



МИНИСТЕРСТВО НАУКИ
И ВЫСШЕГО ОБРАЗОВАНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное бюджетное
образовательное учреждение высшего образования
«НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»



**НГТУ
НЭТИ | Факультет прикладной
математики и информатики**

Кафедра теоретической и прикладной информатики
Лабораторная работа № 8
по дисциплине «Администрирование информационных систем»

Мониторинг POSTGRES PRO

Бригада 2 ХАЙДАЕВ К.Е.

Группа ПМИ-82 ЗЯБЛИЦЕВА У.П.

Вариант 2

Преподаватели АВРУНЕВ О.Е.

Новосибирск, 2022

1 Установить расширение pg_stat_statements

```
sudo vi /var/lib/pgpro/std-14/data/postgresql.conf (/shared – поиск n – next)  
shared_preload_libraries = 'pg_stat_statements'
```

```
# - shared Library Preloading -  
  
#local_preload_libraries = ''  
#session_preload_libraries = ''  
shared_preload_libraries = 'pg_stat_statements' # (change requires restart)  
pg_stat_statements.max = 10000  
pg_stat_statements.track = all  
#jit_provider = 'llvmjit' # JIT library to use  
  
# - other defaults -
```

```
sudo systemctl restart postgresql-std-14  
create extension pg_stat_statements;  
select pg_stat_statements_reset();  
demo=# create extension pg_stat_statements;  
CREATE EXTENSION  
demo=# select count(*) from pg_stat_statements;  
count  
-----  
25  
(1 row)  
  
demo=# show shared_preload_libraries;  
shared_preload_libraries  
-----  
pg_stat_statements  
(1 row)  
  
demo=# select pg_stat_statements_reset();  
pg_stat_statements_reset  
-----  
(1 row)  
  
demo=# select count(*) from pg_stat_statements;  
count  
-----  
1  
(1 row)
```

\x – для транспонирования таблицы(столбцы как строки записываются и можно читать ...)

2 Запустить выполнение скриптов с sql-запросами

Модификация строк в таблице, интервал между итерациями 1 сек;

Вставка строк в таблицу, интервал между итерациями 1 сек;

500 итераций в цикле.

lab8_1.py

```
import psycopg2  
from time import sleep
```

```
conn = psycopg2.connect("dbname='demo' user='dba' host='127.0.0.1'  
port='5432' password='sladkiyKot'")  
cur = conn.cursor()  
for i in range(3,503):  
    cur.execute("""update bookings.lab7  
        set string1 = 'changed string'  
        where id = %s""", (i,))  
    sleep(1)  
conn.commit()
```

lab8_2.py

```
import psycopg2  
from time import sleep  
conn = psycopg2.connect("dbname='demo' user='dba' host='127.0.0.1'  
port='5432' password='sladkiyKot'")  
cur = conn.cursor()  
for i in range(500):  
    cur.execute("""insert into bookings.lab7(num1,num2,string1)  
        values (0,0,'new string')""")  
    sleep(1)  
conn.commit()
```

Запустим

python3 lab8_1.py & python3 lab8_2.py &

3 После запуска привести информацию из представлений pg_stat_activity и pg_stat_statements для сеансов, соответствующих выполняемым скриптом

```
select * from pg_stat_activity;
```

-[RECORD 5]-----	
datid	16385
datname	demo
pid	7470
leader_pid	
usesysid	16384
username	dba
application_name	
client_addr	127.0.0.1
client_hostname	
client_port	49914
backend_start	2022-03-30 11:02:29.240993+07
xact_start	2022-03-30 11:03:01.409313+07
query_start	2022-03-30 11:03:01.409556+07
state_change	2022-03-30 11:03:01.409927+07
wait_event_type	Client
wait_event	ClientRead
state	idle in transaction
backend_xid	1931
backend_xmin	
query_id	1758111928664284911
query	update bookings.lab7 set string1 = 'changed string' where id = 35
backend_type	client backend
-[RECORD 6]-----	
datid	16385
datname	demo
pid	7471
leader_pid	
usesysid	16384
username	dba
application_name	
client_addr	127.0.0.1
client_hostname	
client_port	49916
backend_start	2022-03-30 11:02:29.241699+07
xact_start	2022-03-30 11:03:01.401764+07
query_start	2022-03-30 11:03:01.402024+07
state_change	2022-03-30 11:03:01.402368+07
wait_event_type	Client
wait_event	ClientRead
state	idle in transaction
backend_xid	1930
backend_xmin	
query_id	440773376023043712
query	insert into bookings.lab7(num1,num2,string1) values (0,0,'new string')
backend_type	client backend

```
select * from pg_stat_statements;
```

