This module guides you how to join two tables and retrieve data.

We already have a table called `Personal` and need to create another table (say `Subjects`).

The CREATE TABLE statement is used to create tables in MYSQL database. Here, you need to specify the name of the table and definition (name and datatype) of each column.

In our `Personal` table, we have two columns: `indexno` and `name`. New table is used to store what each student studying. Column names can be `indexno` and `subject`. For example, new `Subjects` table is in this form.

SUBJECTS

indexno	subject
001	Geography
002	Music
002	History
003	Science
003	Mathematics
003	Geography
004	Business Studies
004	Music
005	Geography

NOTE:

1st student following one subject: *Geography*, 2nd student two subjects: *Music* & *History*, 3rd student three subjects: *Science Mathematics* & *Geography*, 4th student one subject: *Business Studies* and the 5th student one subject: *Geography*.

Earlier we create a database, table and add records using **phpMyAdmin** interface. Now we are going to create table `subjects` and add records through **Python**.

To create the table `Subjects`, **Python** code will be

```
sql = 'CREATE TABLE subjects (indexno VARCHAR(3), subject VARCHAR(20))'
mycursor.execute(sql)
```

Once you create the database, we can add records to the table. Python code will be

```
sql = 'INSERT INTO subjects (indexno, subject) VALUES (%s, %s)'
val = [
    ('001', 'Geography'),
    ('002', 'Music'),
    ('002', 'History'),
    ('003', 'Science'),
    ('003', 'Mathematics'),
    ('003', 'Geography'),
    ('004', 'Business Studies'),
    ('004', 'Music'),
    ('005', 'Geography')
    ]
mycursor.executemany(sql, val)
```
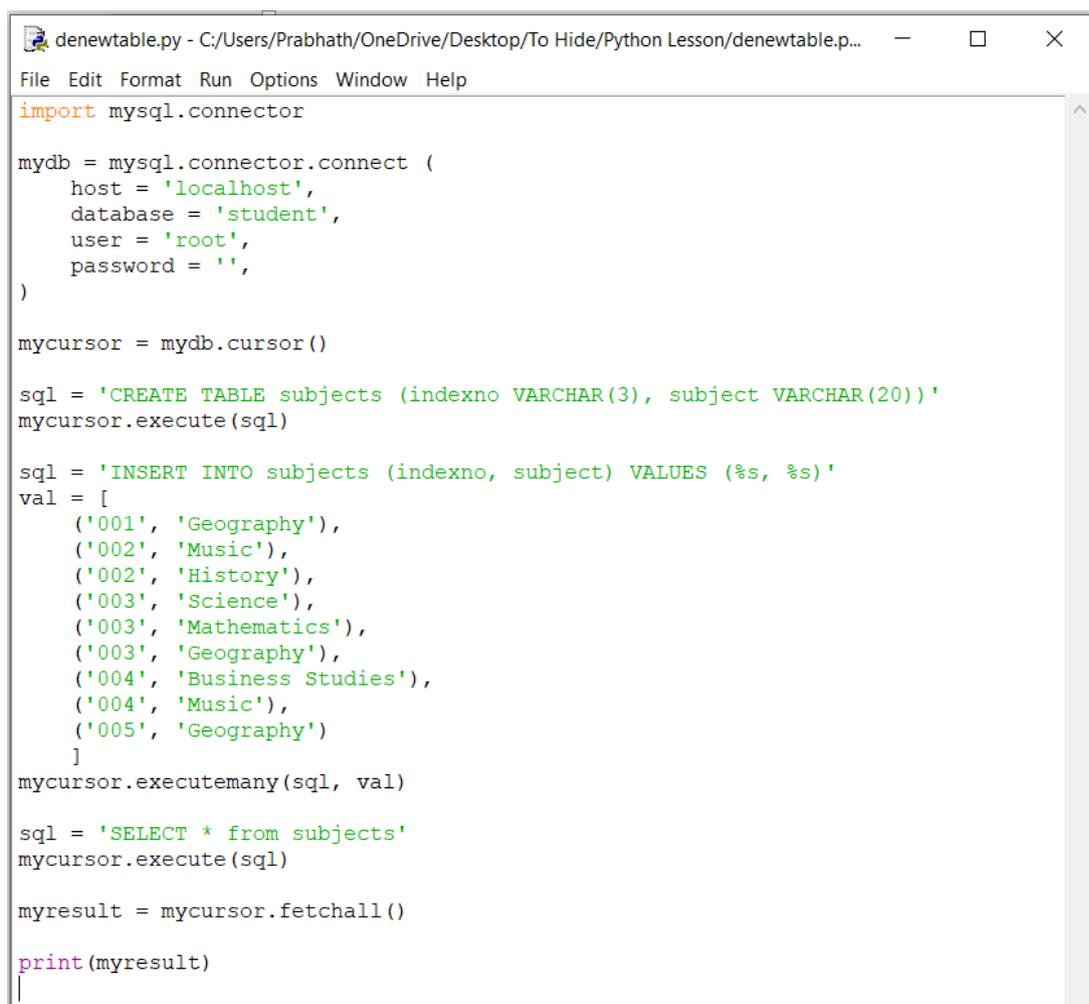
Finally, we can add a code for displaying records what you entered.

```
sql = 'SELECT * from subjects'
mycursor.execute(sql)

myresult = mycursor.fetchall()

print(myresult)
```

