Benchmarking - Project Manual

Step 1: Unzip the Prog1_Prakash_Pavithra.zip

Contains a subfolder **src** which further includes the following folders where all the java files and the scripts are present

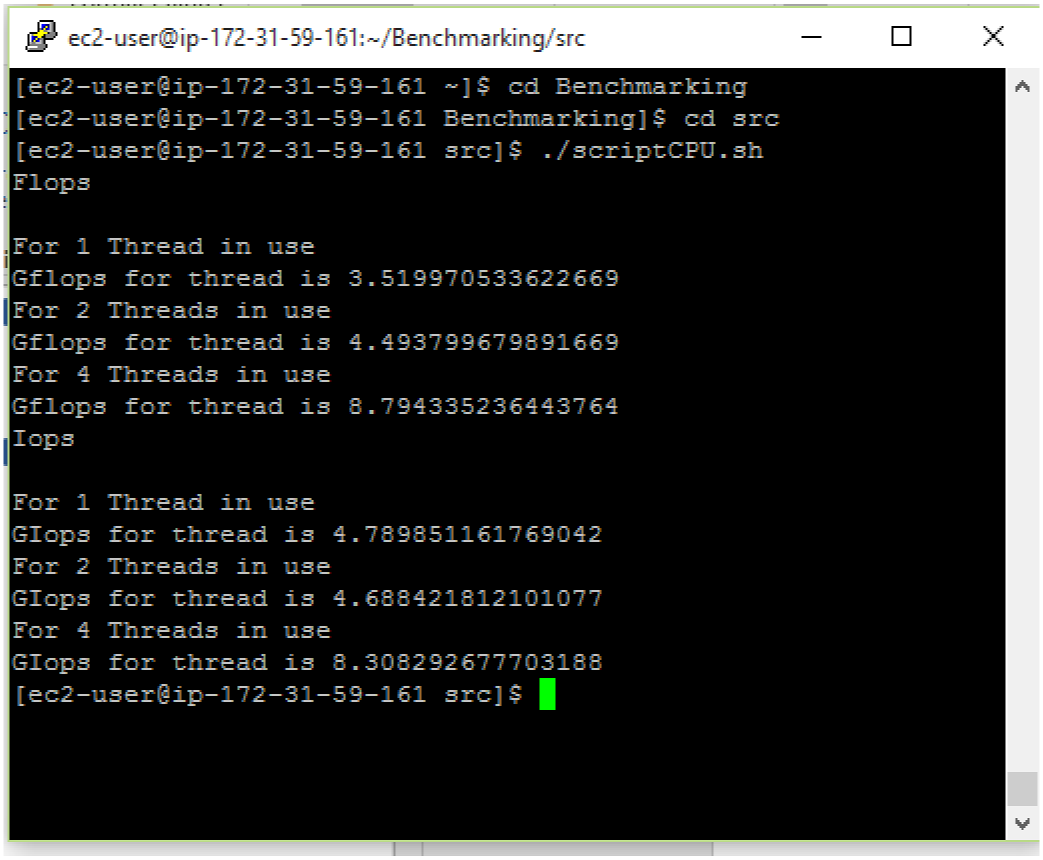
- CPU
- Disk
- Memory

To run the programs first navigate to **src** using the command - cd src

Step 2: Run the script scriptCPU to run the CPU experiment (Experiment 1) using the following command

