

Отчет по INT-1 Оводова Д. В.

Основные функции

Функция для подключения к бд и функция для получения результатов SELECT

```
6 usages
def mysql_connection():
    connection = mysql.connector.connect(
        host='192.168.31.113',
        user='root',
        password='P@ssw0rd',
        database='test'
    )
    return connection

2 usages
def func_check_results(connection):
    cursor = connection.cursor()
    #cursor.execute("ALTER TABLE test DROP INDEX text_index")
    cursor.execute("SELECT * FROM test WHERE text LIKE 'password: %'")
    result = [i[0] for i in cursor.fetchall()]

    cursor.close()
    connection.close()

    result.sort()
    return result
```

Функция для сравнения результатов SELECT с индексацией и без индексации

```
2 usages
def func_check_with_and_without_index(connection):
    cursor = connection.cursor()

    cursor.execute("SELECT * FROM test WHERE text LIKE 'password: %'")
    result_wo_ind = [i[0] for i in cursor.fetchall()]

    cursor.execute("CREATE INDEX text_index ON test (text)")
    cursor.execute("SELECT * FROM test WHERE text LIKE 'password: %'")
    result_wi_ind = [i[0] for i in cursor.fetchall()]
    cursor.execute("ALTER TABLE test DROP INDEX text_index;")

    cursor.close()
    connection.close()

    result_wi_ind.sort()
    result_wo_ind.sort()
    return result_wo_ind == result_wi_ind
```

Функция для сравнения скорости выполнения SELECT с индексацией и без индексации

```

2 usages
def performance(connection):
    cursor = connection.cursor()

    start = datetime.now()
    cursor.execute("SELECT SQL_NO_CACHE * FROM test WHERE text LIKE 'some'")
    no_index_time = datetime.now() - start
    cursor.fetchall()

    cursor.execute("CREATE INDEX text_index ON test (text)")
    start = datetime.now()
    cursor.execute("SELECT SQL_NO_CACHE * FROM test USE INDEX (text_index) WHERE text LIKE 'some'")
    with_index_time = datetime.now() - start
    cursor.fetchall()
    cursor.execute("ALTER TABLE test DROP INDEX text_index")

    cursor.close()
    connection.close()

    return with_index_time < no_index_time

```

Результаты выполнения программы

Результат программы main

```

D:\python\Scripts\python.exe D:\PT\pt2\int1\main.py
['password: 123456783874', 'password: askdfsaakdfas', 'password: askdfsaakdfas', 'password: seckslfdkjljk', 'password: secret']
True
True

Process finished with exit code 0

```

Тесты и их успешное прохождение

```

main.py x
71 for i in range(10000):
72     cursor.execute("INSERT INTO test (text, text2) VALUES ('somesdfsadfasd', 'lsdfk');")
73     connection.commit()
74     cursor.close()
75     connection.close()
76
77
78 def test_results():
79     assert func_check_results(mysql_connection()) == ['password: 123456783874', 'password: askdfsaakdfas', 'password: askdfsaakdfas', 'password: seckslfdkjljk', 'password: secret']
80
81 def test_equation_of_with_and_wo_index():
82     assert func_check_with_and_without_index(mysql_connection()) == True
83
84 def test_performance():
85     assert performance(mysql_connection()) == True
86
87 if __name__ == '__main__':
88     print(func_check_results(mysql_connection()))
89     print(func_check_with_and_without_index(mysql_connection()))
90     print(performance(mysql_connection()))
91
92     #insert(mysql_connection())
93

