Database - Application - python

Ahmad Yoosofan

University of Kashan

Simple Application(I)

```python
1 import sqlite3
2 conn = sqlite3.connect('sp.sqlite')
3 c = conn.cursor()
4 r1 = c.execute('select * from "s";')
5 print(r1)
6 for m1 in r1:
7   print(m1)
8 c.close()
9 conn.close()
```

Cursor(I)

```python
import sqlite3
conn = sqlite3.connect('sp.sqlite')
c1 = conn.cursor()
c2 = conn.cursor()

r1 = c1.execute('select * from s;')
r2 = c2.execute('select * from p;')

print('S')
for m1 in r1:
    print(m1)

print('P')
for m1 in r2:
    print(m1)

c1.close()
c2.close()
conn.close()
```

Cursor(II)

```python
import sqlite3
conn = sqlite3.connect('sp.sqlite')
c = conn.cursor()

r1 = c.execute('select * from s;')

print('S')
for m1 in r1:
    print(m1)

r2 = c.execute('select * from p;')

print('P')
for m1 in r2:
    print(m1)

c.close()
conn.close()
```

Cursor(III)

```
 1 import sqlite3
 2 conn = sqlite3.connect('sp.sqlite')
 3 c = conn.cursor()
 4 r1 = c.execute('select * from s;')
 5 r2 = c.execute('select * from p;')
 6 print('r1: ', type(r1))
 7 print('r2:',  type(r2))
 8 r1 = ( ('p4', 'cog', 'green', 13),
 9         ('p8', 'bolt', 'red', 32)
10      )
11 r2 = ( ('p15', 'screw', 'blue', 76),
12        ( 'p45', 'Nut', 'Red', 27)
13      )
14 print('r1: ', type(r1))
15 print('r2:',  type(r2))
16 print('S')
17 r1 = c.execute('select * from s;')
18 r2 = c.execute('select * from p;')
19 for m1 in r1:
20   print(m1)
21 print('P')
22 for m1 in r2:
23   print(m1)
24 c.close()
25 conn.close()
```

```
 1 python3 sp260.py
 2
 3 r1:  <class 'sqlite3.Cursor'>
 4 r2: <class 'sqlite3.Cursor'>
 5 r1:  <class 'tuple'>
 6 r2: <class 'tuple'>
 7 S
 8 ('P1', 'Nut', 'Red', 12, 'London')
 9 ('P2', 'Bolt', 'Green', 17, 'Paris')
10 ('P3', 'Screw', 'Blue', 17, 'Oslo')
11 ('P4', 'Screw', 'Red', 14, 'London')
12 ('P5', 'Cam', 'Blue', 12, 'Paris')
13 ('P6', 'Cog', 'Red', 19, 'London')
14 P
```

Traverse Fields

```python
import sqlite3
conn = sqlite3.connect('sp.sqlite')
c1 = conn.cursor()
c2 = conn.cursor()

r1 = c1.execute('select * from s;')
r2 = c2.execute('select * from p;')

print('S')
for m1 in r1:
  for k1 in m1:
    print(k1, end=" ;  ")
  print();

print('P')
for m1 in r2:
  print(m1)

c1.close()
c2.close()

conn.close()
```

```
python3 sp280.py

S
S1 ;   Smith ;   20 ;   London ;
S2 ;   Jones ;   10 ;   Paris ;
S3 ;   Blake ;   30 ;   Paris ;
S4 ;   Clark ;   20 ;   London ;
S5 ;   Adams ;   30 ;   Athens ;

S6 ;   Ali ;    40 ;   کاشان ;
P
('P1', 'Nut', 'Red', 12, 'London')
('P2', 'Bolt', 'Green', 17, 'Paris')
('P3', 'Screw', 'Blue', 17, 'Oslo')
('P4', 'Screw', 'Red', 14, 'London')
('P5', 'Cam', 'Blue', 12, 'Paris')
('P6', 'Cog', 'Red', 19, 'London')
```

