

Python

SQL 2

pip install sqlalchemy

```
Администратор: C:\Windows\system32\cmd.exe
C:\Users\admin>cd..
C:\Users>cd..
C:\>cd dev
C:\dev>cd python3
C:\dev\python3>cd scripts
C:\dev\python3\Scripts>pip install sqlalchemy
You are using pip version 6.0.8, however version 18.1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
Collecting sqlalchemy
  Downloading https://files.pythonhosted.org/packages/e2/0a/05b7d13618ad41c108a6c2b886af83bf9bb7e35f8951227abb18b1330745/SQLAlchemy-1.2.14.tar.gz (5.7MB)
    100% |#####| 5.7MB 77kB/s
Installing collected packages: sqlalchemy
  Running setup.py install for sqlalchemy
    building 'sqlalchemy.cprocessors' extension
    Microsoft Visual C++ 10.0 is required (Unable to find vcvarsall.bat).
    WARNING: The C extension could not be compiled, speedups are not enabled.
    Failure information, if any, is above.
    Retrying the build without the C extension now.
    #####
    #####
    WARNING: The C extension could not be compiled, speedups are not enabled.
    Plain-Python build succeeded.
    #####
Successfully installed sqlalchemy-1.2.14
C:\dev\python3\Scripts>
```

pip install pymysql

```
Администратор: C:\Windows\system32\cmd.exe
44528f5c21d3f465cabd6c77e60c40fcde24b55a/pymongo-3.7.2-cp34-cp34m-win32.whl (308
kB)
 100% |████████████████████████████████████████| 317kB 6.6MB/s
Installing collected packages: pymongo
Successfully installed pymongo-3.7.2

C:\Users\admin>pip install pymysql
Collecting pymysql
  Using cached https://files.pythonhosted.org/packages/a7/7d/682c4a7da195a678047
c8f1c51bb7682aaedee1dca7547883c3993ca9282/PyMySQL-0.9.2-py2.py3-none-any.whl
Collecting cryptography (from pymysql)
  Downloading https://files.pythonhosted.org/packages/52/6d/3d136e3f926ae8e9667f
0b6c7b4fdeef9ab953fa1812f5c864560fccd89b/cryptography-2.4.2-cp34-cp34m-win32.whl
(1.1MB)
 100% |████████████████████████████████████████| 1.1MB 3.3MB/s
Collecting six>=1.4.1 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/67/4b/141a581104b1f6397bfa
78ac9d43d8ad29a7ca43ea90a2d863fe3056e86a/six-1.11.0-py2.py3-none-any.whl
Collecting asn1crypto>=0.21.0 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/ea/cd/35485615f45f30a51057
6f1a56d1e0a7ad7bd8ab5ed7cdc600ef7cd06222/asn1crypto-0.24.0-py2.py3-none-any.whl
(101kB)
 100% |████████████████████████████████████████| 102kB 3.3MB/s
Collecting cffi!=1.11.3,>=1.7 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/fb/43/bfcb03ed75425dd719c
d335ffd3adcced79d7585cc636635564b1116aad/cffi-1.11.5-cp34-cp34m-win32.whl (154kB)
 100% |████████████████████████████████████████| 163kB 3.3MB/s
Collecting idna>=2.1 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/4b/2a/0276479a4b3cae8b8a8c1
af2f8e4355746a97fab05a372e4a2c6a6b876165/idna-2.7-py2.py3-none-any.whl (58kB)
 100% |████████████████████████████████████████| 61kB 3.9MB/s
Collecting pycparser (from cffi!=1.11.3,>=1.7->cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/68/9e/49196946aee219aead12
90e00d1e7fdeab8567783e83e1b9ab5585e6206a/pycparser-2.19.tar.gz (158kB)
 100% |████████████████████████████████████████| 163kB 3.3MB/s
Installing collected packages: six, asn1crypto, pycparser, cffi, idna, cryptogra
phy, pymysql
Running setup.py install for pycparser ... done
Successfully installed asn1crypto-0.24.0 cffi-1.11.5 cryptography-2.4.2 idna-2.7
pycparser-2.19 pymysql-0.9.2 six-1.11.0
```