./scriptCPU.sh

OUTPUT



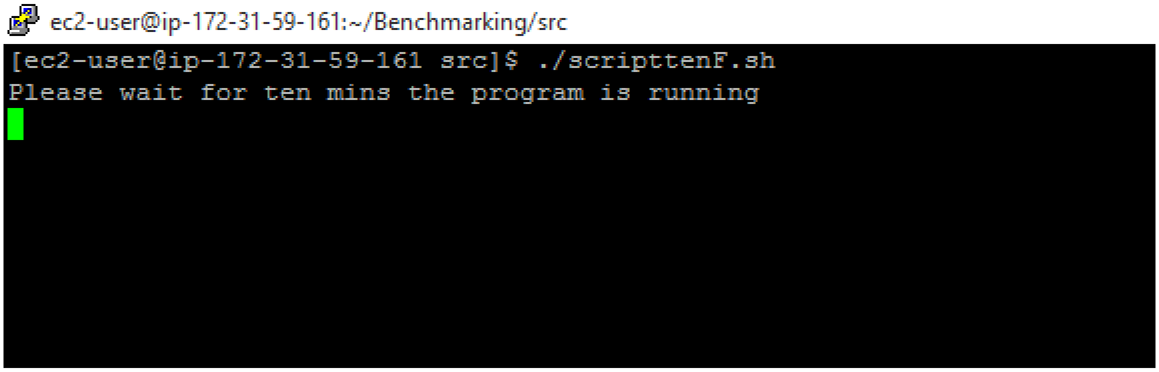
```
[ec2-user@ip-172-31-59-161 ~]$ cd Benchmarking
[ec2-user@ip-172-31-59-161 Benchmarking]$ cd src
[ec2-user@ip-172-31-59-161 src]$ ./scriptCPU.sh
Flops

For 1 Thread in use
Gflops for thread is 3.519970533622669
For 2 Threads in use
Gflops for thread is 4.493799679891669
For 4 Threads in use
Gflops for thread is 8.794335236443764
Iops

For 1 Thread in use
GIops for thread is 4.789851161769042
For 2 Threads in use
GIops for thread is 4.688421812101077
For 4 Threads in use
GIops for thread is 8.308292677703188
[ec2-user@ip-172-31-59-161 src]$
```

Step 3: Run the script scripttenF to run the CPU Experiment2(Long experiment can be done at the end) using the following command

./scripttenF.sh

It takes ten minutes to return the prompt as the scripts runs the program for 10 minutes

OUTPUT



```
[ec2-user@ip-172-31-59-161 src]$ ./scripttenF.sh
Please wait for ten mins the program is running
```

The excel file (scripttenF.xlsx) is present in the Prog1_Prakash_Pavithra.zip folder

Note:

To change the permission of the file if denied use the following command

chmod 777 ./scripttenF.sh

Once the ten mins is done you can open the file tenF.txt in the folder where the program in the src folder

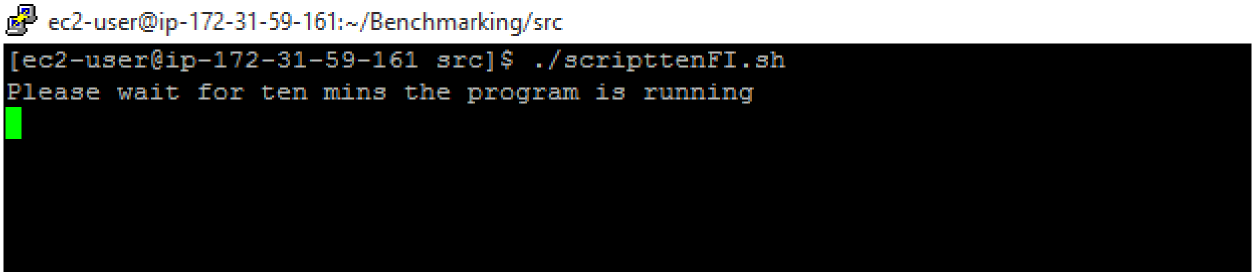
600 values are entered into the file tenF.txt, each time one runs the ./scripttenF.sh and waits for ten minutes, the values will append i.e next 600 values will be entered having 1200 values now.

Step 4: Run the script scripttenFI to run the CPU Experiment2(Long experiment can be done at the end) using the following command

./scripttenFI.sh

It takes ten minutes to return the prompt as the scripts runs the program for 10 minutes

OUTPUT



```
[ec2-user@ip-172-31-59-161 src]$ ./scripttenFI.sh
Please wait for ten mins the program is running
```

The excel file (scripttenFI.xlsx) is present in the Prog1_Prakash_Pavithra.zip folder

Note:

To change the permission of the file if denied use the following command *chmod 777 ./scripttenFI.sh*

Once the ten mins is done you can open the file tenFI.txt in the folder where the program is src folder

