

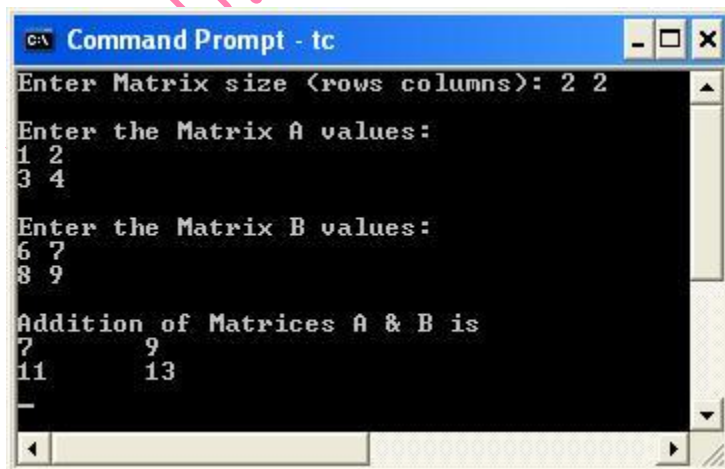
## Week – 5

## A) Write a C program to perform Addition of two Matrices

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int A[10][10],B[10][10],C[10][10],rows,cols,i,j;
    clrscr();
    printf("Enter Matrix size (rows columns): ");
    scanf("%d%d",&rows,&cols);
    printf("\nEnter the Matrix A values:\n");
    for(i=0; i<rows; i++)
        for(j=0; j<cols; j++)
            scanf("%d",&A[i][j]);

    printf("\nEnter the Matrix B values:\n");
    for(i=0; i<rows; i++)
        for(j=0; j<cols; j++)
            scanf("%d",&B[i][j]);
    for(i=0; i<rows; i++)
        for(j=0; j<cols; j++)
            C[i][j] = A[i][j] + B[i][j];
    printf("\nAddition of Matrices A & B is \n");
    for(i=0; i<rows; i++)
    {
        for(j=0; j<cols; j++)
            printf("%d\t",C[i][j]);
        printf("\n");
    }
    getch();
}
```

## Result:



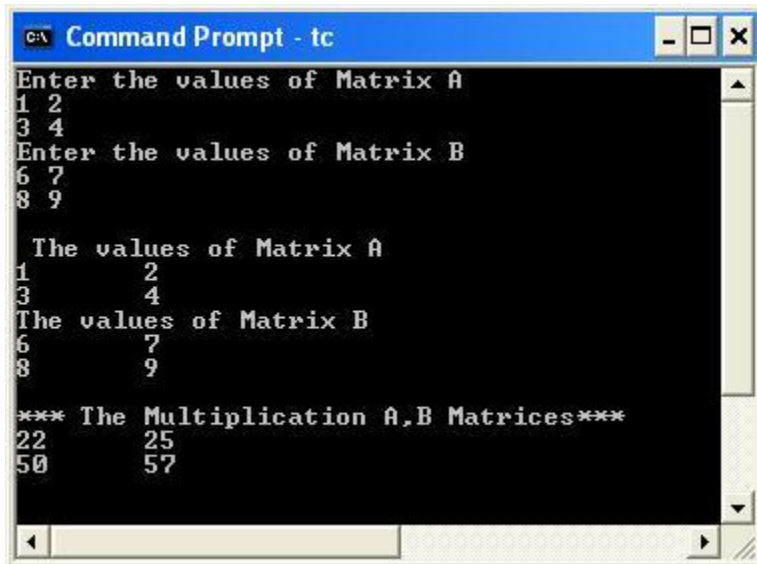
```
Command Prompt - tc
Enter Matrix size (rows columns): 2 2
Enter the Matrix A values:
1 2
3 4
Enter the Matrix B values:
6 7
8 9
Addition of Matrices A & B is
7      9
11     13
_
```

**B) Write a C program to perform Multiplication of two Matrices**

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int A[2][2],B[2][2],C[2][2],i,j,k;
    clrscr();
    //Reading the values of A Matrix
    printf("Enter the values of Matrix A\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            scanf("%d",&A[i][j]);
        }
    }
    //Reading the Values of B Matrix
    printf("Enter the values of Matrix B\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            scanf("%d",&B[i][j]);
        }
    }
    //Displaying the Values of Matrix A
    printf("\n The values of Matrix A\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("%d\t",A[i][j]);
        }
        printf("\n");
    }
    printf("The values of Matrix B\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("%d\t",B[i][j]);
        }
        printf("\n");
    }
    //Performing Multiplication of Matrices A,B
    printf("\n*** The Multiplication A,B Matrices***\n");
    for(i=0;i<2;i++)
```

```
{  
  for(j=0;j<2;j++)  
  {  
    C[i][j]=0;  
    for(k=0;k<2;k++)  
    {  
      C[i][j]=C[i][j]+A[i][k]*B[k][j];  
    }  
    printf("%d\t",C[i][j]);  
  }  
  printf("\n");  
}  
getch();  
}
```