Fetch

```python
1  import sqlite3
2  conn = sqlite3.connect('sp.sqlite')
3  c1 = conn.cursor()
4  c2 = conn.cursor()
5
6  r1 = c1.execute('select * from s;')
7  r2 = c2.execute('select * from p;')
8
9  print('S')
10 for m1 in r1:
11   print(m1)
12
13 print('P')
14 print(c2.fetchone())
15 print(c2.fetchone())
16 print(r2.fetchone())
17
18 c1.close()
19 c2.close()
20 conn.close()
```

```
1  python3 sp280.py
2
3  S
4  ('S1', 'Smith', 20, 'London')
5  ('S2', 'Jones', 10, 'Paris')
6  ('S3', 'Blake', 30, 'Paris')
7  ('S4', 'Clark', 20, 'London')
8  ('S5', 'Adams', 30, 'Athens')
9  ('S6', 'Ali', 40, 'كاشان')
10 P
11 ('P1', 'Nut', 'Red', 12, 'London')
12 ('P2', 'Bolt', 'Green', 17, 'Paris')
13 ('P3', 'Screw', 'Blue', 17, 'Oslo')
14
```

Manipulate Tables(I)

```python
import sqlite3
conn = sqlite3.connect('sp.sqlite')
c = conn.cursor()
c.execute('''
  insert into p(pn, pname, color, weight, city)
  values('p19','Nut'  ,'Red'  ,12.0,'London')
  ;
  ''')
r1 = c.execute('select * from p;')
for m1 in r1:
  print(m1)
print('before commit')
conn.commit()
print('after commit')
r1 = c.execute('select * from p;')
for m1 in r1:
  print(m1)
c.close()
conn.close()
```

Manipulate Tables(II)

```python
 1 import sqlite3
 2 conn = sqlite3.connect('sp.sqlite')
 3 c1 = conn.cursor()
 4 c2 = conn.cursor()
 5 c1.execute('''
 6   insert into p(pn, pname, color, weight, city)
 7   values('p20','Nut'  ,'Red'  ,12.0,'London')
 8   ;
 9  ''')
10 r1 = c2.execute('select * from p;')
11 for m1 in r1:
12   print(m1)
13 print('before commit')
14 conn.commit()
15 print('after commit')
16 r1 = c2.execute('select * from p;')
17 for m1 in r1:
18   print(m1)
19 c1.close()
20 c2.close()
21 conn.close()
```

Two Connection

```python
import sqlite3
conn = sqlite3.connect('sp.sqlite')
conn1 = sqlite3.connect('sp.sqlite')
c = conn.cursor()
c1 = conn1.cursor()
c.execute('''
  insert into p(pn, pname, color, weight, city)
  values('p22','Nut'  ,'Red'  ,12.0,'London')
  ;
''')
r1 = c1.execute('select * from p;')
for m1 in r1:
  print(m1)
print('before commit')
conn.commit()
print('after commit')
r1 = c1.execute('select * from p;')
for m1 in r1:
  print(m1)
c.close()
c1.close()
conn.close()
```

DELETE

```python
 1 import sqlite3
 2 conn = sqlite3.connect('sp.sqlite')
 3 c = conn.cursor()
 4 c.execute('''delete from p where pn='p19';''')
 5 conn.commit()
 6 r1 = c1.execute('select * from p;')
 7 for m1 in r1:
 8   print(m1)
 9 c.close()
10 conn.close()
```

A program(I)

```python
1  def createTable(c):
2    c.execute('''
3      CREATE TABLE IF NOT EXISTS stocks (
4      date1 char(10),
5      trans char(15),
6      symbol char(10),
7      qty numeric(8,2),
8      price numeric(8,2),
9      primary key(date1)
10   );
11   ''')
12   c.execute('''
13     INSERT INTO stocks VALUES (
14       '2006-01-05'
15       ,'BUY', 'RHAT', 100, 35.14
16     );
17   ''')
18
19 def test2(c):
20   t = ('RAT',)
21   c.execute('''
22     SELECT *
23     FROM stocks
24     WHERE symbol=?
25   ''', t)
```

