

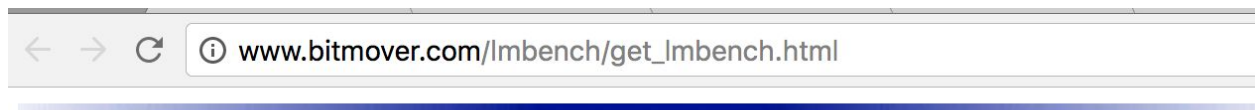
CSE2005L - Operating Systems Lab

L1 , L2 Cache Benchmarking

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Download the compressed file of LMBench3



## LMbench - Tools for performance analysis

### How do I get LMbench?

Download [LMbench version 2](#) or [LMbench version 3](#).



**Download file from above website**

```
wget http://www.bitmover.com/lmbench/lmbench3.tar.gz
```

**Extract the compressed tar.gz file**

```
tar -xvzf lmbench3.tar.gz
```

**Once extracted**

```
root@oslab-15bce1097:~/lmbench3# apt-get install build-essential
```

```
root@oslab-15bce1097:~/lmbench3# make
```

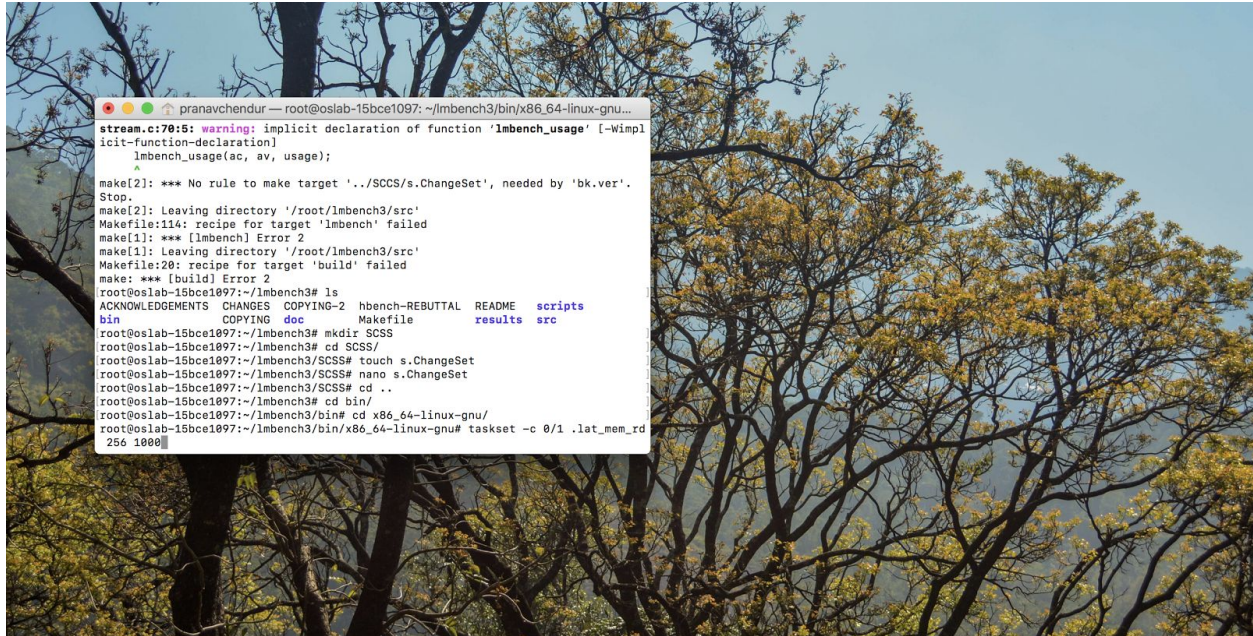
```
root@oslab-15bce1097:~/lmbench3# mkdir SCSS
```

```
root@oslab-15bce1097:~/lmbench3# cd SCSS/
```

```
root@oslab-15bce1097:~/lmbench3/SCSS# touch s.ChangeSet
```

