

Assignment

Counting Primes Problem:

This problem describes extracting all primes between two numbers entered by user, using parallel MPI (Message Passage Interface) library and c++ code.

Given Test Case:

- Lower bound number $x = 1$
- Upper bound number $y = 100$

Output

According to master/slave approach , this test case uses 5 processes (0 is master and [1,2,3,4] are slaves) , the master proc assign portion of those numbers to each slave proc and receive primes found in each proc and sum it in order to get all prime numbers in master array , Code Attached

```
C:\Windows\System32\cmd.exe
C:\Users\Mohamed Ramadan\Documents\Visual Studio 2012\Projects\MPIPrimeNumbers\Debug>mpiexec -n 5 MPIPrimeNumbers.exe
Enter lower : 1
Enter upper : 100

Recive Process 1 take 1.97753 seconds
Recive Process 2 take 1.97755 seconds
Recive Process 3 take 1.97887 seconds
Recive Process 4 take 1.97946 seconds
Send to all Process from master take 0.00186344 seconds
All Primes Count is 25
Send Process 1 take 0.000545289 seconds
Send Process 3 take 0.000758585 seconds
Send Process 4 take 0.000926366 seconds
Send Process 2 take 0.000355643 seconds
Recive from all Process in master 0.00244845 seconds
C:\Users\Mohamed Ramadan\Documents\Visual Studio 2012\Projects\MPIPrimeNumbers\Debug>_
```

Given map for prime numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100