Parallel and Distributed Computing

CSE4001

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Lab Assignment 10

**ISHAAN OHRI**

**18BCE0265**

**Aim:**

Assume the variable rank contains the process rank and root is 3. What will be stored in array b [ ] on each of four processes if each executes the following code fragment?

int b [4] = {0 , 0 , 0 , 0};

MPI\_Gather ( & rank , 1 , MPI\_INT , b , 1 , MPI\_INT , root ,MPI\_COMM\_WORLD);  
  
Hint. The function prototype is as follows:

int MPI\_Gather (

void \* sendbuf , // pointer to send buffer

int sendcount , // number of items to send

MPI\_Datatype sendtype , // type of send buffer data

void \* recvbuf , // pointer to receive buffer

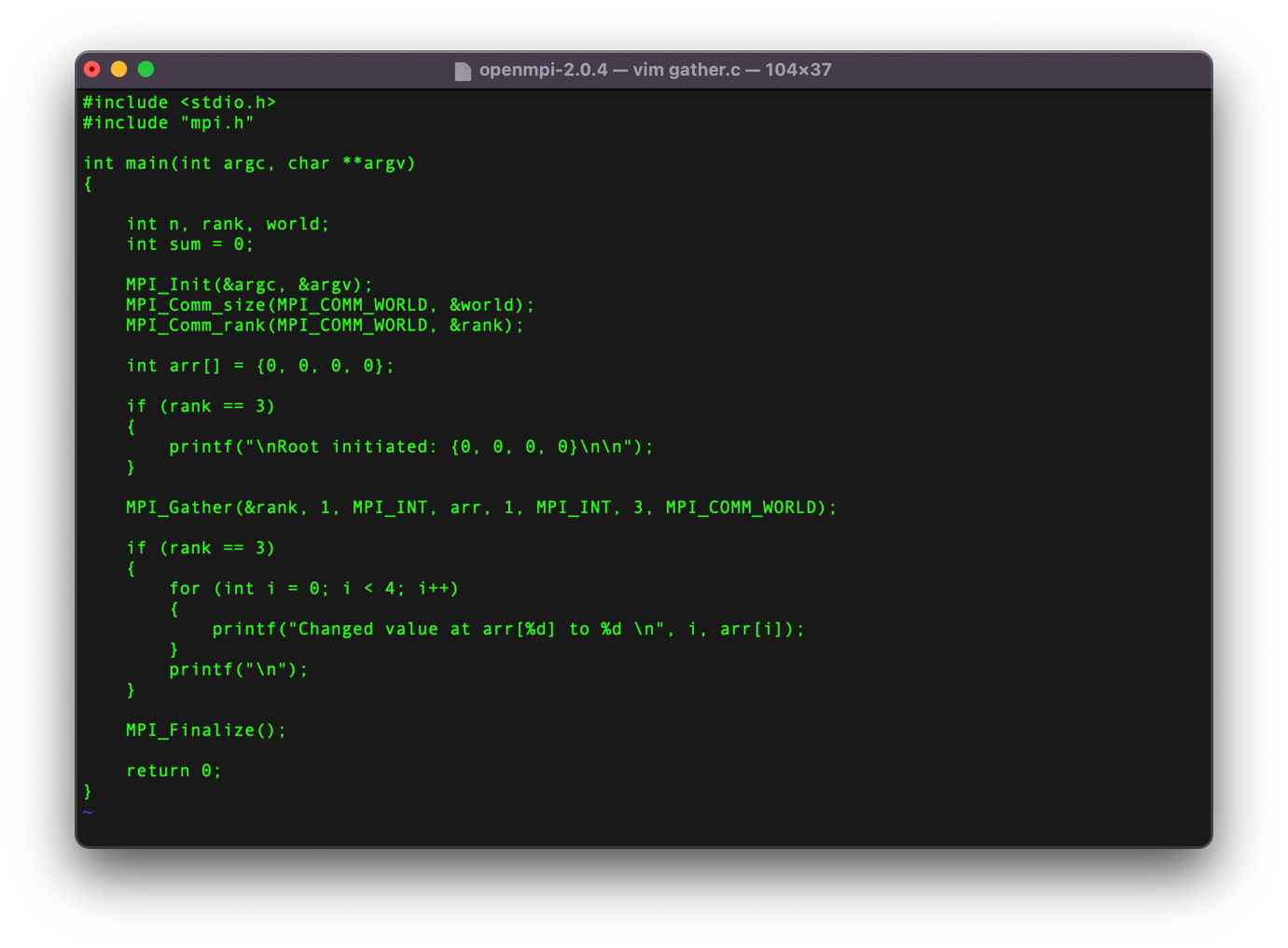
int recvcount , // items to receive per process

MPI\_Datatype recvtype , // type of receive buffer data

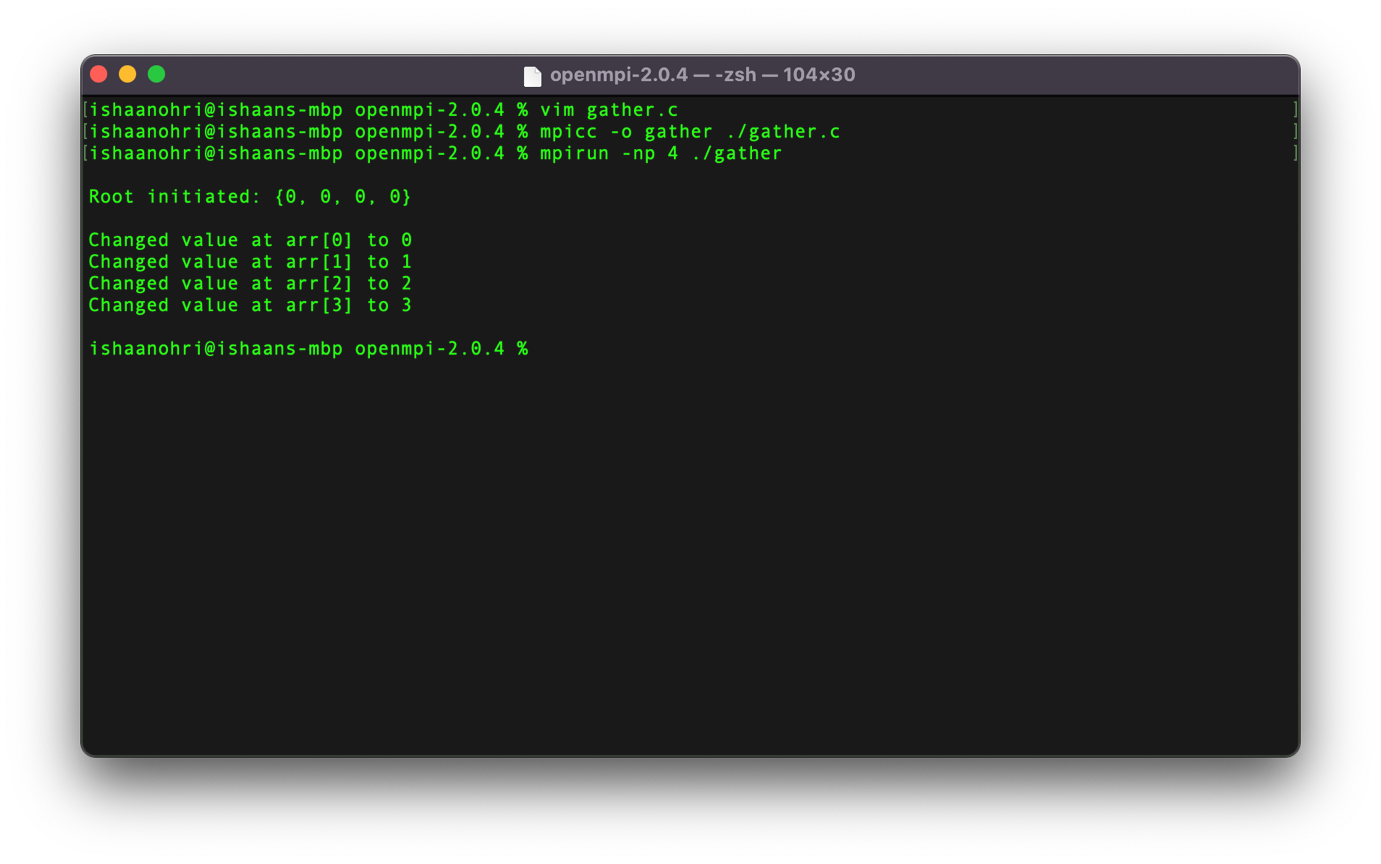
int root , // rank of receiving process

MPI\_Comm comm ) // MPI communicator to use

**Source Code:**

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**Execution:**

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**Remarks:**

int MPI\_Gather(const void \*sendbuf, int sendcount, MPI\_Datatype sendtype, void \*recvbuf, int recvcount, MPI\_Datatype recvtype, int root, MPI\_Comm comm)

In the MPI\_Gather command following are the meaning of all parameters:

sendbuf => starting address of send buffer (choice)

sendcount => number of elements in send buffer (integer)

sendtype => data type of send buffer elements (handle)

recvcount => number of elements for any single receive (integer, significant only at root)

recvtype => data type of recv buffer elements (significant only at root) (handle)

root => rank of receiving process (integer)

comm => communicator (handle)

Initially the array arr is declared as {0, 0, ,0 ,0} and then by the use of MPI\_Gather we get the values changed to {0, 1, 2, 3}. Each and every root is sending its rank as the sendbuff. These received values are stored at the respective indices of the final root array. These value are displayed iteratively.