Started on	Thursday, 11 April 2024, 10:57 PM
State	Finished
Completed on	Thursday, 11 April 2024, 10:58 PM
Time taken	35 secs
Grade	**3.00** out of 3.00 (**100**%)

Question 1

Correct

Mark 1.00 out of 1.00

Collective communication primitives are called differently from the different processes which execute the MPI program. For instance, a master process would call MPI_Bcast differently from the workers.

Select one:

- True
- False ✔

Well done. Congratulations!

The correct answer is 'False'.

Question 2

Correct

Mark 1.00 out of 1.00

MPI collective communication primitives involve many processes.

For each of the primitives below indicate if the communication is from 1 to N, from N to 1, or from N to N processes.

MPI_Reduce	N -> 1 ✔
MPI_Bcast	1 -> N ✔
MPI_Allgather	N -> N ✔
MPI_Alltoall	N -> N ✔
MPI_Gather	N -> 1 ✔
MPI_Scatter	1 -> N ✔

Your answer is correct.

The correct answer is: MPI_Reduce → N -> 1, MPI_Bcast → 1 -> N, MPI_Allgather → N -> N, MPI_Alltoall → N -> N, MPI_Gather → N -> 1, MPI_Scatter → 1 -> N

Question 3

Correct

Mark 1.00 out of 1.00

Let's see the semantics of each MPI primitive.

"root" refers to the special process when communications go from 1 to N, or from N to 1.

MPI_Bcast	Broadcasts a message from the process with rank "root" (4th parameter) to all other processes of the group. ✔
MPI_Gather	Each process (root process included) sends the contents of its send buffer to the root process. The root process receives the messages and stores them in rank order. ✔
MPI_Alltoall	All processes send data to all processes. All processes send the same amount of data to each other, and receive the same amount of data from each other. ✔
MPI_Allgather	The block of data sent from the jth process is received by every process and placed in the jth block of the buffer recvbuf. MPI_Allgather is similar to MPI_Gather, except that all processes receive the result, instead of just the root. ✔
MPI_Scatter	Sends data from one process (root) to all processes in a group. Each process receives a different subset of the input data. ✔
MPI_Reduce	Reduces values in the input buffer of all processes within a group to a single value by applying the operation "op" specified in the 5th parameter. Only the "root" process will retrieve the result (within the memory pointed to by the 2nd parameter). ✔

Your answer is correct.

The correct answer is: MPI_Bcast → Broadcasts a message from the process with rank "root" (4th parameter) to all other processes of the group., MPI_Gather → Each process (root process included) sends the contents of its send buffer to the root process. The root process receives the messages and stores them in rank order., MPI_Alltoall → All processes send data to all processes. All processes send the same amount of data to each other, and receive the same amount of data from each other., MPI_Allgather → The block of data sent from the jth process is received by every process and placed in the jth block of the buffer recvbuf. MPI_Allgather is similar to MPI_Gather, except that all processes receive the result, instead of just the root., MPI_Scatter → Sends data from one process (root) to all processes in a group. Each process receives a different subset of the input data., MPI_Reduce → Reduces values in the input buffer of all processes within a group to a single value by applying the operation "op" specified in the 5th parameter. Only the "root" process will retrieve the result (within the memory pointed to by the 2nd parameter).