
DELETE 0
lorestanuniv=# SAVEPOINT step3;
SAVEPOINT
lorestanuniv=# ROLLBACK TO step2;
ROLLBACK
lorestanuniv=# DELETE FROM PresentedCourses WHERE CID = '12345';
DELETE 0
lorestanuniv=# COMMIT;
COMMIT

```