A program(II)

```python
26   print(c.fetchone())
27   purchases = [
28     ('2006-03-28', 'BUY', 'IBM', 1000, 45.00),
29     ('2006-04-05', 'BUY', 'MSFT', 1000, 72.00),
30     ('2006-04-06', 'SELL', 'IBM', 500, 53.00),
31   ]
32   c.executemany('INSERT INTO stocks VALUES (?,?,?,?,?)', purchases)
33
34 def testDelete(c):
35   c.execute("DELETE FROM stocks WHERE symbol='IBM';")
36   c.execute("select * from stocks");
37   print("آخرین خروجی‌های");
38   print(c.fetchone())
39
40 def testFor(c):
41   for row in c.execute('SELECT * FROM stocks ORDER BY price'):
42     print(row)
43
44 path1 = 'example.db'
45 conn = sqlite3.connect(path1)
46 c = conn.cursor()
47 #createTable(c)
48 #test2(c)
49 testDelete(c)
50 #testFor(c)
51 c.close(); conn.commit() #os.system('rm example.db')
52 if os.path.exists(path1):
53   os.remove(path1)
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="ali",
        password="12", host = '127.0.0.1')
cur = conn.cursor()
cur.execute("select * from s;");
for a in cur.fetchall():
  print(a)
cur.close()
conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="ali",
        password="12", host = '127.0.0.1')
cur = conn.cursor()
cur.execute("select * from s;");
for a in cur.fetchall():
  print('[ ', end = '')
  for m1 in a:
    if type(m1) is str:
      print(m1.strip(), end=', ')
    else:
      print('not str:: ',m1, end=', ')
  print(']')
cur.close()
conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="ali",
           password="12",host='127.0.0.1')
cur = conn.cursor()
#cur.execute("select * from a1;");
cur.execute("""create table a1(
                     mn int primary key,
                     st char(20)
                );
           """)
conn.commit();
cur.close()
conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="ali",
        password="12",host='127.0.0.1')
cur = conn.cursor()
#cur.execute("select * from a1;");
cur.execute("""CREATE TABLE IF NOT EXISTS "a1"(
                "mn" INTEGER PRIMARY KEY,
                "st" VARCHAR(20)
            );
        """)
conn.commit();
cur.close()
conn.close()
```

```python
1  import psycopg
2  conn = psycopg.connect(dbname="sp", user="ali",
3              password="12",host='127.0.0.1')
4  cur = conn.cursor()
5  cur.execute("""ALTER TABLE "a1" ADD "status" INTEGER;""");
6  #input("Enter something: ")
7  conn.commit();
8  cur.execute("""SELECT * FROM "a1";""")
9  cur.close()
10 conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="ali",
        password="12",host='127.0.0.1')
cur = conn.cursor()
conn.commit();
cur.execute("select * from a1;");
for a in cur.fetchall():
  print(a)
cur.close()
conn.close()
```

```python
 1 import psycopg
 2 conn = psycopg.connect(dbname="sp", user="postgres",
 3         password="12",host='127.0.0.1')
 4 cur = conn.cursor()
 5 cur.execute("""SELECT * FROM "s";""");
 6 for a in cur.fetchall():
 7   print(a)
 8 cur.close()
 9 conn.commit()
10 conn.close()
11
12 # psql --username=postgres --dbname=sp  --host=127.0.0.1  --password
13 # INSERT INTO "p"("pn", "pname", "color", "weight", "city") VALUES('p7','Bolt', 'Green', 12.1, 'Shir
14
15 # with psk as (select city from p natural join s)
16 # select * from psk;
17 # CREATE OR REPLACE VIEW "psk" ("city") AS SELECT DISTINCT "p"."city" FROM "s" JOIN "p" ON "s"."city
18 """
