Parallel and Distributed Computing
CSE4001
Fall Semester 2020-21

Lab Assignment 9

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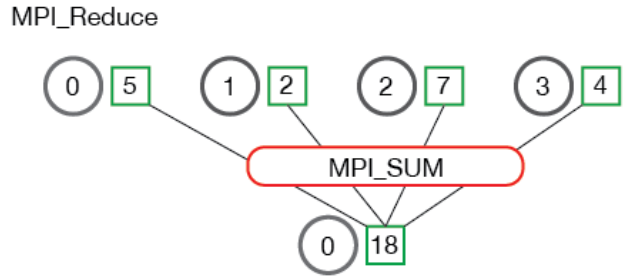
Aim:

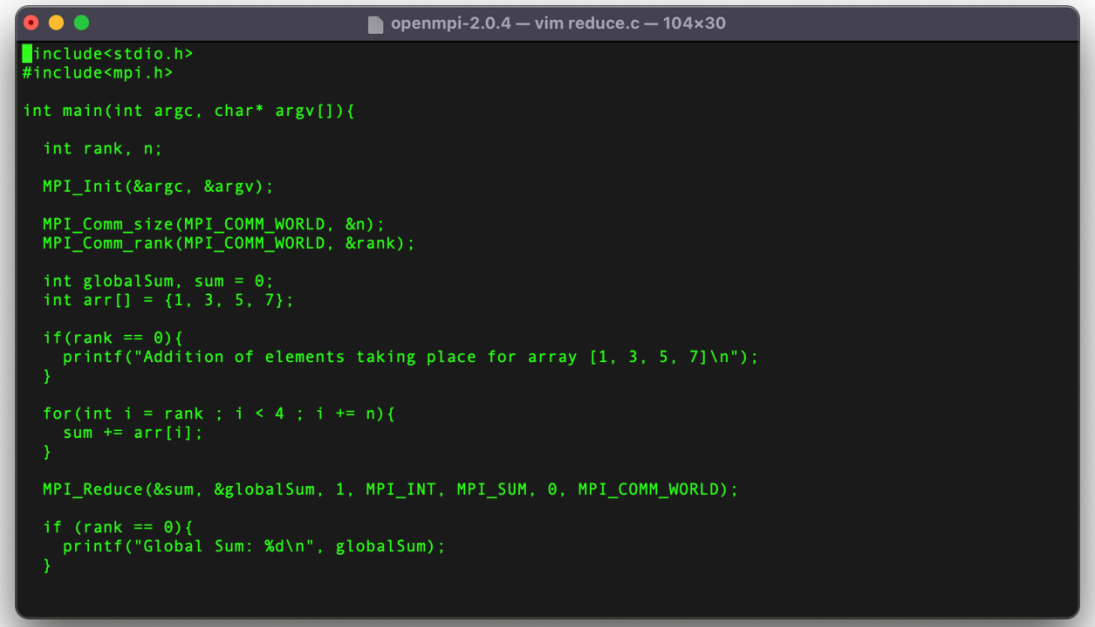
Write a C program to use MPI_Reduce that divides the processors into the group to find the addition independently.



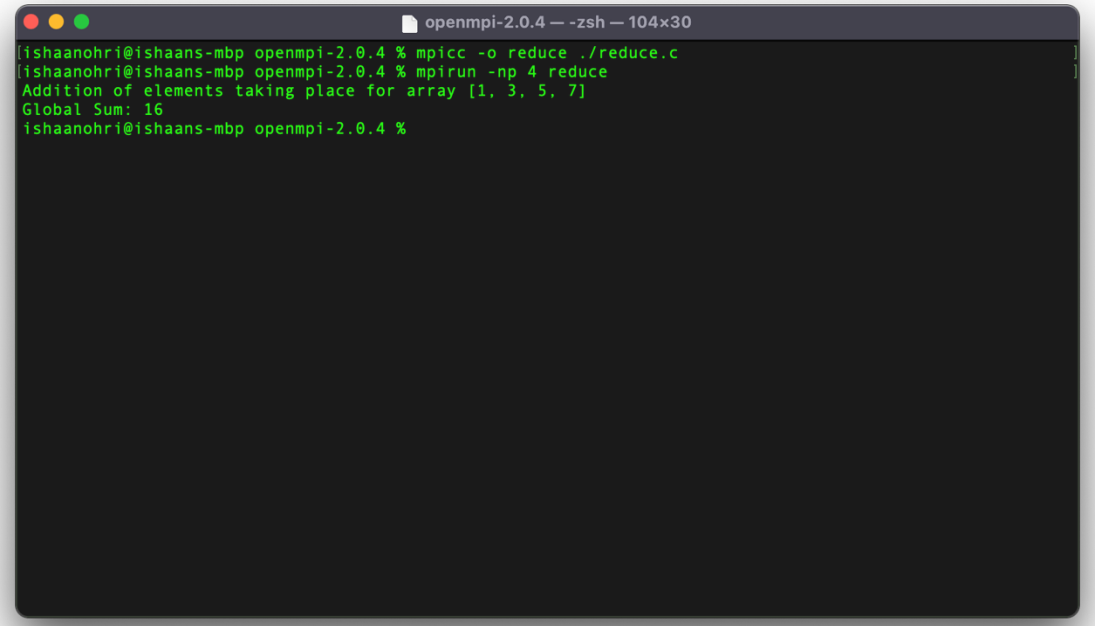
Hint. The function prototype is as follows:

```
MPI_Reduce(
                void* send_data,
                void* recv_data,
                int count,
                MPI_Datatype datatype,
                MPI_Op op,
                int root,
                MPI_Comm communicator)
```

Source Code:



Execution:



Remarks:

```
int MPI_Reduce(const void *sendbuf, void *recvbuf, int count, MPI_Datatype
datatype, MPI_Op op, int root, MPI_Comm comm)
```

In the above command

- sendbuf is the address of send buffer
- count is the number of elements in the send buffer
- datatype is the data type of elements of send buffer
- op is the reduce operation
- root is the rank of root process
- comm is the communicator
- recvbuf is the address of the receive buffer

Using MPI_Reduce, MPI process can apply a reduction calculation. The values sent by the MPI processes will be combined using the reduction operation given and the result will be stored on the MPI process specified as root.