-[RECORD 5]-----	
wal_bytes	0
userid	16384
dbid	16385
toplevel	t
queryid	1758111928664284911
query	update bookings.lab7 set string1 = \$1 where id = \$2
plans	0
total_plan_time	0
min_plan_time	0
max_plan_time	0
mean_plan_time	0
stddev_plan_time	0
calls	510
total_exec_time	325.662269999999964
min_exec_time	0.055868
max_exec_time	83.943443
mean_exec_time	0.6385534705882353
stddev_exec_time	4.336270386197604
rows	510
shared_blk_hit	3218
shared_blk_read	24
shared_blk_dirtied	30
shared_blk_written	2
local_blk_hit	0
local_blk_read	0
local_blk_dirtied	0
local_blk_written	0
temp_blk_read	0
temp_blk_written	0
blk_read_time	0
blk_write_time	0
wal_records	1079
wal_fpi	28
wal_bytes	162890

-[RECORD 1]-----	
userid	16384
dbid	16385
toplevel	t
queryid	4407773376023043712
query	insert into bookings.lab7(num1,num2,string1)+ values (\$1,\$2,\$3)
plans	0
total_plan_time	0
min_plan_time	0
max_plan_time	0
mean_plan_time	0
stddev_plan_time	0
calls	232
total_exec_time	59.501299
min_exec_time	0.043238
max_exec_time	32.225742000000004
mean_exec_time	0.25647111637931047
stddev_exec_time	2.1114499068358685
rows	232
shared_blk_hit	1212
shared_blk_read	8
shared_blk_dirtied	12
shared_blk_written	3
local_blk_hit	0
local_blk_read	0
local_blk_dirtied	0
local_blk_written	0
temp_blk_read	0
temp_blk_written	0
blk_read_time	0
blk_write_time	0
wal_records	708
wal_fpi	7
wal_bytes	69991

4 Привести значения конфигурационных параметров, отвечающих за запись журнала сообщений сервера

sudo vi /var/lib/pgpro/std-14/data/postgresql.conf

```
#log_lock_waits = off                                # e.g. '<%u%%%d> '
#log_recovery_conflict_waits = off                  # log lock waits >= deadlock_timeout
#log_parameter_max_length = -1                      # log standby recovery conflict waits
#                                     # >= deadlock_timeout
#                                     # when logging statements, limit logged
#                                     # bind-parameter values to N bytes;
#                                     # -1 means print in full, 0 disables
#log_parameter_max_length_on_error = 0              # when logging an error, limit logged
#                                     # bind-parameter values to N bytes;
#                                     # -1 means print in full, 0 disables
#                                     # none, ddl, mod, all
#log_statement = 'none'                             # log temporary files equal or larger
#log_rePLICATION_commands = off                    # than the specified size in kilobytes;
#log_temp_files = -1                               # -1 disables, 0 logs all temp files
log_timezone = 'Asia/Novosibirsk'
```

5 Включить запись выполняемых операторов, убедиться, что параметр установлен, повторно выполнить сценарии. Проверить в журнале сообщений наличие записей о выполненных запросах, привести их

```

#log_parameter_max_length_on_error = 0      # -1 means print in full, 0 disables
                                              # when logging an error, limit logged
                                              # bind-parameter values to N bytes;
                                              # -1 means print in full, 0 disables
                                              # none, ddl, mod, all
log_statement = 'all'                      # log temporary files equal or larger
#log_replication_commands = off            # than the specified size in kilobytes;
#log_temp_files = -1                      # -1 disables, 0 logs all temp files
log_timezone = 'Asia/Novosibirsk'