**Result:**



```
C:\ Command Prompt - tc  
Enter the values of Matrix A  
1 2  
3 4  
Enter the values of Matrix B  
6 7  
8 9  
  
The values of Matrix A  
1 2  
3 4  
The values of Matrix B  
6 7  
8 9  
  
*** The Multiplication A,B Matrices ***  
22 25  
50 57
```

## Week – 6

**C) Write a C program to insert a sub-string to given main string from given position**

```

#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
    char MainStr[50],Str1[50],Str2[50];
    int n,Pos,i,j,l1,l2;
    clrscr();
    printf("Enter the MainString\n");
    gets(MainStr);
    printf("Enter the No.of Characters U want to Delete\n");
    scanf("%d",&n);
    printf("Enter the Position From Where U Want to Delete\n");
    scanf("%d",&Pos);
    l1=strlen(MainStr);
    for(i=0;i<Pos;i++)
    {
        Str1[i]=MainStr[i];
    }
    for(i=n+Pos,j=0;i<l1;i++,j++)
    {
        Str2[j]=MainStr[i];
    }
    printf("\nStr1=%s",Str1);
    printf("\nStr2=%s",Str2);
    printf("After Removing Set of Characters From Main String=%s\n",strcat(Str1,Str2));
    getch();
}

```

**Result:**

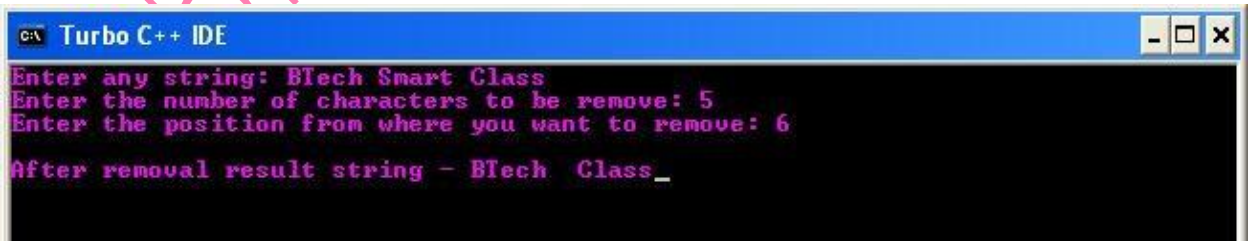
```

Turbo C++ IDE
Enter the MainString
Btech Class
Enter the SubString
Smart
Enter the Position where U want to insert the SubString
6
MainStr=Btech SmartAfter Inserting Substing into Main String=Btech SmartClass

```

**D) Write a C program to delete n characters from given main string from given position**

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
    char str[30]="",str1[30]="",str2[30]="";
    int n,position,i,j;
    clrscr();
    printf("Enter any string: ");
    gets(str);
    printf("Enter the number of characters to be remove: ");
    scanf("%d",&n);
    printf("Enter the position from where you want to remove: ");
    scanf("%d",&position);
    for(i=0;i<position;i++)
        str1[i] = str[i];
    for(i=n+position,j=0; i<strlen(str);i++,j++)
        str2[j] = str[i];
    strcat(str1,str2);
    printf("\nAfter removal result string - %s",str1);
    getch();
}
```

**Result:**

```
c:\ Turbo C++ IDE
Enter any string: BTech Smart Class
Enter the number of characters to be remove: 5
Enter the position from where you want to remove: 6
After removal result string - BTech Class_
```

## Week 7

**A) Write a C program that displays the position or index in the string S where the string T begins or -1 if S does not contain T.**

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main( )
{
char mainString[30], searchString[20];
int i, j, flag=0, count=0, index;
clrscr();
printf("Enter the main string: ");
gets(mainString);
printf("Enter the search string: ");
gets(searchString);
for(i=0;mainString[i]!='\0';i++)
{
if(mainString[i]==searchString[0])
{
index = i;
for(j=0;searchString[j]!='\0';j++)
{
if(mainString[i] == searchString[j])
count++;
i++;
}
flag=1;
break;
}
}
if(flag==1 && count==strlen(searchString))
printf("\nsearchString begins at index %d in mainString",index);
else if(flag==1 && count < strlen(searchString))
printf("\nsearchString does not found: -1");
getch();
}
```

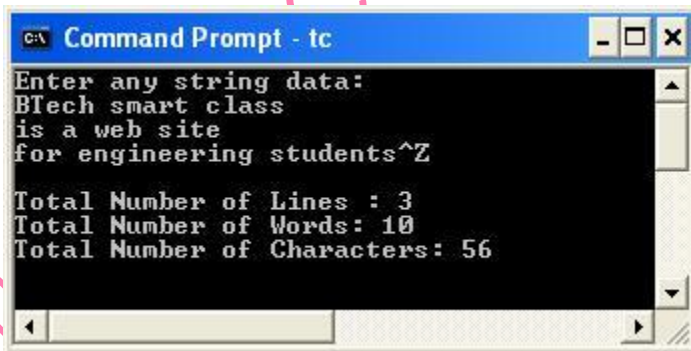
**Result:**

```
C:\> Command Prompt - tc
Enter the main string: welcome to mrit
Enter the search string: come
searchString begins at index 3 in mainString
```

**B) Write a C program to count the Lines, Words and Characters in a given Text.**

```
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main( )
{
    char ch;
    int lines=0, words=0, characters=0;
    clrscr( );
    printf("Enter any string data: \n");
    while((ch=getchar( ))!=EOF)
    {
        if(ch==10)
            lines++;
        if(isspace(ch))
            words++;
        characters++;
    }
    printf("\nTotal Number of Lines : %d", lines+1);
    printf("\nTotal Number of Words: %d", words+1);
    printf("\nTotal Number of Characters: %d", characters);
    getch( );
}
```

**Result:**

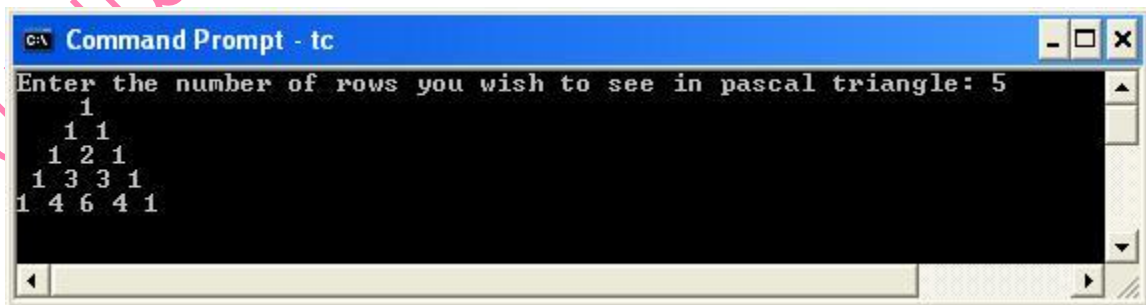


## Week 8

### A) Write a C program to generate Pascal's Triangle.

```
//pascal program
#include<stdio.h>
long factorial(int);
void main()
{
    int i, n, c;
    clrscr();
    printf("Enter the number of rows you wish to see in pascal triangle: ");
    scanf("%d",&n);
    for (i=0;i<n;i++)
    {
        for (c=0 ;c<=(n-i-2);c++)
            printf(" ");
        for(c=0;c<=i;c++)
            printf("%ld ",factorial(i)/(factorial(c)*factorial(i-c)));
        printf("\n");
    }
    getch();
}
long factorial(int n)
{
    int c;
    long result = 1;
    for(c=1;c<=n;c++)
        result=result*c;
    return (result);
}
```

**Result:**



```
Command Prompt - tc
Enter the number of rows you wish to see in pascal triangle: 5
 1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
```



