

# Lab 07.2 Python and Databases

Using databases

[Overview](#)

Calling the sql commands in python

[Before the lab](#)

Install the python package

```
pip install mysql-connector
```

You will need to have your mysql server up and running,

I would usually create the database and tables on the server and not through python.

In this lab I show you how to create the table and then perform the CRUD operations.

NOTE: The username and password for your database in WAMP the default is root and blank,

You should make a new file for each of these tasks.

## Not usually done (create database and tables)

1. Create a database called **wsaa** using a python script

```
import mysql.connector

connection = mysql.connector.connect(
    host="localhost",
    user="root",
    password=""
)

mycursor = connection.cursor()

mycursor.execute("CREATE database wsaa ")
mycursor.close()
connection.close()
```

2. Create the table in the database with the python script

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="root",
    password="",
    database="wsaa"
)

mycursor = mydb.cursor()

sql="CREATE TABLE student (id INT AUTO_INCREMENT PRIMARY KEY, name VARCHAR(255), age INT) "

mycursor.execute(sql)

mycursor.close()
connection.close()
```

CRUD operations on a table, this is what you would normally do from an application

### 3. Insert data

```
import mysql.connector

db = mysql.connector.connect(
    host="localhost",
    user="root",
    password="",
    database="wsaa"
)

cursor = db.cursor()
sql="insert into student (name, age) values (%s, %s) "
values = ("Mary",21)

cursor.execute(sql, values)

db.commit()
print("1 record inserted, ID:", cursor.lastrowid)
mycursor.close()
connection.close()
```

### 4. View data

```
import mysql.connector

db = mysql.connector.connect(
    host="localhost",
    user="root",
    password="",
    database="wsaa"
)

cursor = db.cursor()
sql="select * from student where id = %s"
values = (1,)

cursor.execute(sql, values)
result = cursor.fetchall()
for x in result:
    print(x)
mycursor.close()
connection.close()
```

## 5. Update data

```
import mysql.connector

db = mysql.connector.connect(
    host="localhost",
    user="root",
    password="",
    #user="datarep", # this is the user name on my mac
    #passwd="password" # for my mac
    database="wsaa"
)

cursor = db.cursor()
sql="update student set name= %s, age=%s where id = %s"
values = ("Joe",33, 1)

cursor.execute(sql, values)

db.commit()
print("update done")
mycursor.close()
connection.close()
```

## 6. Delete

```
import mysql.connector

db = mysql.connector.connect(
    host="localhost",
    user="root",
    password="",
    #user="datarep", # this is the user name on my mac
    #passwd="password" # for my mac
    database="wsaa"
)

cursor = db.cursor()
sql="delete from student where id = %s"
values = (1,)

cursor.execute(sql, values)

db.commit()
print("delete done")
mycursor.close()
connection.close()
```

Put it into a file that can be used from another file (eg from your flask app)

```
import mysql.connector

class StudentDAO:
    host = ""
    user = ""
    password = ""
    database = ""
    connection = ""
    cursor = ""

    def __init__(self):
        #these should be read from a config file
        self.host="localhost"
        self.user="root"
        self.password=""
        self.database="wsaa"

    def getCursor(self):
        self.connection = mysql.connector.connect(
            host=self.host,
            user=self.user,
            password=self.password,
            database=self.database
        )
        self.cursor = self.connection.cursor()
        return self.cursor

    def closeAll(self):
        self.connection.close()
        self.cursor.close()

    def create(self, values):
        cursor = self.getCursor()
        sql="insert into student (name, age) values (%s,%s)"
        cursor.execute(sql, values)

        self.connection.commit()
        newid = cursor.lastrowid
        self.closeAll()
        return newid

    def getAll(self):
        # your code here

    def findByID(self, id):
        #your code here

    def update(self, values):
        #your code here

    def delete(self, id):
        # your code here

studentDAO = StudentDAO()
```

Test it

```
from zstudentDAO import studentDAO

#create
latestid = studentDAO.create(('mark', 45))
# find by id
result = studentDAO.findByID(latestid);
print (result)

#update
studentDAO.update(('Fred',21,latestid))
result = studentDAO.findByID(latestid);
print (result)

# get all
allStudents = studentDAO.getAll()
for student in allStudents:
    print(student)

# delete
studentDAO.delete(latestid)
```