

MySQL Database

- You can download a free MySQL database at <https://www.mysql.com/downloads/>.
- `python -m pip install mysql-connector-python`

Create Connection

- `import mysql.connector`
- `mydb = mysql.connector.connect(`
- `host="localhost",`
- `user="myusername",`
- `password="mypassword"`
- `)`
- `print(mydb)`

Creating a Database

- `import mysql.connector`

```
mydb = mysql.connector.connect(  
    host="localhost",  
    user="yourusername",  
    password="yourpassword"  
)
```

```
mycursor = mydb.cursor()
```

```
mycursor.execute("CREATE DATABASE mydatabase")
```

Check if Database Exists

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="yourusername",
    password="yourpassword"
)

mycursor = mydb.cursor()

mycursor.execute("SHOW DATABASES")

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

Or you can try to access the database when making the connection:

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="yourusername",
    password="yourpassword",
    database="mydatabase"
)
```

Creating a Table

```
import mysql.connector
```

```
mydb = mysql.connector.connect(  
    host="localhost",  
    user="myusername",  
    password="mypassword",  
    database="mydatabase"  
)
```

```
mycursor = mydb.cursor()
```

```
mycursor.execute("CREATE TABLE customers (name VARCHAR(255), address VARCHAR(255))")
```

#If this page is executed with no error, you have successfully created a table named "customers".

Check if Table Exists

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

mycursor.execute("SHOW TABLES")

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


Primary Key

```
import mysql.connector
```

```
mydb = mysql.connector.connect(  
    host="localhost",  
    user="yourusername",  
    password="yourpassword",  
    database="mydatabase"  
)
```

```
mycursor = mydb.cursor()
```

```
mycursor.execute("CREATE TABLE customers (id INT AUTO_INCREMENT PRIMARY KEY, name VARCHAR(255), address VARCHAR(255))")
```

#If this page is executed with no error, the table "customers" now has a primary key

If the table already exists, use the **ALTER TABLE** keyword:

```
import mysql.connector
```

```
mydb = mysql.connector.connect(  
    host="localhost",  
    user="yourusername",  
    password="yourpassword",  
    database="mydatabase"  
)
```

```
mycursor = mydb.cursor()
```

```
mycursor.execute("ALTER TABLE customers ADD COLUMN id INT AUTO_INCREMENT PRIMARY KEY")
```

#If this page is executed with no error, the table "customers" now has a primary key

Insert Into Table

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "INSERT INTO customers (name, address) VALUES (%s, %s)"
val = ("John", "Highway 21")

mycursor.execute(sql, val)

mydb.commit()

print(mycursor.rowcount, "record inserted.")
```

Insert Multiple Rows

```
import mysql.connector
```

```
mydb = mysql.connector.connect(  
    host="localhost",  
    user="myusername",  
    password="mypassword",  
    database="mydatabase"  
)
```

```
mycursor = mydb.cursor()
```

```
sql = "INSERT INTO customers (name, address) VALUES (%s, %s)"
```

Insert Multiple Rows

```
val = [  
    ('Peter', 'Lowstreet 4'),  
    ('Amy', 'Apple st 652'),  
    ('Hannah', 'Mountain 21'),  
    ('Michael', 'Valley 345'),  
    ('Sandy', 'Ocean blvd 2'),  
    ('Betty', 'Green Grass 1'),  
    ('Richard', 'Sky st 331'),  
    ('Susan', 'One way 98'),  
    ('Vicky', 'Yellow Garden 2'),  
    ('Ben', 'Park Lane 38'),  
    ('William', 'Central st 954'),  
    ('Chuck', 'Main Road 989'),  
    ('Viola', 'Sideway 1633')  
]  
  
mycursor.executemany(sql, val)  
  
mydb.commit()  
  
print(mycursor.rowcount, "record was inserted.")
```

