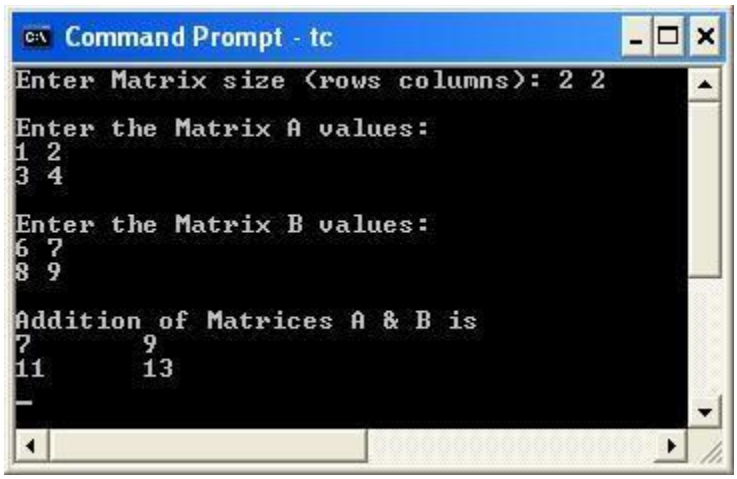
Week – 5

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:

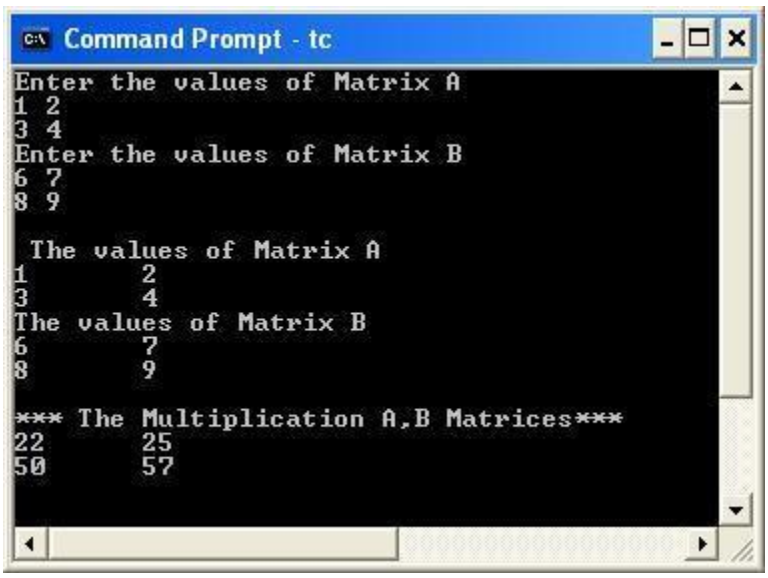


B) Write a C program to perform Multiplication of two Matrices

```
#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:

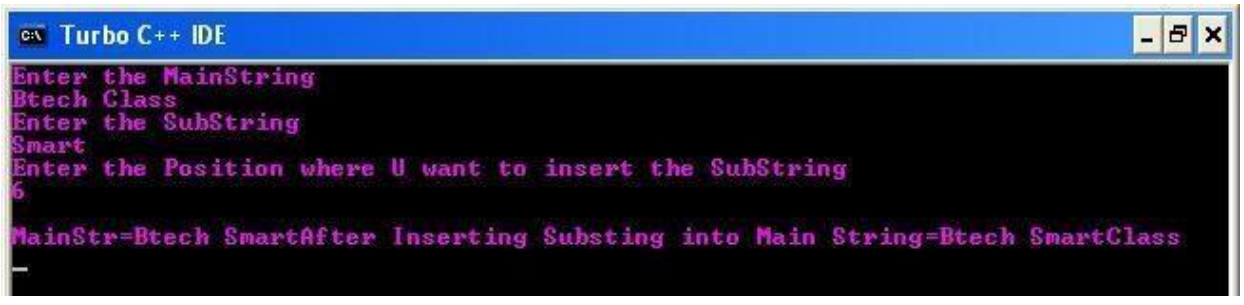


Week – 6

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:



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:

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.

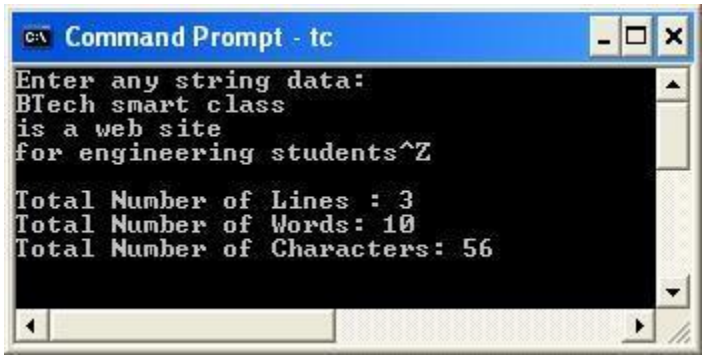
```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main( )
{
char mainString[30], searchString[20];