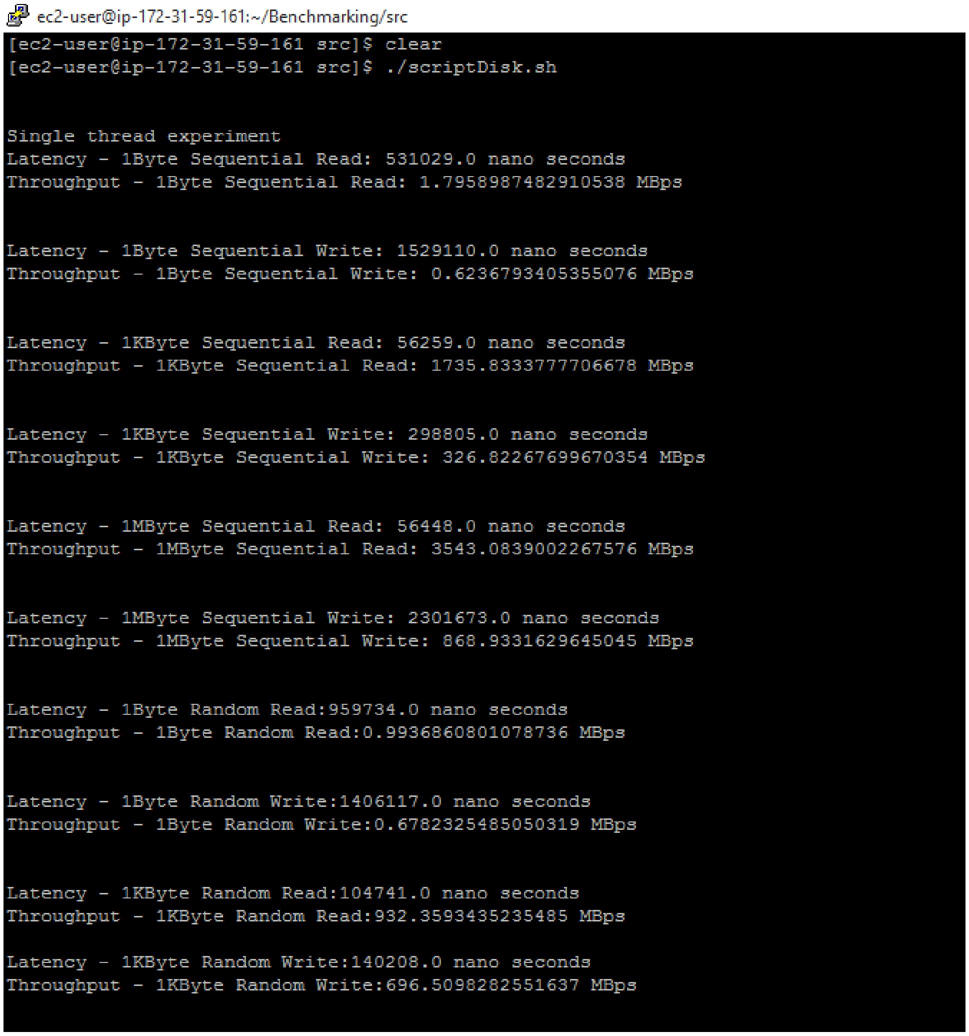
600 values are entered into the file tenFI.txt, each time one runs the ./scripttenFI.sh and waits for ten minutes, the values will append i.e next 600 values will be entered having 1200 values now.