```

```

601 ms ✓ Tests passed: 3 of 3 tests - 601ms
D:\python\Scripts\python.exe "C:/Users/R/AppData/Local/Programs/PyCharm Community/plugins/python-ce/helpers/pycharm/_jb_pytest_runner.py" --path D:\PT\pt2\int1\main.py
Testing started at 20:27 ...
Launching pytest with arguments D:\PT\pt2\int1\main.py --no-header --no-summary -q in D:\PT\pt2\int1

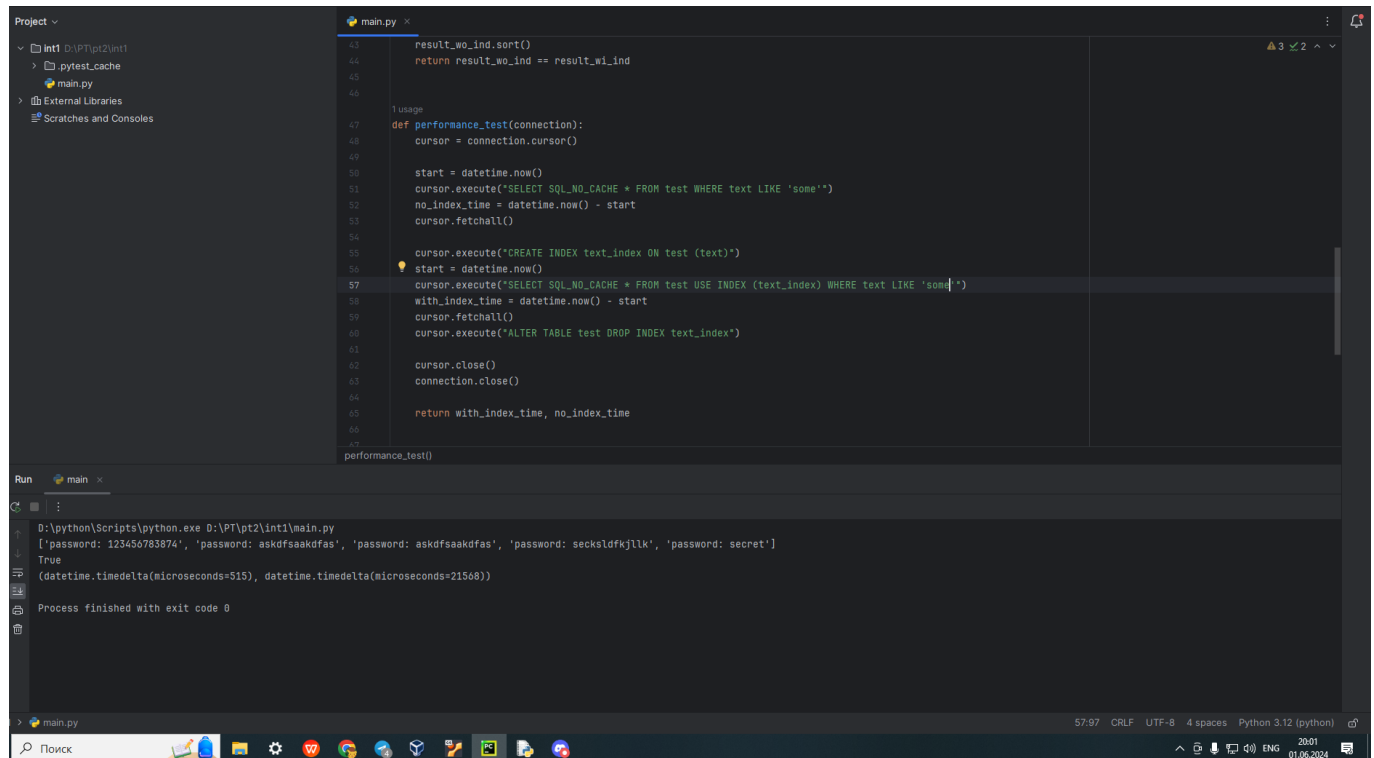
===== test session starts =====
collecting ... collected 3 items

main.py::test_results PASSED [ 33%]
main.py::test_equation_of_with_and_wo_index PASSED [ 66%]
main.py::test_performance PASSED [100%]

```

Примеры регулярных выражений, при которых не работает индексация

При поиске по подстроке индексация работает (слева результат с индексацией, справа без индексации)

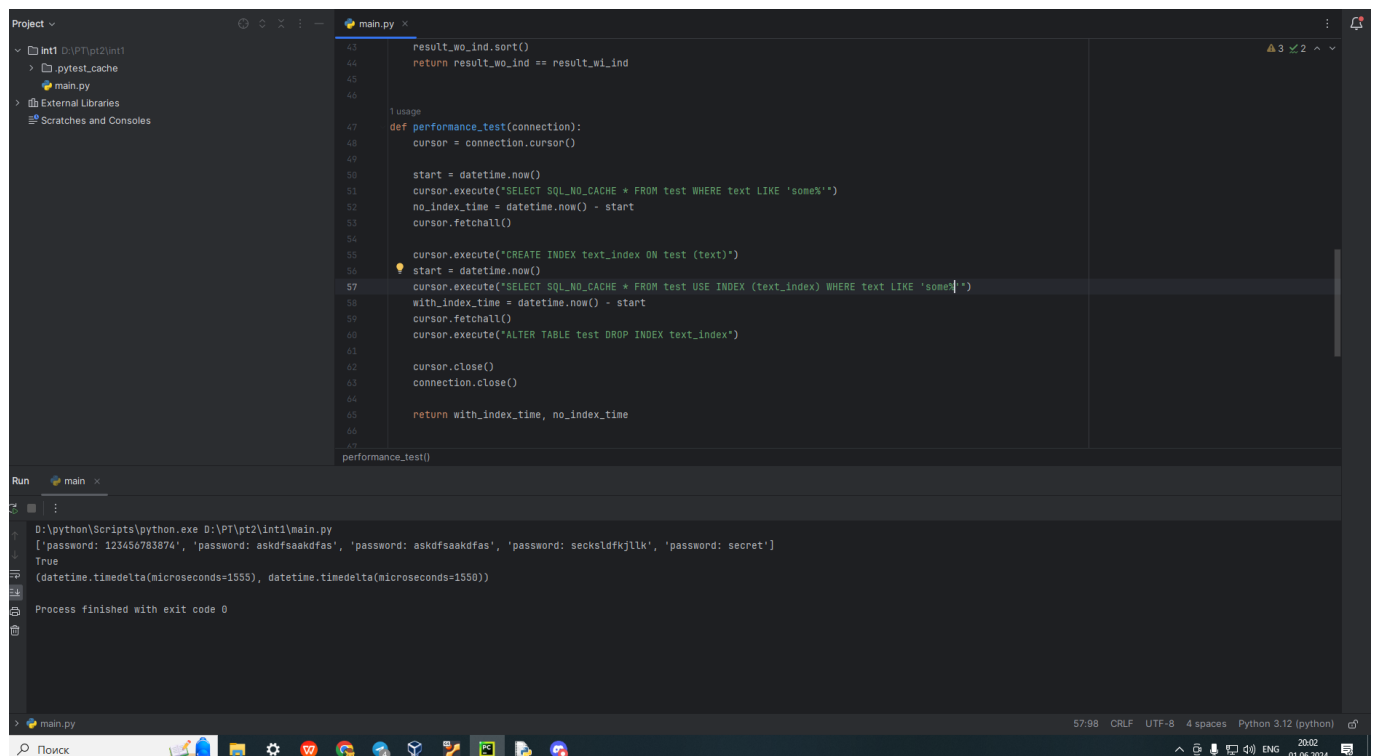


```
43 result_wo_ind.sort()
44 return result_wo_ind == result_wi_ind
45
46
47 !usage
48 def performance_test(connection):
49     cursor = connection.cursor()
50
51     start = datetime.now()
52     cursor.execute("SELECT SQL_NO_CACHE * FROM test WHERE text LIKE 'some%')
53     no_index_time = datetime.now() - start
54     cursor.fetchall()
55
56     cursor.execute("CREATE INDEX text_index ON test (text)")
57     start = datetime.now()
58     cursor.execute("SELECT SQL_NO_CACHE * FROM test USE INDEX (text_index) WHERE text LIKE 'some%')
59     with_index_time = datetime.now() - start
60     cursor.fetchall()
61     cursor.execute("ALTER TABLE test DROP INDEX text_index")
62
63     cursor.close()
64     connection.close()
65
66     return with_index_time, no_index_time
67
68 performance_test()
```

