

PENGUJIAN ANTARA WINDOW WSL UBUNTU – LINUX UBUNTU

1. PENGUJIAN WINDOW WSL (UBUNTU)

1.1 CPU Benchmark

1.1.1 jalankan sysbench cpu run

```
lenovo@L24CIP:~$ sysbench cpu run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Prime numbers limit: 10000
Initializing worker threads...

Threads started!

CPU speed:
events per second: 2203.60

General statistics:
total time: 10.0008s
total number of events: 22042

Latency (ms):
min: 0.40
avg: 0.45
max: 10.55
95th percentile: 0.55
sum: 9978.06

Threads fairness:
events (avg/stddev): 22042.0000/0.00
execution time (avg/stddev): 9.9781/0.00
```

1.2.1 jalankan sysbench cpu --cpu-max-prime=20000 --threads=4 --time=30 run

```
lenovo@L24CIP:~$ sysbench cpu --cpu-max-prime=20000 --threads=4
--time=30 run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 4
Initializing random number generator from current time

Prime numbers limit: 20000
Initializing worker threads...

Threads started!

CPU speed:
events per second: 2279.11

General statistics:
total time: 30.0075s
total number of events: 68414

Latency (ms):
min: 1.28
avg: 1.75
max: 13.09
95th percentile: 2.48
sum: 119909.17

Threads fairness:
events (avg/stddev): 17103.5000/91.50
execution time (avg/stddev): 29.9773/0.00
```

1.2 Memory Benchmark (RAM)

1.1.1 jalankan sysbench memory run

```
lenovo@L24CIP:~$ sysbench memory run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Running memory speed test with the following options:
block size: 1KiB
total size: 102400MiB
operation: write
scope: global

Initializing worker threads...

Threads started!

Total operations: 33450374 (3344216.49 per second)
32666.38 MiB transferred (3265.84 MiB/sec)

General statistics:
      total time:          10.0002s
      total number of events: 33450374

Latency (ms):
      min:                 0.00
      avg:                 0.00
      max:                11.24
      95th percentile:     0.00
      sum:                3922.82

Threads fairness:
      events (avg/stddev): 33450374.0000/0.00
      execution time (avg/stddev): 3.9228/0.00
```

1.2 File I/O Benchmark

1.2.1 jalankan sysbench fileio --file-total-size=2G prepare

```
lenovo@L24CIP:~$ sysbench fileio --file-total-size=2G prepare
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

128 files, 16384Kb each, 2048Mb total
Creating files for the test...
Extra file open flags: (none)
Reusing existing file test_file.0
Reusing existing file test_file.1
Reusing existing file test_file.2
Reusing existing file test_file.3
Reusing existing file test_file.4
Creating file test_file.5
```

```
lenovo@L24CIP:~$ sysbench fileio --file-total-size=2G prepare
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

128 files, 16384Kb each, 2048Mb total
Creating files for the test...
Extra file open flags: (none)
Reusing existing file test_file.0
Reusing existing file test_file.1
Reusing existing file test_file.2
Reusing existing file test_file.3
Reusing existing file test_file.4
Creating file test_file.5
```

1.3.2 jalankan benchmark disk sysbench fileio - -file-test-mode=rndrw run

```
Lenovo@L24CIP:~$ sysbench fileio --file-test-mode=rndrw run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Extra file open flags: (none)
128 files, 16MiB each
2GiB total file size
Block size 16KiB
Number of IO requests: 0
Read/Write ratio for combined random IO test: 1.50
Periodic FSYNC enabled, calling fsync() each 100 requests.
Calling sync() at the end of test, Enabled.
Using synchronous I/O mode
Doing random r/w test
Initializing worker threads...

Threads started!

File operations:
  reads/s:           565.78
  writes/s:          377.19
  fsyncs/s:          1209.88

Throughput:
  read, MiB/s:       8.84
  written, MiB/s:    5.89

General statistics:
  total time:        10.0710s
  total number of events: 21561

Latency (ms):
  min:               0.01
  avg:               0.46
  max:               8.05
  95th percentile:   0.87
  sum:              9956.19

Threads fairness:
  events (avg/stddev): 21561.0000/0.00
  execution time (avg/stddev): 9.9562/0.00
```

1.3.3 jalankan sysbench fileio cleanup untuk membersihkan file

```
NO BYTES WRITTEN.
Lenovo@L24CIP:~$ sysbench fileio cleanup
```

2. PENGUJIAN LINUX UBUNTU

1.4 CPU Benchmark

1.4.3 jalankan sysbench cpu run

```
server@Rifa-VirtualBox:~$ sysbench --version
sysbench 1.0.20
server@Rifa-VirtualBox:~$ sysbench cpu run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Prime numbers limit: 10000

Initializing worker threads...

Threads started!

CPU speed:
  events per second: 1212.02

General statistics:
  total time:          10.0003s
  total number of events: 12122

Latency (ms):
  min:                 0.44
  avg:                 0.82
  max:                62.70
  95th percentile:    4.10
  sum:                9976.88

Threads fairness:
  events (avg/stddev): 12122.0000/0.00
  execution time (avg/stddev): 9.9769/0.00
```

