CSB Lab-7

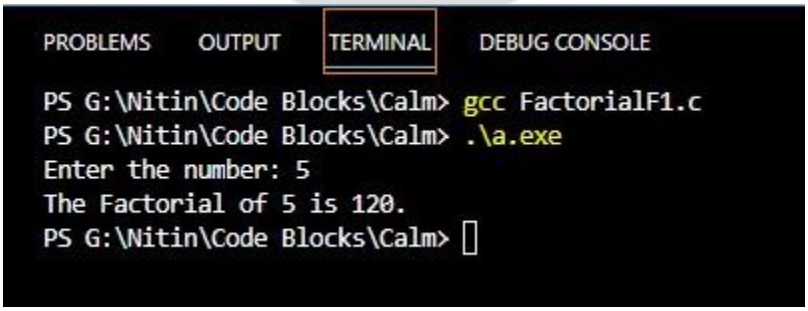
Q1) Find the factorial of a number using recursive and non-recursive functions.

```c
#include<stdio.h>

int num;

int fac(int fac1, int fac0)
{
    if (fac0!=0)
    {
        fac1 = fac1*fac0;
        fac(fac1, fac0-1);
    }
    else{return fac1;}
}

int main()
{
    printf("Enter the number: ");
    scanf("%d", &num);
    printf("The Factorial of %d is %d.", num, fac(num, num-1));
}
```



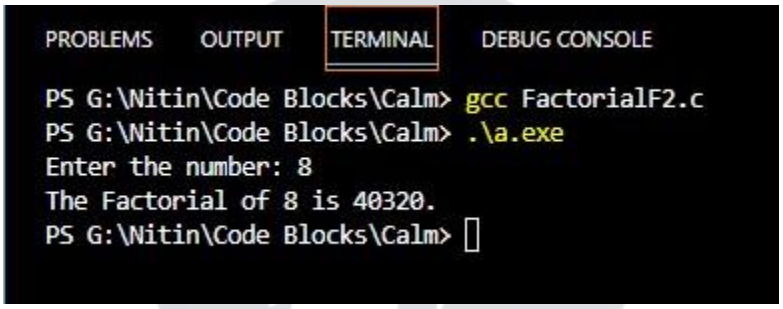

```c
#include<stdio.h>

int num, i = 1, res = 1;

int fac(int num)
```

```
{
    while (i<=num)
    {
        res = res*i;
        i++;
    }
    return res;
}

int main()
{
    printf("Enter the number: ");
    scanf("%d", &num);
    printf("The Factorial of %d is %d.", num, fac(num));
}
```



Q2) Find the following using functions for a given natural number.

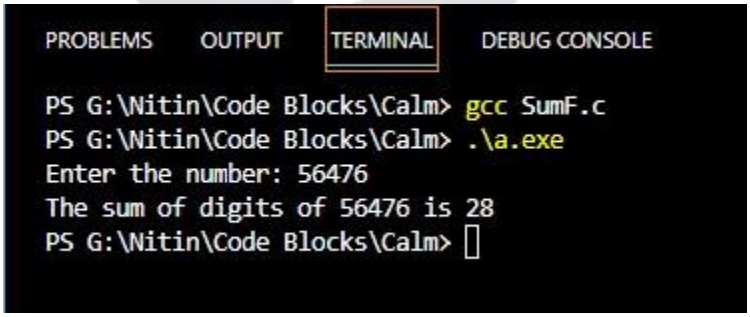
- Reverse of a number.

```
#include<stdio.h>
int num, new = 0;
int pal(int dummy){
    if (dummy!=0){
        new = new*10 + dummy%10;
        pal(dummy/10);}
    return new;
}
int main(){
    printf("Enter the number: ");
    scanf("%d", &num);
    printf("The reverse of %d is %d", num, pal(num));
}
```

- Sum of digits of a number.

```c
#include<stdio.h>
int num, new = 0;
int pal(int dummy){
    if (dummy!=0){
        new = new + dummy%10;
        pal(dummy/10);}
    return new;
}
int main(){
    printf("Enter the number: ");
    scanf("%d", &num);

    printf("The sum of digits of %d is %d", num, pal(num));
}
```



- Palindrome or not.

```c
#include<stdio.h>
int num, new = 0;
int pal(int dummy){
    if (dummy!=0){
        new = new*10 + dummy%10;
        pal(dummy/10);}
    else{
```

```
        if (new == num)
        {return 1;}
        else
        {return 0;}}
}
int main(){
    printf("Enter the number: ");
    scanf("%d", &num);
    if (pal(num)==1)
    {printf("%d is a Palindrome.", num);}
    else if (pal(num)==0)
    {printf("%d is not a Palindrome.", num);}
    else{printf("Invalid Input!");}
}
```

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE

PS G:\Nitin\Code Blocks\Calm> gcc PalindromeF.c
PS G:\Nitin\Code Blocks\Calm> .\a.exe
Enter the number: 121
121 is a Palindrome.
PS G:\Nitin\Code Blocks\Calm> .\a.exe
Enter the number: 362
362 is not a Palindrome.
PS G:\Nitin\Code Blocks\Calm>
```

- Prime or not.

```
#include<stdio.h>
int num;
int prime(int dummy, int i)
{
    if (i<=dummy/2){
        if (dummy%i==0)
        {return 0;}
        else
        {prime(dummy, i+1);}
    }
    else
    {return 1;}
}
int main()
{
    printf("Enter the number: ");
```

```
    scanf("%d", &num);
    if (prime(num,2) == 1)
    {printf("%d is a Prime Number.", num);}
    else if (prime(num,2) == 0)
    {printf("%d is a Composite Number.", num);}
    else{printf("Invalid Input!");}
}
```