LAB SHEET NO.6 [To be familiar with FUNCTIONS:]

1.Write a program to add, subtract, multiply and divide two integers using user defined function add(), sub(), mul() and div().

Code:

```
#include<stdio.h>
void add(int a,int b)
{
  int c;
  c = a+b;
  printf("the sum of %d and %d is %d",a,b,c);
}
void sub(int a,int b)
{
  int c;
  c = a-b;
  printf("\nthe subtraction of %d and %d is %d",a,b,c);
}
void mul(int a,int b)
{
  int c;
  c = a*b;
  printf("\nthe multiply  of %d and %d is %d",a,b,c);
}
void div(int a,int b)
{
  float c;
  c = (float)a/b;
  printf("\nThe division of %d and %d is %f",a,b,c);
}
int main()
{
  int a,b;
  printf("Enter any two numbers:");
  scanf("%d%d",&a,&b);
  add(a,b);
  sub(a,b);
  mul(a,b);
  div(a,b);
```

```
  return 0;
}
```

Output:

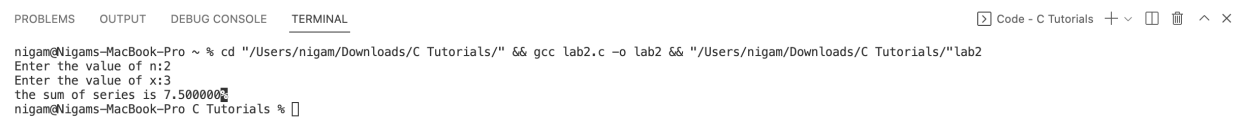
2.WAP to display sum of series: $x + x^2/2! + x^3/3! + x^4/4! + x^5/5! \ldots x^n/n!$. User defined function factorial() and power() should be used to calculate the factorial and power.

Code:

```
#include<stdio.h>
#include<math.h>
int factorial(int n)
{
   if(n==0||n==1)
   return 1;
   else
   return (n*factorial(n-1));
}
int  power(int x,int i)
{

  return pow(x,i);

}
int main()
{
   int n,x,fact,i;
   float sum=0.0;
   printf("Enter the value of n:");
   scanf("%d",&n);
   printf("Enter the value of x:");
```

```
    scanf("%d",&x);
    for(i=1;i<=n;i++)
    {
        sum = sum + (float)power(x,i)/(factorial(i));
    }
    printf("the sum of series is %f",sum);
    return 0;
}
```

Output:



3.WAP to calculate factorial using Recursion.

Code:

```
#include<stdio.h>
int factorial(int n)
{
    int fact;
    if(n==0||n==1)
    return 1;
    else
    return (n*factorial(n-1));
}
int main()
{
    int n,fact;
    printf("Enter the value of n:");
    scanf("%d",&n);
    fact=factorial(n);
    printf("%d! = %d",n,fact);
    return 0;
}
```

Output:

4.WAP to display the nth Fibonacci number using recursion.

Code:

```
#include<stdio.h>
int factorial(int n)
{
   int fact;
   if(n==0)
   return 0;
   else if(n==1)
   return 1;
   else
   return (factorial(n-1)+factorial(n-2));
}
int main()
{
   int n,i=0,c;
   printf("Enter the number of terms in series:");
   scanf("%d",&n);
   printf("fibonacci series\n");
   for(c=1;c<=n;c++)
   {
      printf("%d\n",factorial(i));
      i++;
   }
   return 0;
}
```

Output:

5.WAP to take two numbers in main(). Write a function Swap() to swap the values of the variables. Print the swapped values in main().

Code:

```
#include<stdio.h>
void swap(int *a,int *b)
{
   int temp;
   temp=*a;
   *a=*b;
   *b=temp;


}
int main()
{
   int a,b;
   printf("Enter any two number:");
   scanf("%d%d",&a,&b);
   printf("The numbers before swapping are: a = %d and b = %d\n",a,b);
   swap(&a,&b);
   printf("The numbers after swapping are: a = %d and b=%d",a,b);

   return 0;
}
```

Output:

