

CSB Lab-7

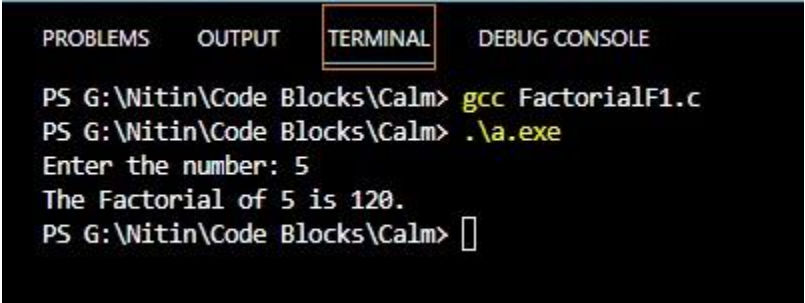
Q1) Find the factorial of a number using recursive and non-recursive functions.

```
#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));
}
```



The screenshot shows a terminal window with four tabs: PROBLEMS, OUTPUT, TERMINAL (which is selected and highlighted with a red border), and DEBUG CONSOLE. The terminal text shows the user compiling a file named 'FactorialF1.c' with 'gcc', then running the resulting executable 'a.exe'. The program prompts for a number, the user enters '5', and the program outputs 'The Factorial of 5 is 120.'.

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE

PS G:\Nitin\Code Blocks\Calm> gcc FactorialF1.c
PS G:\Nitin\Code Blocks\Calm> .\a.exe
Enter the number: 5
The Factorial of 5 is 120.
PS G:\Nitin\Code Blocks\Calm> 
```

```
#include<stdio.h>

int num, i = 1, res = 1;

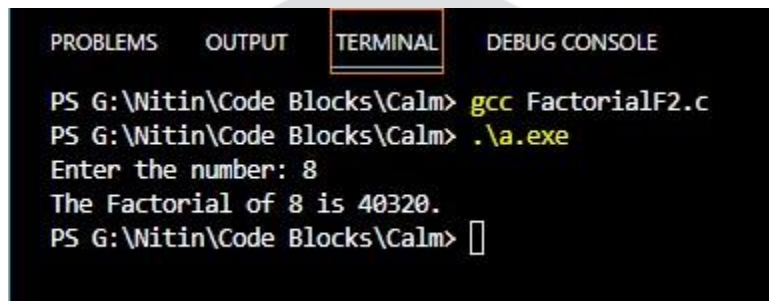
int fac(int num)
```

```

{
    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));
}

```



```

PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE

PS G:\Nitin\Code Blocks\Calm> gcc FactorialF2.c
PS G:\Nitin\Code Blocks\Calm> .\a.exe
Enter the number: 8
The Factorial of 8 is 40320.
PS G:\Nitin\Code Blocks\Calm> 

```

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));
}

```

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE

PS G:\Nitin\Code Blocks\Calm> gcc ReverseF.c
PS G:\Nitin\Code Blocks\Calm> .\a.exe
Enter the number: 362721
The reverse of 362721 is 127263
PS G:\Nitin\Code Blocks\Calm> 
```

➤ Sum of digits of a number.

```
#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));
}
```

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE

PS G:\Nitin\Code Blocks\Calm> gcc SumF.c
PS G:\Nitin\Code Blocks\Calm> .\a.exe
Enter the number: 56476
The sum of digits of 56476 is 28
PS G:\Nitin\Code Blocks\Calm> 
```

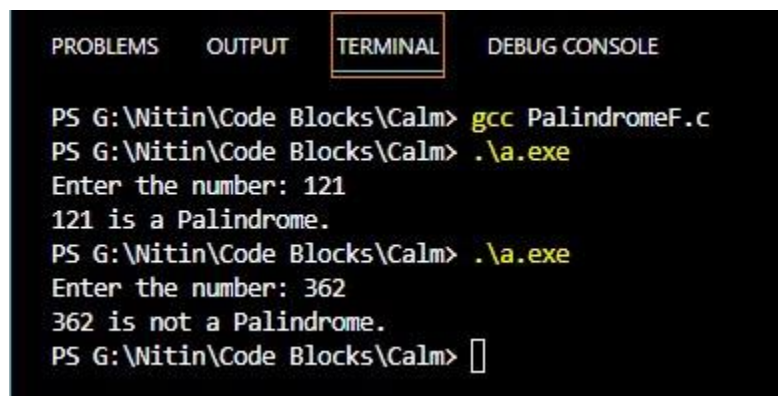
➤ Palindrome or not.

```
#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!");}  
}
```

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE  
  
PS G:\Witin\Code Blocks\Calm> gcc PrimeF.c  
PS G:\Witin\Code Blocks\Calm> .\a.exe  
Enter the number: 21  
21 is a Composite Number.  
PS G:\Witin\Code Blocks\Calm> .\a.exe  
Enter the number: 31  
31 is a Prime Number.  
PS G:\Witin\Code Blocks\Calm> █
```

