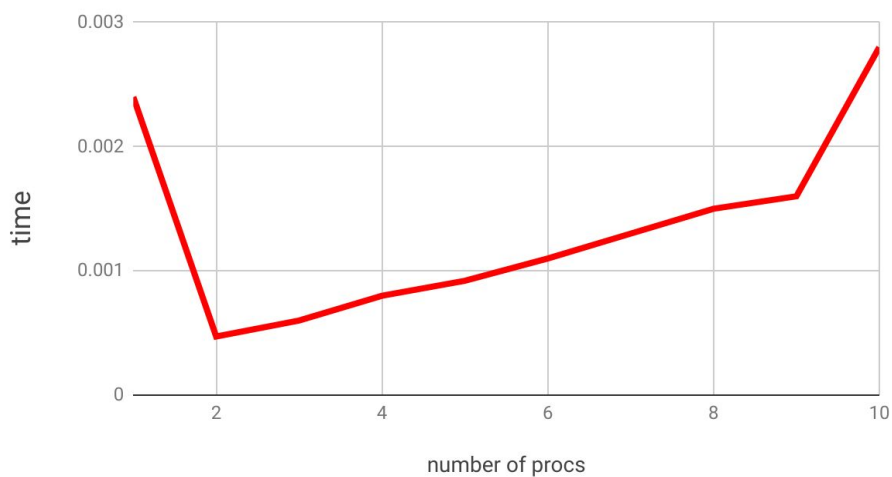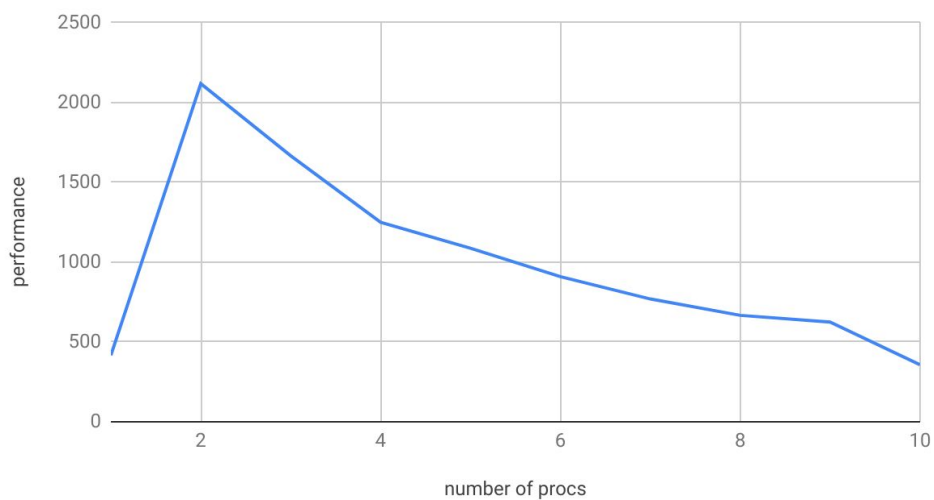# COL331
ASSIGNMENT 2 REPORT

Performance vs Number of Processes

time vs. number of procs

performance vs. number of procs

The values are for N=12, and e =0.00001, and L =20000 and then varying P.

I have used pipes for IPC.

OBSERVATIONS

We see that the performance gets better when we use 2 processes instead of just one. Subsequently, increasing the number of processes does not improve the performance because of the communication overheads.

From #process =1 to #process =2 we see a increase in performance, due to better parallelisation.
The performance decreases when we go from 2 to 3 or more processes as the communication time increases.

We observe that performance increases with increase in number of processes when the value of N is large. I.e, the benefit of parallel computation overshadows the overheads of IPC.

The speedup does not scale linearly, as the algorithm used is by splitting the matrix into row strips and not by splitting into 2D grids.

In theory, we can show that we cannot get linear speedup by splitting into rows of dimension r*N.

VERIFICATION

The results were verified by running the given standard *"jacob.c"* file, that is provided to us. and comparing the results with the output of my code. My code outputs the correct values when compared with standard results.

To verify that all the child processes compute correct values on their assigned rows, I printed their results one by one, and verified the individual results of the child processes.

I have compared the value of the difference after each iteration in the sequential as well as parallel code and they match.

To verify that the difference handling is carried out correctly , I printed the value of difference and the number of iterations taken before convergence which comes out to be less than L.

Pushpam Anand

2016CS10347