DISK

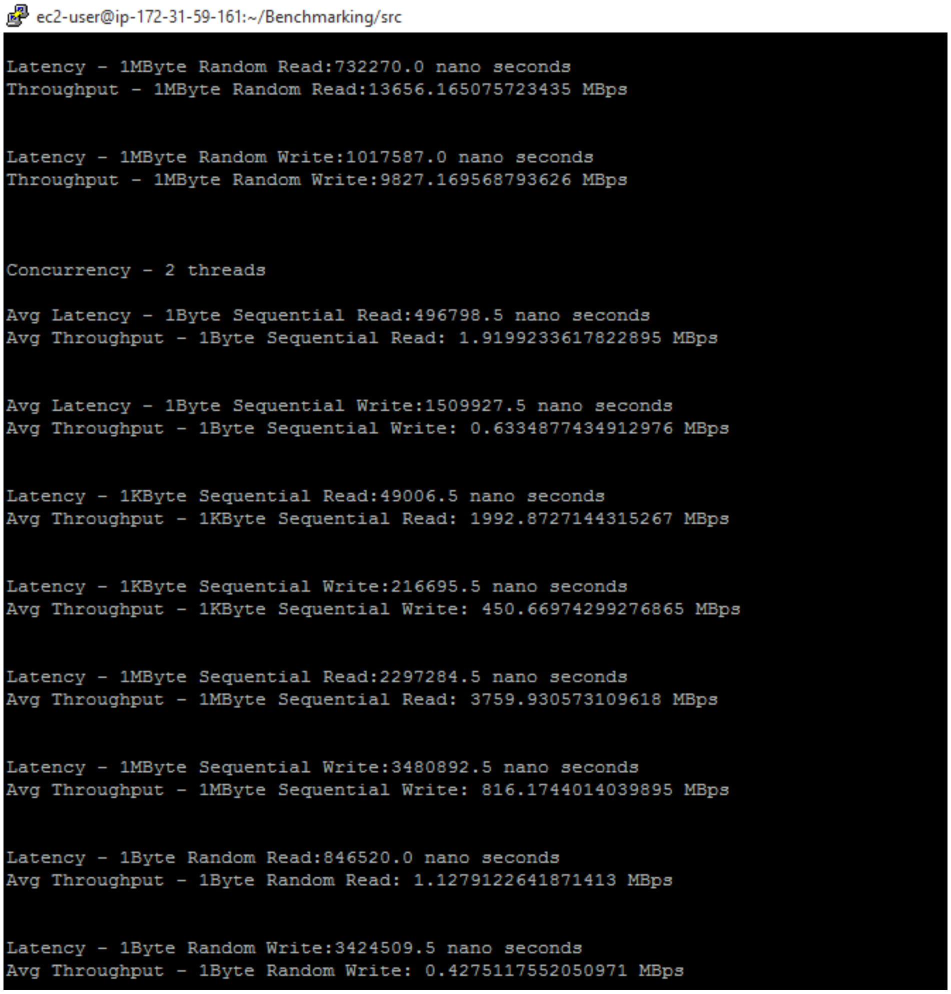
Step 5: Run the script scriptDisk to run the Disk experiments using the following command

./scriptDisk.sh

OUTPUT

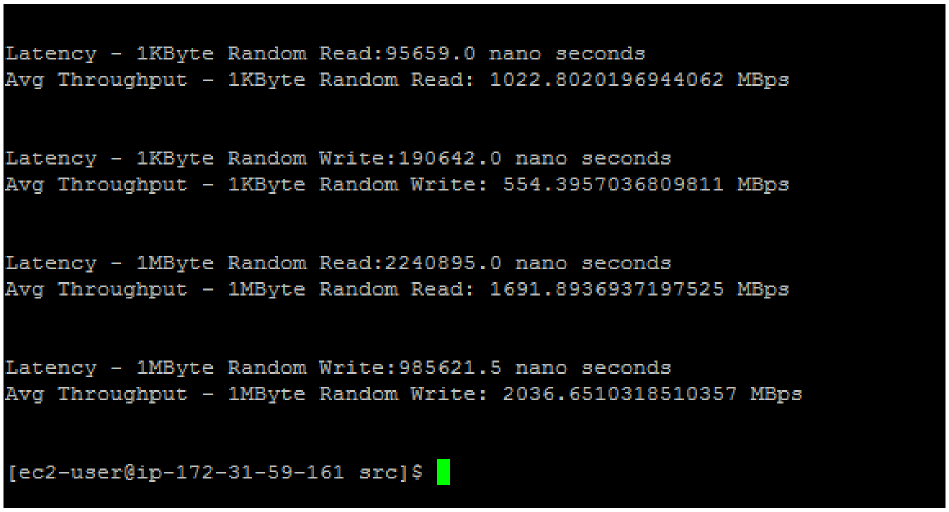


```
[ec2-user@ip-172-31-59-161 src]$ clear
[ec2-user@ip-172-31-59-161 src]$ ./scriptDisk.sh


Single thread experiment
Latency - 1Byte Sequential Read: 531029.0 nano seconds
Throughput - 1Byte Sequential Read: 1.7958987482910538 MBps


Latency - 1Byte Sequential Write: 1529110.0 nano seconds
Throughput - 1Byte Sequential Write: 0.6236793405355076 MBps


Latency - 1KByte Sequential Read: 56259.0 nano seconds
Throughput - 1KByte Sequential Read: 1735.8333777706678 MBps


Latency - 1KByte Sequential Write: 298805.0 nano seconds
Throughput - 1KByte Sequential Write: 326.82267699670354 MBps


Latency - 1MByte Sequential Read: 56448.0 nano seconds
Throughput - 1MByte Sequential Read: 3543.0839002267576 MBps


Latency - 1MByte Sequential Write: 2301673.0 nano seconds
Throughput - 1MByte Sequential Write: 868.9331629645045 MBps


Latency - 1Byte Random Read:959734.0 nano seconds
Throughput - 1Byte Random Read:0.9936860801078736 MBps


Latency - 1Byte Random Write:1406117.0 nano seconds
Throughput - 1Byte Random Write:0.6782325485050319 MBps


Latency - 1KByte Random Read:104741.0 nano seconds
Throughput - 1KByte Random Read:932.3593435235485 MBps

Latency - 1KByte Random Write:140208.0 nano seconds
Throughput - 1KByte Random Write:696.5098282551637 MBps
```