Соединение с БД

```
mysql002.py x log.txt x
1 import string
2 import pymysql as MySQLdb
3 #import MySQLdb
4
5 host='localhost'
6 user='root'
7 password='12345'
8 db='test'
9 charset='utf8'
10
```

```
db=MySQLdb.connect(host=host,user=user,password=password,db=db,charset=charset)
cursor=db.cursor()
```

```
cursor.close()
db.close()
```

Проверка версий

```
db=MySQLdb.connect(host=host,user=user,password=password,db=db,charset=charset)
cursor=db.cursor()

# execute SQL query using execute() method.
cursor.execute("SELECT VERSION()")

# Fetch a single row using fetchone() method.
data = cursor.fetchone()
print ("Database version : %s " % data)

cursor.close()
db.close()
```

```
C:\Python34>python mysql004.py
Database version : 5.6.42-log
```

Создание таблиц

```
# Drop table if it already exist using execute() method.
cursor.execute("DROP TABLE IF EXISTS EMPLOYEE")

# Create table as per requirement
sql = """CREATE TABLE EMPLOYEE (
    FIRST_NAME CHAR(20) NOT NULL,
    LAST_NAME CHAR(20),
    AGE INT,
    SEX CHAR(1),
    INCOME FLOAT )"""

cursor.execute(sql)
```

Вставка данных

```
# Prepare SQL query to INSERT a record into the database.
sql = """INSERT INTO EMPLOYEE(FIRST_NAME,
    LAST_NAME, AGE, SEX, INCOME)
    VALUES ('Mac', 'Mohan', 20, 'M', 2000)"""
try:
    # Execute the SQL command
    cursor.execute(sql)
    # Commit your changes in the database
    db.commit()
except:
    # Rollback in case there is any error
    db.rollback()
```

Ввод пароля в БД (плохой способ)

- `user_id = "test123 "`
- `password = "password"`
- `con.execute('insert into Login values("%s", "%s")' % (user_id, password))`


```
def unpack_line(line):
    line = line.replace("'", "")
    els = line.split(";")
    # выделяем имя, емейл, адрес и телефон
    fname = els[0]
    fmail = els[1]
    fadres = els[2]
    ftel = els[3]
    return fname, fmail, fadres, ftel
```

```
for line in lines:
    # если в строке присутствует емейл (определяем по наличию "@")
    if line.find("@") != 0:
        # извлекаем данные из строки
        fname, fmail, fadres, ftel = unpack_line(line)
        # подставляем эти данные в SQL-запрос
        sql = """INSERT INTO contacts(name, mail, adres, tel)
VALUES ('%(name)s', '%(mail)s', '%(adres)s', '%(tel)s')
"""%{"name":fname, "mail":fmail, "adres":fadres, "tel":ftel}
# исполняем SQL-запрос
cursor.execute(sql)
# применяем изменения к базе данных
db.commit()
```

Чтение из БД

- **fetchone()** – выбор одной строки
- **fetchall()** – выбор всех строк
- **rowcount** – число строк к которым был применен execute

```
# Prepare SQL query to INSERT a record into the database.
sql = "SELECT * FROM EMPLOYEE \
      WHERE INCOME > '%d'" % (1000)
try:
    # Execute the SQL command
    cursor.execute(sql)
    # Fetch all the rows in a list of lists.
    results = cursor.fetchall()
    for row in results:
        fname = row[0]
        lname = row[1]
        age = row[2]
        sex = row[3]
        income = row[4]
        # Now print fetched result
        print ("fname = %s,lname = %s,age = %d,sex = %s,income = %d" % \
              (fname, lname, age, sex, income ))
except:
    print ("Error: unable to fetch data")
```

```
C:\Python34>python mysql008.py
fname = Mac,lname = Mohan,age = 20,sex = M,income = 2000
fname = Mac,lname = Mohan,age = 20,sex = M,income = 2000
```

Обновление

```
# Prepare SQL query to UPDATE required records
sql = "UPDATE EMPLOYEE SET AGE = AGE + 1 WHERE SEX = '%c'" % ('M')
try:
    # Execute the SQL command
    cursor.execute(sql)
    # Commit your changes in the database
    db.commit()
except:
    # Rollback in case there is any error
    db.rollback()

# disconnect from server
```