**B) Write a C program to construct a Pyramid of numbers.**

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,j,n,Space;
    clrscr();
    printf("Enter pyramid range:");
    scanf("%d",&n);
    for(i=1;i<=n;i++) // Moving in Each Row
    {
        // Assigning Spaces
        for(Space=0;Space<n-i;Space++)
            printf(" ");
        // Displaying the Values
        for(j=1;j<=i;j++)
            printf("%d ",i);
        printf("\n");
    }
    getch();
}
```

**Result:**

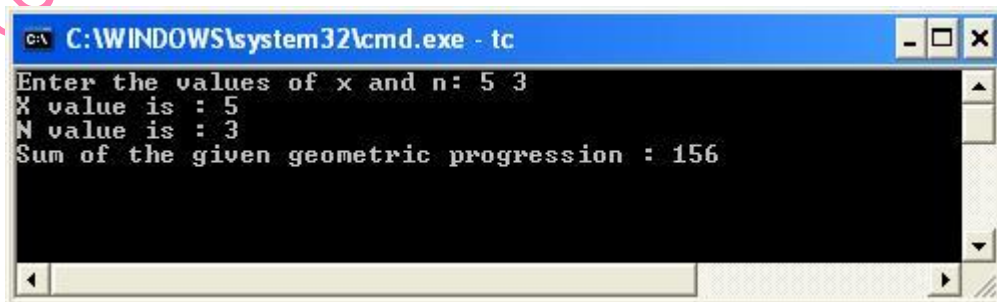


**Week 9**

**Write a C program to read x and n values and calculate  $1+x+x^2+x^3+\dots+x^n$ .**

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main( )
{
    int x, n, sum,power;
    clrscr( );
    printf("Enter the values of x and n: ");
    scanf("%d%d", &x, &n);
    if(n<0)
    {
        printf("\nSorry,the formula does not make sense for negative exponents&values");
        printf("Enter the values of x and n:");
        scanf("%d%d", &x, &n);
        sum=1;
        for(power=1; power <=n; power++)
            sum=sum+ pow(x,power);
        printf("X value is : %d \nN value is : %d", x, n);
        printf("\nSum of the given geometric progression : %d", sum);
    }
    else
    {
        sum=1;
        for(power=1; power <=n; power++)
            sum=sum+ pow(x,power);
        printf("X value is : %d \nN value is : %d", x, n);
        printf("\nSum of the given geometric progression : %d", sum);
    }
    getch( );
}
```

**Result:**



```
C:\WINDOWS\system32\cmd.exe - tc
Enter the values of x and n: 5 3
X value is : 5
N value is : 3
Sum of the given geometric progression : 156
```

## Week 10

**A) Write a C program to find 2's Complement of given Binary number.**

/\* 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1.

Thus 2's complement of 11100 is 00100.

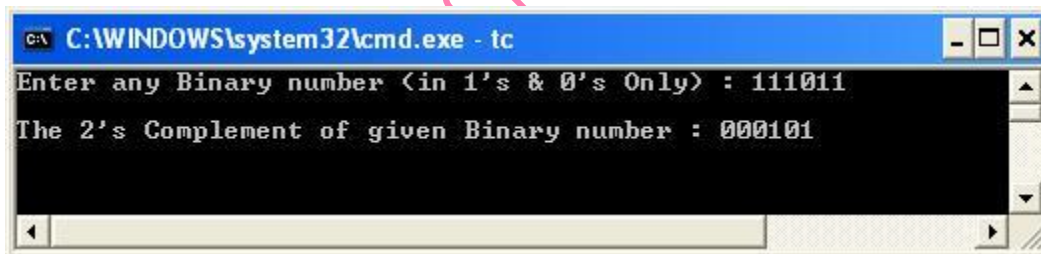
```

*/
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>
#include <string.h>
void complement (char *a);
void main()
{
    char a[16];
    int i;
    clrscr();
    printf("Enter any Binary number (in 1's & 0's Only) : ");
    gets(a);
    for(i=0;a[i]!='\0'; i++)
    {
        if (a[i]!='0' && a[i]!='1')
        {
            printf("The number entered is not a binary number. Enter the correct number");
            exit(0);
        }
    }
    complement(a);
    getch();
}
void complement (char *a)
{
    int l, i, c=0;
    char b[16];
    l=strlen(a);
    for (i=l-1; i>=0; i--)
    {
        if (a[i]=='0')
            b[i]='1';
        else
            b[i]='0';
    }
    for(i=l-1; i>=0; i--)
    {
        if(i==l-1)
        {
            if (b[i]=='0')