Let's combine all 3 steps discussed above into a single Python program. Try following **Python** code (`dbnewtable.py`) and run it to create the table and add above records.

```
denewtable.py - C:/Users/Prabhath/OneDrive/Desktop/To Hide/Python Lesson/denewtable.p...    —    □    ×
File  Edit  Format  Run  Options  Window  Help
import mysql.connector

mydb = mysql.connector.connect (
    host = 'localhost',
    database = 'student',
    user = 'root',
    password = '',
)

mycursor = mydb.cursor()

sql = 'CREATE TABLE subjects (indexno VARCHAR(3), subject VARCHAR(20))'
mycursor.execute(sql)

sql = 'INSERT INTO subjects (indexno, subject) VALUES (%s, %s)'
val = [
    ('001', 'Geography'),
    ('002', 'Music'),
    ('002', 'History'),
    ('003', 'Science'),
    ('003', 'Mathematics'),
    ('003', 'Geography'),
    ('004', 'Business Studies'),
    ('004', 'Music'),
    ('005', 'Geography')
    ]
mycursor.executemany(sql, val)

sql = 'SELECT * from subjects'
mycursor.execute(sql)

myresult = mycursor.fetchall()

print(myresult)
```

Joining 2 or more Tables

Using **join** command, we can combine records from two or more tables based on a related column (field) between them.

We have two tables: **personal** and **subjects**.

