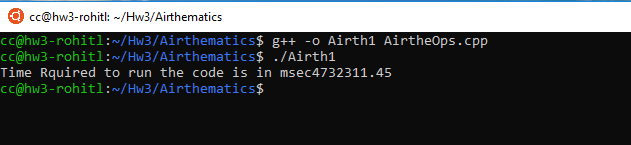
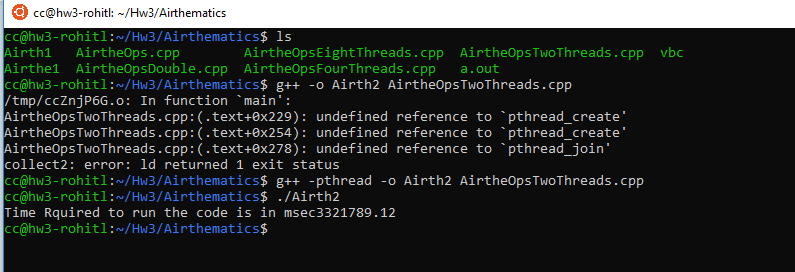
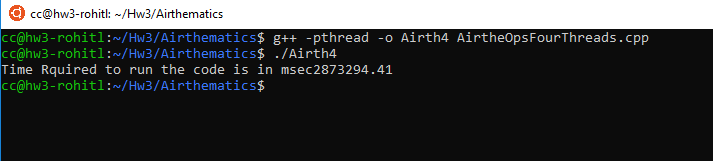
1. **CPU Benchmark by Arithmetic operations:**
2. Airthe 1threads



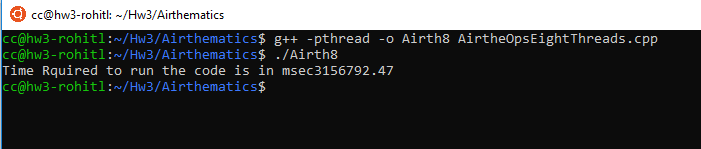
1. Airthe 2 threads



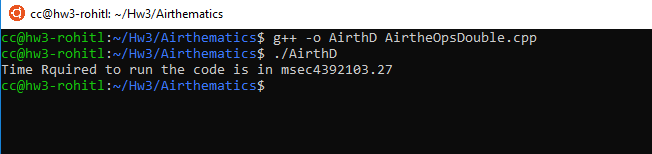
1. Airth2 4 Threads



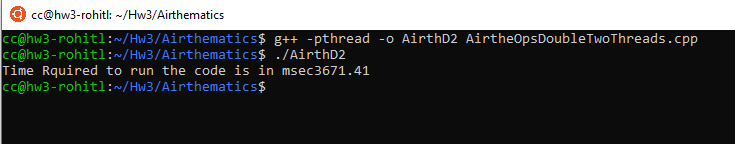
1. Airthe 8 Threads



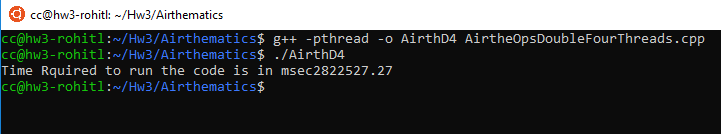
1. AirtheDouble



2.AirtheDouble2Threads



1. AirtheDouble4Threads



1. AirtheDouble8Threads
2. **Matrix-Bench Benchmark:**

Conditions for creating square matrix are:

* + 1. Its size should be <= 0.75 of RAM (RAM Provided is 8GB)
    2. Memory = 6 GB = 6 \* 1024 = 6144MB = 6144000000 bytes
* **Single precision matrix size:**  
  N \* N \* size of float = Memory size/ no of matrices

