

CSE4001 – Parallel and Distributed Computing

Slot: L29 + L30

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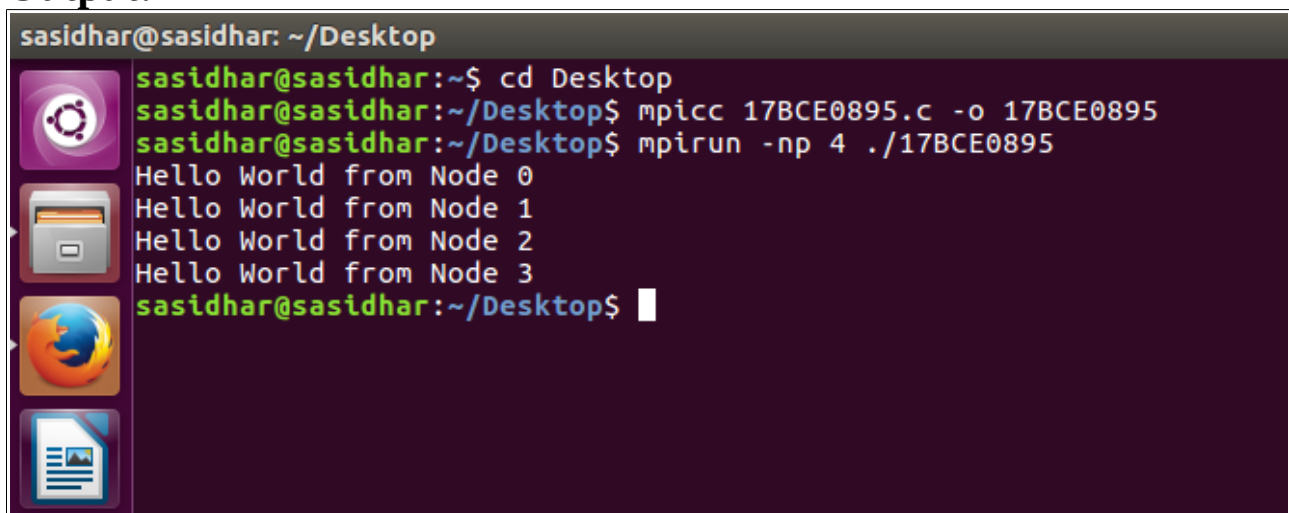
Lab Assignment – 4

Question 1: MPI Hello World

Code:-

```
#include <stdio.h>
#include <mpi.h>
void main(int argc, char **argv)
{
    int node;
    MPI_Init(&argc,&argv);
    MPI_Comm_rank(MPI_COMM_WORLD, &node);
    printf("Hello World from Node %d\n",node);
    MPI_Finalize();
}
```

Output:

A terminal window with a dark purple background and a sidebar on the left containing icons for a terminal, a folder, a web browser, and a document. The terminal text shows the user 'sasidhar' at 'sasidhar' in the directory '~/Desktop'. The commands executed are 'cd Desktop', 'mpicc 17BCE0895.c -o 17BCE0895', and 'mpirun -np 4 ./17BCE0895'. The output consists of four lines: 'Hello World from Node 0', 'Hello World from Node 1', 'Hello World from Node 2', and 'Hello World from Node 3'. The prompt returns to 'sasidhar@sasidhar:~/Desktop\$' with a cursor.

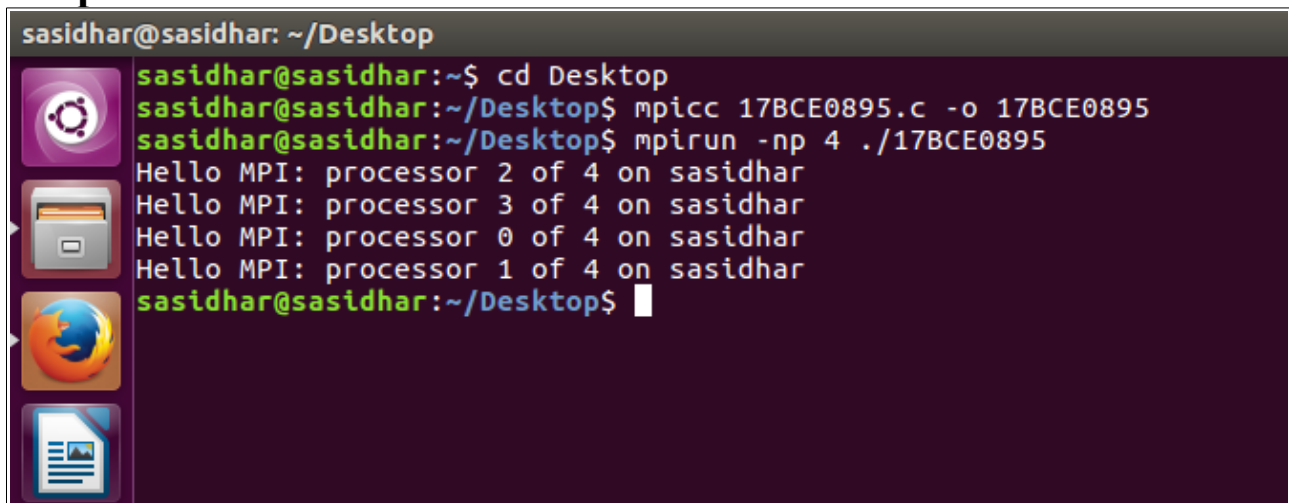
```
sasidhar@sasidhar: ~/Desktop
sasidhar@sasidhar:~$ cd Desktop
sasidhar@sasidhar:~/Desktop$ mpicc 17BCE0895.c -o 17BCE0895
sasidhar@sasidhar:~/Desktop$ mpirun -np 4 ./17BCE0895
Hello World from Node 0
Hello World from Node 1
Hello World from Node 2
Hello World from Node 3
sasidhar@sasidhar:~/Desktop$
```

Question 2: MPI Basic

Code:-

```
#include <stdio.h>
#include <mpi.h>
int main(int argc, char ** argv) {
int rank, size;
char name[80];
int length;
MPI_Init(&argc, &argv); // note that argc and argv are passed
// by address
MPI_Comm_rank(MPI_COMM_WORLD,&rank);
MPI_Comm_size(MPI_COMM_WORLD,&size);
MPI_Get_processor_name(name,&length);
printf("Hello MPI: processor %d of %d on %s\n",
rank,size,name);
MPI_Finalize();
}
```

Output:

A terminal window with a dark purple background and a sidebar on the left containing icons for a terminal, a folder, a web browser, and a document. The terminal text shows the user 'sasidhar' at host 'sasidhar' in the directory '~/Desktop'. The commands executed are 'cd Desktop', 'mpicc 17BCE0895.c -o 17BCE0895', and 'mpirun -np 4 ./17BCE0895'. The output consists of four lines, each from a different processor (2, 3, 0, and 1) stating 'Hello MPI: processor X of 4 on sasidhar'.

```
sasidhar@sasidhar: ~/Desktop
sasidhar@sasidhar:~$ cd Desktop
sasidhar@sasidhar:~/Desktop$ mpicc 17BCE0895.c -o 17BCE0895
sasidhar@sasidhar:~/Desktop$ mpirun -np 4 ./17BCE0895
Hello MPI: processor 2 of 4 on sasidhar
Hello MPI: processor 3 of 4 on sasidhar
Hello MPI: processor 0 of 4 on sasidhar
Hello MPI: processor 1 of 4 on sasidhar
sasidhar@sasidhar:~/Desktop$
```