2.12 LeetCode Problem 204: Count Primes

204. Count Primes

https://leetcode.com/problems/count-primes/

Given an integer n, return the number of prime numbers that are strictly less than n.

`0 <= n <= 5 * 10^6` **Cannot use sqrt()**

```
Testing Prime.py Starts
------------ 100 -------------------------
-------------- uptoprime  Method-----------------------
100  has  25  Prime. Took 132  steps to compute
Total CPU time in sec = 0.0
-------------- sieve_of_eratosthenes  Method----------------------
100  has  25  Prime. Took 202  steps to compute
Total CPU time in sec = 0.0
------------ 1000 -------------------------
-------------- uptoprime  Method-----------------------
1000  has  168  Prime. Took 2302  steps to compute
Total CPU time in sec = 0.0
-------------- sieve_of_eratosthenes  Method----------------------
1000  has  168  Prime. Took 2409  steps to compute
Total CPU time in sec = 0.0
------------ 10000 ------------------------
-------------- uptoprime  Method-----------------------
10000  has  1229  Prime. Took 38754  steps to compute
Total CPU time in sec = 0.015625
-------------- sieve_of_eratosthenes  Method----------------------
10000  has  1229  Prime. Took 26979  steps to compute
Total CPU time in sec = 0.0
------------ 100000 -------------------------
-------------- uptoprime  Method-----------------------
100000  has  9592  Prime. Took 694437  steps to compute
Total CPU time in sec = 0.171875
-------------- sieve_of_eratosthenes  Method----------------------
100000  has  9592  Prime. Took 293076  steps to compute
Total CPU time in sec = 0.0625
------------ 1000000 ------------------------
-------------- uptoprime  Method-----------------------
1000000  has  78498  Prime. Took 13427403  steps to compute
Total CPU time in sec = 3.3125
-------------- sieve_of_eratosthenes  Method----------------------
1000000  has  78498  Prime. Took 3122046  steps to compute
Total CPU time in sec = 0.6875
ALL TESTS PASSED
Testing Prime.py ENDS
Press any key to continue . . .
```

Figure 2.20: Problem definition

2.12.1 Leetcode output

204. Count Primes

https://leetcode.com/problems/count-primes/

```
class Solution:
    def countPrimes(self, n: int) -> int:
        list = []
        work = [0]
        if True:
            L0204(n, list, work, "up_to_prime")
        if False:
            L0204(n, list, work, "sieve_of_eratosthenes")
        return len(list)
```

Time Limit Exceeded Details ›

Success Details ›

Runtime: 8928 ms, faster than 5.02% of Python3 online submissions for Count Primes.

Memory Usage: 70.2 MB, less than 35.97% of Python3 online submissions for Count Primes.

Figure 2.21: Problem 204: Count Primes passed

2.13 LeetCode Problems 225, 235, 632 and 641 using *slist*

