Homework-1 Report

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Date: October 29, 2024

BGK-516

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In this section of the assignment, I once more used the gmp library, but I was unable to deal with really large values because of some memory issues. because I had issues when attempting to export the numbers to Excel. One byte is actually stored in a prime integer, given that the gadget I'm working on has 16 gb memory. I wanted to use ten percent of my memory to print prime numbers. This figure was equivalent to about 100 million. But as I indicated, I had memory issues during the transfer to Excel, which allowed me to raise the maximum values to one million.

The libraries I use are shown in the picture below.

```
#include <stdio.h>
#include <gmp.h>
#include <stdlib.h>
```

This function I checked whether a number is prime or not. I did this using the 6k+1 method. In order to determine whether the number is less than or equal to 1 and whether it is divided by itself by executing the square root operation, I utilized the mpz_cmp_ui, mpz_divisible_p, and mpz_sqrt functions from the gmp library.

```
int prime_mark
```

Less than n or I identified the prime integers that equaled n in this function and stored them in an array. You can use this function to export to Excel and find out if m is prime or not.

```
void prime_observe(mpz_t n, mpz_t* primes, int* count)
```

In this function, I check whether m is prime or not. Also, examined the precise divisibility between two huge integers in this function using the mpz_divisible_p function of the gmp library.

```
int prime_check_from_list(mpz_t m, mpz_t* primes, int count)
```

All values up to n are written to Excel in the final function.

```
void prime_save(mpz_t* primes, int count, const char* filename)
```

OUTPUTS:

```
mpz_set_ui(n, 1000900);
mpz_set_ui(m, 17);
```

```
C:\Users\emrecan\CLionProjects\untitled4\cmake-build-debug\untitled4.exe
Checked the List, m = 17 is  prime.

Process finished with exit code 0
```

```
mpz_set_ui(n, 1000900);
mpz_set_ui(m, 1000);
```

```
C:\Users\emrecan\CLionProjects\untitled4\cmake-build-debug\untitled4.exe
Checked the List, m = 1000 is not prime.

Process finished with exit code 0
```

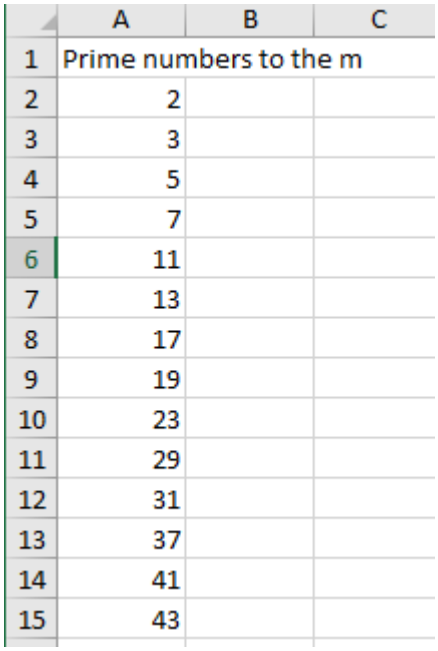
```
mpz_set_ui(n, 1000900);
mpz_set_ui(m, 15687);
```

```
C:\Users\emrecan\CLionProjects\untitled4\cmake-build-debug\untitled4.exe
Checked the List, m = 15687 is not prime.

Process finished with exit code 0
```

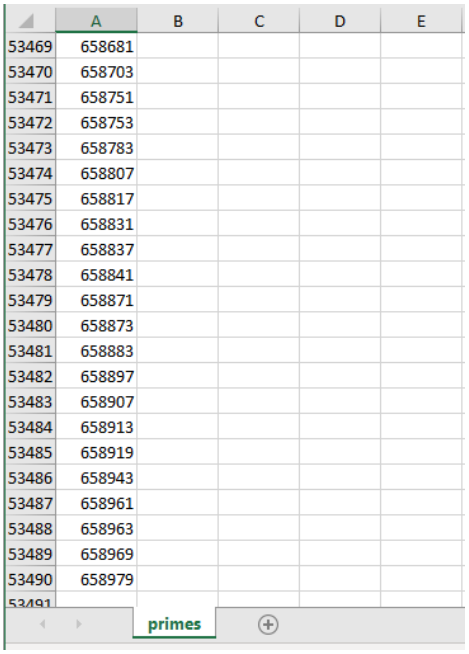
```
mpz_set_ui(n, 658986);
mpz_set_ui(m, 15687);
```

```
C:\Users\emrecan\CLionProjects\untitled4\cmake-build-debug\untitled4.exe
Checked the List, m = 15687 is not prime.

Process finished with exit code 0
```

EXAMPLE OF EXCEL OUTPUT:



	A	B	C
1	Prime numbers to the m		
2	2		
3	3		
4	5		
5	7		
6	11		
7	13		
8	17		
9	19		
10	23		
11	29		
12	31		
13	37		
14	41		
15	43		



	A	B	C	D	E
53469	658681				
53470	658703				
53471	658751				
53472	658753				
53473	658783				
53474	658807				
53475	658817				
53476	658831				
53477	658837				
53478	658841				
53479	658871				
53480	658873				
53481	658883				
53482	658897				
53483	658907				
53484	658913				
53485	658919				
53486	658943				
53487	658961				
53488	658963				
53489	658969				
53490	658979				
53491					

primes