Lab 6

Theory:

The **string.h** header defines one variable type, one macro, and various functions for manipulating arrays of characters.Strings in array are defined as an array of character. The difference between an array and a string is the string is terminated with a special character'\0'.

Some of the string functions that we used in this lab report are described below:

- **strcmp:** strcmp() is a built-in library function and is declared in <string.h> header file. This function takes two string as arguments and compare these two strings lexicographically.
- **strcpy:** strcpy() is a standard library function in C++ and is used to copy one string to another. In C present in string.h header file and in C++ it is present in cstring header file.
- **strlen:** The strlen() function calculates the length of a given string. The strlen() function is defined in string.h header file. It doesn't count null character '\0'

Methodology:

In the first program, we added two numbers using functions with no arguments and no return values, no arguments and with return values, with arguments and no return values, and with arguments and return values. The second question was based don finding the errors. There was a missing 'n' variable in declaration of the function. Other remaining problems, however, were correct. The third, fourth, sixth, seventh and eighth questions were problem solving questions, so there was no error. The fifth question, on the other hand was missing function declaration on both questions (a & b).Also, there had to be int main instead of void main on both the questions.

Objectives:

1. To be familiar with syntax and structure of C-programming.
2. To learn problem solving techniques using C.
3. To learn the basics of string function.

Programs:

- Find out the errors and output of the following programs.

Code:

// Following codes are written and compiled in DevC++

Program 1:

a)

```
#include<stdio.h>
#include<conio.h>
void add()
{
	int a,b,sum;
	printf("Enter two number:\n");
	scanf("%d%d",&a,&b);
	sum=a+b;
	printf("SUM=%d",sum);
}
int main(){
	add();
	getch();
}
```

b)

```
#include<stdio.h>
#include<conio.h>
int add()
{
	int a,b,sum;
	printf("Enter two number:\n");
	scanf("%d%d",&a,&b);
	sum=a+b;
	return sum;

}
int main(){
	printf("Sum=%d",add());
	getch();
}
```

c)

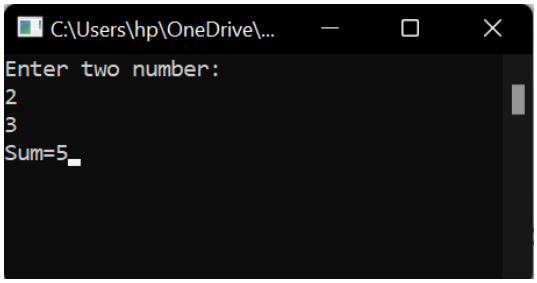
```
#include<stdio.h>
#include<conio.h>
int main(){
	int x,y;
	void add(int a,int b);
	printf("Enter two number:\n");
	scanf("%d%d",&x,&y);
	add(x,y);
	getch();
	return 0;
}
void add(int a,int b)
{
	int sum;
	sum=a+b;
	printf("sum=%d",sum);

}
```

d)

```
#include<stdio.h>
#include<conio.h>
int add(int a,int b);
int main(){
	int x,y,sum;
	printf("Enter two number:\n");
	scanf("%d%d",&x,&y);
	sum=add(x,y);
	printf("Sum=%d",sum);
	getch();

}
int add(int a,int b)
{
```

```
    int sum;
    sum=a+b;
    return sum;

}
```

Output:

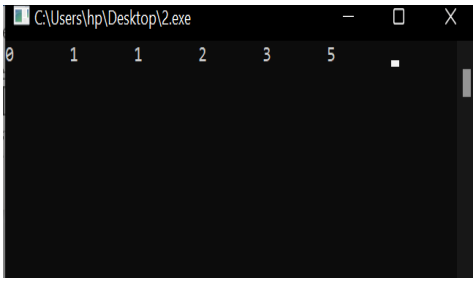


Program No. 2

a)

```
#include<stdio.h>
#include<conio.h>
int fib(int n);
int main(){
    int i,n;
    printf("Enter total term:");
    scanf("%d",&n);
    for(i=0;i<=n;i++)
    printf("%d\t",fib(i));
    getch();
}
int fib(int n){
    if(n==0||n==1)
    return (n);
    else
    return(fib(n-1)+fib(n-2));
}
```

Output:

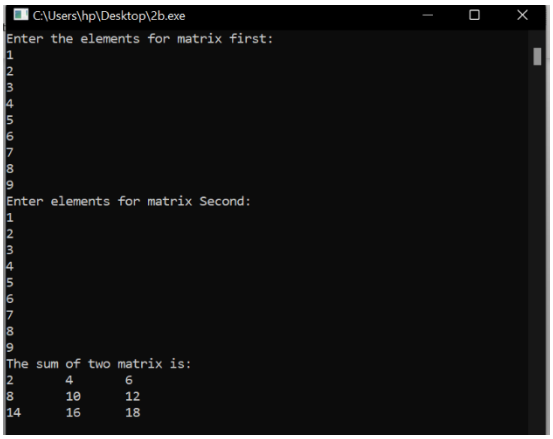


b)

```
#include<stdio.h>
#include<conio.h>
int main(){
    int
i,j,mat1[3][3],mat2[3][3],sum[3][3];
    printf("Enter the elements for matrix first:\n");
    for(i=0;i<3;i++){
        for(j=0;j<3;j++){

    scanf("%d",&mat1[i][j]);
        }
    }
    printf("Enter elements for matrix Second:\n");
    for(i=0;i<3;i++){
```

```
            for(j=0;j<3;j++){

        scanf("%d",&mat2[i][j]);
            }
        }
        for(i=0;i<3;i++){
            for(j=0;j<3;j++){

        sum[i][j]=mat1[i][j]+mat2[i][j];
            }
        }
        printf("The sum of two matrix is:\n");
        for(i=0;i<3;i++){
            for(j=0;j<3;j++){

        printf("%d\t",sum[i][j]);
            }
            printf("\n");
        }
        getch();
        return 0;
}
```

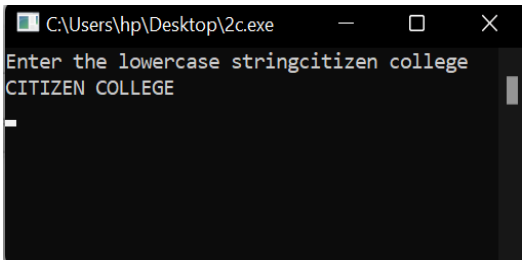
Output:



c)

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
int main(){
        char str[30];
        printf("Enter the lowercase string");
        gets(str);
        strupr(str);
        puts(str);
        getch();
}
```

Output:

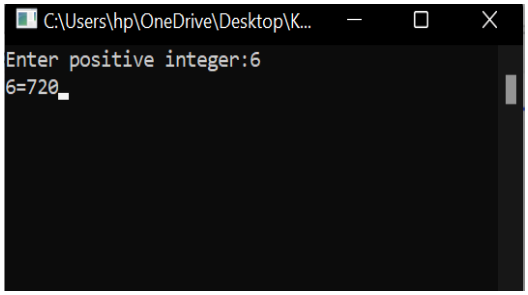


Program No. 3

```
#include<stdio.h>
#include<conio.h>
int fact(int n);
int main(){
        int num,res;
        printf("Enter positive integer:");
        scanf("%ld",&num);
        res=fact(num);
        printf("%d=%d",num,res);
        getch();
}
```

```
 fact(int n){
        int f=1;
        if(n<=0)
        {
                return(1);
        }
        else{
                f=n*fact(n-1);
                return(f);
        }
}
```

Output:

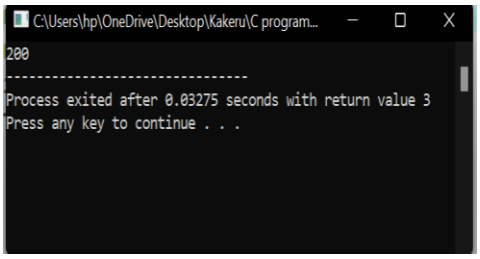


Program No. 4

(Value)

```
#include<stdio.h>
#include<conio.h>
void display(int x);
int main(){
        int a=100;
        display(a);
        printf("%d",a);
}
void display(int x){
        x=x+100;

