OUTPUTS FOR ASSIGNMENT - 1, 2 & 3

Assignment: 1

1. MPI_SEND_RECV

```
bhavuu@Bhavika:~$ nano A1_Q1.c
bhavuu@Bhavika:~$ mpicc A1_Q1.c -o A1_Q1
bhavuu@Bhavika:~$ mpirun -np 2 ./A1_Q1
Process 0 sent data 100 to process 1
Process 1 received data 100 from process 0
bhavuu@Bhavika:~$
```

2. MPI_PROBE_STATUS

```
bhavuu@Bhavika:~$ nano A1_Q2.c
bhavuu@Bhavika:~$ mpicc A1_Q2.c -o A1_Q2
bhavuu@Bhavika:~$ mpirun -np 2 ./A1_Q2
Process 0 sent 5 integers
Process 1 received 5 integers:
10 20 30 40 50
bhavuu@Bhavika:~$
```

3. MPI_RANDOM_WALK

```
bhavuu@Bhavika:~$ nano A1_Q3.c
bhavuu@Bhavika:~$ mpicc A1_Q3.c -o A1_Q3
bhavuu@Bhavika:~$ mpirun -np 2 ./A1_Q3
Step 1: Process 0 moved to position -1
Step 2: Process 0 moved to position 1
Step 3: Process 0 moved to position 3
Step 4: Process 0 moved to position 5
Step 5: Process 0 moved to position 5
Step 6: Process 0 moved to position 7
Step 7: Process 0 moved to position 7
Step 8: Process 0 moved to position 7
Step 9: Process 0 moved to position 5
Step 10: Process 0 moved to position 5
Step 1: Process 1 moved to position 0
Step 2: Process 1 moved to position 2
Step 3: Process 1 moved to position 4
Step 4: Process 1 moved to position 6
Step 5: Process 1 moved to position 6
Step 6: Process 1 moved to position 6
Step 7: Process 1 moved to position 8
Step 8: Process 1 moved to position 6
Step 9: Process 1 moved to position 4
Step 10: Process 1 moved to position 6
bhavuu@Bhavika:~$
```

Assignment: 2

1. MPI_PI_ESTIMATION

```
bhavuu@Bhavika:~$ nano A2_Q1.c
bhavuu@Bhavika:~$ mpicc A2_Q1.c -o A2_Q1
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q1
Estimated value of Pi: 3.143724
bhavuu@Bhavika:~$
```

2. MPI_MATRIX_MULTIPLICATION

```
bhavuu@Bhavika:~$ nano A2_Q2.c
bhavuu@Bhavika:~$ mpicc -fopenmp A2_Q2.c -o A2_Q2
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q2
Serial Execution Time: 0.001886 seconds
Parallel Execution Time: 0.000735 seconds
bhavuu@Bhavika:~$
```

3. MPI_ODD_EVEN_SORT

```
bhavuu@Bhavika:~$ nano A2_Q3.c
bhavuu@Bhavika:~$ mpicc A2_Q3.c -o A2_Q3
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q3
Unsorted array:
96 60 57 94 75 50 23 76 38 0 45 55 62 11 68 1
Sorted array:
0 1 11 23 38 45 50 55 57 60 62 68 75 76 94 96
Execution Time: 0.000370 seconds
bhavuu@Bhavika:~$
```

4. MPI_HEAT_SIMULATION

```
bhavuu@Bhavika:~$ nano A2_Q4.c
bhavuu@Bhavika:~$ mpicc A2_Q4.c -o A2_Q4
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q4
Final Heat Distribution:
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00
100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00
Execution Time: 0.001001 seconds
bhavuu@Bhavika:~$
```

5. MPI_REDUCTION

```
bhavuu@Bhavika:~$ nano A2_Q5.c
bhavuu@Bhavika:~$ mpicc A2_Q5.c -o A2_Q5
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q5
Total Sum: 49698.00
Execution Time: 0.000103 seconds
bhavuu@Bhavika:~$
```

6. MPI_DOT_PRODUCT

```
bhavuu@Bhavika:~$ nano A2_Q6.c
bhavuu@Bhavika:~$ mpicc A2_Q6.c -o A2_Q6
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q6
Dot Product: 2347817.00
Execution Time: 0.000097 seconds
bhavuu@Bhavika:~$
```

7. MPI_PREFIX_SUM

```
bhavuu@Bhavika:~$ nano A2_Q7.c
bhavuu@Bhavika:~$ mpicc A2_Q7.c -o A2_Q7
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q7
Total Sum: 214
Execution Time: 0.000269 seconds
bhavuu@Bhavika:~$
```

8. MPI_MATRIX_TRANSPOSE

```
bhavuu@Bhavika:~$ nano A2_Q8.c
bhavuu@Bhavika:~$ mpicc A2_Q8.c -o A2_Q8
bhavuu@Bhavika:~$ mpirun -np 4 ./A2_Q8
Matrix Transposition Completed.
Execution Time: 0.001169 seconds
bhavuu@Bhavika:~$
```

Assignment: 3

1. MPI_DAXPY

```
bhavuu@Bhavika:~$ nano A3_Q1.c
bhavuu@Bhavika:~$ mpicc A3_Q1.c -o A3_Q1
bhavuu@Bhavika:~$ mpirun -np 4 ./A3_Q1
DAXPY completed in 0.000090 seconds
bhavuu@Bhavika:~$
```

2. MPI_PI_CALCULATION

```
bhavuu@Bhavika:~$ nano A3_Q2.c
bhavuu@Bhavika:~$ mpicc A3_Q2.c -o A3_Q2
bhavuu@Bhavika:~$ mpirun -np 4 ./A3_Q2
Calculated value of π: 3.141592653598117
bhavuu@Bhavika:~$
```

3. MPI_PRIME_FINDER

```
bhavuu@Bhavika:~$ nano A3_Q3.c
bhavuu@Bhavika:~$ mpicc A3_Q3.c -o A3_Q3
bhavuu@Bhavika:~$ mpirun -np 4 ./A3_Q3
2 is prime
3 is prime
5 is prime
7 is prime
11 is prime
13 is prime
17 is prime
19 is prime
23 is prime
29 is prime
31 is prime
37 is prime
41 is prime
43 is prime
47 is prime
53 is prime
59 is prime
61 is prime
67 is prime
71 is prime
73 is prime
79 is prime
83 is prime
89 is prime
97 is prime
```