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CS381-16 Assignment 5

Answer to A

Code:

```
from mpi4py import MPI

comm_world = MPI.COMM_WORLD
my_rank = comm_world.Get_rank()
buffer = [ None ]

if my_rank == 0:
  print(f"I am {my_rank} before send ping")

if my_rank > 0:
  print(f"I am {my_rank} after  recv ping ")
```

Terminal:

```
[Hasanats-Air:Assignment5 jahan$ mpirun -np 2 python3 ping-skel.py
I am 1 after  recv ping
I am 0 before send ping
```

Answer to B

```
from mpi4py import MPI

buffer = [ None ]

comm_world = MPI.COMM_WORLD
my_rank = comm_world.Get_rank()

if (my_rank == 0):
  print(f"I am {my_rank} before send ping")
  comm_world.send(buffer, dest=1, tag=17)

  buffer = comm_world.recv(source=1, tag=23)
  print(f"I am {my_rank} after  recv ping")

elif (my_rank == 1):
  buffer = comm_world.recv(source=0, tag=17)
  print(f"I am {my_rank} after  recv ping")
   print(f"I am {my_rank} before send ping")
  comm_world.send(buffer, dest=0, tag=23)
```

Output:

```
Hasanats-Air:Assignment5 jahan$ mpirun -np 2 python3 pingpong-skel.py
I am 0 before send ping
I am 1 after  recv ping
I am 1 before send ping
I am 0 after  recv ping
```

Answer to C

```
from mpi4py import MPI

number_of_messages = 50
buffer = 0.0
status = MPI.Status()

comm_world = MPI.COMM_WORLD
my_rank = comm_world.Get_rank()

start = MPI.Wtime()

for x in range(50):
  if (my_rank == 0):
     comm_world.send(buffer, dest=1, tag=17)
     buffer = comm_world.recv(source=1, tag=23, status=status)

  elif (my_rank == 1):
     buffer = comm_world.recv(source=0, tag=17, status=status)
     comm_world.send(buffer, dest=0, tag=23)

finish = MPI.Wtime()

if (my_rank == 0):
  msg_transfer_time = ((finish - start) / (2 * number_of_messages)) * 1e6 # in
microsec
  print(f"Time for one message: {msg_transfer_time:f} micro seconds.")
```

Output:

```
Hasanats-Air:Assignment5 jahan$ mpirun -np 2 python3 pingpong-bench-skel.py
Time for one message: 15.340000 micro seconds.
```