Unit 8: Introduction to scripting with Python.

2022/2023

Contents

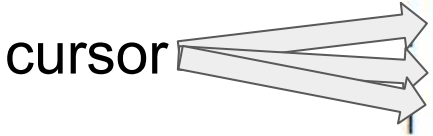
What is a cursor?

In Python, a **cursor** is an object that allows you **to interact with a relational database** through a Python program.

The **cursor** is used to **execute SQL commands** in a database and **retrieve the results** of those queries.

The cursor is responsible for sending the query to the database, receiving the results, and storing them in memory for further processing by the Python program.

What is a cursor?



id	name	date_of_birth	email
1234567	Anna Smith	2000-12-23	annasmith@noemail.org
1234568	John Moore	2001-07-13	jmoore@noemail.org
1234569	Julia Romney	2001-11-21	juliar@noemail.org

SELECT

```python
import psycopg2
# connect to the database
connection = psycopg2.connect(
    host="localhost",
    database="mydatabase",
    user="myuser",
    password="mypassword"
)
# create a cursor
cursor = connection.cursor()
# execute a query
cursor.execute("SELECT * FROM mytable")
# fetch one row at a time
while True:
    row = cursor.fetchone()
    if row is None:
        break
    print(row)
# close the cursor and connection
cursor.close()
connection.close()
```

```python
# fetch one row at a time
row = cursor.fetchone()
while row is not None:
    print(row)
    row = cursor.fetchone()
```

```
+---------+--------------+---------------+-----------------------+
| id      | name         | date_of_birth | email                 |
+---------+--------------+---------------+-----------------------+
| 1234567 | Anna Smith   | 2000-12-23    | annasmith@noemail.org |
| 1234568 | John  Moore  | 2001-07-13    | jmoore@noemail.org    |
| 1234569 | Julia Romney | 2001-11-21    | juliar@noemail.org    |
+---------+--------------+---------------+-----------------------+
```

SELECT

```python
import psycopg2

# connect to the database
connection = psycopg2.connect(
    host="localhost",
    database="mydatabase",
    user="myuser",
    password="mypassword"
)
# create a cursor
cursor = connection.cursor()
# execute a query
cursor.execute("SELECT * FROM mytable")
# fetch all rows
rows = cursor.fetchall()
# print each row
for row in rows:
    print(row)
# close the cursor and connection
cursor.close()
connection.close()
```

```python
for i in len(rows):
    print(rows[i])
```

INSERT

```
import psycopg2
# connect to the database
connection = psycopg2.connect(
    host="localhost",
    database="mydatabase",
    user="myuser",
    password="mypassword"
)
# create a cursor
cursor = connection.cursor()
# execute an insert statement
insert_query = "INSERT INTO mytable (column1,
column2, column3) VALUES (%s, %s, %s)"
record_to_insert = ('value1', 'value2', 'value3')
cursor.execute(insert_query, record_to_insert)
# commit the transaction
connection.commit()
# close the cursor and connection
cursor.close()
connection.close()
```

UPDATE

```
import psycopg2
# connect to the database
connection = psycopg2.connect(
   host="localhost",
   database="mydatabase",
   user="myuser",
   password="mypassword"
)
# create a cursor
cursor = connection.cursor()
# execute an update statement
update_query = "UPDATE mytable SET column1 = %s
WHERE id = %s"
record_to_update = ('new_value', 1)
cursor.execute(update_query, record_to_update)
# commit the transaction
connection.commit()
# close the cursor and connection
cursor.close()
connection.close()
```

DELETE

```
import psycopg2
# connect to the database
connection = psycopg2.connect(
   host="localhost",
   database="mydatabase",
   user="myuser",
   password="mypassword"
)
# create a cursor
cursor = connection.cursor()
# execute a delete statement
delete_query = "DELETE FROM mytable WHERE id = %s"
record_to_delete = (1,)
cursor.execute(delete_query, record_to_delete)
# commit the transaction
connection.commit()
# close the cursor and connection
cursor.close()
connection.close()
```