Parallel Programming HW1 Write Up

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1 Description

For this assignment we needed to write a program using MPI, where each process sends its rank number to rank+1%size and prints out both its own rank as well as the data it received, and then execute it and show the output.

2 Implementation

The implementation of this program is simple as it was shown in class. First we initialize the variables rank, size and data. Then we call MPI_Init() using the addresses of the argc and argv variables of the main function. Next we call MPI_Comm_rank() with the address of rank and MPI_Comm_size() using the address of size. Then we use MPI_Send() to send the rank number to the process and use MPI_Recv() To have the process receive the sent data. Then we finally have a cout statement that prints out the current process's rank and the data that it received.

3 Specs

My system is a AMD Ryzen 5800x processor running Windows 10.

4 Installation

To install OpenMPI I had to first install Ubuntu and run it with WSL. Then I ran the command **sudo apt install openmpi-bin** to install OpenMPI and **sudo apt-get install g++** to install the linux c++ compiler.

5 Compile and Run

To compile my code I moved into the directory containing HW1.cpp and ran the command **mpic++ HW1.cpp**. Then to run the code I used the command **mpirun -n 4 a.out** to run the code with 4 processes.

6 Output

The output of my code is shown below.