LAB-6

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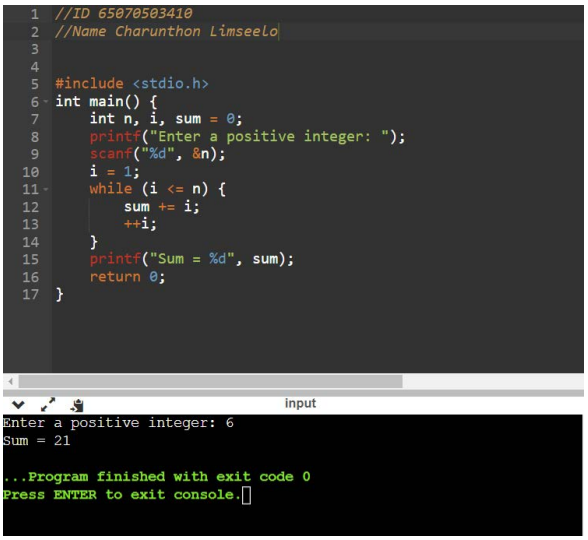
CPE100 | Computer Programming for Engineers | 2022

PROBLEM 1

Write a C program to read one integer, namely n, from your standard input and show the following results.

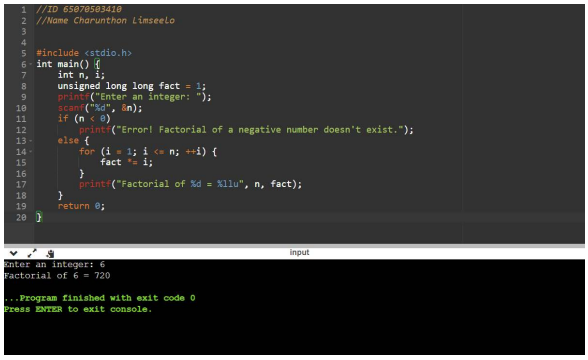
1. Summation from 1 to n.

```c
//ID 65070503410
//Name : Charunthon Limseelo
#include <stdio.h>
int main() {
    int n, i, sum = 0;
    printf("Enter a positive integer: ");
    scanf("%d", &n);
    i = 1;
    while (i <= n) {
        sum += i;
        ++i;
    }
    printf("Sum = %d", sum);
    return 0;
}
```



2. n!

```c
//ID 65070503410
//Name : Charunthon Limseelo
#include <stdio.h>
int main() {
    int n, i;
    unsigned long long fact = 1;
    printf("Enter an integer: ");
    scanf("%d", &n);
    if (n < 0)
        printf("Error! Factorial of a negative number doesn't exist.");
    else {
        for (i = 1; i <= n; ++i) {
            fact *= i;
        }
        printf("Factorial of %d = %llu", n, fact);
    }
    return 0;
}
```



PROBLEM 2: FIBONACCI NUMBER

Fibonacci number is a series of integers where the current position can be calculated by the sum of two previous numbers. Print out n Fibonacci's numbers.

```
 1   1   2   3   5   8  13  21  34  55  89 144 233
```

```
//ID 65070503410
//Name : Charunthon Limseelo
#include <stdio.h>
int main()
{
    int fib1= 0, fib2 =1, fib3, num, count =0;
    printf("Enter the range of Fibonacci number: ");
    scanf("%d", &num);
    printf("First %d Fibonacci numbers are : ", num);
    printf("%d ", fib1);
    printf("%d ", fib2);
    count = 2; /* fib1 and fib2 are already used */
    while (count < num)
    {
        fib3 = fib1 + fib2;
        count++;
        printf("%d ", fib3);
        fib1 = fib2;
        fib2 = fib3;
   }
}
```

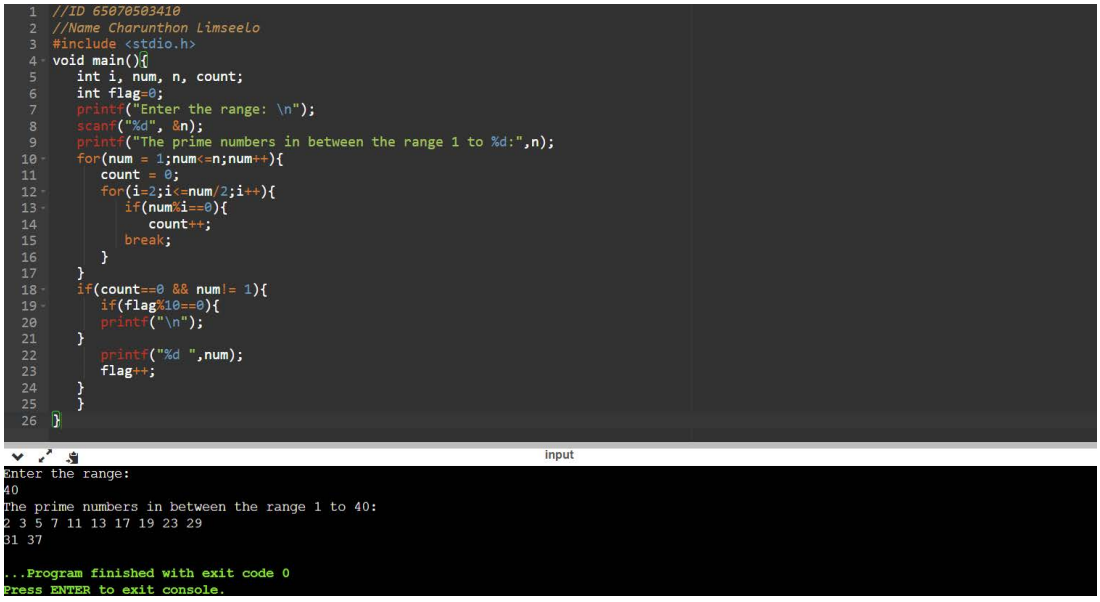
PROBLEM 3: PRIME NUMBER

Write a C program to read one integer from your standard input and show the prime numbers from 2 to that input number. The format can be shown as below. There must be 10 numbers displayed per one row.

```
Enter the number: 40

 2  3  5  7 11 13 17 19 23 29
31 37
```

```
//ID 65070503410
//Name Charunthon Limseelo
#include <stdio.h>
void main(){
   int i, num, n, count;
   int flag=0;
   printf("Enter the range: \n");
   scanf("%d", &n);
   printf("The prime numbers in between the range 1 to %d:",n);
   for(num = 1;num<=n;num++){
      count = 0;
      for(i=2;i<=num/2;i++){
         if(num%i==0){
            count++;
         break;
      }
   }
   if(count==0 && num!= 1){
      if(flag%10==0){
      printf("\n");
   }
      printf("%d ",num);
      flag++;
   }
   }
}
```



```
//ID 65070503410
//Name Charunthon Limseelo
#include <stdio.h>
void main(){
   int i, num, n, count;
   int flag=0;
   printf("Enter the range: \n");
   scanf("%d", &n);
   printf("The prime numbers in between the range 1 to %d:",n);
   for(num = 1;num<=n;num++){
      count = 0;
      for(i=2;i<=num/2;i++){
         if(num%i==0){
            count++;
         break;
      }
   }
   if(count==0 && num!= 1){
      if(flag%10==0){
      printf("\n");
   }
      printf("%d ",num);
      flag++;
   }
   }
}
```

```
input
Enter the range:
40
The prime numbers in between the range 1 to 40:
2 3 5 7 11 13 17 19 23 29
31 37

...Program finished with exit code 0
Press ENTER to exit console.
```

PROBLEM 4: PRIME FACTOR

Write a C program to read one integer from your standard input and show the prime factor of such number.

Enter the number: 60

The factor of 60 is 2*2*3*5

```
//ID 65070503410
//Name : Charunthon Limseelo
#include <stdio.h>
int main()
{
    int x, i;
    printf("Enter an integer:  ");
    scanf("%d", &x);
    if (x <= 1)
    {
        return 1;
    }
    printf("The prime factorization of %d is ", x);
    if (x > 1)
    {
        while (x % 2 == 0)
        {
            printf("2 ");
            x = x / 2;
            if(x > 1) {
                printf("* ");
            }
        }
        for (i = 3; i < 1009; i = i + 2)
        {
            while (x % i == 0)
            {
                printf("%d ", i);
                x = x / i;
                if(x > 1) {
                printf("* ");
            }
            }
        }
    }
    return 0;
}
```

```
Enter an integer:  60
The prime factorization of 60 is 2 * 2 * 3 * 5

...Program finished with exit code 0
Press ENTER to exit console.
```

PROBLEM 5: MY CALENDAR

Write a C program to print out the current month using for loop as follows.

```
    SEPTEMBER 2022

 S  M  T  W  T  F  S
                1  2  3
 4  5  6  7  8  9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30
```

```c
//ID 65070503410
//Name : Charunthon Limseelo
#include <stdio.h>
int main()
{
int i;
printf("\n\n\t\tSEPTEMBER\n");
printf("\n\t S M T W T F S\n");
printf("\n\t               ");
for(i=1;i<=30;i++){
      if(i%7==4){
            printf("\n\t");
      }
      printf("%3d", i);
}
printf("\n");
return 0;
}
```