```

sudo systemctl restart postgrespro-std-14

python3 lab8_1.py & python3 lab8_2.py &

sudo ls /var/lib/pgpro/std-14/data/log/

```

[dba@centos-7 ~]$ sudo cat /var/lib/pgpro/std-14/data/log/postgresql-2022-03-30_112608.log
2022-03-30 11:26:08.290 +07 [7969] LOG:  starting PostgreSQL 14.2 on x86_64-pc-linux-gnu, compiled by gcc (GCC) 4.8.5 20150623 (Red Hat 4.8.5-44), 64-bit
2022-03-30 11:26:08.292 +07 [7969] LOG:  listening on IPv4 address "0.0.0.0", port 5432
2022-03-30 11:26:08.292 +07 [7969] LOG:  listening on IPv6 address "::", port 5432
2022-03-30 11:26:08.296 +07 [7969] LOG:  listening on Unix socket "/tmp/.s.PGSQL.5432"
2022-03-30 11:26:08.305 +07 [7972] LOG:  database system was shut down at 2022-03-30 11:26:08 +07
2022-03-30 11:26:08.316 +07 [7969] LOG:  database system is ready to accept connections
2022-03-30 11:26:13.022 +07 [7981] LOG:  statement: SELECT pg_catalog.set_config('search_path', '', false);
2022-03-30 11:26:13.026 +07 [7981] LOG:  starting logical decoding for slot "sub_lab6"
2022-03-30 11:26:13.026 +07 [7981] DETAIL:  Streaming transactions committing after 0/3A0345C0, reading WAL from 0/3A032128.
2022-03-30 11:26:13.026 +07 [7981] STATEMENT: START_REPLICATION SLOT "sub_lab6" LOGICAL 0/2D01A910 (proto_version '2', publication_names '"pub_lab6")
2022-03-30 11:26:13.026 +07 [7981] LOG:  logical decoding found consistent point at 0/3A032128
2022-03-30 11:26:13.027 +07 [7981] DETAIL: Logical decoding will begin using saved snapshot.
2022-03-30 11:26:13.027 +07 [7981] STATEMENT: START_REPLICATION SLOT "sub_lab6" LOGICAL 0/2D01A910 (proto_version '2', publication_names '"pub_lab6")
2022-03-30 11:26:15.846 +07 [7986] LOG:  statement: BEGIN
2022-03-30 11:26:15.847 +07 [7986] LOG:  statement: insert into bookings.lab7(num1,num2,string1)
                                         values(0,0,'new string')
2022-03-30 11:26:15.854 +07 [7987] LOG:  statement: BEGIN
2022-03-30 11:26:15.854 +07 [7987] LOG:  statement: update bookings.lab7
                                         set string1 = 'changed string'
                                         where id = 3
2022-03-30 11:26:16.851 +07 [7986] LOG:  statement: COMMIT
2022-03-30 11:26:16.853 +07 [7986] LOG:  statement: BEGIN
2022-03-30 11:26:16.854 +07 [7986] LOG:  statement: insert into bookings.lab7(num1,num2,string1)
                                         values(0,0,'new string')
2022-03-30 11:26:16.858 +07 [7987] LOG:  statement: COMMIT
2022-03-30 11:26:16.859 +07 [7987] LOG:  statement: BEGIN
2022-03-30 11:26:16.859 +07 [7987] LOG:  statement: update bookings.lab7
                                         set string1 = 'changed string'
                                         where id = 4
2022-03-30 11:26:17.858 +07 [7986] LOG:  statement: COMMIT
2022-03-30 11:26:17.860 +07 [7986] LOG:  statement: BEGIN
2022-03-30 11:26:17.861 +07 [7986] LOG:  statement: insert into bookings.lab7(num1,num2,string1)
                                         values(0,0,'new string')
2022-03-30 11:26:17.862 +07 [7987] LOG:  statement: COMMIT
2022-03-30 11:26:17.863 +07 [7987] LOG:  statement: BEGIN
2022-03-30 11:26:17.864 +07 [7987] LOG:  statement: update bookings.lab7
                                         set string1 = 'changed string'
                                         where id = 5
2022-03-30 11:26:18.864 +07 [7986] LOG:  statement: COMMIT
2022-03-30 11:26:18.866 +07 [7986] LOG:  statement: BEGIN
2022-03-30 11:26:18.866 +07 [7986] LOG:  statement: insert into bookings.lab7(num1,num2,string1)
                                         values(0,0,'new string')
2022-03-30 11:26:18.867 +07 [7987] LOG:  statement: COMMIT
2022-03-30 11:26:18.868 +07 [7987] LOG:  statement: BEGIN
2022-03-30 11:26:18.869 +07 [7987] LOG:  statement: update bookings.lab7
                                         set string1 = 'changed string'
                                         where id = 6
2022-03-30 11:26:19.868 +07 [7986] LOG:  statement: COMMIT

```