Assignment-7

1.Write a program to find G.C.D (Greatest Common divisor) using recursion.

CODE:

Assignment > 07 > **C** 01_Find_GCD_USING_Recursion.c > ...

```c
1   #include <stdio.h>
2   int gcd(int n1, int n2);
3   int main() {
4       int n1, n2;
5       printf("Enter 1st Number: ");
6       scanf("%d", &n1);
7       printf("Enter 2nd Number: ");
8       scanf("%d", &n2);
9       printf("G.C.D of %d and %d is %d.", n1, n2, gcd(n1, n2));
10      return 0;
11  }
12
13  int gcd(int n1, int n2) {
14      if (n2 != 0)
15          return gcd(n2, n1 % n2);
16      else
17          return n1;
18  }
19
```

OUTPUT 1&2:

```
Enter 1st Number: 48
Enter 2nd Number: 8
G.C.D of 48 and 8 is 8.
PS E:\Code\CSE 4192>  & 'c:\Users\HP\.vscode\extensions\ms-vscode.cpptools-1.12.4-win32-x64\debugAdapters\bin\W
indowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-pq43z4j2.zpk' '--stdout=Microsoft-MIEngine-Out-1xvi3n5d
.hcr' '--stderr=Microsoft-MIEngine-Error-q2xkjcm4.bsn' '--pid=Microsoft-MIEngine-Pid-1lm3fl5t.uyr' '--dbgExe=C:
\msys64\mingw64\bin\gdb.exe' '--interpreter=mi'
Enter 1st Number: 12
Enter 2nd Number: 24
G.C.D of 12 and 24 is 12.
PS E:\Code\CSE 4192>
```

2.Write a program to calculate the power using recursion.

CODE:

```c
#include <stdio.h>
int power(int base, int rep);
int main ()
{
    int base, num;
    again:
    printf("Enter the base and power number: ");
    scanf("%d %d", &base, &num);
    printf("The power %d of base %d is %d.\n", num, base, power(base,num));
    goto again;
    return 0;
}
int power(int base, int rep)
{
    while(base==0 && rep==0){
        break;
    }

    if(base>0 && rep==0)
        return 1;
    else
        return base*power(base, rep-1);
}
```

OUTPUT:

```
Enter the base and power number: 2 3
The power 3 of base 2 is 8.
Enter the base and power number: 3 4
The power 4 of base 3 is 81.
Enter the base and power number: 0 0
```

3.Write a program in C to get the largest element of an array using the function.

CODE:

```c
1   #include <stdio.h>
2   void maxNumber (int arr[], int n);
3   int main()
4   {
5       int i, n, arr[100];
6       printf("Enter Number of Elements: ");
7       scanf("%d", &n);
8       for(i=0;i<n;++i){
9           printf("Enter number %d : ", i+1);
10          scanf("%d", &arr[i]);
11      }
12      maxNumber(arr, n);
13      return 0;
14  }
15  void maxNumber (int arr[], int n)
16  {
17      int i;
18      //find largest number
19      for(i=1;i<n;++i){
20          if(arr[0]<arr[i]){
21              arr[0]=arr[i];
22          }
23      }
24      printf("The largest number is %d.", arr[0]);
25  }
26
```

OUTPUT:

```
Enter Number of Elements: 6
Enter number 1 : 10
Enter number 2 : 15
Enter number 3 : 8
Enter number 4 : 46
Enter number 5 : 7
Enter number 6 : 89
The largest number is 89.
PS E:\Code\CSE 4192>
```

Lab-7

1. Write a C program to find summation and subtraction of a number using user define function.

CODE:

```c
Class > Class-7 > C User_Defined_Function.c > ✪ main()
1    #include<stdio.h>
2    void calculate (int m, int n);
3    int main(){
4        int a =3,b=2 , sum, substract;
5        calculate(a,b);
6        return 0;
7    }
8    void calculate (int m, int n){
9        int summation, difference;
10       summation = m+n;
11       difference = m-n;
12       printf("The summation of %d + %d = %d",m,n, summation);
13       printf("\nThe difference of %d - %d = %d", m , n , difference);
14   }
15
```

OUTPUT:

```
The summation of 3 + 2 = 5
The difference of 3 - 2 = 1
PS E:\Code\CSE 4192>
```

2. Write a C program to check prime number between few integer numbers using user define function.

CODE:

```c
#include <stdio.h>
int checkPrimeNumber(int n);
int main(){
    int n1, n2, i, flag;
    printf("Enter Two integer Number : ");
    scanf("%d %d",&n1, &n2);
    printf("Prime Number between %d and %d are : ", n1, n2);
    for (i = n1+1; i<n2;++i){
        flag= checkPrimeNumber(i);
        if(flag==1){
            printf("%d ", i);
        }
    }
    return 0;
}
int checkPrimeNumber(int n){
    int j , flag=1;
    for (j =2; j<=n/2; ++j){
        if (n%j==0){
            flag = 0;
            break;
        }
    }
    return flag;
}
```

OUTPUT:

```
Enter Two integer Number : 2
50
Prime Number between 2 and 50 are : 3 5 7 11 13 17 19 23 29 31 37 41 43 47
PS E:\Code\CSE 4192> █
```

3. Write a program in C to find factorial number using user define function.

CODE:

```c
#include<stdio.h>
long int factorial (int num);

int main()
{
    int num;
    long int fact;
    printf("Enter a number to find factorial : \n");
    scanf("%d", &num);
    if(num<0)
        printf("Factorial of negative no. is not defined. \n");
    else
    {
        fact= factorial(num);
        printf("Factorial of %d is %ld",num, fact);
    }
    return 0;
}
//function definition
long int factorial (int num){
    if (num==0)
        return 1;
    else
        return num * factorial(num-1);
}
```

OUTPUT 1&2:

```
Enter a number to find factorial :
25
Factorial of 25 is 2076180480
PS E:\Code\CSE 4192>  & 'c:\Users\HP\.vscode\extensions\ms-vscode.cpptools-1.12.4-win32-x64\debugAdapters\bin\W
indowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-uxoahvhx.fw1' '--stdout=Microsoft-MIEngine-Out-qkeg4ev1
.11p' '--stderr=Microsoft-MIEngine-Error-jrj1ay0q.2t4' '--pid=Microsoft-MIEngine-Pid-gtorpa0o.4ho' '--dbgExe=C:
\msys64\mingw64\bin\gdb.exe' '--interpreter=mi'
Enter a number to find factorial :
7
Factorial of 7 is 5040
PS E:\Code\CSE 4192>
```