1.4.4 jalankan sysbench cpu - -cpu-max-prime=20000 - -threads=4 - -time=30 run

```
root@jellyfish-Rifa:/home/server# sysbench cpu --cpu-max-prime=20000 --threads=4 --time=30 run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 4
Initializing random number generator from current time

Prime numbers limit: 20000

Initializing worker threads...
Threads started!

CPU speed:
  events per second: 461.72

General statistics:
  total time:          30.00063s
  total number of events: 13855

Latency (ms):
  min:                 1.19
  avg:                 8.65
  max:                128.17
  95th percentile:    46.63
  sum:                119816.00

Threads fairness:
  events (avg/stddev): 3463.7500/2.68
  execution time (avg/stddev): 29.9540/0.02
```

1.5 Memory Benchmark (RAM)

1.5.3 jalankan sysbench memory run

```
root@jellyfish-Rifa:/home/server# sysbench memory run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Running memory speed test with the following options:
  block size: 1KiB
  total size: 102400MiB
  operation: write
  scope: global

Initializing worker threads...

Threads started!

Total operations: 17421144 (1741534.60 per second)
17012.84 MiB transferred (1700.72 MiB/sec)

General statistics:
  total time:          10.0022s
  total number of events: 17421144

Latency (ms):
  min:                 0.00
  avg:                 0.00
  max:                24.79
  95th percentile:    0.00
  sum:                4238.99

Threads fairness:
  events (avg/stddev): 17421144.0000/0.00
  execution time (avg/stddev): 4.2390/0.00
```

1.6 File I/O Benchmark

1.6.3 jalankan sysbench fileio --file-total-size=2G prepare

```
root@jellyfish-Rifa:/home/server# sysbench fileio --file-total-size=2G prepare
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

128 files, 16384Kb each, 2048MiB total
Creating files for the test...
Extra file open flags: (none)
Reusing existing file test_file.0
Reusing existing file test_file.1
Reusing existing file test_file.2
Reusing existing file test_file.3
Reusing existing file test_file.4
Creating file test_file.5
Creating file test_file.6
Creating file test_file.7

Creating file test_file.123
Creating file test_file.124
Creating file test_file.125
Creating file test_file.126
Creating file test_file.127
2063597568 bytes written in 35.58 seconds (55.32 MiB/sec).
```

1.6.4 jalankan sysbench fileio - -file - -test - -mode=rndrw run

```

root@jellyfish-Rifa:/home/server# sysbench fileio --file-test-mode=rndrw run
sysbench 1.0.20 (using system LuaJIT 2.1.0-beta3)

Running the test with following options:
Number of threads: 1
Initializing random number generator from current time

Extra file open flags: (none)
128 files, 16MiB each
2GiB total file size
Block size 16KiB
Number of IO requests: 0
Read/Write ratio for combined random IO test: 1.50
Periodic FSYNC enabled, calling fsync() each 100 requests.
Calling fsync() at the end of test, Enabled.
Using synchronous I/O mode
Doing random r/w test
Initializing worker threads...

Threads started!

File operations:
  reads/s:           110.01
  writes/s:          73.34
  fsyncs/s:          234.79

Throughput:
  read, MiB/s:       1.72
  written, MiB/s:    1.15

General statistics:
  total time:        10.3612s
  total number of events: 4205

Latency (ms):
  min:                0.01
  avg:                2.38
  max:                39.05
  95th percentile:   5.77
  sum:                9990.95

Threads fairness:
  events (avg/stddev):   4205.0000/0.00
  execution time (avg/stddev): 9.9909/0.00

```

1.6.5 jalankan sysbench fileio cleanup untuk membersihkan file

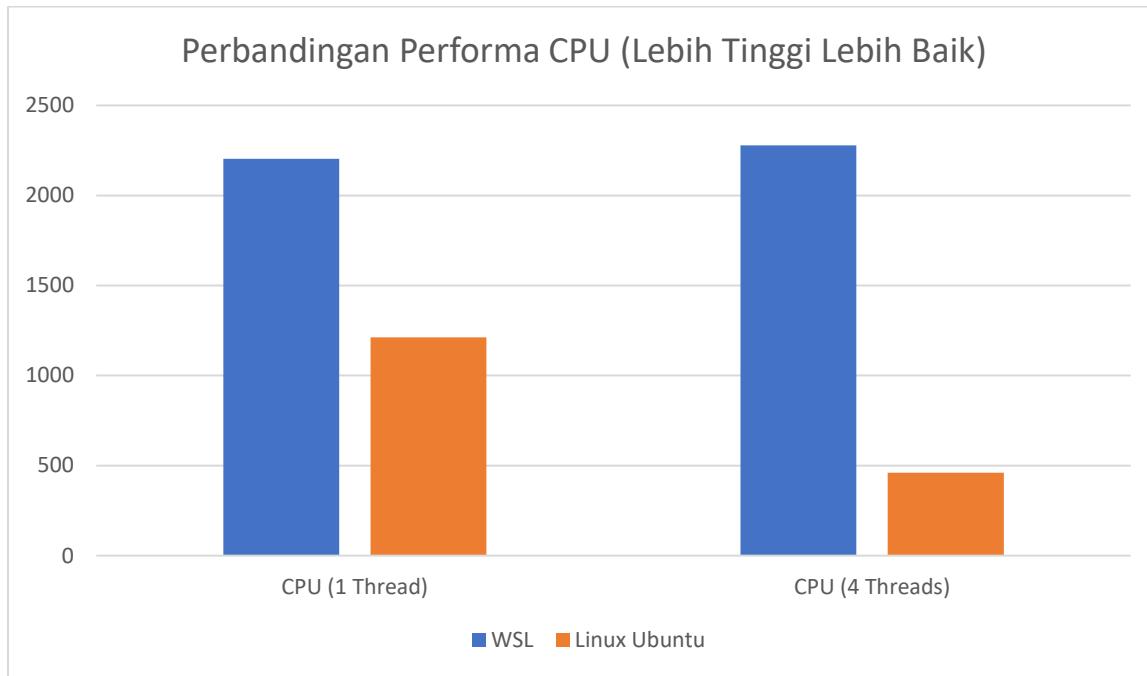
	<code>root@jellyfish-Rifa:/home/server# sysbench fileio cleanup</code>	
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Tabel dan Grafik Perbandingan

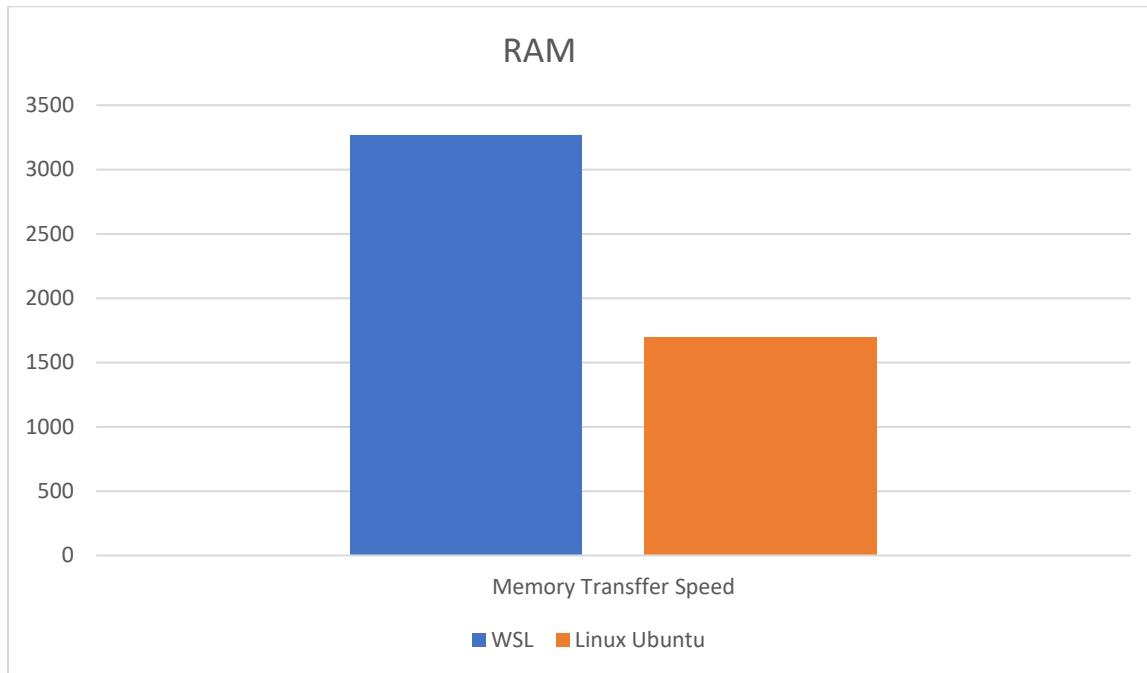
- Tabel Perbandingan Hasil Pengujian

Parameter Pengujian	WSL (Ubuntu)	Linux Ubuntu Native	Satuan
CPU (1 Thread)	2203.60	1212.02	events/sec
CPU (4 Threads)	2279.11	461.72	events/sec
Memory (RAM)	3265.84	1700.72	MiB/sec
Disk I/O (Read)	8.84	1.72	MiB/sec
Disk I/O (Write)	5.89	1.15	MiB/sec

- **Grafik 1 : Performa CPU**



- **Grafik 2 : Performa RAM (Memory Transfer)**



- **Grafik 3 : Disk I/O (Kecepatan Baca/Tulis Disk)**



- **Analisis Singkat**

Berdasarkan grafik di atas, terlihat bahwa pada lingkungan pengujian ini, Windows WSL memiliki performa yang lebih unggul dibandingkan Linux Ubuntu (VirtualBox) di semua sektor (CPU, RAM, dan Disk). Hal ini terlihat signifikan pada pengujian CPU Multi-thread dan kecepatan Disk I/O, di mana WSL mampu memproses event dan data jauh lebih cepat.