Final Year B. Tech, Sem VII 2022-23
PRN – 2020BTECS00211
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Batch: B4
Practical No – 5

Title: Installation of MPI and implementation of basic functions of MPI

Github Link for Code - https://github.com/Aashita06/HPC_Practicals

Q1: Implement a simple hello world program by setting number of processes equal to 10.
→
Code:

```
#include "mpi.h"
#include <stdio.h>
int main( int argc, char *argv[] )
{
int rank, size;
MPI_Init( &argc, &argv );
MPI_Comm_rank( MPI_COMM_WORLD, &rank );
MPI_Comm_size( MPI_COMM_WORLD, &size );
printf( "Hello World from process %d of %d\n", rank, size );
MPI_Finalize();
return 0;
}
```

Output:

```
PS F:\College\Semesters\SEM_7\HPC\Lab\Assignment5> mpiexec -n 10 .\mpiHelloWorld.exe
Hello World from process 7 of 10
Hello World from process 6 of 10
Hello World from process 4 of 10
Hello World from process 3 of 10
Hello World from process 0 of 10
Hello World from process 9 of 10
Hello World from process 8 of 10
Hello World from process 5 of 10
Hello World from process 1 of 10
Hello World from process 2 of 10
```

Q2. Implement a program to display rank and communicator group of five processes.

→

Code:

```c
#include <mpi.h>
#include <stdio.h>
int main( int argc, char * argv[])
{
MPI_Init(&argc, &argv);
int rank;
MPI_Group group;
MPI_Comm_group(MPI_COMM_WORLD, &group);
MPI_Comm_rank(MPI_COMM_WORLD, &rank);
printf("Rank: %d, Group: %d \n", rank, group);
MPI_Finalize();
return 0;
}
```

Output:

```
PS F:\College\Semesters\SEM_7\HPC\Lab\Assignment5> mpiexec -n 5 .\rankCommunicator.exe
Rank: 0, Group: -2013265920
Rank: 3, Group: -2013265920
Rank: 1, Group: -2013265920
Rank: 2, Group: -2013265920
Rank: 4, Group: -2013265920
```