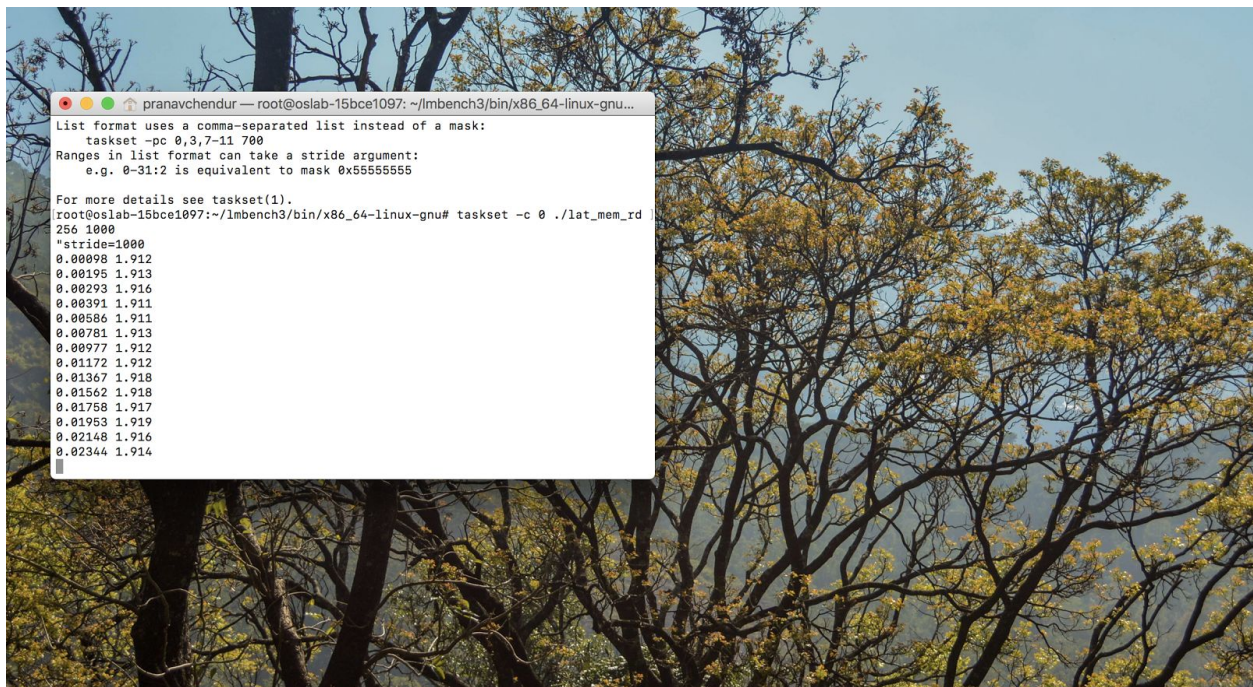
```
root@oslab-15bce1097:~/lmbench3/SCSS# nano s.ChangeSet
```

```
root@oslab-15bce1097:~/lmbench3/SCSS# cd ..
root@oslab-15bce1097:~/lmbench3# cd bin/
root@oslab-15bce1097:~/lmbench3/bin# cd x86_64-linux-gnu/
root@oslab-15bce1097:~/lmbench3/bin/x86_64-linux-gnu# taskset -c 0/1 .lat_mem_rd 256 1000
```

A terminal window titled 'pranavchendur' showing the compilation of lmbench3. The window is overlaid on a background image of trees with yellow leaves. The terminal output shows several errors: a warning about an implicit declaration of 'lmbench\_usage', a 'No rule to make target' error for 'SCSS/s.ChangeSet', and a 'recipe for target' error for 'build'. The user then runs 'ls' showing the directory contents, and finally runs the benchmark command 'taskset -c 0/1 .lat\_mem\_rd 256 1000'.

```
stream.c:70:5: warning: implicit declaration of function 'lmbench_usage' [-Wimplicit-function-declaration]
    lmbench_usage(ac, av, usage);
    ^
make[2]: *** No rule to make target '../SCSS/s.ChangeSet', needed by 'bk.ver'.
Stop.
make[2]: Leaving directory '/root/lmbench3/src'
Makefile:114: recipe for target 'lmbench' failed
make[1]: *** [lmbench] Error 2
make[1]: Leaving directory '/root/lmbench3/src'
Makefile:20: recipe for target 'build' failed
make: *** [build] Error 2
root@oslab-15bce1097:~/lmbench3# ls
ACKNOWLEDGEMENTS  CHANGES  COPYING-2  hbench-REBUTTAL  README  scripts
bin                COPYING    doc         Makefile         results  src
root@oslab-15bce1097:~/lmbench3# mkdir SCSS
root@oslab-15bce1097:~/lmbench3# cd SCSS/
root@oslab-15bce1097:~/lmbench3/SCSS# touch s.ChangeSet
root@oslab-15bce1097:~/lmbench3/SCSS# nano s.ChangeSet
root@oslab-15bce1097:~/lmbench3/SCSS# cd ..
root@oslab-15bce1097:~/lmbench3# cd bin/
root@oslab-15bce1097:~/lmbench3/bin# cd x86_64-linux-gnu/
root@oslab-15bce1097:~/lmbench3/bin/x86_64-linux-gnu# taskset -c 0/1 .lat_mem_rd
256 1000
```

## Benchmark Running

A terminal window titled 'pranavchendur' showing the execution of the benchmark. The window is overlaid on a background image of trees with yellow leaves. The terminal output shows instructions on how to use the 'taskset' command, followed by the execution of the benchmark command 'taskset -c 0 ./lat\_mem\_rd 256 1000'. The results are displayed as a list of 20 pairs of numbers, representing the benchmark's performance over time.

```
List format uses a comma-separated list instead of a mask:
taskset -pc 0,3,7-11 700
Ranges in list format can take a stride argument:
e.g. 0-31:2 is equivalent to mask 0x55555555

For more details see taskset(1).
root@oslab-15bce1097:~/lmbench3/bin/x86_64-linux-gnu# taskset -c 0 ./lat_mem_rd
256 1000
"stride=1000
0.00098 1.912
0.00195 1.913
0.00293 1.916
0.00391 1.911
0.00586 1.911
0.00781 1.913
0.00977 1.912
0.01172 1.912
0.01367 1.918
0.01562 1.918
0.01758 1.917
0.01953 1.919
0.02148 1.916
0.02344 1.914
```

## Running GNUPlot on captured data

```
1 # Scale font and line width (dpi) by changing the size! It will always display stretched.
2 set terminal svg size 400,300 enhanced fname 'arial' fsize 10 butt solid
3 set output 'out.svg'
4
5 plot "data.txt"
6
```

We arrive at the following graph

