

CSE 102-COMPUTER PROGRAMMING -HOMEWORK 10

This program aims to read numbers(1-1.000.000) from a file called “data.txt” and it writes these numbers in to two data structures. One is a linked list and other one is a dynamically allocated array. Also this program prints and writes prime numbers into output_prime_dynamic_array.txt and output_prime_linked_list.txt files using record_to_array and record_to_linked_list functions. These functions also calculate the time passing between the calculations of 1-500.000, 1-750.000,1-1.000.000 by using gettimeofday function from the library sys/time.h. Found the totally time passing by differentiating ending and starting value of the time, then converted it to milliseconds. These time values are also written in to output_prime_dynamic_array.txt and output_prime_linked_list.txt files.

Here are some screenshots of the files and the program runnings.

```
gokce@gokce-VirtualBox: ~/Desktop
999521
999529
999541
999553
999563
999599
999611
999613
999623
999631
999653
999667
999671
t999683
999721
999727
999749
t999763
999769
999773
999809
999853
999863
999883
t999907
999917
999931
999953
999959
999961
999979
999983
Time spent for 1-500.000:44861.000000 ms
Time spent for 1-750.000:95822.000000 ms
Time spent for 1-1.000.000:165011.000000 ms
```

Program output for record_to_array(just the ending since numbers are too much to capture).

```
2
3
5
7
11
13
17
19
23
29
31
37
41
43
47
53
59
61
67
71
73
79
83
89
97
101
103
107
109
113
127
131
137
139
149
151
157
163
167
173
179
181
191
193
197
199
211
223
227
```

File output for record_to_array
(start of the file to show the first values)

```
78433 999287
78454 999307
78455 999329
78456 999331
78457 999359
78458 999371
78459 999377
78460 999389
78461 999431
78462 999433
78463 999437
78464 999451
78465 999491
78466 999499
78467 999521
78468 999529
78469 999541
78470 999553
78471 999563
78472 999599
78473 999611
78474 999613
78475 999623
78476 999631
78477 999653
78478 999667
78479 999671
78480 999683
78481 999721
78482 999727
78483 999749
78484 999763
78485 999769
78486 999773
78487 999809
78488 999853
78489 999863
78490 999883
78491 999907
78492 999917
78493 999931
78494 999953
78495 999959
78496 999961
78497 999979
78498 999983
78499 Time spent for 1-500.000:44861.000000
78500 Time spent for 1-750.000:95822.000000
78501 Time spent for 1-1.000.000:165011.000000
```

File output for record_to_array
(ending of the file to show last values)

```

999563
999599
999611
999613
999623
999631
999653
999667
999671
999683
999721
999727
999749
999763
999769
999773
999809
999853
999863
999883
999907
999917
999931
999953
999959
999961
999979
999983
Time spent for 1-500.000:49545.000000 ms
Time spent for 1-750.000:100065.000000 ms
Time spent for 1-1.000.000:170259.000000 ms

```

Program output for record_to_linked_list(just the ending since numbers are too much to capture).

```

1 2
2 3
3 5
4 7
5 11
6 13
7 17
8 19
9 23
10 29
11 31
12 37
13 41
14 43
15 47
16 53
17 59
18 61
19 67
20 71
21 73
22 79
23 83
24 89
25 97
26 101
27 103
28 107
29 109
30 113
31 127
32 131
33 137
34 139
35 149
36 151
37 157
38 163
39 167
40 173
41 179
42 181
43 191
44 193
45 197
46 199
47 211
48 223
49 227

```

File output for record_to_linked_list
(start of the file to show the first values)

```

78453 999287
78454 999307
78455 999329
78456 999331
78457 999359
78458 999371
78459 999377
78460 999389
78461 999431
78462 999433
78463 999437
78464 999451
78465 999491
78466 999499
78467 999521
78468 999529
78469 999541
78470 999553
78471 999563
78472 999599
78473 999611
78474 999613
78475 999623
78476 999631
78477 999653
78478 999667
78479 999671
78480 999683
78481 999721
78482 999727
78483 999749
78484 999763
78485 999769
78486 999773
78487 999809
78488 999853
78489 999863
78490 999883
78491 999907
78492 999917
78493 999931
78494 999953
78495 999959
78496 999961
78497 999979
78498 999983
78499 Time spent for 1-500.000:49545.000000
78500 Time spent for 1-750.000:100065.000000
78501 Time spent for 1-1.000.000:170259.000000

```

File output for record_to_linked_list
(ending of the file to show last values)