Удаление

```
## Prepare SQL query to DELETE required records
sql = "DELETE FROM EMPLOYEE WHERE AGE > '%d'" % (20)
try:
    # Execute the SQL command
    cursor.execute(sql)
    # Commit your changes in the database
    db.commit()
except:
    # Rollback in case there is any error
    db.rollback()
```

Атрибуты трансляций

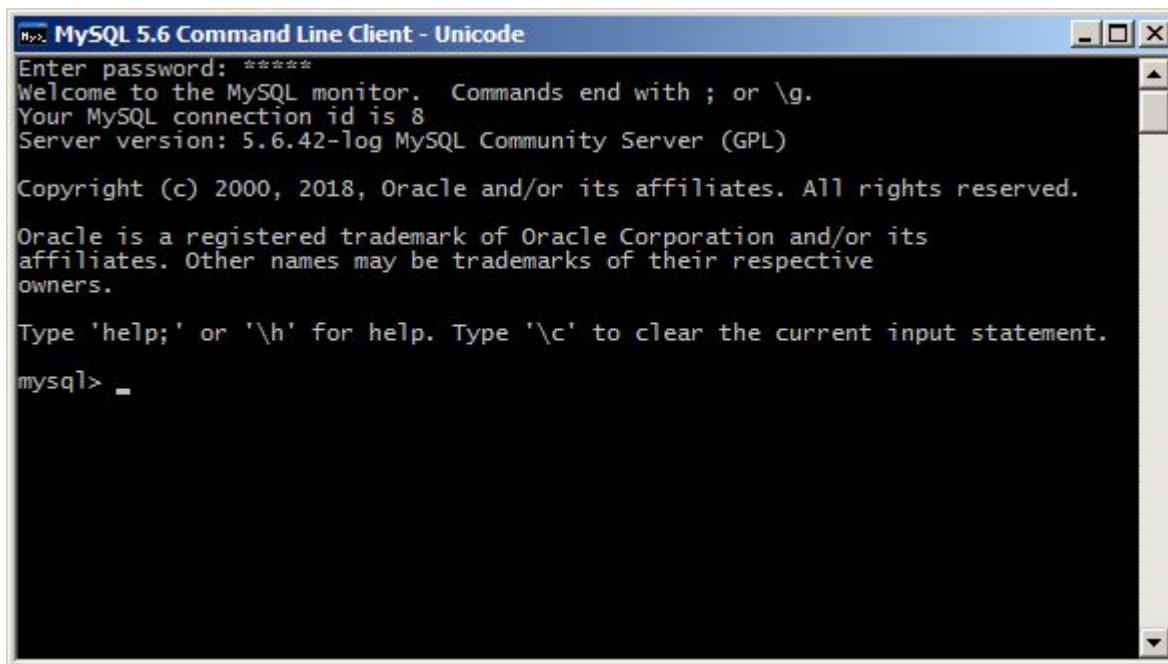
- **Atomicity** - завершение трансляции, в противном случае ничего не происходит
- **Consistency** – должна начинаться и заканчиваться в согласованном состоянии
- **Isolation** - промежуточные результаты трансляции видны за пределами трансляции
- **Durability** - данные сохраняются даже в случае сбоя системы

```
# Prepare SQL query to DELETE required records
sql = "DELETE FROM EMPLOYEE WHERE AGE > '%d'" % (20)
try:
    # Execute the SQL command
    cursor.execute(sql)
    # Commit your changes in the database
    db.commit()
except:
    # Rollback in case there is any error
    db.rollback()
```

- +примеры страницы 100

pip install mysql-connector-python==2.18

```
C:\dev\python3>cd scripts
C:\dev\python3\Scripts>pip install mysql-connector-python
Requirement already satisfied: mysql-connector-python in c:\dev\python3\lib\site-packages (2.1.8)
C:\dev\python3\Scripts>
```



```
MySQL 5.6 Command Line Client - Unicode
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 5.6.42-log MySQL Community Server (GPL)

Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> _
```

```
MySQL 5.6 Command Line Client - Unicode
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 5.6.42-log MySQL Community Server (GPL)

Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE test002
-> ;
Query OK, 1 row affected (0.00 sec)

mysql>
```