ec2-user@ip-172-31-59-161:~/Benchmarking/src

```
Latency - 1MByte Random Read:732270.0 nano seconds
Throughput - 1MByte Random Read:13656.165075723435 MBps


Latency - 1MByte Random Write:1017587.0 nano seconds
Throughput - 1MByte Random Write:9827.169568793626 MBps



Concurrency - 2 threads

Avg Latency - 1Byte Sequential Read:496798.5 nano seconds
Avg Throughput - 1Byte Sequential Read: 1.9199233617822895 MBps


Avg Latency - 1Byte Sequential Write:1509927.5 nano seconds
Avg Throughput - 1Byte Sequential Write: 0.6334877434912976 MBps


Latency - 1KByte Sequential Read:49006.5 nano seconds
Avg Throughput - 1KByte Sequential Read: 1992.8727144315267 MBps


Latency - 1KByte Sequential Write:216695.5 nano seconds
Avg Throughput - 1KByte Sequential Write: 450.66974299276865 MBps


Latency - 1MByte Sequential Read:2297284.5 nano seconds
Avg Throughput - 1MByte Sequential Read: 3759.930573109618 MBps


Latency - 1MByte Sequential Write:3480892.5 nano seconds
Avg Throughput - 1MByte Sequential Write: 816.1744014039895 MBps


Latency - 1Byte Random Read:846520.0 nano seconds
Avg Throughput - 1Byte Random Read: 1.1279122641871413 MBps


Latency - 1Byte Random Write:3424509.5 nano seconds
Avg Throughput - 1Byte Random Write: 0.4275117552050971 MBps
```