Personal

```
indexno: '001', name: 'Tharindu'
indexno: '002', name: 'Supun'
indexno: '003', name: 'Bhagya'
indexno: '004', name: 'Sachini'
indexno: '005', name: 'Hiruni'
indexno: '006', name: 'Janani'
indexno: '007', name: 'Pasindu
indexno: '008', name: 'Lahiru'
indexno: '009', name: 'Isuru'
indexno: '010', name: 'Fathima'
```
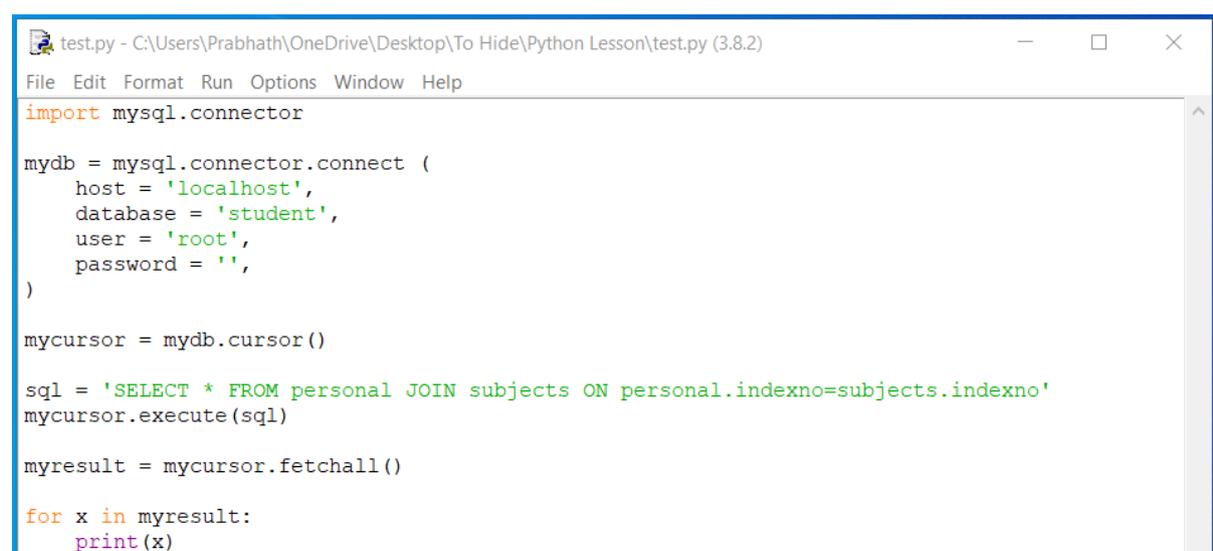
Subjects

```
indexno: '001', subject: 'Geography'
indexno: '002', subject: 'Music'
indexno: '002', subject: 'History'
indexno: '003', subject: 'Science'
indexno: '003', subject: 'Mathematics'
indexno: '003', subject: 'Geography'
indexno: '004', subject: 'Business Studies'
indexno: '004', subject: 'Music'
indexno: '005', subject: 'Geography'
```

`indexno` field in **Personal** and `indexno` field in **subjects** can use to combine two tables.

```
SELECT * FROM personal JOIN subjects ON personal.indexno=subjects.indexno
```

Complete **Python** programme given in below.

```python
import mysql.connector

mydb = mysql.connector.connect (
    host = 'localhost',
    database = 'student',
    user = 'root',
    password = '',
)

mycursor = mydb.cursor()

sql = 'SELECT * FROM personal JOIN subjects ON personal.indexno=subjects.indexno'
mycursor.execute(sql)

myresult = mycursor.fetchall()

for x in myresult:
    print(x)
```

Output of the program given below.

```
====== RESTART: C:\Users\Prabhath\OneDrive\Desktop\To Hide\Python Lesson\test.py ======
('001', 'Tharindu', '001', 'Geography')
('002', 'Supun', '002', 'Music')
('002', 'Supun', '002', 'History')
('003', 'Bhagya', '003', 'Science')
('003', 'Bhagya', '003', 'Mathematics')
('003', 'Bhagya', '003', 'Geography')
('004', 'Sachini', '004', 'Business Studies')
('004', 'Sachini', '004', 'Music')
('005', 'Hiruni', '005', 'Geography')
>>>
                                                                          Ln: 99  Col: 4
```

Use `GROUP_CONCAT` command to get better output.

```
SELECT personal.indexno, personal.name, \
GROUP_CONCAT(subjects.subject) \
FROM personal \
JOIN subjects \
ON personal.indexno=subjects.indexno \
GROUP BY personal.indexno
```

Modify your code using above SQL statement to get following output.

```
====== RESTART: C:\Users\Prabhath\OneDrive\Desktop\To Hide\Python Lesson\test3.py =====
001 Tharindu - Geography
002 Supun - History,Music
003 Bhagya - Mathematics,Science,Geography
004 Sachini - Business Studies,Music
005 Hiruni - Geography
>>>
                                                                          Ln: 120  Col: 4
```