N^2 \* 4 = 6144000000/3

N^2 \* 4 = 2048000000

N^2 = 512000000

N = 22627.41 = Aprox 22627

* **Double precision matrix size:**

N \* N \* size of double = Memory size/ no of matrices

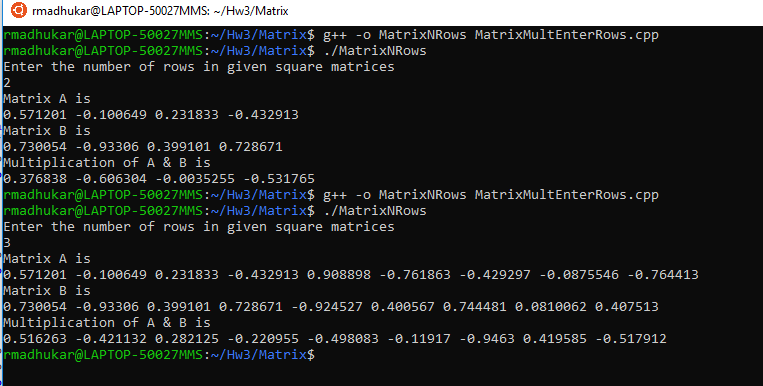
N^2 \* 8 = 6144000000/3

N^2 \* 8 = 2048000000

N^2 = 2550000000

N = 15968.71 = Aprox 15968

**Screenshot showing code supports any N\*N matrix:**



**Note:** Above example is implemented on local machine while all other codes are implemented on chameleon cloud.

**Theoretical Performance of CPU:**

CPU Performance = Speed in Ghz \* No of CPU cores \* Threads per core \* Instructions per cycle

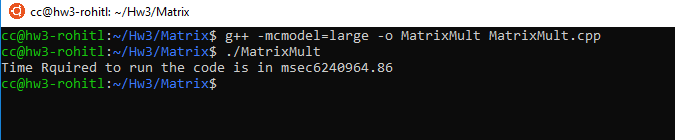
Single Thread = 2.4 \* 4 \* 1 \* 2.4 \* 1000000000 = 2.304 GigaOps

Two Thread = 2.4 \* 4 \* 2 \* 2.4 \* 1000000000 = 4.608 GigaOps

Four Thread = 2.4 \* 4 \* 4 \* 2.4 \* 1000000000 = 9.216 GigaOps

Eight Thread = 2.4 \* 4 \* 4 \* 2.4 \* 1000000000 = 9.216 GigaOps

**No Thread SP:**

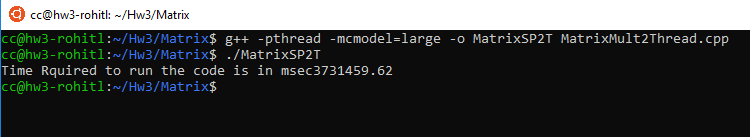


Time is 6240.9648 sec

Number of operations 22627\*22627\*22627 = 11584.59 \* 10^9

Speed = (11584.59 \* 10^9)/6240.964 = 1.8 GigaOps/sec

**Two Threads SP:**

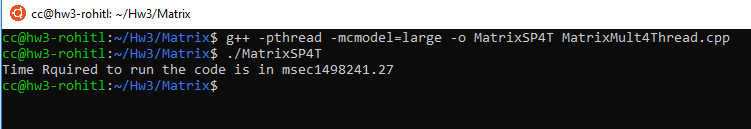


Time is 3731.4596 sec

Number of operations 22627\*22627\*22627 = 11584.59 \* 10^9

Speed = (11584.59 \* 10^9)/ 3731.4596 = 3.1 GigaOps/sec

**Four Threads SP:**

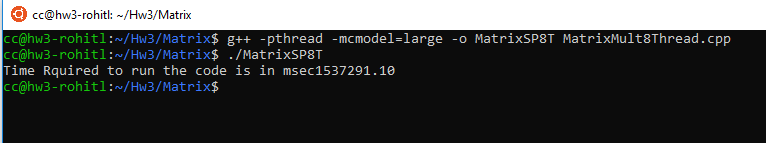


Time is 1498.24 sec

Number of operations 22627\*22627\*22627 = 11584.59 \* 10^9

Speed = (11584.59 \* 10^9)/ 1498.24 = 7.7 GigaOps/sec

**Eight Threads SP:**



Time is 1537.29 sec

Number of operations 22627\*22627\*22627 = 11584.59 \* 10^9

Speed = (11584.59 \* 10^9)/ 1537.29 = 7.53 GigaOps/sec

**Similarly double calculations can be done**

1. **HPL BenchMark:**

Below are the screenshots for HPL benchmarking: