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

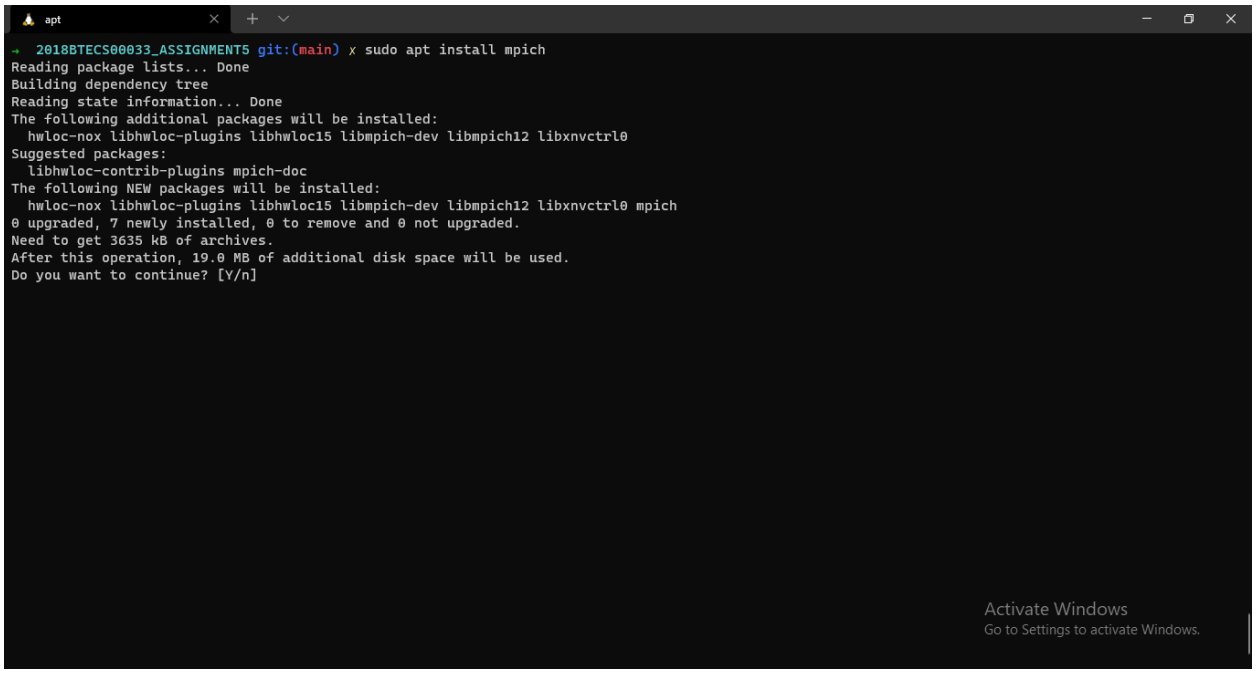
Practical No. 4B

Exam Seat No:

1. 2018BTECS00033 - Mahendra Bhimrao Gharge

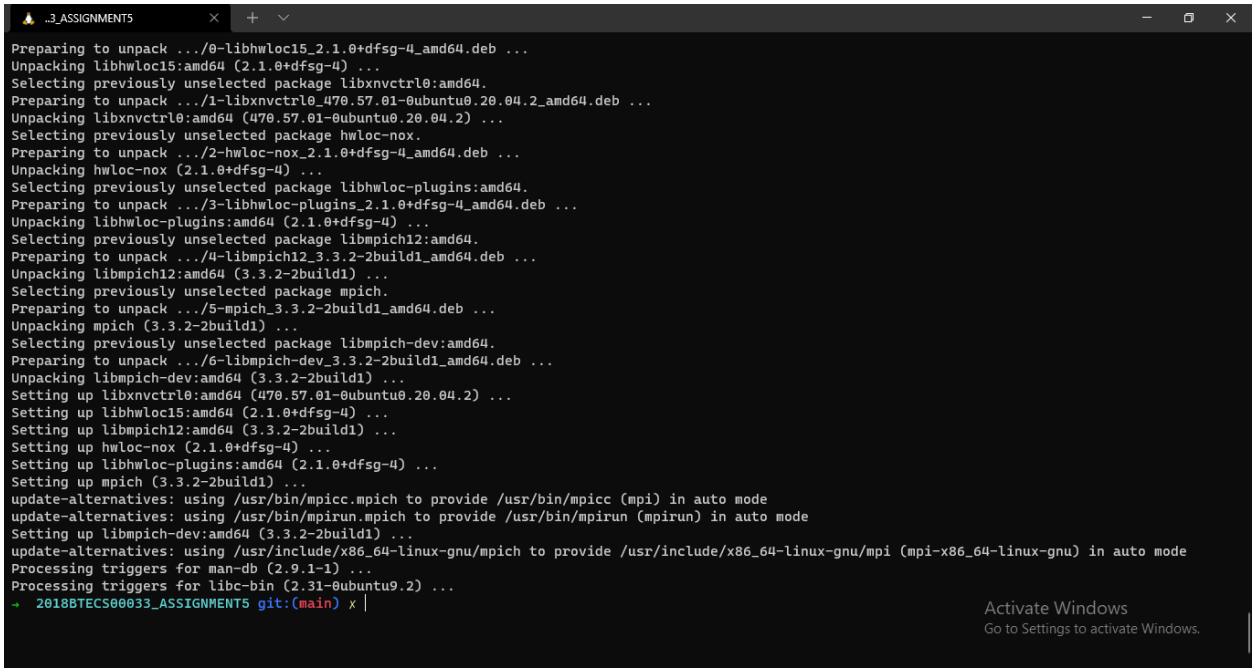
Problem Statement 1: Installation of MPI

Screenshot 1:



Information 1: As I am running Windows Subsystem for Linux, it runs Ubuntu linux. So I installed the MPI with the use of **mpich** which was available in official repositories of Ubuntu.

Screenshot 2:



Information 2: Installation complete.

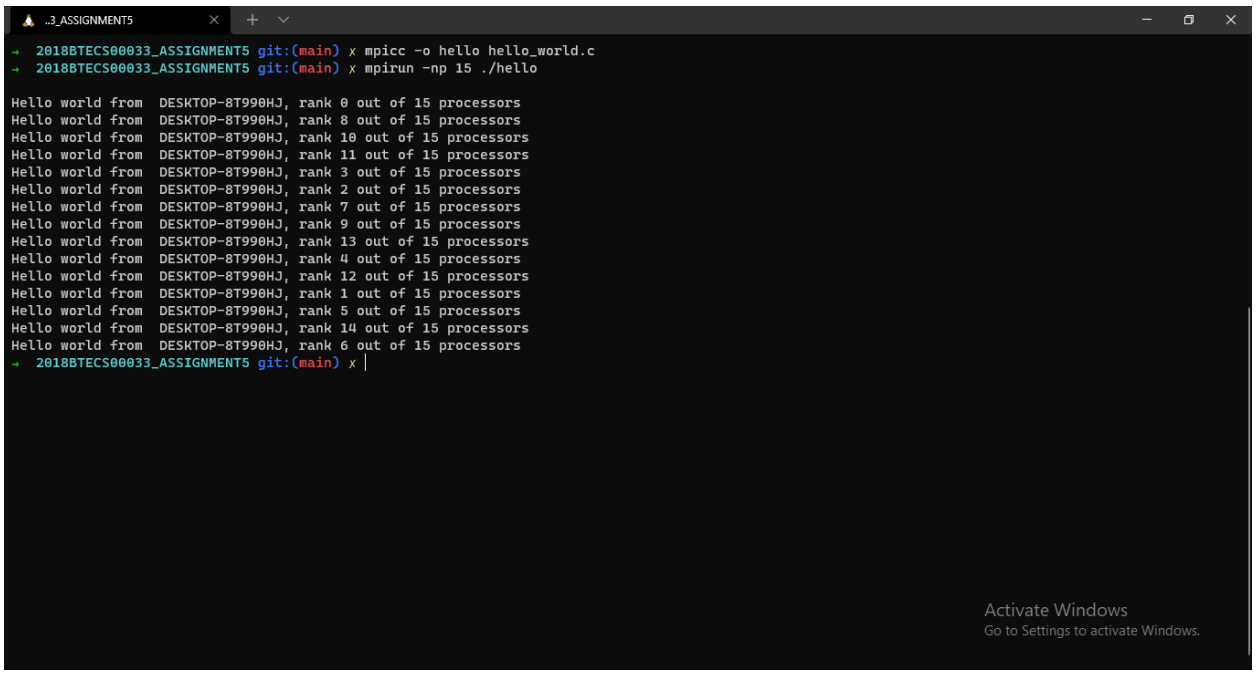
Problem Statement 2:

Q1: Implement a simple hello world program by setting the number of processes equal to 15.

```c
#include <mpi.h>
#include <stdio.h>

int main(int argc, char **argv)
{
    MPI_Init(NULL, NULL);

    int size;
    MPI_Comm_size(MPI_COMM_WORLD, &size);

    int rank;
    MPI_Comm_rank(MPI_COMM_WORLD, &rank);

    char processor_name[MPI_MAX_PROCESSOR_NAME];
    int name_len;
    MPI_Get_processor_name(processor_name, &name_len);
```

```
    printf("Hello world from  %s, rank %d out of %d processors\n",
           processor_name, rank, size);

    MPI_Finalize();
}
```

Screenshot 3:

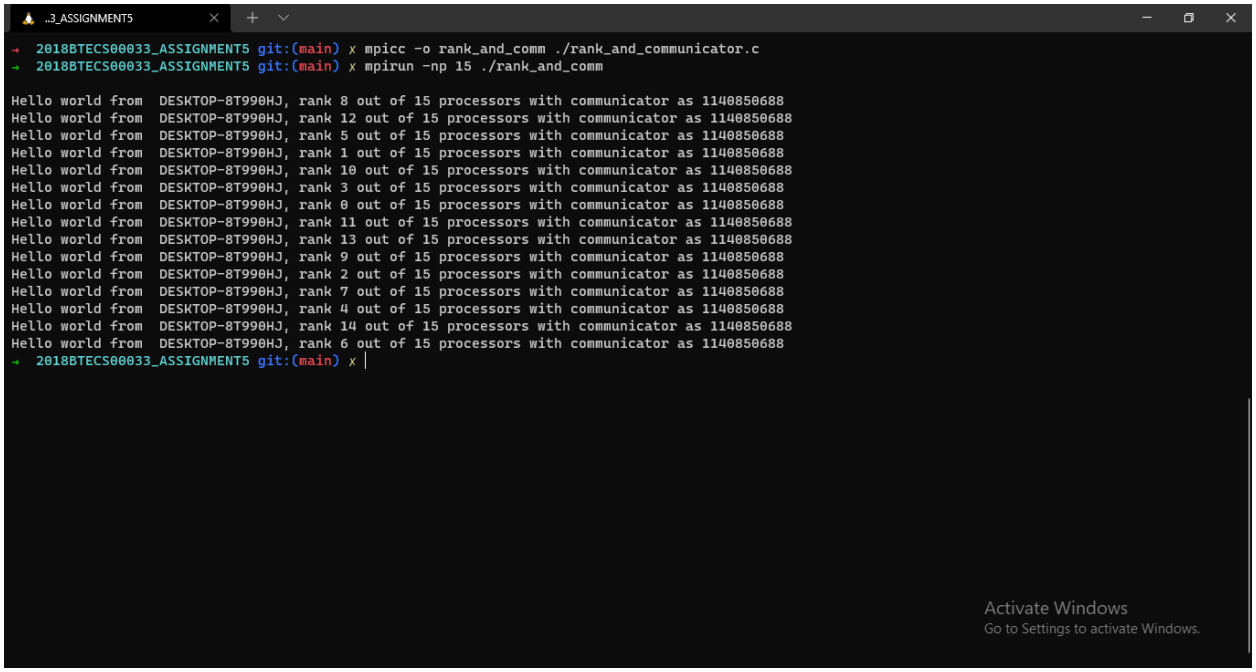


Information 3: Hello World program with number of processes as 15

Problem Statement 3:
Q2. Implement a program to display rank and communicator group of ten processes

```
#include <mpi.h>
#include <stdio.h>

int main(int argc, char **argv)
{
    MPI_Init(NULL, NULL);

    int size;
    MPI_Comm_size(MPI_COMM_WORLD, &size);

    int rank;
    MPI_Comm_rank(MPI_COMM_WORLD, &rank);

    char processor_name[MPI_MAX_PROCESSOR_NAME];
    int name_len;
    MPI_Get_processor_name(processor_name, &name_len);

    printf("Hello world from  %s, rank %d out of %d processors with
communicator as %d\n",
           processor_name, rank, size, MPI_COMM_WORLD);

    MPI_Finalize();
}
```

Screenshot 4:



Information 4: Program showing rank and communicator group of processes.

Github Link: https://github.com/g-mahendra/HPC_LAB_ASSIGNMENTS