Run main

```
D:\python\Scripts\python.exe D:\PT\pt2\int1\main.py
['password: 123456783874', 'password: askdksaakdfas', 'password: askdksaakdfas', 'password: seckslldfkjllk', 'password: secret']
True
(datetime.timedelta(microseconds=515), datetime.timedelta(microseconds=21568))
Process finished with exit code 0
```

При поиске по началу и концу строки индексация не работает



```
43 result_wo_ind.sort()
44 return result_wo_ind == result_wi_ind
45
46
47 !usage
48 def performance_test(connection):
49     cursor = connection.cursor()
50
51     start = datetime.now()
52     cursor.execute("SELECT SQL_NO_CACHE * FROM test WHERE text LIKE 'some%')
53     no_index_time = datetime.now() - start
54     cursor.fetchall()
55
56     cursor.execute("CREATE INDEX text_index ON test (text)")
57     start = datetime.now()
58     cursor.execute("SELECT SQL_NO_CACHE * FROM test USE INDEX (text_index) WHERE text LIKE 'some%')
59     with_index_time = datetime.now() - start
60     cursor.fetchall()
61     cursor.execute("ALTER TABLE test DROP INDEX text_index")
62
63     cursor.close()
64     connection.close()
65
66     return with_index_time, no_index_time
67
68 performance_test()
```

Run main

```
D:\python\Scripts\python.exe D:\PT\pt2\int1\main.py
['password: 123456783874', 'password: askdksaakdfas', 'password: askdksaakdfas', 'password: seckslldfkjllk', 'password: secret']
True
(datetime.timedelta(microseconds=1550), datetime.timedelta(microseconds=1550))
Process finished with exit code 0
```

The image shows a PyCharm IDE with a Python script named `main.py` and its execution output in the Run console.

main.py

```
43     result_wo_ind.sort()
44     return result_wo_ind == result_wi_ind
45
46
47     1 usage
48     def performance_test(connection):
49         cursor = connection.cursor()
50
51         start = datetime.now()
52         cursor.execute("SELECT SQL_NO_CACHE * FROM test WHERE text LIKE '%some'")
53         no_index_time = datetime.now() - start
54         cursor.fetchall()
55
56         cursor.execute("CREATE INDEX text_index ON test (text)")
57         start = datetime.now()
58         cursor.execute("SELECT SQL_NO_CACHE * FROM test USE INDEX (text_index) WHERE text LIKE '%some'")
59         with_index_time = datetime.now() - start
60         cursor.fetchall()
61         cursor.execute("ALTER TABLE test DROP INDEX text_index")
62
63         cursor.close()
64         connection.close()
65
66         return with_index_time, no_index_time
67
68 performance_test()
```

Run console output:

```
D:\python\Scripts\python.exe D:\PT\pt2\int1\main.py
['password: 123456783874', 'password: askdfsaakdfas', 'password: askdfsaakdfas', 'password: seckslfkjllk', 'password: secret']
True
(datetime.timedelta(microseconds=33692), datetime.timedelta(microseconds=34840))
Process finished with exit code 0
```

At the bottom of the IDE, the status bar shows: 57:94 CRLF UTF-8 4 spaces Python 3.12 (python).