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Final Homework

Part 1:

In my computer I did: mpirun -np 2 ./FHW 1 100000 and it caused a deadlock were both process are stock sending the message. I tried inputting 1 1000 like in class but that didn't cause a deadlock for me. This means that Large message, both processes send then receive causes a deadlock and anything above 16360 causes a deadlock in my computer.

And receiving first always causes a error because both process are waiting for the other to send something.

Part 2:
Code with cuda:

```
peguenoa@charon:~/MANDELBROT_STARTER$ ./mandelbrot2 100
Mandelbrot Example
N = 100
X = -2.000000 -> 2.000000, Y = -2.000000 -> 2.000000
DEPTH = 1000
ELAPSED TIME IN CALCULATION LOOP = 0.818208 ms

peguenoa@charon:~/MANDELBROT_STARTER$ ./mandelbrot2 1000
Mandelbrot Example
N = 1000
X = -2.000000 -> 2.000000, Y = -2.000000 -> 2.000000
DEPTH = 1000
ELAPSED TIME IN CALCULATION LOOP = 18.934849 ms

peguenoa@charon:~/MANDELBROT_STARTER$ ./mandelbrot2 10000
Mandelbrot Example
N = 10000
X = -2.000000 -> 2.000000, Y = -2.000000 -> 2.000000
DEPTH = 1000
ELAPSED TIME IN CALCULATION LOOP = 1340.446533 ms
```

Code without cuda:

```
peguenoa@charon:~/MANDELBROT_STARTER$ ./mandelbrot_host 100
Mandelbrot Example
N = 100
X = -2.000000 -> 2.000000, Y = -2.000000 -> 2.000000
```

```
DEPTH = 1000
ELAPSED TIME IN CALCULATION LOOP = 11.582464 ms

peguenoa@charon:~/MANDELBROT_STARTER$ ./mandelbrot_host 1000
Mandelbrot Example
N = 1000
X = -2.000000 -> 2.000000, Y = -2.000000 -> 2.000000
DEPTH = 1000
ELAPSED TIME IN CALCULATION LOOP = 684.123596 ms

peguenoa@charon:~/MANDELBROT_STARTER$ ./mandelbrot_host 10000
Mandelbrot Example
N = 10000
X = -2.000000 -> 2.000000, Y = -2.000000 -> 2.000000
DEPTH = 1000
ELAPSED TIME IN CALCULATION LOOP = 67758.148438 ms
```