SCHEMAS

Filter objects

- ▶ sakila
- ▶ test
- ▶ **test001**
- ▶ test002
- ▶ test_con
- ▶ world

Соединение с БД с connector

```
import mysql.connector
user='root'
password='12345'
host='127.0.0.1'
database='test002'
cnx = mysql.connector.connect(database=database,user=user,password=password,host=host)
cnx.close
```

Использование класса connection

```
#import mysql.connector
from mysql.connector import (connection)
user='root'
password='12345'
host='127.0.0.1'
database='test002'
#cnx = mysql.connector.connect(database=database,user=user,password=password,host=host)
cnx = connection.MySQLConnection(database=database,user=user,password=password,host=host)
cnx.close
```

Использование конфигурации

```
import mysql.connector
config={
    'user': 'root',
    'password': '12345',
    'host': '127.0.0.1',
    'database': 'test002',
}

cnx = mysql.connector.connect(**config)

cnx.close()
```

Проверка на ошибки

```
import mysql.connector
#from mysql.connector import errorcode
from mysql.connector import Error

config={
    'user': 'root',
    'password': '12345',
    'host': '127.0.0.1',
    'database': 'test002',
}

def connect():
    try:
        conn=mysql.connector.connect(**config)
        if conn.is_connected():
            print('Ok')
    except Error as e:
        print(e)
    finally:
        conn.close()

connect()
```

```
C:\dev\python3>python mysql_con004.py
Ok
```

Использование файла конфигурации

```
from configparser import ConfigParser

import mysql.connector
from mysql.connector import Error

def read_db_config(filename='config_sql.ini', section='mysql'):
    parser = ConfigParser()
    parser.read(filename)

    # get section, default to mysql
    db = {}
    if parser.has_section(section):
        items = parser.items(section)
        for item in items:
            db[item[0]] = item[1]
    else:
        raise Exception('{0} not found in the {1} file'.format(section, filename))

    return db

db=read_db_config()
print(db)
```

```
[mysql]
user=root
password=12345
host=localhost
database=test002
```

```
C:\dev\python3>python mysql_con005.py
{'host': 'localhost', 'user': 'root', 'database': 'test002', 'password': '12345'}
```



```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def connect():
    db_config = read_db_config()
    try:
        print('Connecting to MySQL database...')
        conn = MySQLConnection(**db_config)
        if conn.is_connected():
            print('connection established.')
        else:
            print('connection failed.')

    except Error as error:
        print(error)

    finally:
        conn.close()
        print('Connection closed.')

if __name__ == '__main__':
    connect()
```

```
C:\dev\python3>python mysql_con006.py
Connecting to MySQL database...
connection established.
Connection closed.
```

fetchone()

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def query_with_fetchone():
    try:
        dbconfig = read_db_config()
        conn = MySQLConnection(**dbconfig)
        cursor = conn.cursor()
        cursor.execute("SELECT * FROM books")

        row = cursor.fetchone()

        while row is not None:
            print(row)
            row = cursor.fetchone()

    except Error as e:
        print(e)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    query_with_fetchone()
```

fetchall()

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def query_with_fetchall():
    try:
        dbconfig = read_db_config()
        conn = MySQLConnection(**dbconfig)
        cursor = conn.cursor()
        cursor.execute("SELECT * FROM books")
        rows = cursor.fetchall()

        print('Total Row(s):', cursor.rowcount)
        for row in rows:
            print(row)

    except Error as e:
        print(e)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    query_with_fetchall()
```

fetchmany()

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def iter_row(cursor, size=10):
    while True:
        rows = cursor.fetchmany(size)
        if not rows:
            break
        for row in rows:
            yield row

def query_with_fetchmany():
    try:
        dbconfig = read_db_config()
        conn = MySQLConnection(**dbconfig)
        cursor = conn.cursor()

        cursor.execute("SELECT * FROM books")

        for row in iter_row(cursor, 10):
            print(row)

    except Error as e:
        print(e)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    query_with_fetchmany()
```

Вставка одной строки в таблицу

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def insert_book(title, isbn):
    query = "INSERT INTO books(title,isbn) "
           "VALUES(%s,%s)"
    args = (title, isbn)

    try:
        db_config = read_db_config()
        conn = MySQLConnection(**db_config)

        cursor = conn.cursor()
        cursor.execute(query, args)

        if cursor.lastrowid:
            print('last insert id', cursor.lastrowid)
        else:
            print('last insert id not found')

        conn.commit()
    except Error as error:
        print(error)

    finally:
        cursor.close()
        conn.close()

def main():
    insert_book('A Sudden Light', '9781439187036')

if __name__ == '__main__':
    main()
```

