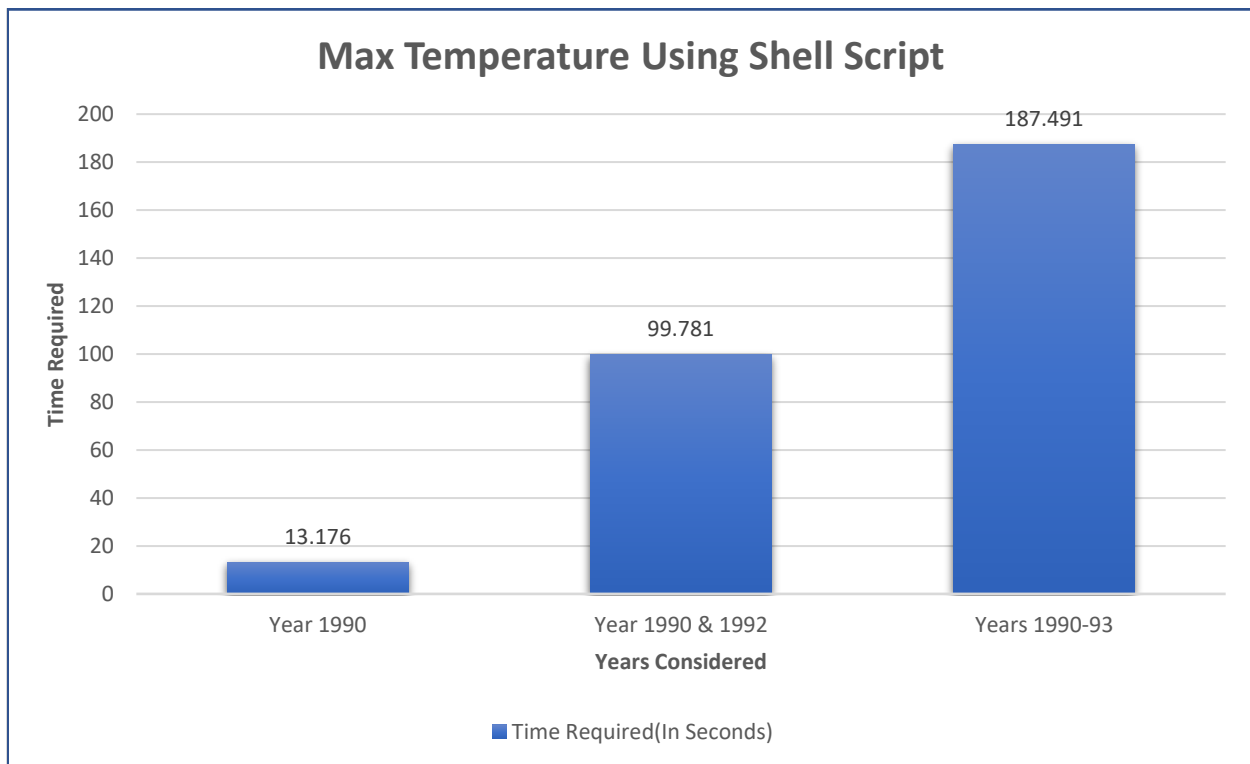


Part 1: Max Temperature using Shell Script: -

Data Analysis for max temperature using shell script			
Years Considered	Time Required (In Seconds)	RAM Allocated	CPU Speed
Year 1990	13.176	2048 MB	2591.531 MHz
Year 1990 & 1992	99.781	2048 MB	2591.531 MHz
Years 1990-93	187.491	2048 MB	2591.531 MHz



The output represented above was of the awk script that was run with modifications done to the code and to give the time required to find the maximum time to find the maximum temperature per year of the given raw data after parsing the same.

The virtual box system configuration that was used to run the system on Vagrant machine was as follows:

- System: Ubuntu/ trusty64
- System RAM: 2048 MB
- CPU: Intel Core i7 6500U of which single core was assigned for the machine at the frequency of 2591.531 MHz



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Note: Images added at the end to verify the same.

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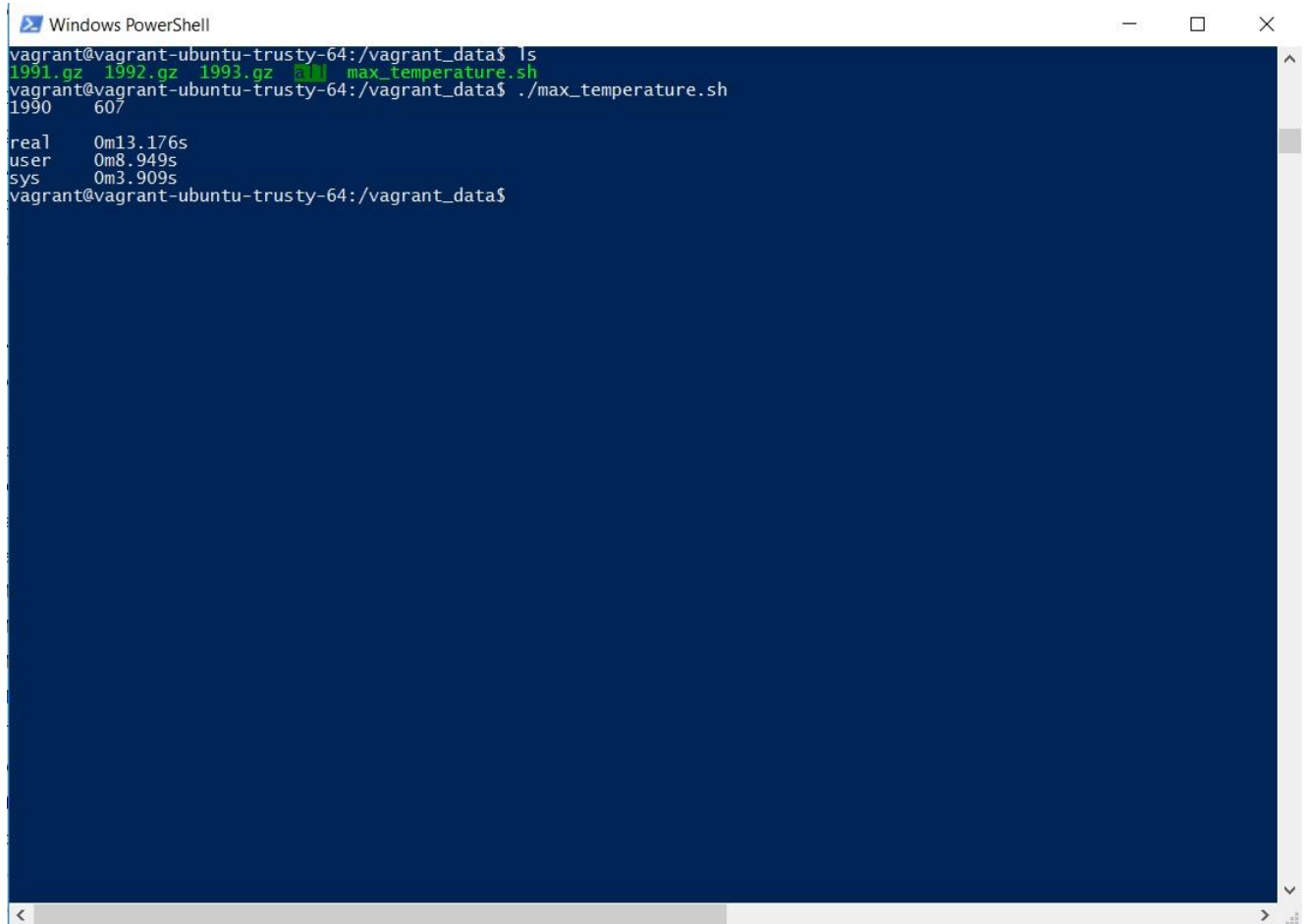
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Analysis of the Output:

- The time required to find the output increased with increase in the amount of data.
- Hence, as more data is going to come the time required to process the data will increase at the same time.
- Since this was performed with a single core of the processor if multiple cores of the processors were used to perform the same type of processing the time would have reduced.
- Increasing the memory does not reduce the processing time.

Screenshots:

Awk script run on the 1990 file:



```
Windows PowerShell
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ ls
1991.gz 1992.gz 1993.gz 8000 max_temperature.sh
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ ./max_temperature.sh
1990    607

real    0m13.176s
user    0m8.949s
sys     0m3.909s
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$
```



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Awk script run on the 1990 and 1992 files together:

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```
Windows PowerShell
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ ls
1991.gz 1993.gz max_temperature.sh
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ cd all/
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data/all$ ls
1990.gz 1992.gz
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data/all$ cd ..
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ ./max_temperature.sh
1990      607
1992      605

real      1m39.781s
user      1m8.596s
sys       0m28.775s
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$
```



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Awk script run on all the files:

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```
Windows PowerShell
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ ls
all/ max_temperature.sh
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ cd all/
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data/all$ ls
1990.gz 1991.gz 1992.gz 1993.gz
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data/all$ cd ..
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ ./max_temperature.sh
1990      607
1991      607
1992      605
1993      567

real      3m7.491s
user      2m6.764s
sys       0m56.093s
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$
```

CPU Speed:

```
Windows PowerShell
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$ lscpu | grep "MHz"
CPU MHz: 2591.531
vagrant@vagrant-ubuntu-trusty-64:/vagrant_data$
```



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RAM Allocated:

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```
Windows PowerShell
MemTotal:      2049964 kB
MemFree:      1839388 kB
Buffers:       11272 kB
Cached:       76636 kB
SwapCached:    0 kB
Active:       115772 kB
Inactive:     51548 kB
Active(anon):  79516 kB
Inactive(anon): 568 kB
Active(file):  36256 kB
Inactive(file): 50980 kB
Unevictable:   0 kB
Mlocked:      0 kB
SwapTotal:    0 kB
SwapFree:     0 kB
Dirty:        0 kB
Writeback:    0 kB
AnonPages:    79408 kB
Mapped:       8724 kB
Shmem:        676 kB
Slab:         22508 kB
SReclaimable: 14872 kB
SUnreclaim:   7636 kB
KernelStack:  680 kB
PageTables:   2528 kB
NFS_Unstable: 0 kB
Bounce:       0 kB
WritebackTmp: 0 kB
CommitLimit: 1024980 kB
Committed_AS: 144596 kB
VmallocTotal: 34359738367 kB
VmallocUsed:  26504 kB
VmallocChunk: 34359706616 kB
HardwareCorrupted: 0 kB
AnonHugePages: 0 kB
HugePages_Total: 0
HugePages_Free: 0
HugePages_Rsvd: 0
HugePages_Surp: 0
Hugepagesize:  2048 kB
DirectMap4k:   34752 kB
DirectMap2M:   2062336 kB
/proc/meminfo (END)
```