Walchand College of Engineering, Sangli
Department of Computer Science and Engineering

Class: Final Year (Computer Science and Engineering)

Year: 2021-22   **Semester:** 1

Course: High Performance Computing Lab

Practical No. 4B

Exam Seat No:2018BTECS00100

1. Exam Seat Number – Prakash Singh

Problem Statement 1:

Screenshot #1:

```
prax@prakx-ideapad:~/Desktop/HPC/4B$ sudo apt install mpich
[sudo] password for prax:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libllvm7 python3-click python3-colorama
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  gfortran gfortran-7 hwloc-nox libcr-dev libcr0 libgfortran-7-dev
  libgfortran4 libhwloc-plugins libhwloc5 libmpich-dev libmpich12
  ocl-icd-libopencl1
Suggested packages:
  gfortran-multilib gfortran-doc gfortran-7-multilib gfortran-7-doc
  libgfortran4-dbg libcoarrays-dev blcr-dkms libhwloc-contrib-plugins
  blcr-util mpich-doc opencl-icd
The following NEW packages will be installed:
  gfortran gfortran-7 hwloc-nox libcr-dev libcr0 libgfortran-7-dev
  libgfortran4 libhwloc-plugins libhwloc5 libmpich-dev libmpich12 mpich
  ocl-icd-libopencl1
0 upgraded, 13 newly installed, 0 to remove and 132 not upgraded.
Need to get 12.9 MB of archives.
After this operation, 45.9 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Information #1:
Installed mpic using command : sudo apt install mpich

Screenshot #2:

```
prax@prakx-ideapad:~/Desktop/HPC/4B$ mpicc -o  hello hello.c
prax@prakx-ideapad:~/Desktop/HPC/4B$ mpiexec -np 15 ./hello
Hello world from processor prakx-ideapad,rank 6 out of 15 processes
Hello world from processor prakx-ideapad,rank 5 out of 15 processes
Hello world from processor prakx-ideapad,rank 0 out of 15 processes
Hello world from processor prakx-ideapad,rank 4 out of 15 processes
Hello world from processor prakx-ideapad,rank 7 out of 15 processes
Hello world from processor prakx-ideapad,rank 11 out of 15 processes
Hello world from processor prakx-ideapad,rank 1 out of 15 processes
Hello world from processor prakx-ideapad,rank 14 out of 15 processes
Hello world from processor prakx-ideapad,rank 8 out of 15 processes
Hello world from processor prakx-ideapad,rank 9 out of 15 processes
Hello world from processor prakx-ideapad,rank 13 out of 15 processes
Hello world from processor prakx-ideapad,rank 12 out of 15 processes
Hello world from processor prakx-ideapad,rank 2 out of 15 processes
Hello world from processor prakx-ideapad,rank 3 out of 15 processes
Hello world from processor prakx-ideapad,rank 10 out of 15 processes
```

Information #2:

Implemented a simple hello world program by setting number of processes equal to 15.

Screenshot #3:

```
prax@prakx-ideapad:~/Desktop/HPC/4B$ mpicc -o  2 2.c
prax@prakx-ideapad:~/Desktop/HPC/4B$ mpiexec -np 10 ./2
Hello world from processor prakx-ideapad,rank 4 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 8 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 3 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 7 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 9 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 0 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 6 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 2 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 5 out of 10 processes and communicator 1140850688
Hello world from processor prakx-ideapad,rank 1 out of 10 processes and communicator 1140850688
```

Information #3:

Implemented a program to display rank and communicator group of ten processes

Github Link:https://github.com/prakx1/HPC-LAB/tree/master/

Final Year: High Performance Computing Lab