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Batch : B1
Topic : HPC Assignment 5

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

1. Implement a simple hello world program by setting the number of processes equal to 10.

```c
#include <mpi.h>
#include <stdio.h>
int main( int argc, char *argv[] )
{
    MPI_Init( &argc, &argv );

    printf("Hello, world!\n");
    return 0;
}
```

```
$ mpiexec -np 10 ./hello.exe
Hello, world!
Hello, world!
Hello, world!
Hello, world!
Hello, world!
Hello, world!
Hello, world!
Hello, world!
Hello, world!
Hello, world!

job aborted:
[ranks] message

[0-9] process exited without calling finalize

---- error analysis -----

[0-9] on RUTIKESH
./hello.exe ended prematurely and may have crashed. exit code 0

---- error analysis -----
```

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

```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;
}
```

```
$ mpiexec -np 10 ./rank\ finder.exe
Rank: 3, Group: -2013265920
Rank: 8, Group: -2013265920
Rank: 1, Group: -2013265920
Rank: 2, Group: -2013265920
Rank: 0, Group: -2013265920
Rank: 9, Group: -2013265920
Rank: 7, Group: -2013265920
Rank: 6, Group: -2013265920
Rank: 4, Group: -2013265920
Rank: 5, Group: -2013265920
```