

CSCI – B673
ex1
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REPORT

DESCRIPTION:

1. The program gives a demo of Parallel computing on different nodes.
2. Message passing in Round Robing fashion is implemented amongst different processes on different nodes.
3. The time required for message passing per cycle for a combination of different number of processes (4, 5,..., 16) for different message sizes (1, 10, 100,..., 1000000.) are calculated. The MPI_Wtime function is used to record the time.
4. MPI_Bcast function is used to broadcast message to different processes.
5. ROUND ROBIN SCHEDULING: Performs message passing between different processes in a time-sharing mode.
6. The program is implemented for 4, 8 and 16 processes.
7. To run the program for 16 processes, the maxNumProc variable in the 'runit' file is changed from 8 to 16.
8. The input file 'sizes' contains the following:
0 1 6
minSz stride maxSz
9. The message size range from 10^0 to 10^6 and a stride of 10^1 .
10. The output file 'result' is of the following format:
#processes msgSize #cycles totaltime
where, #processes gives the number of processes
msgSize gives the size of the message
#cycles gives the number of cycles
totaltime gives the time taken for execution
11. The program should be executed on a computer machine that should have OpenMPI package installed.
12. The analysis is performed on the program using Matlab script that uses the 'results' file.

ANALYSIS:

Figure 1:

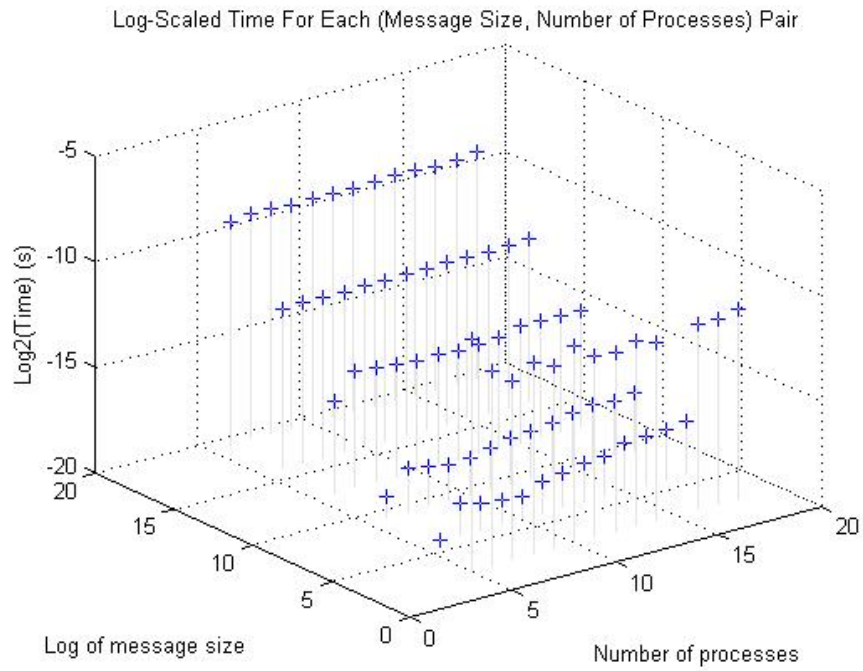


Figure 2:

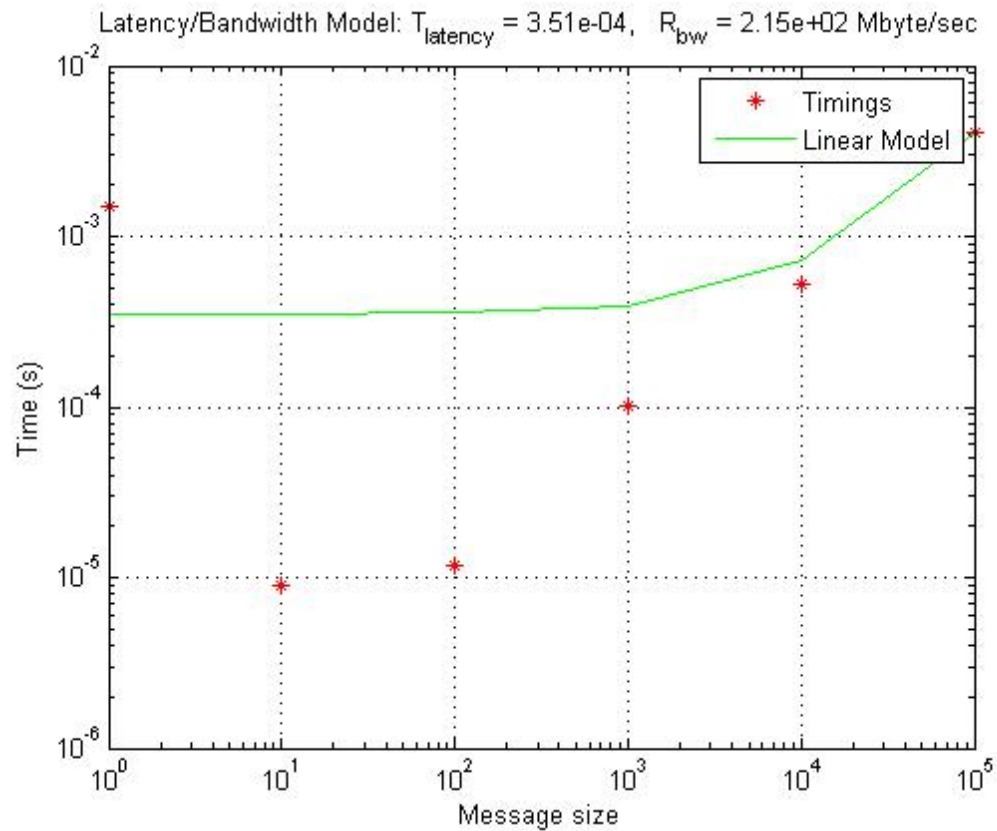


Figure 3:

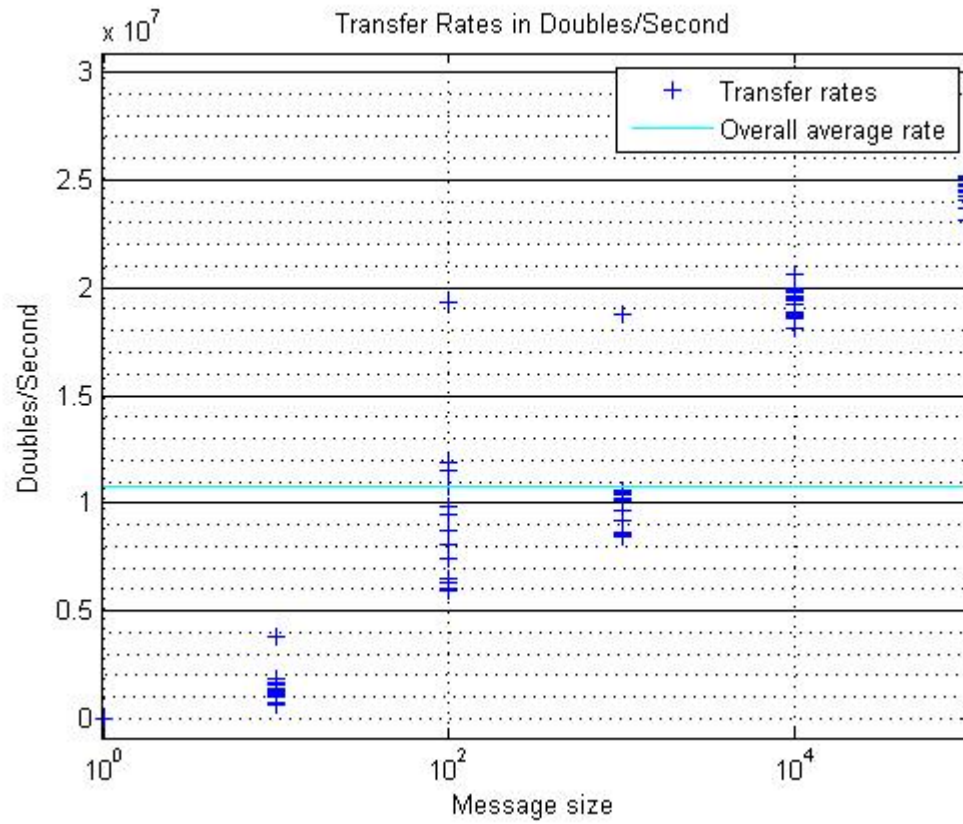


Figure 4:

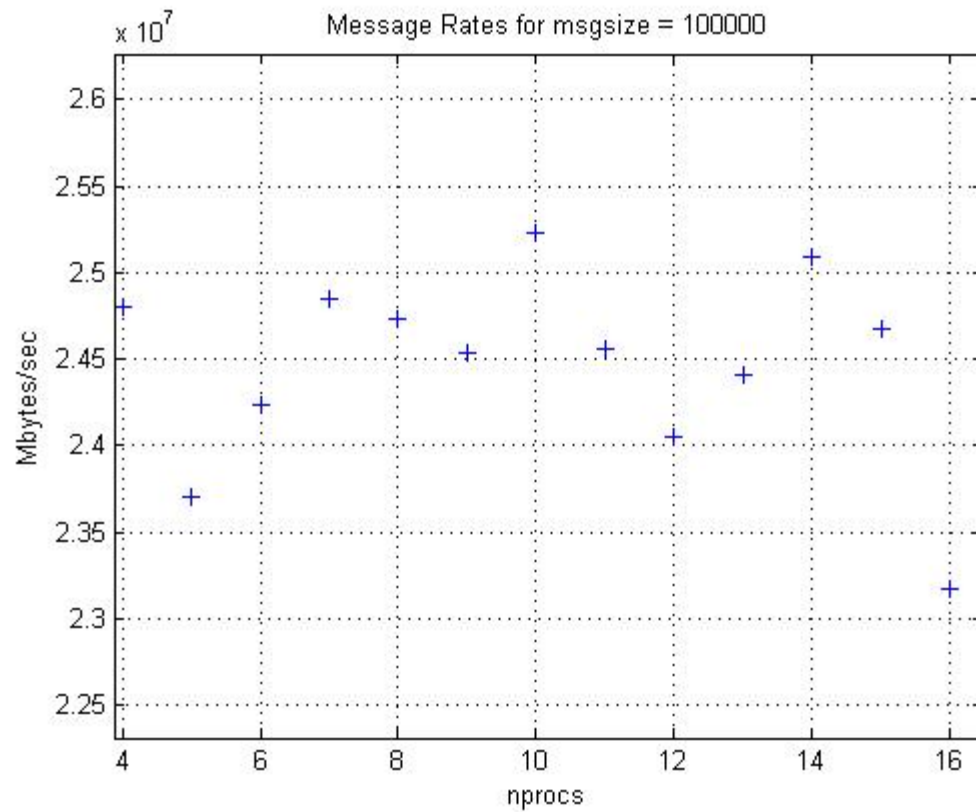
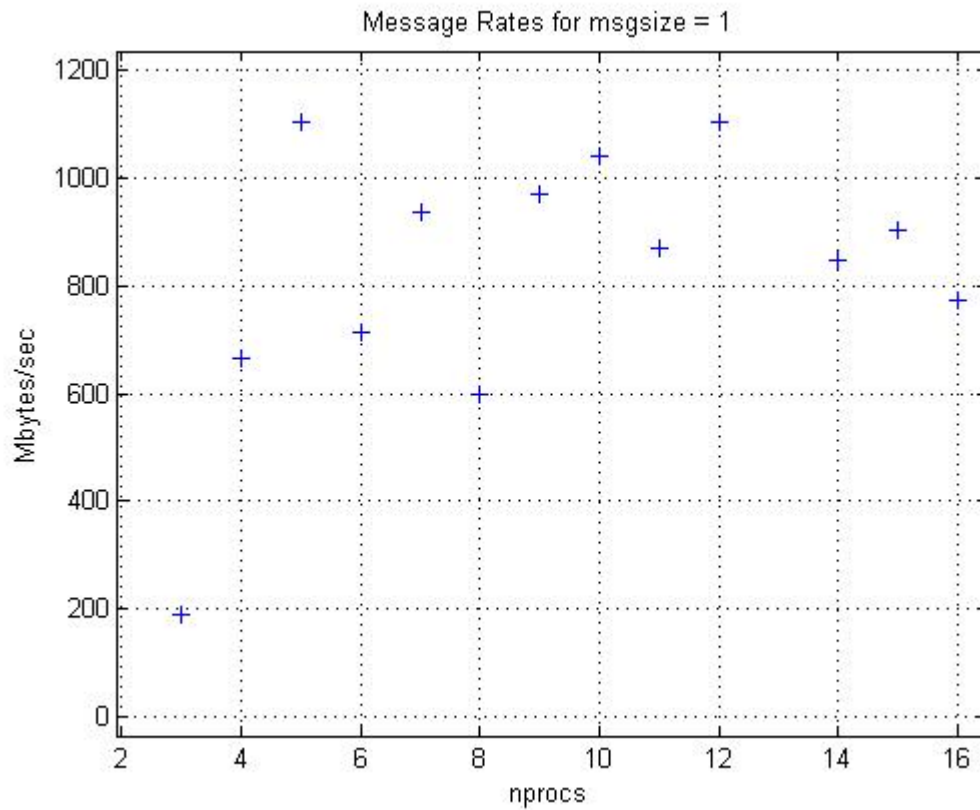


Figure 5:



- As the size of the message increases and the number of cycles decrease, the time taken by the processes to transfer the message decreases.
- The time taken to transfer the message is heavily dependent on the size of the message. The number of processes and the number of cycles have less influence on the time taken to transfer the message amongst different processes on different nodes.