**Q1.** Write an MPI program to check if the input number is prime.

**Example Run**:
$>> mpiexec -np 5 PrimalityTest
17

**Output**: 17 is a prime.

**Note**:
      1. Strictly adhere to the output format ('x is a prime' or 'x is not a prime').
      2. There would be checks ensuring two way communication between Master and Slaves.
      Submitting a simple primality test program will result in negative marks.

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**Q2.** Write an MPI program that implements Merge Sort.

- The master reads the input array until newline and then divides the input array into *n* equal parts and sends them accordingly to the slave processes.
- The slave processes uses any sorting algorithm and sends back the sorted subarray to the master.
- Upon receiving all the sorted subarrays from the slave processes, the master merges the subarrays into one and prints them out.

**Example Run**:
$>> mpiexec -np 5 MS
9 5 1 2 4 7 5 3

Master to Slaves:
[9, 5] will be sent to Slave 0.
[1, 2] will be sent to Slave 1.
[4, 7] will be sent to Slave 2.
[5, 3] will be sent to Slave 3.

Slaves to Master:
[5, 9] is received from Slave 0.
[1, 2] is received from Slave 1.
[4, 7] is received from Slave 2.
[3, 5] is received from Slave 3.

Master merges the subarrays and prints the following:
1 2 3 4 5 5 7 9

**Note**:
    1. Print only the final sorted array (no trace).
    2. There would be checks ensuring two way communication between Master and
    Slaves.
    Submitting a simple sorting program will result in negative marks.

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**Q3**. Given coordinates of a convex polygon with *n* vertices, write an MPI program to
calculate the area of the polygon.

**Example Run**:
$>> mpiexec -np 4 Area
4
0 2
2 2
2 0
0 0

**Output**: Area: 4

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**Upload Format**: Roll No.zip
Contents:     a. Q1.c/cpp
              b. Q2.c/cpp
              c. Q3.c/cpp