Parallel Processing/MPI

Wednesday, June 10, 2020 10:08 PM

Excellent article on MPI and its history:
https://en.wikipedia.org/wiki/Message_Passing_Interface

The documentation for mpi4py a Python package for MPI:
MPI for Python: https://mpi4py.readthedocs.io/en/stable/

Link for mpi4py on the PyPi Package Index:
https://pypi.org/project/mpi4py/

Simple example from MPI Tutorial:
https://mpi4py.readthedocs.io/en/stable/tutorial.html#running-python-scripts-with-mpi

I was able to install mpi4py using pip in the Anaconda PowerShell. I could not get mpi4py to download in the generic Windows environment.

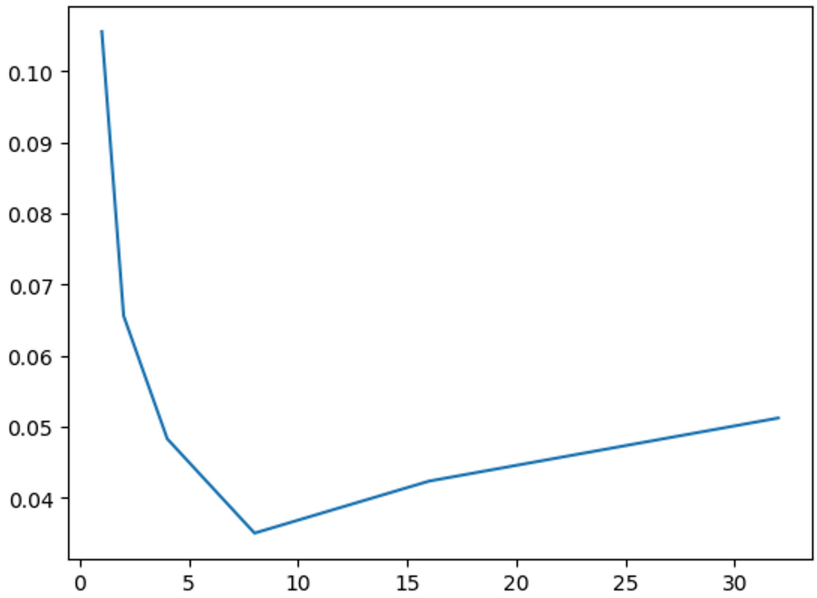
This is my original inspiration for working on MPI. It was brought to my attention by one of my students (Greg Duzman). In order to avoid the hardware, I discovered that I could do parallel processing on my laptop.

Raspberry Pi Supercomputer Cluster

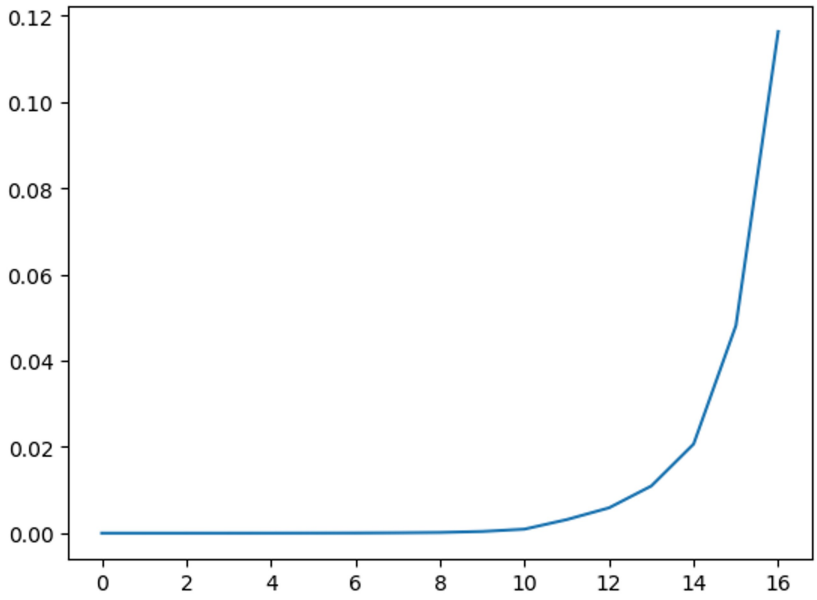
Code for finding primes using parallel processing from Gary Explains github
https://github.com/garyexplains/examples/blob/master/primality_cluster_test2.py

The Github repository for my implementation for Gary Sims code on my laptop.
https://github.com/aambrioso1/parallel_processing

Parallel: (nodes, time (sec))



Non-parallel (n of 2^n of search size, time(sec))



Typical runtime: Search 2 to 2^16 - 1
parallel with 8 nodes: 0.035 sec

non-parallel: (0.105 sec)