Get Inserted ID

- `import mysql.connector`
- `mydb = mysql.connector.connect(
 host="localhost",
 user="myusername",
 password="mypassword",
 database="mydatabase"`
- `)`
- `mycursor = mydb.cursor()`
- `sql = "INSERT INTO customers (name, address) VALUES (%s, %s)"`
- `val = ("Michelle", "Blue Village")`
- `mycursor.execute(sql, val)`
- `mydb.commit()`
- `print("1 record inserted, ID:", mycursor.lastrowid)`

Select From a Table

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

mycursor.execute("SELECT * FROM customers")

myresult = mycursor.fetchall()

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

Selecting Columns

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

mycursor.execute("SELECT name, address FROM customers")

myresult = mycursor.fetchall()

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


Using the fetchone() Method

- `import mysql.connector`
- `mydb = mysql.connector.connect(
 host="localhost",
 user="myusername",
 password="mypassword",
 database="mydatabase"
)`
- `mycursor = mydb.cursor()`
- `mycursor.execute("SELECT * FROM customers")`
- `myresult = mycursor.fetchone()`
- `print(myresult)`

Select With a Filter

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT * FROM customers WHERE address = 'Park Lane 38'"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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

Wildcard Characters

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT * FROM customers WHERE address Like '%way%'"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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

Prevent SQL Injection

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT * FROM customers WHERE address = %s"
adr = ("Yellow Garden 2", )

mycursor.execute(sql, adr)

myresult = mycursor.fetchall()

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

Sort the Result

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT * FROM customers ORDER BY name"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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

ORDER BY DESC

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT * FROM customers ORDER BY name DESC"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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

Delete Record

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "DELETE FROM customers WHERE address = 'Mountain 21'"

mycursor.execute(sql)

mydb.commit()

print(mycursor.rowcount, "record(s) deleted")
```

Prevent SQL Injection

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "DELETE FROM customers WHERE address = %s"
adr = ("Yellow Garden 2", )

mycursor.execute(sql, adr)

mydb.commit()

print(mycursor.rowcount, "record(s) deleted")
```



```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="yourusername",
    password="yourpassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "DROP TABLE customers"

mycursor.execute(sql)
```

Drop Only if Exist

```
import mysql.connector
```

```
mydb = mysql.connector.connect(  
    host="localhost",  
    user="myusername",  
    password="mypassword",  
    database="mydatabase"  
)
```

```
mycursor = mydb.cursor()
```

```
sql = "DROP TABLE IF EXISTS customers"
```

```
mycursor.execute(sql)
```

#If this page was executed with no error(s), you have successfully deleted the "customers" table.

Update Table

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "UPDATE customers SET address = 'Canyon 123' WHERE address = 'Valley 345'"

mycursor.execute(sql)

mydb.commit()

print(mycursor.rowcount, "record(s) affected")
```

Prevent SQL Injection

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "UPDATE customers SET address = %s WHERE address = %s"
val = ("Valley 345", "Canyon 123")

mycursor.execute(sql, val)

mydb.commit()

print(mycursor.rowcount, "record(s) affected")
```

Limit the Result

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

mycursor.execute("SELECT * FROM customers LIMIT 5")

myresult = mycursor.fetchall()

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

Start From Another Position

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

mycursor.execute("SELECT * FROM customers LIMIT 5 OFFSET 2")

myresult = mycursor.fetchall()

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

Join Two or More Tables

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT \
    users.name AS user, \
    products.name AS favorite \
FROM users \
INNER JOIN products ON users.fav = products.id"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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

LEFT JOIN

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT \
    users.name AS user, \
    products.name AS favorite \
FROM users \
LEFT JOIN products ON users.fav = products.id"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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


RIGHT JOIN

```
import mysql.connector

mydb = mysql.connector.connect(
    host="localhost",
    user="myusername",
    password="mypassword",
    database="mydatabase"
)

mycursor = mydb.cursor()

sql = "SELECT \
    users.name AS user, \
    products.name AS favorite \
FROM users \
RIGHT JOIN products ON users.fav = products.id"

mycursor.execute(sql)

myresult = mycursor.fetchall()

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