

Largest gap between consecutive primes in a range

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```
range  $\leftarrow$  10.000.000
for all processors do
    chunksize  $\leftarrow$  range/processors
    start  $\leftarrow$  myId * chunksize
    firstprime  $\leftarrow$  firstprimefound
    for number := start  $\rightarrow$  start + chunksize do
        if checkprime(number) then
            if number - prev_prime > gap then
                gap  $\leftarrow$  number - prev_prime
            end if
            prev_prime  $\leftarrow$  number
        end if
    end for
    lastprime  $\leftarrow$  lastprimefound
end for
Gather all firstprime in processor_id = 0
Gather all lastprime in processor_id = 0
maxgap  $\leftarrow$  MPI_Reduce(gap, max, ...)
for i = 0  $\rightarrow$  (numprocs - 1) - 1 do
    mid_gap = firstprime[i + 1] - last[i]
    if mid_gap > maxgap then
        maxgap  $\leftarrow$  mid_gap
    end if
end for
return

function CHECKPRIME(n)
    for i = 2  $\rightarrow$  sqrt(n) do
        if n mod i = 0 then
            return False
        end if
    end for
    return True
```

end function