```

```
b[i]='1';
else
{
    b[i]='0';
    c=1;
}
}
else
{
    if(c==1 && b[i]=='0')
    {
        b[i]='1';
        c=0;
    }
    else if (c==1 && b[i]=='1')
    {
        b[i]='0';
        c=1;
    }
}
b[l]='\0';
printf("\nThe 2's Complement of given Binary number : %s", b);
}
```

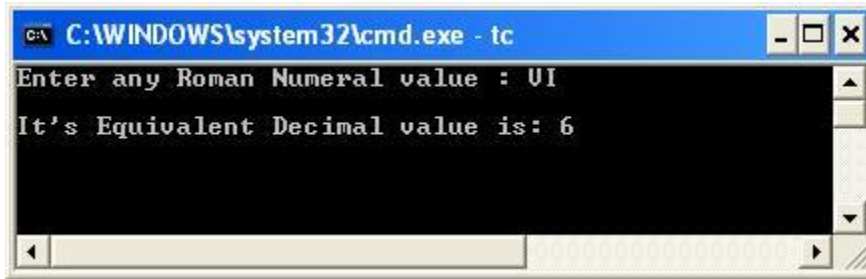
**Result:**



**B) Write a C program to convert a Roman numeral to its decimal equivalent.**

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
#include<stdlib.h>
void main(){
    int *a,len,i,j,k;
    char *rom;
    clrscr();
    printf("Enter any Roman Numeral value : ");
    scanf("%s",rom);
    len=strlen(rom);
    for(i=0;i<len;i++){
        if(rom[i]=='I')
            a[i]=1;
        else if(rom[i]=='V')
            a[i]=5;
        else if(rom[i]=='X')
            a[i]=10;
        else if(rom[i]=='L')
            a[i]=50;
        else if(rom[i]=='C')
            a[i]=100;
        else if(rom[i]=='D')
            a[i]=500;
        else if(rom[i]=='M')
            a[i]=1000;
        else
        {
            printf("\nInvalid Value");
            getch();
            exit(0);
        }
    }
    k=a[len-1];
    for(i=len-1;i>0;i--)
    {
        if(a[i]>a[i-1])
            k=k-a[i-1];
        else if(a[i]==a[i-1] || a[i]<a[i-1])
            k=k+a[i-1];
    }
    printf("\nIt's Equivalent Decimal value is: ");
    printf("%d",k);
    getch();
}
```

**Result:**



```
C:\WINDOWS\system32\cmd.exe - tc
Enter any Roman Numeral value : VI
It's Equivalent Decimal value is: 6
```

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## Week 12

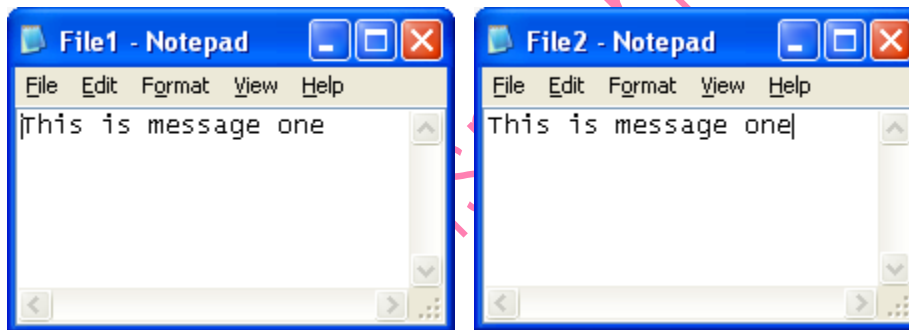
### A) Write a C program which copies one file to another.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    FILE *fp1,*fp2;
    char ch;
    clrscr();
    fp1 = fopen("File1.txt","r");
    fp2 = fopen("File2.txt","w");

    while((ch=getc(fp1))!=EOF)
        putc(ch,fp2);
    fclose(fp2);
    fclose(fp1);

    getch();
}
```