19 CREATE OR REPLACE VIEW "psk" ("city") AS
20     SELECT DISTINCT "p"."city"
21     FROM "s" JOIN "p" ON "s"."city" = "p"."city" ;
22 """
```

```python
 1 import psycopg
 2 conn = psycopg.connect(dbname="sp", user="postgres",
 3          password="12",host='127.0.0.1')
 4 cur = conn.cursor()
 5 conn.commit();
 6 cur.execute("select * from a1;");
 7 for a in cur.fetchall():
 8   print(a)
 9 #cur.execute("insert into a1(sno,status) values('s4','alll');")
10 cur.execute("""INSERT INTO "a1"("mn", "st", "status") VALUES
11          (4, 'S4', 15);""")
12 #input('Enter Something:: ')
13 cur.execute("""UPDATE "a1" SET "status" = 40 WHERE "st"='S4';""")
14 cur.execute("select * from a1;");
15 for a in cur.fetchall():
16   print(a)
17 conn.commit()
18
19 cur.close()
20 conn.close()
```

```python
#Error
import psycopg
conn = psycopg.connect(dbname="sp", user="ali", password="12",host='127.0.0.1')
cur = conn.cursor()
cur.execute("select * from a1;");
for a in cur.fetchall():
  print(a)
cur.execute("update a1 set status=10 where sn='s1';")
cur.execute("update a1 set status=20 where sn='s2';")
conn.commit();
for a in cur.fetchall():
  print(a)
cur.close()
conn.close()
```

```
 1 mport psycopg
 2 conn = psycopg.connect(dbname="sp", user="postgres",
 3             password="12",host='127.0.0.1')
 4 cur = conn.cursor()
 5 cur.execute("select * from s;");
 6 for a in cur.fetchall():
 7    print(a)
 8 print()
 9 n1=input('Enter Status for s1 :  ')
10 si=input("Enter si : ");
11 stmt="update s set status="+str(n1)+" where sn='"+si+"';"
12 stmt="update s set status="+str(n1)+" where sn='"+"'S12'"+"';"
13 stmt="update s set status="+str(n1)+" where sn='"+"S12' or \'32\'='32"+"';"
14
15 # update s set status=13 where sn='S12' or '32'='32';
16
17 stmt="update s set status="+str(n1)+" where sn='"+"S12'; insert into p(pn, pname, weight, city) valu
18
19 print(stmt)
20 cur.execute(stmt)
21 #cur.execute("update s set status=20 where sn='s3';")
22 conn.commit();
23 print();
24 cur.execute("select * from s;");
25 for a in cur.fetchall():
26    print(a)
27 cur.close()
28 conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="postgres", password="12",host='127.0.0.1')
cur = conn.cursor()
cur.execute("select * from a1;");
for a in cur.fetchall():
  print(a)
cur.execute("update a1 set status=10 where sno='s1';")
cur.execute("update a1 set status=20 where sno='s3';")
conn.commit();
cur.execute("select * from a1;");
for a in cur.fetchall():
  print(a)
cur.close()
conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="postgres", password="12",host='127.0.0.1')
cur = conn.cursor()
s1=input('Enter a sn: ')
sname1=input('Enter sname ')
stmt1 ="insert into s(sn, sname, status, city) values('";
stmt1+=s1+"','"+sname1
stmt1+="',30,'Athens');"
cur.execute(stmt1)
cur.execute("select * from s;");
for a in cur.fetchall():
    print(a)
cur.close()
conn.commit()
conn.close()
```

```python
 1 import psycopg
 2 conn = psycopg.connect(dbname="sp", user="postgres", password="12",host='127.0.0.1')
 3 cur = conn.cursor()
 4 s1=input('Enter a sn: ')
 5 sname1=input('Enter sname ')
 6 stmt1 ="insert into s(sn, sname, status, city) values('";
 7 stmt1+=s1+"','"+sname1
 8 stmt1+="',30,'Athens');"
 9 cur.execute(stmt1)
10 cur.execute("select * from s;");
11 for a in cur.fetchall():
12   print(a)
13   for l1 in a:
14     #print(l1,type(l1),end=' ');
15     if type(l1) != int and type(l1)!=float and l1!=None:
16       print(l1,len(l1),end=' ');
17   print()
18 cur.close()
19 conn.commit()
20 conn.close()
```

```python
 1 mport psycopg
 2 conn = psycopg.connect(dbname="sp", user="postgres",
 3             password="12",host='127.0.0.1')
 4 cur = conn.cursor()
 5 cur.execute("select * from s;");
 6 for a in cur.fetchall():
 7    print(a)
 8 print()
 9 n1=input('Enter Status for s1 :  ')
10 si=input("Enter si : ");
11 stmt="update s set status="+str(n1)+" where sn='"+si+"';"
12 stmt="update s set status="+str(n1)+" where sn='"+"'S12'"+"';"
13 stmt="update s set status="+str(n1)+" where sn='"+"S12' or \'32\'='32"+"';"
14
15 # update s set status=13 where sn='S12' or '32'='32';
16
17 stmt="update s set status="+str(n1)+" where sn='"+"S12'; insert into p(pn, pname, weight, city) valu
18
19 print(stmt)
20 cur.execute(stmt)
21 #cur.execute("update s set status=20 where sn='s3';")
22 conn.commit();
23 print();
24 cur.execute("select * from s;");
25 for a in cur.fetchall():
26    print(a)
27 cur.close()
28 conn.close()
```

```python
import psycopg
conn = psycopg.connect(dbname="sp", user="postgres",
        password="12",host='127.0.0.1')
cur = conn.cursor()
cur.execute("select sn, avg(qty) from sp group by sn;");
for a in cur.fetchall():
  print(a)
cur.execute("select sn,qty from sp;")
sum=0;
prev='s00'
for a in cur.fetchall():
  if a[0]==prev:
    sum+=a[1];
  else:
    if prev!='s00':
      print(prev, sum)
    sum=a[1]
    prev=a[0]
cur.close()
conn.close()
```

```python
import psycopg
#conn = psycopg.connect(dbname="sp", user="postgres", password="12",host='localhost')
conn = psycopg2.connect(dbname="sp", user="postgres", password="12344321",host='127.0.0.1')
cur = conn.cursor()
#cur.execute("SELECT * from s")
#print(cur.fetchone())
#cur.execute(
# "create view vs2 as select sno,pno,sname from s natural join sp;");
#cur.execute(
# "select * from vs2");
#print(cur.fetchone());
#for a  in cur.fetchall():
#  print(a)
#cur.execute(
#  "insert into s values ('s6','ali',20,null);")
#conn.commit();
cur.execute("select * from s;");
for a in cur.fetchall():
  for l1 in a:
    #print(l1,type(l1),end=' ');
    if type(l1) != int and type(l1)!=float and l1!=None:
      print(l1,len(l1),end=' ');
  print()
cur.execute('''
create table if not exists a2 (
  sn varchar(10),
  sname varchar(25),
  primary key(sn)
);
''')
conn.commit()
cur.execute(
 "insert into a2 values('s1','ali');")
conn.commit()
cur.execute("select * from a1;");
for a in cur.fetchall():
  for l1 in a:
    #print(l1,type(l1),end=' ');
    if type(l1) != int and type(l1)!=float and l1!=None:
      print(l1,len(l1),end=' ');
  print()
cur.close()
conn.close()
```

```python
#https://www.psycopg.org/docs/usage.html
import psycopg
conn = psycopg.connect(dbname="sp", user="postgres",
        password="12",host='127.0.0.1')
cur = conn.cursor()
sql = """
    CREATE TABLE test (
        id serial PRIMARY KEY,
        num integer,
        data varchar);
    """
cur.execute(sql)
sql = "INSERT INTO test (num, data) VALUES (%s, %s)"
cur.execute(sql, (100, "abc'def"))

cur.execute("SELECT * FROM test;")
cur.fetchone()
conn.commit()
cur.close()
conn.close()
```