

Week#4

김우진

2017314712

1. INTRODUCTION

In this week, we learned how to quantify the cost of a single page flush.

2. METHODS

Add some codes to measure the wait time of a single page flush. After running TPC-C with modified MySQL, calculate the average time and the total time it took to perform single page flushes.

3. Performance Evaluation

3.1 Experimental Setup

| Type | Specification |
|--------|---|
| OS | Ubuntu 18.04.65 LTS |
| CPU | Intel(R) Core(TM) i5-10400F CPU @ 2.90GHz |
| Memory | 3994720 kB |
| Kernel | Linux ubuntu 5.4.0-144-genericcat /proc |

3.2 Experimental Results

```
<Raw Results>
[0] sc:514 lt:166392 rt:0 fl:0 avg_rt: 30.5 (5)
[1] sc:57339 lt:109567 rt:0 fl:0 avg_rt: 7.3 (5)
[2] sc:10053 lt:6638 rt:0 fl:0 avg_rt: 5.3 (5)
[3] sc:13882 lt:2809 rt:0 fl:0 avg_rt: 64.9 (80)
[4] sc:0 lt:16690 rt:0 fl:0 avg_rt: 131.6 (20)
in 1200 sec.
```

```
<Raw Results2(sum ver.)>
[0] sc:514 lt:166392 rt:0 fl:0
[1] sc:57339 lt:109568 rt:0 fl:0
[2] sc:10053 lt:6638 rt:0 fl:0
[3] sc:13882 lt:2809 rt:0 fl:0
[4] sc:0 lt:16690 rt:0 fl:0
```

```
<Constraint Check> (all must be [OK])
[transaction percentage]
  Payment: 43.48% (>=43.0%) [OK]
  Order-Status: 4.35% (>= 4.0%) [OK]
  Delivery: 4.35% (>= 4.0%) [OK]
  Stock-Level: 4.35% (>= 4.0%) [OK]
[response time (at least 90% passed)]
  New-Order: 0.31% [NG] *
  Payment: 34.35% [NG] *
  Order-Status: 60.23% [NG] *
  Delivery: 83.17% [NG] *
  Stock-Level: 0.00% [NG] *
```

```
<TpMC>
8345.300 TpMC
```

```
nicholasbear@ubuntu:~/Desktop/tpcc-mysql$ tail /home/nicholasbear/Desktop/test-data/mysql_error.log
single page flush response time: 1
single page flush response time: 0
single page flush response time: 0
single page flush response time: 0
single page flush response time: 1
single page flush response time: 0
single page flush response time: 0
single page flush response time: 0
single page flush response time: 0
single page flush response time: 0
single page flush response time: 0
single page flush response time: 0
nicholasbear@ubuntu:~/Desktop/tpcc-mysql$
```

4. Conclusion

```
nicholasbear@ubuntu:~/Desktop/test-data$ cat mysql_error.log | grep 'response time' | sed 's/[0-9]//g' |
awk '{ sum += $1; cnt++ } END { print sum/cnt }'
1.43297
```

The response time of a single page flush is 1.43297ms, on average.

Single page flush occurred 76902times during the couse of 20 minute experiment.

Based on the information provided, we can calculate the time each user thread spent waiting for single page flushes during the 20 minute experiment.

First, we need to calculate the total time spent on single page flushes:

Total time spent on single page flushes = average response time * number of occurrences

Total time spent on single page flushes = 1.43297ms * 76,902

Total time spent on single page flushes = 110,156.06ms

Next, we can calculate the time each user thread spent waiting for single page flushes:

Time per user thread = total time spent on single page flushes / number of user threads

Time per user thread = 110,156.06ms / 8

Time per user thread = 13,769.51ms

Therefore, each user thread waited for approximately 13.77 seconds (13,769.51ms converted to seconds) for a single page flush to be finished during the 20 minute experiment.