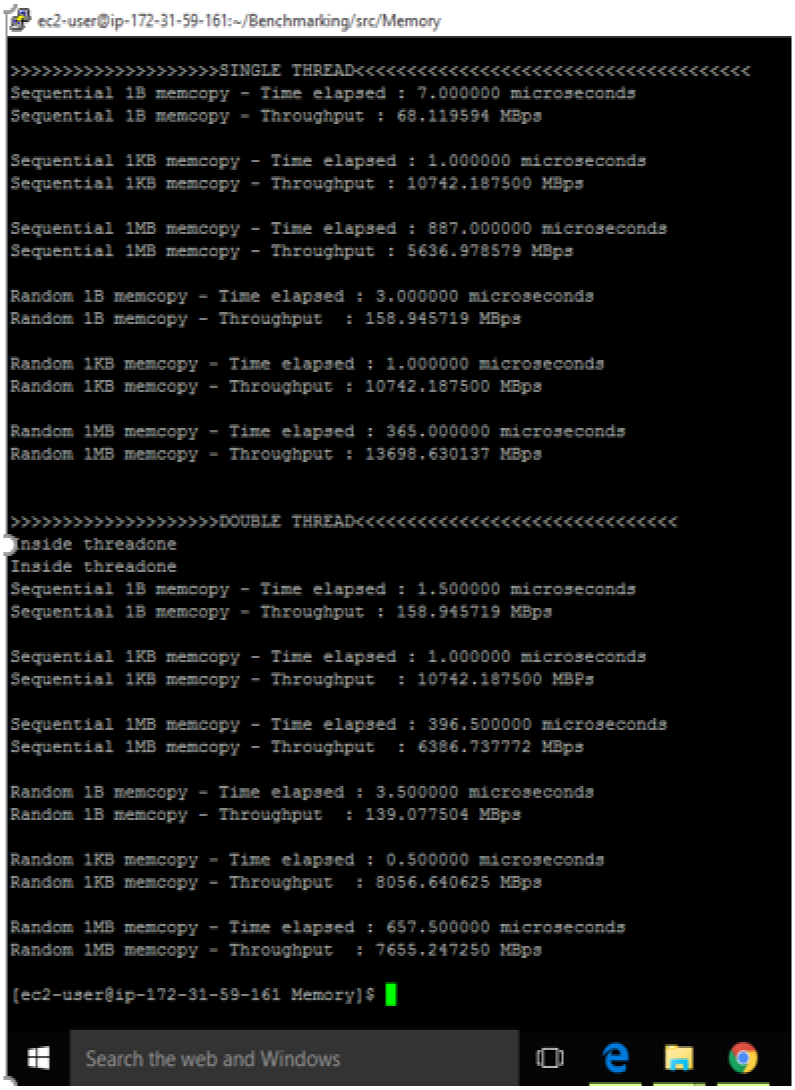


```
Latency - 1KByte Random Read:95659.0 nano seconds
Avg Throughput - 1KByte Random Read: 1022.8020196944062 MBps


Latency - 1KByte Random Write:190642.0 nano seconds
Avg Throughput - 1KByte Random Write: 554.3957036809811 MBps


Latency - 1MByte Random Read:2240895.0 nano seconds
Avg Throughput - 1MByte Random Read: 1691.8936937197525 MBps


Latency - 1MByte Random Write:985621.5 nano seconds
Avg Throughput - 1MByte Random Write: 2036.6510318510357 MBps


[ec2-user@ip-172-31-59-161 src]$
```

MEMORY

Step 6: Navigate to Memory folder using cd Memory, then type make and now type ./memory

OUPUT


ec2-user@ip-172-31-59-161:~/Benchmarking/src/Memory
Search the web and Windows

```
>>>>>>>>>>>>>>>>>>>>SINGLE THREAD<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
Sequential 1B memcopy - Time elapsed : 7.000000 microseconds
Sequential 1B memcopy - Throughput : 68.119594 MBps

Sequential 1KB memcopy - Time elapsed : 1.000000 microseconds
Sequential 1KB memcopy - Throughput : 10742.187500 MBps

Sequential 1MB memcopy - Time elapsed : 887.000000 microseconds
Sequential 1MB memcopy - Throughput : 5636.978579 MBps

Random 1B memcopy - Time elapsed : 3.000000 microseconds
Random 1B memcopy - Throughput  : 158.945719 MBps

Random 1KB memcopy - Time elapsed : 1.000000 microseconds
Random 1KB memcopy - Throughput : 10742.187500 MBps

Random 1MB memcopy - Time elapsed : 365.000000 microseconds
Random 1MB memcopy - Throughput : 13698.630137 MBps


>>>>>>>>>>>>>>>>>>>>DOUBLE THREAD<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
Inside threadone
Inside threadone
Sequential 1B memcopy - Time elapsed : 1.500000 microseconds
Sequential 1B memcopy - Throughput : 158.945719 MBps

Sequential 1KB memcopy - Time elapsed : 1.000000 microseconds
Sequential 1KB memcopy - Throughput  : 10742.187500 MBPs

Sequential 1MB memcopy - Time elapsed : 396.500000 microseconds
Sequential 1MB memcopy - Throughput  : 6386.737772 MBps

Random 1B memcopy - Time elapsed : 3.500000 microseconds
Random 1B memcopy - Throughput  : 139.077504 MBps

Random 1KB memcopy - Time elapsed : 0.500000 microseconds
Random 1KB memcopy - Throughput  : 8056.640625 MBps

Random 1MB memcopy - Time elapsed : 657.500000 microseconds
Random 1MB memcopy - Throughput  : 7655.247250 MBps

[ec2-user@ip-172-31-59-161 Memory]$
```