### Result:



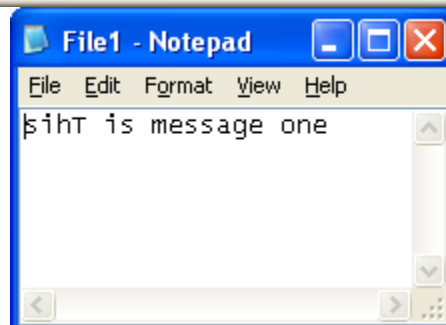
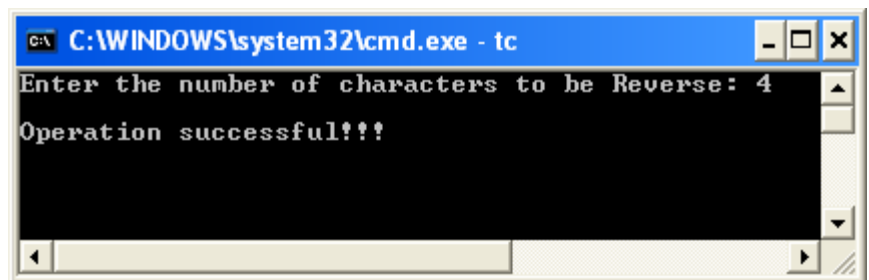
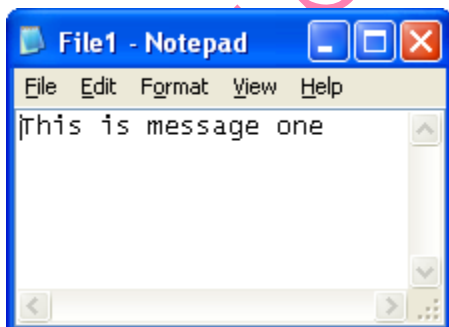
**B) Write a C program to Reverse the first 'n' characters in a file.**

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
    FILE *fp;
    char ch,temp[]="";
    int n,count = 0,i = 0;
    clrscr();
    printf("Enter the number of characters to be Reverse: ");
    scanf("%d",&n);
    fp = fopen("File1.txt","r+");
    while((ch=getc(fp))!=EOF)
        count++;
    if(n>count)
        printf("Specified number of characters are not available in the file!!!");
    else
    {
        rewind(fp);
        fgets(temp,n+1,fp);
        strrev(temp);
        rewind(fp);
        for(i=0; i<=n; i++)
            putc(temp[i],fp);

        printf("\nOperation successful!!!");
    }
    fclose(fp);

    getch();
}
```

**Result:**





## Week 13

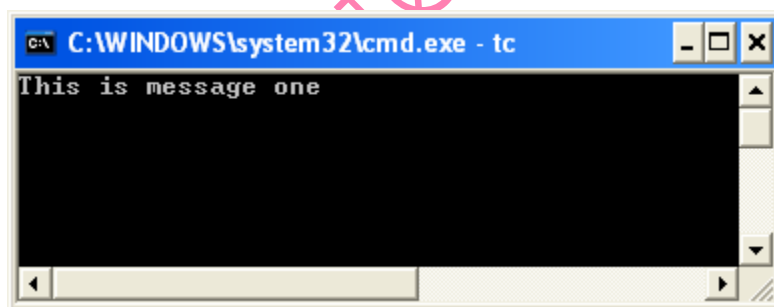
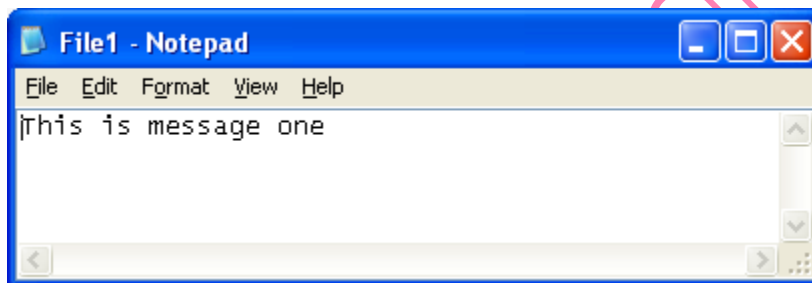
### A) Write a C program to display the contents of a file.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    FILE *fp;
    char ch;
    clrscr();
    fp = fopen("File1.txt","r");

    while((ch=getc(fp))!=EOF)
        putchar(ch);
    fclose(fp);

    getch();
}
```