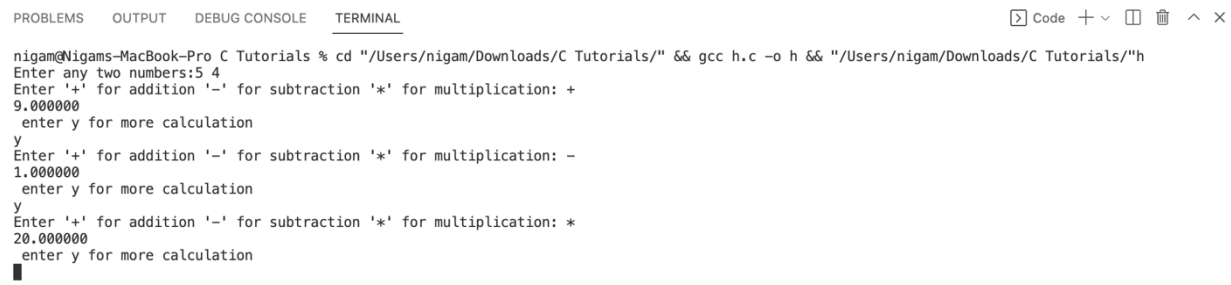
6.WAP to take two float number in main(). Write a function single user define function calculator() to perform the addition, subtraction and multiplication. The sum, difference and product should be displayed from the main() function. [Use the concept of pass by reference.].

Code:

```
#include <stdio.h>
void calculator(float *a,float *b,float *Ans)
{

   char operator;



   printf("Enter '+' for addition '-' for subtraction '*' for multiplication: ");
   scanf(" %c",&operator);
   switch (operator)
   {
   case '+':*Ans=*a + *b;
      break;

   case '-':*Ans= *a- *b;
      break;

   case '*':*Ans= *a * *b;
      break;

   default:
   printf("Enter a valid operator.");
      break;
   }

}
int main()
{
   float a,b,Ans;
   char c;

   int d;
```

```
    printf("Enter any two numbers:");
    scanf("%f%f",&a,&b);
    do
    {
     calculator(&a,&b,&Ans);
     printf("%f",Ans);
     printf("\n enter y for more calculation\n");
     scanf("\n%c",&c);

    } while (c=='y');


    return 0;
}
```

Output:



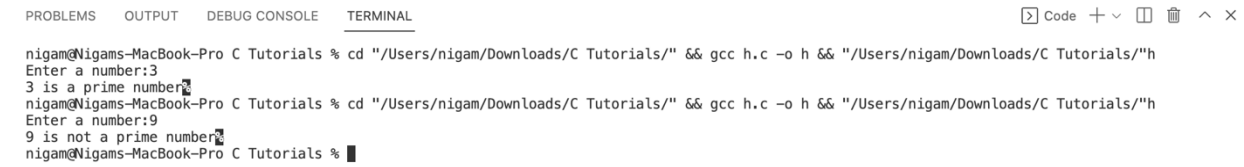
7.WAP to input a integer number int main( ). Write a user define function isPrime() to calculate whether the number is prime of not. Print whether the number is prime or not from the main().

Code:

```
#include<stdio.h>
int isPrime(int n)
{
   int flag=0,i;
   if(n==0||n==1)
   return 0;
```

```
    else
    {
     for(i=2;i<n;i++)
    {
       if(n%i==0)
       {
          flag++;
          break;
       }
    }
    }
    return flag;

}
int main()
{
    int n,flag;
    printf("Enter a number:");
    scanf("%d",&n);
    flag=isPrime(n);

    if(flag==0)
    {
       printf("%d is a prime number",n);

    }
    else
    printf("%d is not a prime number",n);

    return 0;
}
```

Output:



8.WAP to illustrate the concept of global and static variables.

Code:

```c
// for static variable
#include<stdio.h>
void counter()
{
   static int count;
   count ++;
   printf("Function called %d times\n",count);
}
int main()
{
   counter ();
   counter();
   counter();
   counter();
   return 0;
}
```

Output:

For global variable…

Code:

```c
#include<stdio.h>
int a,b=10;   // Global variable
void function_1()
{
   printf("From function_1 a=%d\t b=%d\n",a,b);
}
void function_2()
{
   a=20;
```

```c
    b=30;
    printf("From function_2 a=%d\t b=%d\n",a,b);
}
void function_3()
{
    printf("From function_3 a=%d\t b=%d\n",a,b);
}
int main()
{
    printf("From main a=%d\t b=%d\n",a,b);
    function_1();
    function_2();
    function_3();
    a=25;
    function_3();
    function_1();
    return 0;
}
```

Output: