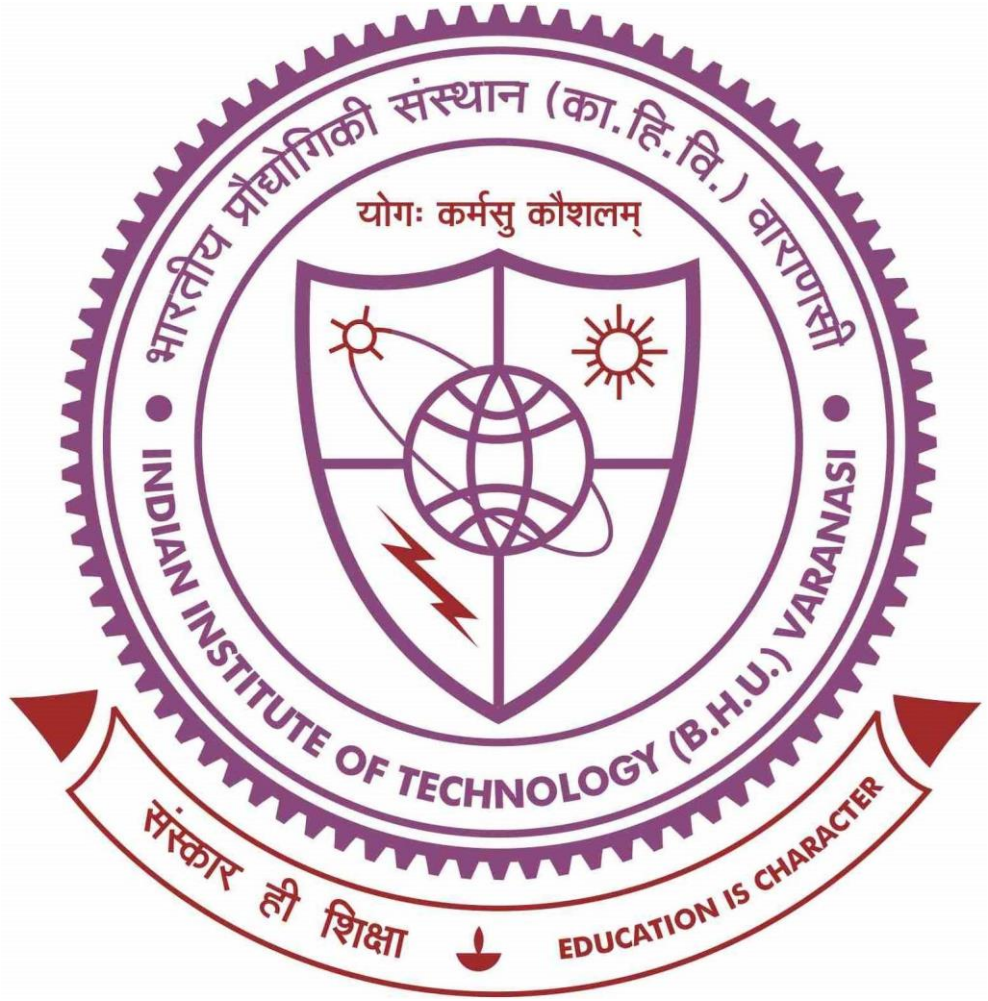

ASSIGNMENT-6

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DEPT-CSE

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SUBJECT-CSO-101

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1. **Write a C program that calls a function to print the nth term of the Fibonacci series(1,1,2,3,5, 8, 13, ,...). User will input n through keyboard. For example, if n=5, output is 5.**

Solution:-

```c
#include <stdio.h>

int fib(int n)
{
    int p;
    int next = 1;
    int prev = 0;
    for (int i = 0; i < n; i++)
    {
        int z = prev;
        p=next;
        prev = next;
        next = prev + z;
    }
     return(p);
}
int main()
{
     int n;
     printf("Enter the value of n: ");
     scanf("%d",&n);
     int value =fib(n);
     printf("%d",value);
    return 0;
}
```

2. **Write a C program,that calls a function to swap the values of two memory locations.Use Call by Reference.**

Solution:-

```c
#include <stdio.h>

void swap(int *a ,int *b){
    int tmp;
    tmp =*a;
   *a=*b;
   *b=tmp;
```

```
}
int main()
{
    int a=5;
    int b=7;
    printf("The values of a and b before swap are %d and %d\n",a,b);
    swap(&a,&b);
    printf("The values of a and b after swap are %d and %d\n",a,b);
    return 0;
}
```

3. Write a C function to evaluate an polynomial given it's order n and coefficients at $a_1,\ldots,a_n$ a point x.

Solution:-

```
#include <stdio.h>
#include <math.h>
int eval(int n,int x,int array[n+1]){

 int value=0;
 for (int i = 0; i <= n; i++)
 {
     value= value +(array[i]*pow(x,i));
 }
 return value;

}
int main()
{
    int n,x;
    printf("Enter the order of the polynomial :");
    scanf("%d",&n);
    printf("Enter the value of x:");
    scanf("%d",&x);
    int arr[n+1];
    for (int i = 0; i < n+1; i++)
    {
        printf("Enter the value of a%d: ",i);
        scanf("%d",&arr[i]);

    }
    printf("The polynomial is\n");
    for (int i = n; i >=0; i--)
```

```
    {

        if (i!=0)
        {
            printf("%d*x^%d",arr[i],i);
            printf("+");
        }
        else
        {
            printf("%d=0\n",arr[i]);
        }
    }
    printf("%d",eval(n,x,arr));


    return 0;
}
```

4. Write a C function that can be called to find the largest element of an m by n matrix.

Solution:-

```
#include <stdio.h>

int max(int m,int n,int array[m][n])
{

    int max;
    for (int i = 0; i < m; i++)
    {
        for (int j = 0; j < n; j++)
        {
            if (array[i][j] >= max)
            {
                max = array[i][j];
            }
        }
    }
    return max;
}
int main()
{
```

```
    int m, n;
    printf("Enter the value of m and n\n");
    scanf("%d %d",&m,&n);
    int array[m][n];
    for (int i = 0; i < m; i++)
    {
        for (int j = 0; j < n; j++)
        {
            scanf("%d", &array[i][j]);
        }
    }
    int mx = max(m,n,array);
    printf("The max of the matrix is :");
    printf("%d", mx);
    return 0;
}
```

5. **Write a C program that takes as input three distinct integers,and calls a function to find the maximum of the three numbers.**

Solution:-

```
#include <stdio.h>
int max(m,n,k){
    int l;
    if (m>n && m>k)
    {
        l=m;
    }
    else if (n>m && n>k)
    {
        l=n;
    }
    else{
        l=k;
    }
    return l;

}
int main()
{
    int num1 ,num2,num3;
    printf("Enter the value of number 1 ,number 2 and number 3\n");
    scanf("%d %d %d",&num1,&num2,&num3);
```

```
    int p = max(num1,num2,num3);
    printf("%d",p);
    return 0;
}
```

6. Study how to call main() with arguments.Write a C program to input two integer numbers at run-time and next compute the sum of the two numbers.

Theory-

Whenever a program is compiled,the compilation begins from the main() function.Howerver we can call the main() function with arguments also.The first parameter that is specified in the main function is argc(argument count) is an integer which represents the number of arguments entered on the command line during the beginning of the execution.The second parameter,argv[](argument vector),is an array of pointers to arrays of character objects.The array objects are strings terminated with null,which represent the arguments that were entered on the command line when the program began to execute,argv[0] is a pointer to the character array that contains the program name,argv[1] indicates the first first argument passed to the program,argv[2] the second argument,and so on.

Solution:-

```
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[])
{
    int x, y, sum;
    if (argc != 3)
    {
        printf("Two values are needed for finding the sum");
        return -1;
    }
    x = atoi(argv[1]);
    y = atoi(argv[2]);
    sum = x + y;
    printf("Sum of %d and %d is %d", x, y, sum);

    return 0;
}
```

7. **Create a user-defined library "user.h" and define the following two functions in the library:**
   (a) int fact(int): takes an integer as input and returns the factorial of the input integer,
   (b)void fib(int):takes as input an integer (say,n) and prints then the term of the Fibonacci series

Solution:-

First is the c library user.h

```c
#include<stdio.h>
int fact()
{
    int n;
    printf("Enter the number to find its factorial :");
    scanf("%d", &n);
    int value = 1;
    for (int i = 1; i <= n; i++)
    {
        value *= i;
    }
    return value;
}
void fibo()
{
    int n, value1;
    printf("Enter the value of n to find the nth fibonacci term :");
    scanf("%d", &n);
    int next = 1;
    int prev = 0;
    for (int i = 0; i < n; i++)
    {
        int z = prev;
        value1 =next;
        prev = next;
        next = prev + z;
    }
    printf("%d\n",value1);
}
```

Now the code using the user.h library

```c
#include <stdio.h>
#include "user.h"
```

```c
int main()
{
    printf("The factorial is %d\n",fact());
    fibo();
    return 0;
}
```