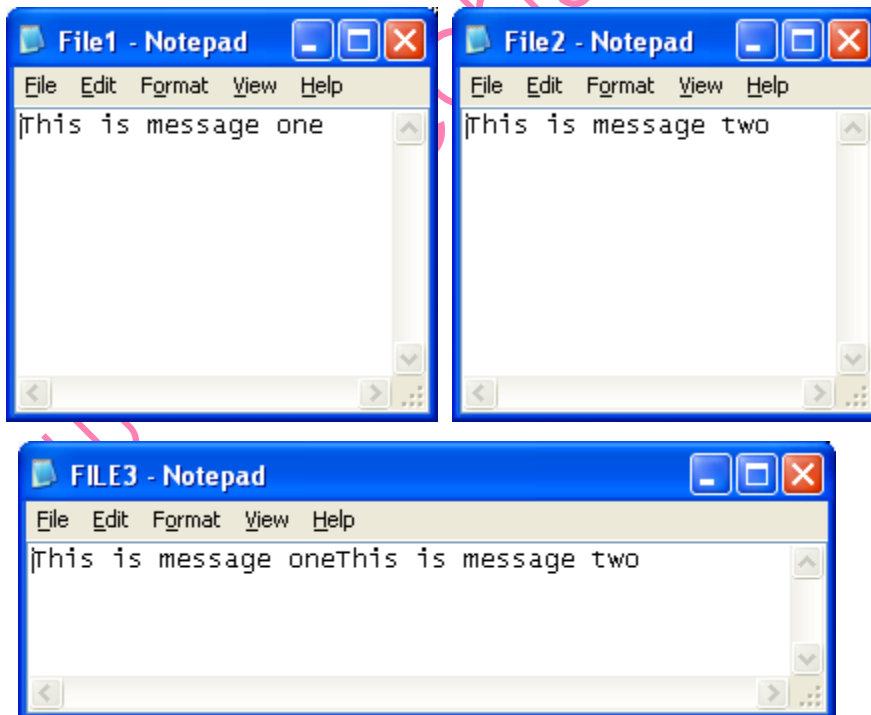
### Result:



**B) Write a C program to merge two files into a third file**

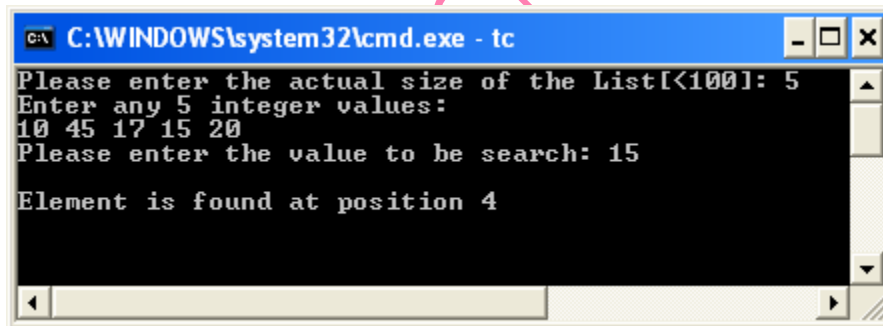
```
#include<stdio.h>
#include<conio.h>
void main()
{
    FILE *fp1,*fp2,*fp3;
    char ch;
    clrscr();
    fp1 = fopen("File1.txt","r");
    fp2 = fopen("File2.txt","r");
    fp3 = fopen("File3.txt","w");
    while((ch=getc(fp1))!=EOF)
        putc(ch,fp3);
    while((ch=getc(fp2))!=EOF)
        putc(ch,fp3);
    fclose(fp3);
    fclose(fp2);
    fclose(fp1);
    printf("Done!!!");
    getch();
}
```

**Result:**



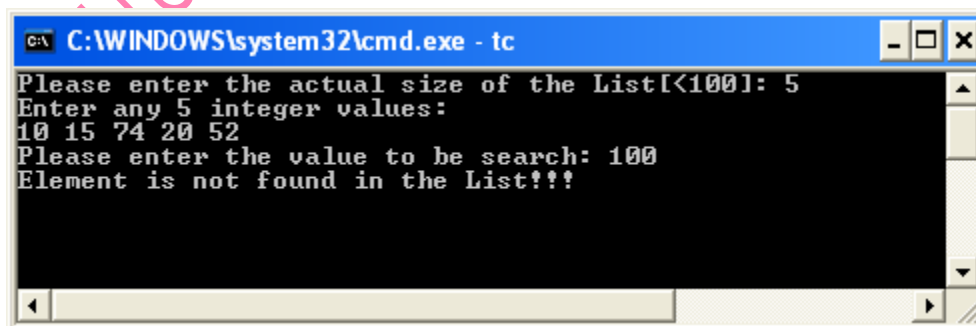
**Week – 14****A) Write a C program to search a Key in a given List using Linear Search**

```
#include<stdio.h>
#include<conio.h>
#define MAXSIZE 100
int List[MAXSIZE];
void main()
{
    int sKey,size,i;
    clrscr();
    printf("Please enter the actual size of the List(<100): ");
    scanf("%d",&size);
    printf("Enter any %d integer values:\n",size);
    for(i=0; i<size; i++)
        scanf("%d",&List[i]);
    printf("Please enter the value to be search: ");
    scanf("%d",&sKey);
    for(i=0; i<=size; i++) {
        if(sKey == List[i]) {
            printf("\nElement is found at position %d",i+1);
            getch();
            exit(0);
        }
    }
    printf("Element is not found in the List!!!");
    getch();
}
```

