

W14

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1. INTRODUCTION

This week you will learn how to configure checkpoint on SQLite database engine using androbench.

2. METHODS

1. Run androbench.sql for four values:
 - Change value of wal_autocheckpoint: 1, 2, 4, 8, and 16
2. Observe how runtime changes
 - Record the run time of androbench
3. Present experimental results
4. Analyze the results
 - The wal_autocheckpoint value determines the ~ when using WAL for journaling in SQLite.
 - hint. Invoking checkpoint frequently can cause the performance degradation due to ~.

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

```
nicholasbear@ubuntu:~/Desktop/sqlite-src-3360000/build$ time ./sqlite3 androben
ch.db < androbench.sql &> /dev/null

real    0m2.435s
user    0m0.021s
sys     0m0.993s
```

Wal_autocheckpoint = 1

```
nicholasbear@ubuntu:~/Desktop/sqlite-src-3360000/build$ time ./sqlite3 androben
h.db < androbench.sql &> /dev/null

real    0m2.139s
user    0m0.024s
sys     0m1.077s
```

Wal_autocheckpoint = 2

```
nicholasbear@ubuntu:~/Desktop/sqlite-src-3360000/build$ time ./sqlite3 androben
h.db < androbench.sql &> /dev/null

real    0m1.980s
user    0m0.039s
sys     0m1.071s
```

Wal_autocheckpoint = 4

```
nicholasbear@ubuntu:~/Desktop/sqlite-src-3360000/build$ time ./sqlite3 androben
h.db < androbench.sql &> /dev/null

real    0m1.923s
user    0m0.025s
sys     0m0.996s
```

Wal_autocheckpoint = 8

```
nicholasbear@ubuntu:~/Desktop/sqlite-src-3360000/build$ time ./sqlite3 androben
h.db < androbench.sql &> /dev/null

real    0m1.945s
user    0m0.015s
sys     0m1.058s
```

Wal_autocheckpoint = 16

```
nicholasbear@ubuntu:~/Desktop/sqlite-src-3360000/build$ time ./sqlite3 androben
h.db < androbench.sql &> /dev/null

real    0m1.933s
user    0m0.029s
sys     0m0.990s
```

4. Conclusion

The wal_autocheckpoint value determines the frequency of automatic checkpoints when using WAL for journaling in SQLite.

hint. Invoking checkpoint frequently can cause the performance degradation due to increased disk I/O operations and potential contention for the database file.