PDC - Lab 6

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Question 1
A Ping Pong program

```c
#include <mpi.h>
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char** argv) {
    const int PING_PONG_LIMIT = 10;

    // Initialize the MPI environment
    MPI_Init(NULL, NULL);
    // Find out rank, size
    int world_rank;
    MPI_Comm_rank(MPI_COMM_WORLD, &world_rank);
    int world_size;
    MPI_Comm_size(MPI_COMM_WORLD, &world_size);

    int ping_pong_count = 0;
    int partner_rank = (world_rank + 1) % 2;
    while (ping_pong_count < PING_PONG_LIMIT) {
        if (world_rank == ping_pong_count % 2) {
        // Increment the ping pong count before you send it

        ping_pong_count++;
```

```c
        MPI_Send(&ping_pong_count, 1, MPI_INT,
partner_rank, 0, MPI_COMM_WORLD);
        printf("%d sent and incremented ping_pong_count
%d to %d\n",
                world_rank, ping_pong_count,
partner_rank);
        } else {
        MPI_Recv(&ping_pong_count, 1, MPI_INT,
partner_rank, 0, MPI_COMM_WORLD,
                MPI_STATUS_IGNORE);
        printf("%d received ping_pong_count %d from
%d\n",
                world_rank, ping_pong_count,
partner_rank);
        }
    }
    MPI_Finalize();
}
```

```
(base) Aadhityas-MacBook-Air:5Sep2020 aadhitya$ mpicc p1.c
(base) Aadhityas-MacBook-Air:5Sep2020 aadhitya$ mpirun -np 2 a.out
0 sent and incremented ping_pong_count 1 to 1
1 received ping_pong_count 1 from 0
1 sent and incremented ping_pong_count 2 to 0
0 received ping_pong_count 2 from 1
0 sent and incremented ping_pong_count 3 to 1
0 received ping_pong_count 4 from 1
0 sent and incremented ping_pong_count 5 to 1
0 received ping_pong_count 6 from 1
0 sent and incremented ping_pong_count 7 to 1
1 received ping_pong_count 3 from 0
1 sent and incremented ping_pong_count 4 to 0
1 received ping_pong_count 5 from 0
1 sent and incremented ping_pong_count 6 to 0
1 received ping_pong_count 7 from 0
1 sent and incremented ping_pong_count 8 to 0
0 received ping_pong_count 8 from 1
0 sent and incremented ping_pong_count 9 to 1
0 received ping_pong_count 10 from 1
1 received ping_pong_count 9 from 0
1 sent and incremented ping_pong_count 10 to 0
(base) Aadhityas-MacBook-Air:5Sep2020 aadhitya$ []
```