**Result:**

```
C:\WINDOWS\system32\cmd.exe - tc
Please enter the actual size of the List[<100]: 5
Enter any 5 integer values:
10 45 17 15 20
Please enter the value to be search: 15

Element is found at position 4
```



```
C:\WINDOWS\system32\cmd.exe - tc
Please enter the actual size of the List[<100]: 5
Enter any 5 integer values:
10 15 74 20 52
Please enter the value to be search: 100

Element is not found in the List!!!
```

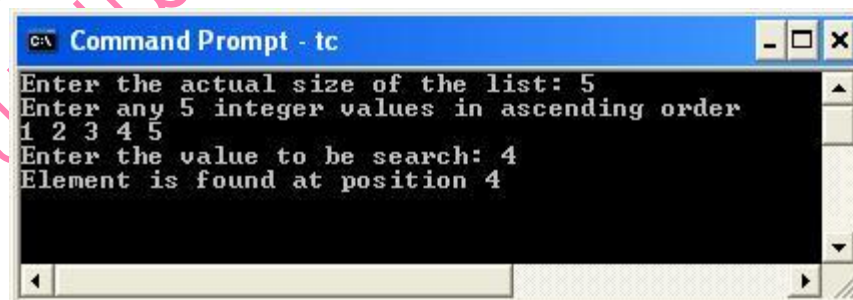
**B) Write a C program to search a Key in a given List using Binary Search Algorithm**

```

#include<stdio.h>
#include<conio.h>
#define MAXSIZE 100
int list[MAXSIZE];
void main()
{
    int size,i,sKey,first,last,middle;
    clrscr();
    printf("Enter the actual size of the list: ");
    scanf("%d",&size);
    printf("Enter any %d integer values in ascending order\n",size);
    for(i=0;i<size;i++)
        scanf("%d",&list[i]);
    printf("Enter the value to be search: ");
    scanf("%d",&sKey);
    first = 0;
    last = size-1;
    while(first <= last) {
        middle = (first + last)/2;

        if(sKey == list[middle]) {
            printf("Element is found at position %d",middle+1);
            getch();
            exit(0);
        }
        if(sKey < list[middle])
            last = middle - 1;
        else
            first = middle + 1;
    }
    printf("Element is not found!!!");
    getch();
}

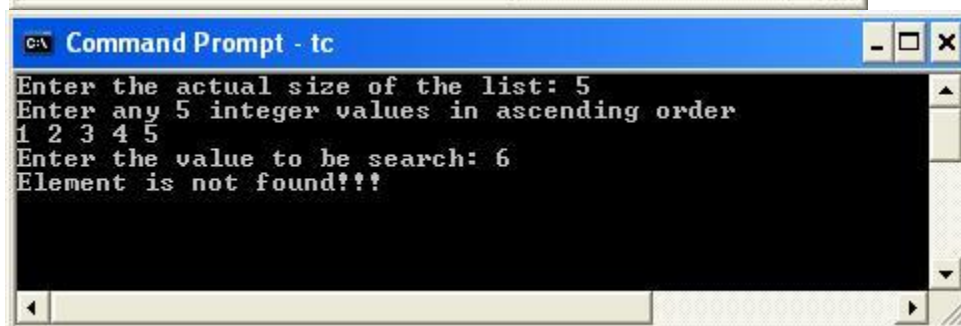
```

**Result:**


```

C:\> Command Prompt - tc
Enter the actual size of the list: 5
Enter any 5 integer values in ascending order
1 2 3 4 5
Enter the value to be search: 4
Element is found at position 4

```



```

C:\> Command Prompt - tc
Enter the actual size of the list: 5
Enter any 5 integer values in ascending order
1 2 3 4 5
Enter the value to be search: 6
Element is not found!!!

```