Вставка нескольких строк в таблицу

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

INSERT INTO books(title,isbn)
VALUES('Harry Potter And The Order Of The Phoenix', '9780439358071'),
      ('Gone with the Wind', '9780446675536'),
      ('Pride and Prejudice (Modern Library Classics)', '9780679783268');

def insert_books(books):
    query = "INSERT INTO books(title,isbn) "
           "VALUES(%s,%s)"

    try:
        conn = MySQLConnection(**db_config)

        cursor = conn.cursor()
        cursor.executemany(query, books)

        conn.commit()
    except Error as e:
        print('Error:', e)

    finally:
        cursor.close()
        conn.close()

def main():
    books = [('Harry Potter And The Order Of The Phoenix', '9780439358071'),
             ('Gone with the Wind', '9780446675536'),
             ('Pride and Prejudice (Modern Library Classics)', '9780679783268')]
    insert_books(books)

if __name__ == '__main__':
    main()
```

Обновление данных

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def update_book(book_id, title):
    # read database configuration
    db_config = read_db_config()

    # prepare query and data
    query = """ UPDATE books
                SET title = %s
                WHERE id = %s """

    data = (title, book_id)

    try:
        conn = MySQLConnection(**db_config)

        # update book title
        cursor = conn.cursor()
        cursor.execute(query, data)

        # accept the changes
        conn.commit()

    except Error as error:
        print(error)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    update_book(37, 'The Giant on the Hill *** TEST ***')
```


Удаление данных

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def delete_book(book_id):
    db_config = read_db_config()

    query = "DELETE FROM books WHERE id = %s"

    try:
        # connect to the database server
        conn = MySQLConnection(**db_config)

        # execute the query
        cursor = conn.cursor()
        cursor.execute(query, (book_id,))

        # accept the change
        conn.commit()

    except Error as error:
        print(error)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    delete_book(102)
```


Создание хранимых процедур MySQL

- для получения всех книг с информацией об авторе из таблиц **books** и **authors**:

```
DELIMITER $$

USE python_mysql$$

CREATE PROCEDURE find_all()
BEGIN
  SELECT title, isbn, CONCAT(first_name, ' ', last_name) AS author
  FROM books
  INNER JOIN book_author ON book_author.book_id = books.id
  INNER JOIN AUTHORS ON book_author.author_id = authors.id;
END$$

DELIMITER ;
```

find_all() содержит оператор **SELECT** с условием **JOIN**, который извлекает название, **ISBN** и полное имя автора из таблиц **books** и **authors**. Когда мы выполняем хранимую процедуру **find_all()**

```
DELIMITER $$  
CREATE PROCEDURE find_by_isbn(IN p_isbn VARCHAR(13),OUT p_title VARCHAR(255))  
  BEGIN  
    SELECT title INTO p_title FROM books  
    WHERE isbn = p_isbn;  
  END$$  
  
DELIMITER ;
```

find_by_isbn() принимает два параметра:
первый параметр **ISBN** (параметр IN),
второй — заголовок (OUT параметр).
Когда вы передаете в хранимую
процедуру **ISBN**

Вызов хранимых процедур

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def call_find_by_isbn():
    try:
        db_config = read_db_config()
        conn = MySQLConnection(**db_config)
        cursor = conn.cursor()

        args = ['1236400967773', 0]
        result_args = cursor.callproc('find_by_isbn', args)

        print(result_args[1])

    except Error as e:
        print(e)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    call_find_by_isbn()
```

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def call_find_all_sp():
    try:
        db_config = read_db_config()
        conn = MySQLConnection(**db_config)
        cursor = conn.cursor()

        cursor.callproc('find_all')

        # print out the result
        for result in cursor.stored_results():
            print(result.fetchall())

    except Error as e:
        print(e)

    finally:
        cursor.close()
        conn.close()

if __name__ == '__main__':
    call_find_all_sp()
```

Обновление BLOB-данных

```
def read_file(filename):
    with open(filename, 'rb') as f:
        photo = f.read()
    return photo

def update_blob(author_id, filename):
    # read file
    data = read_file(filename)

    # prepare update query and data
    query = "UPDATE authors "
           "SET photo = %s "
           "WHERE id = %s"

    args = (data, author_id)

    db_config = read_db_config()

    try:
        conn = MySQLConnection(**db_config)
        cursor = conn.cursor()
        cursor.execute(query, args)
        conn.commit()
    except Error as e:
        print(e)
    finally:
        cursor.close()
        conn.close()

def main():
    update_blob(144, "picturesgarth_stein.jpg")

if __name__ == '__main__':
    main()
```

Чтение BLOB данных

```
from mysql.connector import MySQLConnection, Error
from mysql_con005 import read_db_config

def write_file(data, filename):
    with open(filename, 'wb') as f:
        f.write(data)

def read_blob(author_id, filename):
    # select photo column of a specific author
    query = "SELECT photo FROM authors WHERE id = %s"

    # read database configuration
    db_config = read_db_config()

    try:
        # query blob data form the authors table
        conn = MySQLConnection(**db_config)
        cursor = conn.cursor()
        cursor.execute(query, (author_id,))
        photo = cursor.fetchone()[0]

        # write blob data into a file
        write_file(photo, filename)

    except Error as e:
        print(e)

    finally:
        cursor.close()
        conn.close()

def main():
    read_blob(144, "outputgarth_stein.jpg")

if __name__ == '__main__':
    main()
```

pip install pymongo

```
Администратор: C:\Windows\system32\cmd.exe
C:\Users\admin>pip install pymongo
Collecting pymongo
  Downloading https://files.pythonhosted.org/packages/8c/0e/2b4aba2421d4fee596d144528f5c21d3f465cabd6c77e60c40fcde24b55a/pymongo-3.7.2-cp34-cp34m-win32.whl (308 kB)
    100% |#####| 317kB 6.6MB/s
Installing collected packages: pymongo
Successfully installed pymongo-3.7.2

C:\Users\admin>pip install pymysql
Collecting pymysql
  Using cached https://files.pythonhosted.org/packages/a7/7d/682c4a7da195a678047c8f1c51bb7682aaedee1dca7547883c3993ca9282/PyMySQL-0.9.2-py2.py3-none-any.whl
Collecting cryptography (from pymysql)
  Downloading https://files.pythonhosted.org/packages/52/6d/3d136e3f926ae8e9667f0b6c7b4fdeef9ab953fa1812f5c864560fccd89b/cryptography-2.4.2-cp34-cp34m-win32.whl (1.1MB)
    100% |#####| 1.1MB 3.3MB/s
Collecting six>=1.4.1 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/67/4b/141a581104b1f6397bfa78ac9d43d8ad29a7ca43ea90a2d863fe3056e86a/six-1.11.0-py2.py3-none-any.whl
Collecting asn1crypto>=0.21.0 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/ea/cd/35485615f45f30a510576f1a56d1e0a7ad7bd8ab5ed7cdc600ef7cd06222/asn1crypto-0.24.0-py2.py3-none-any.whl (101kB)
    100% |#####| 102kB 3.3MB/s
Collecting cffi!=1.11.3,>=1.7 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/fb/43/bfcb03ed75425dd719cd335ffd3adcced79d7585cc636635564b1116aad/cffi-1.11.5-cp34-cp34m-win32.whl (154kB)
    100% |#####| 163kB 3.3MB/s
Collecting idna>=2.1 (from cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/4b/2a/0276479a4b3caeb8a8c1af2f8e4355746a97fab05a372e4a2c6a6b876165/idna-2.7-py2.py3-none-any.whl (58kB)
    100% |#####| 61kB 3.9MB/s
Collecting pycparser (from cffi!=1.11.3,>=1.7->cryptography->pymysql)
  Downloading https://files.pythonhosted.org/packages/68/9e/49196946aee219aead1290e00d1e7fdeab8567783e83e1b9ab5585e6206a/pycparser-2.19.tar.gz (158kB)
    100% |#####| 163kB 3.3MB/s
Installing collected packages: six, asn1crypto, pycparser, cffi, idna, cryptography, pymysql
  Running setup.py install for pycparser ... done
```