

CSE 4034 – Advanced Unix Programming

Programming Assignment # 2

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Design;

1. Get a number from user.
2. Calculate number of threads. (random between 3 and 5)
3. Allocate memory for the array and negate it.
4. Check primeness of numbers which are less then the number.
 - Divide numbers to previous prime numbers. If the number is not divisible none of them, the number is prime.
5. Print prime numbers. (in the pdf file it does not say threads have to print their prime numbers. We recorded prime numbers and which thread calculated it to a array, and after all calculations are finished, main thread prints the prime numbers and threads.)

Number : 50

Number of working threads : 4

```
C project2.c x
1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <omp.h>
4  #include <time.h>
5
6
7  void prime_numbers(int numbers, int number_of_threads);
8  int check_prime(int the number);
9  void print_primes(int number);
10 void negate(int number);
11 void memory_allocate(int number);
12
13 int **prime_array;    // array for keep prime numbers and which thread calculated it
14 // prime_array[i][0] keeps prime or not
15 // prime_array[i][1] keeps which thread calculate it

PROBLEMS 26 OUTPUT DEBUG CONSOLE TERMINAL 1: bash
mehmet@mehmet-Inspiron-3543:~/Desktop$ ./a.out
Enter a number: 50

Thread 0 Prime 2
Thread 2 Prime 3
Thread 1 Prime 5
Thread 0 Prime 7
Thread 1 Prime 11
Thread 2 Prime 13
Thread 0 Prime 17
Thread 3 Prime 19
Thread 0 Prime 23
Thread 3 Prime 29
Thread 0 Prime 31
Thread 3 Prime 37
Thread 1 Prime 41
Thread 2 Prime 43
Thread 3 Prime 47
```

Number : 100

Number of working threads : 4

```
C project2.c x
1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <omp.h>
4  #include <time.h>
5
6
7  void prime_numbers(int numbers, int number_of_threads);

PROBLEMS 26 OUTPUT DEBUG CONSOLE TERMINAL 1: bash
mehmet@mehmet-Inspiron-3543:~/Desktop$ ./a.out
Enter a number: 100

Thread 0 Prime 2
Thread 2 Prime 3
Thread 1 Prime 5
Thread 0 Prime 7
Thread 2 Prime 11
Thread 0 Prime 13
Thread 2 Prime 17
Thread 1 Prime 19
Thread 0 Prime 23
Thread 3 Prime 29
Thread 0 Prime 31
Thread 1 Prime 37
Thread 2 Prime 41
Thread 3 Prime 43
Thread 1 Prime 47
Thread 3 Prime 53
Thread 0 Prime 59
Thread 1 Prime 61
Thread 3 Prime 67
Thread 0 Prime 71
Thread 2 Prime 73
Thread 3 Prime 79
Thread 0 Prime 83
Thread 1 Prime 89
Thread 0 Prime 97
```

Number : 500

Number of working threads : 4

```
C project2.c x
1  #include <stdio.h>
2  #include <stdlib.h>

PROBLEMS 26 OUTPUT DEBUG CONSOLE TERMINAL 1: bash +

Thread 3 Prime 307
Thread 1 Prime 311
Thread 2 Prime 313
Thread 0 Prime 317
Thread 3 Prime 331
Thread 1 Prime 337
Thread 0 Prime 347
Thread 2 Prime 349
Thread 3 Prime 353
Thread 1 Prime 359
Thread 0 Prime 367
Thread 2 Prime 373
Thread 3 Prime 379
Thread 1 Prime 383
Thread 2 Prime 389
Thread 0 Prime 397
Thread 3 Prime 401
Thread 1 Prime 409
Thread 2 Prime 419
Thread 0 Prime 421
Thread 3 Prime 431
Thread 1 Prime 433
Thread 2 Prime 439
Thread 0 Prime 443
Thread 3 Prime 449
Thread 1 Prime 457
Thread 2 Prime 461
Thread 0 Prime 463
Thread 3 Prime 467
Thread 2 Prime 479
Thread 1 Prime 487
Thread 0 Prime 491
Thread 3 Prime 499
```

Number : 121

Number of working threads : 5

```
C project2.c x
1 #include <stdio.h>
2 #include <stdlib.h>

PROBLEMS 26 OUTPUT DEBUG CONSOLE TERMINAL 1: bash

mehmet@mehmet-Inspiron-3543:~/Desktop$ ./a.out
Enter a number: 121

Thread 1 Prime 2
Thread 1 Prime 3
Thread 1 Prime 5
Thread 1 Prime 7
Thread 1 Prime 11
Thread 1 Prime 13
Thread 1 Prime 17
Thread 1 Prime 19
Thread 1 Prime 23
Thread 1 Prime 29
Thread 4 Prime 31
Thread 4 Prime 37
Thread 1 Prime 41
Thread 0 Prime 43
Thread 1 Prime 47
Thread 4 Prime 53
Thread 1 Prime 59
Thread 4 Prime 61
Thread 0 Prime 67
Thread 1 Prime 71
Thread 4 Prime 73
Thread 4 Prime 79
Thread 0 Prime 83
Thread 1 Prime 89
Thread 4 Prime 97
Thread 0 Prime 101
Thread 1 Prime 103
Thread 4 Prime 107
Thread 0 Prime 109
Thread 1 Prime 113
```

Number : 70

Number of working threads : 3

```
C project2.c •
83 }
84
85 // print prime numbers
86 void print_primes(int number){
87     int i;
88     for (i = 0; i<number; i++){
89         if ( prime_array[i][0] == 1)
90             printf("Thread %d Prime %d\n", prime_array[i][1], i);
91     }
92 }

PROBLEMS 26 OUTPUT DEBUG CONSOLE TERMINAL 1: bash

Thread 1 Prime 47
Thread 0 Prime 53
Thread 3 Prime 59
Thread 1 Prime 61
Thread 2 Prime 67
mehmet@mehmet-Inspiron-3543:~/Desktop$ ./a.out
Enter a number: 70

Thread 1 Prime 2
Thread 0 Prime 3
Thread 1 Prime 5
Thread 2 Prime 7
Thread 2 Prime 11
Thread 0 Prime 13
Thread 1 Prime 17
Thread 2 Prime 19
Thread 2 Prime 23
Thread 1 Prime 29
Thread 2 Prime 31
Thread 1 Prime 37
Thread 2 Prime 41
Thread 0 Prime 43
Thread 2 Prime 47
Thread 1 Prime 53
Thread 0 Prime 59
Thread 1 Prime 61
Thread 2 Prime 67
```