}
```

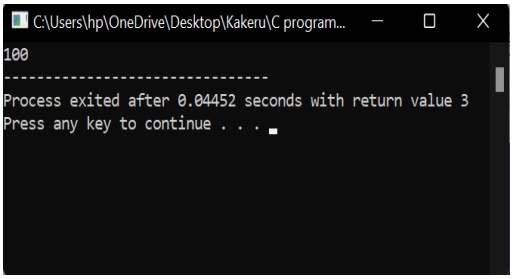
Output:



(Reference)

```
#include<stdio.h>
#include<conio.h>
void display(int *x);
int main(){
        int a=100;
        display(&a);
        printf("%d",a);
}
void display(int *x){
        *x=*x+100;
}
```

Output:



Program No. 5

a)

```
#include<stdio.h>
#include<conio.h>
void display(int n);
int main(){
        int n=7;
        display(n);
```

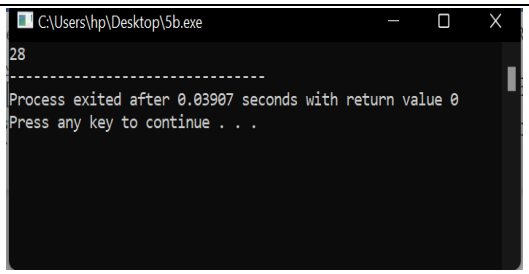
```
}
void display(int n){
        if(n<1)
        return;
        else{
                printf("%d",n);
                display(n-1);
                printf("%d",n);
        }
}
```

Output:

b)

```
#include<stdio.h>
#include<conio.h>
int sum(int x);
int main(){
        int a;
        a=sum(7);
        printf("%d",a);
}
int sum(int x){
        int s=0;
        if(x==1)
        return x;
        s=x+sum(x-1);
        return s;
}
```

Output:

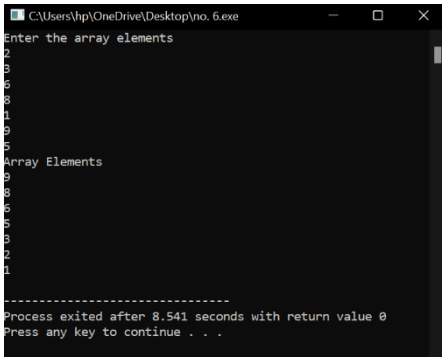


Program No. 6

```
#include<stdio.h>
int main(){
        int a[7],i,j,temp;
        printf("Enter the array elements\n");
        for(i=0;i<7;i++){
                scanf("%d",&a[i]);

        }
                        for(i=0;i<7;i++){

        for(j=0;j<7;j++){

        if(a[i]>a[j]){

        temp=a[i];

        a[i]=a[j];

        a[j]=temp;
                                        }
                                }
                }
                printf("Array Elements\n");
                for(i=0;i<7;i++){
                printf("%d\n",a[i]);
```

```
    }
    return 0;
}
```

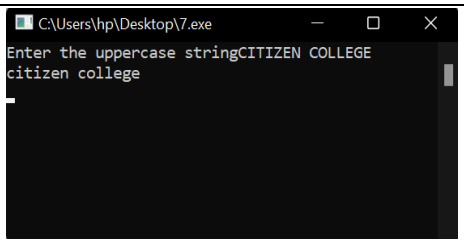
Output:



Program No. 7

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
int main(){
    char str[30];
    printf("Enter the uppercase string");
    gets(str);
    strlwr(str);
    puts(str);
    getch();
}
```

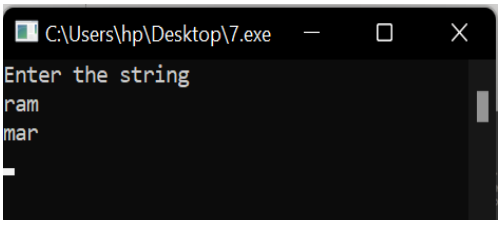
Output:



Program No. 8

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
int main(){
    char str[30];
    printf("Enter the string\nr");
    gets(str);
    strrev(str);
    puts(str);
    getch();
}
```

Output:



Discussion and conclusion:

This is our 6th lab practical. The program is focused on finding the outputs. From this lab, I understood the basic structure of C programming finding out different outputs of the program. Hence, the correct output was placed after each code but most importantly we came to know about some basics of string function.