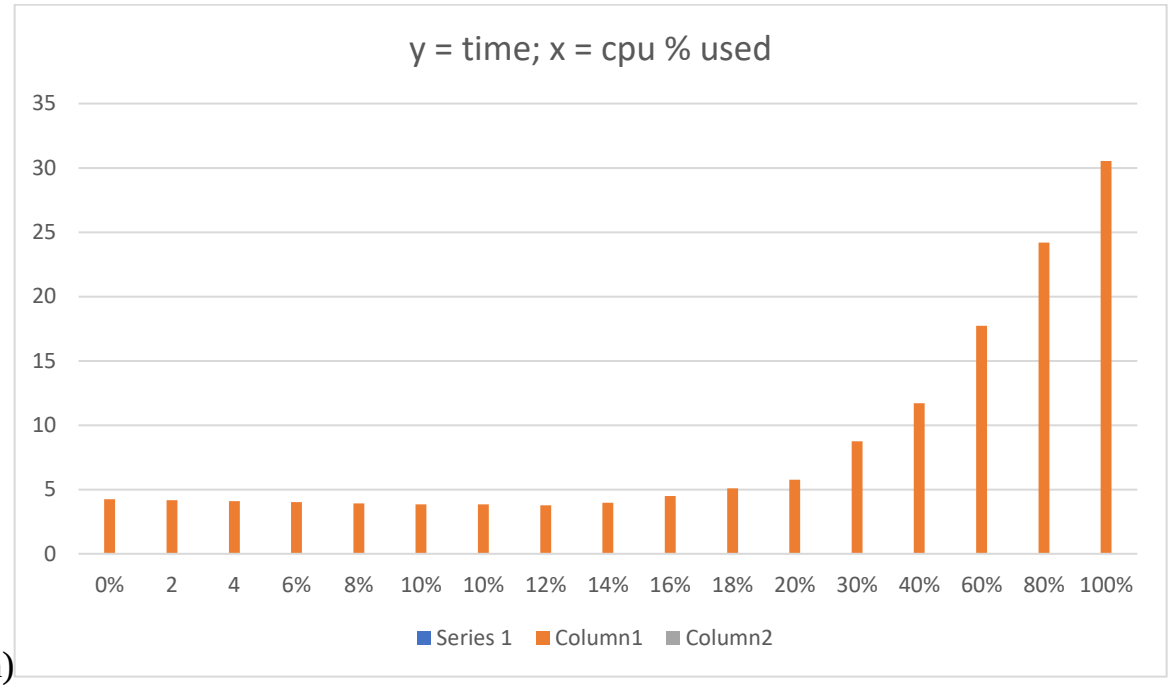
Program 6

6.1a)



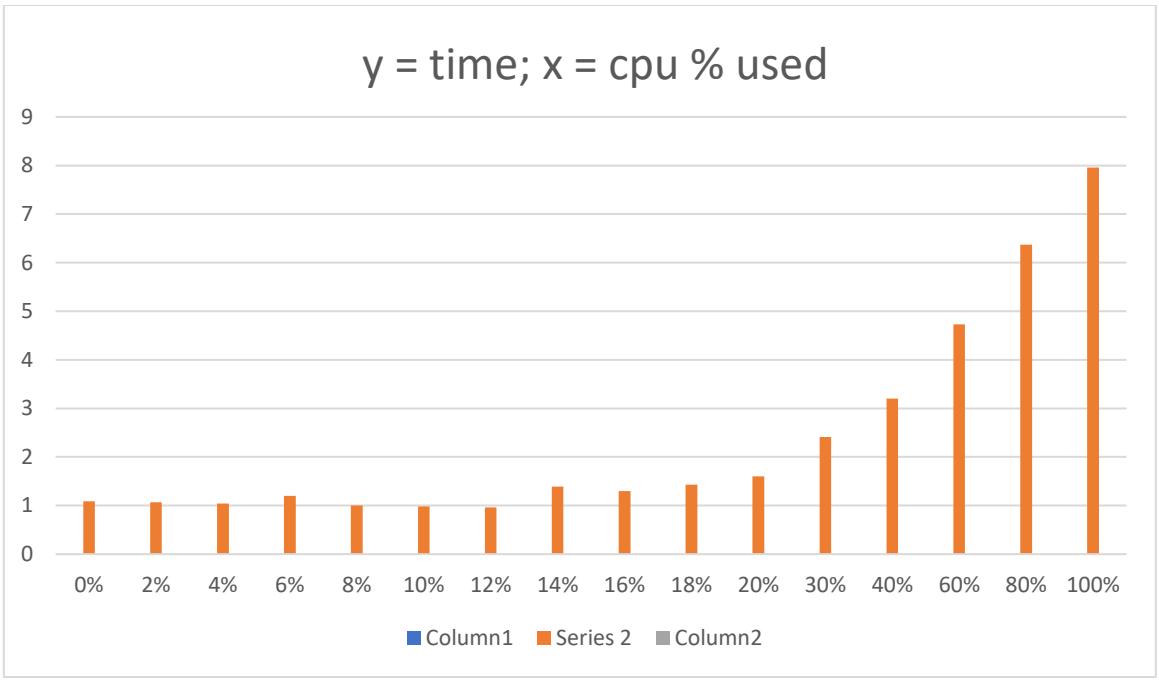
6.1b) The reason for the times dipping and then raising is that we are only using 20 open mp threads and as the cpu percentage goes up the load on only 20 threads slows the performance.

6.1c) the cpu percentage used that had the fastest time was 12% with a time of 3.77s

6.1d) the best hybrid execution is 7.88% faster than using only the gpu.

6.1e) 20 threads are used and it is specified in the collatz_hyb_noMPI.sub file.

6.1f) cpu compute nodes have 24 cores and 2 sockets; hyperthreading is enabled. Gpu nodes have 1 socket with 10 cores and hyperthreading is enabled.

6.2a) 

6.2b) 12% cpu usage gave the best performance with .96s

6.2c) running on four cores is 3.93 times faster than one core, so ~4x faster.

6.2d) running a block schedule across multiple nodes turns it into a distributed memory system which will run slower due to load imbalance across nodes.