int i, j, flag=0, count=0, index;
clrscr();
printf("Enter the main string: ");
gets(mainString);
printf("Enter the search string: ");
gets(searchString);
for(i=0;mainString[i]!='\0';i++)
{
  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:

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:

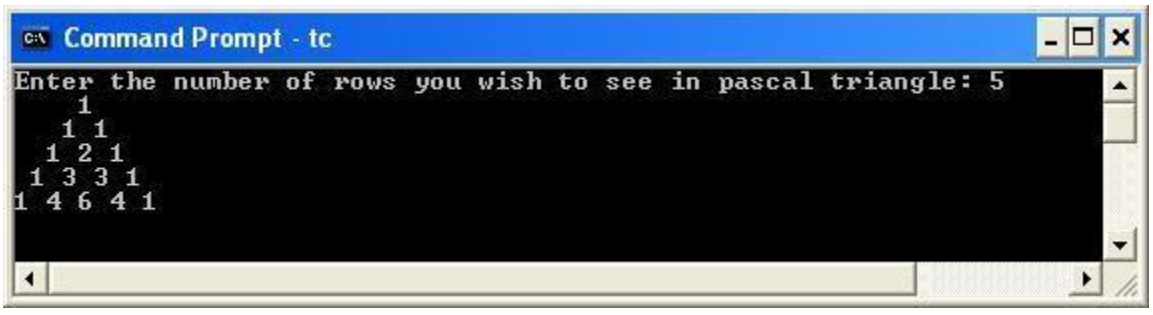


Week 8

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:



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();
}
```

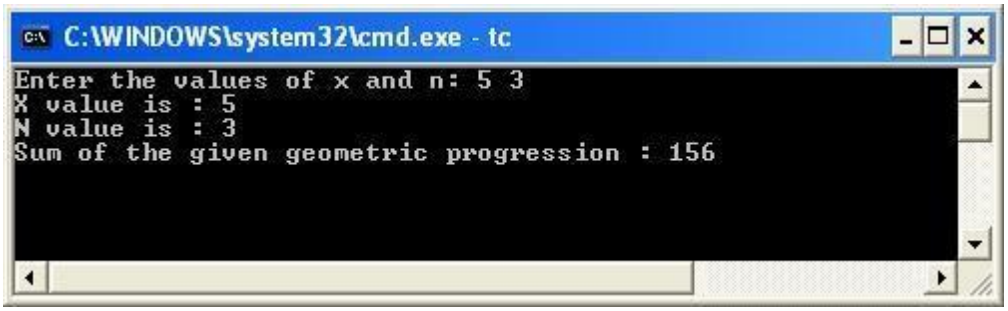
Result:

Week 9

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

```
#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:



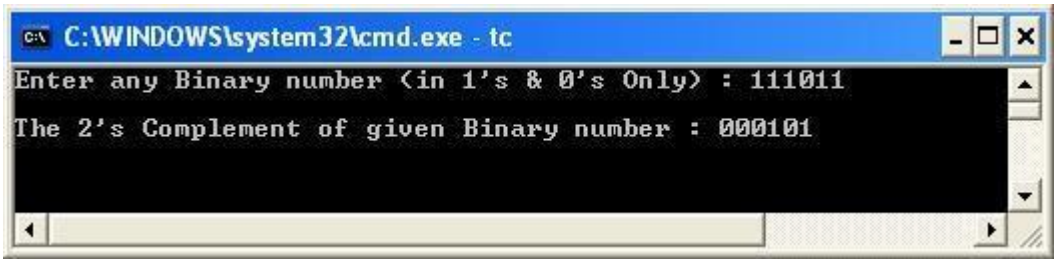
Week 10

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);
}
```

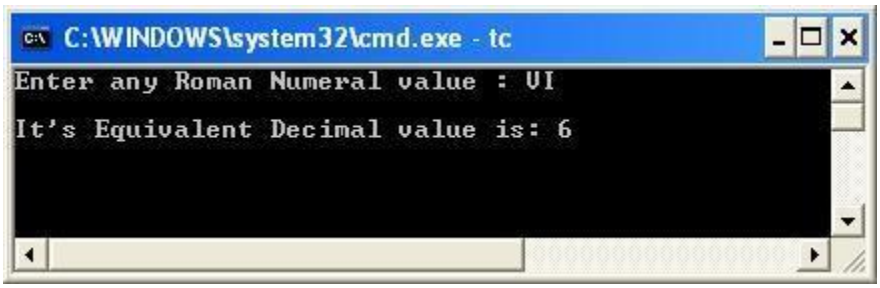
Result:



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

Week 12

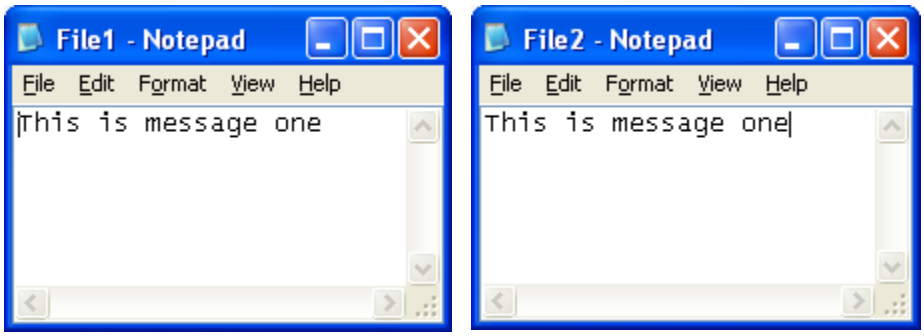
A) Write a C program which copies one file to another.

```
#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:

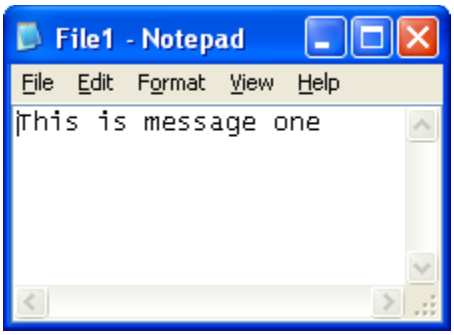


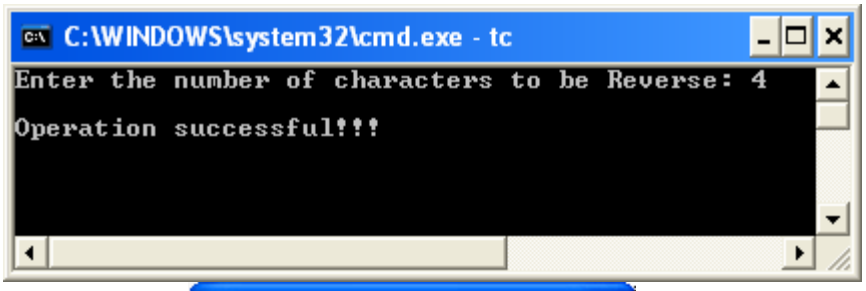
B) Write a C program to Reverse the first 'n' characters in a file.

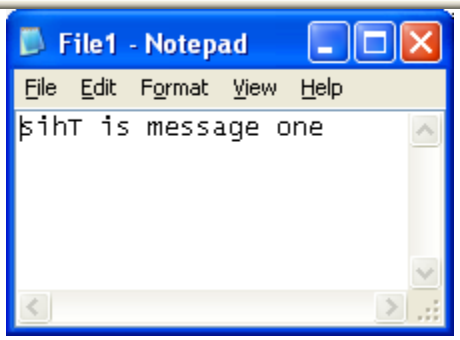
```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
  FILE *fp;
  char ch,temp[]="";
  int n,count = 0,i = 0;
  clrscr();
  printf("Enter the number of characters to be Reverse: ");
  scanf("%d",&n);
  fp = fopen("File1.txt","r+");
  while((ch=getc(fp))!=EOF)
    count++;
  if(n>count)
    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

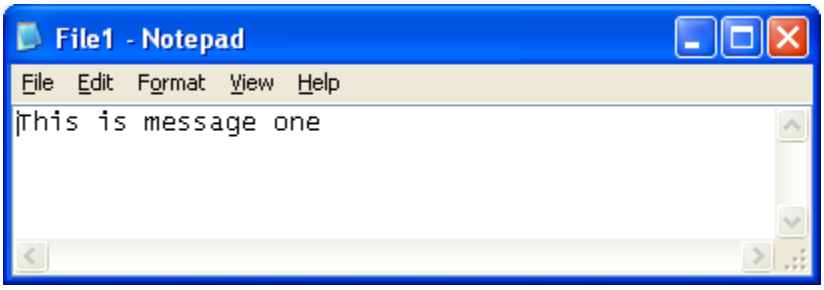
A) Write a C program to display the contents of a file.

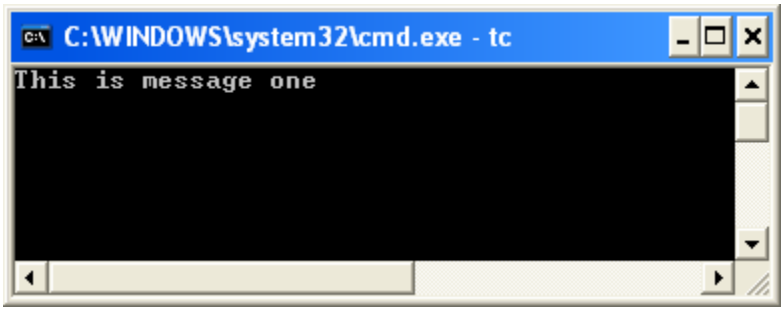
```
#include<stdio.h>
#include<conio.h>
void main()
{
  FILE *fp;
  char  ch;
  clrscr();
  fp = fopen("File1.txt","r");

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

  getch();
}
```

Result:

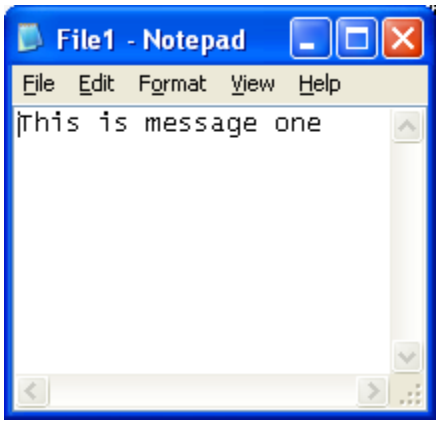


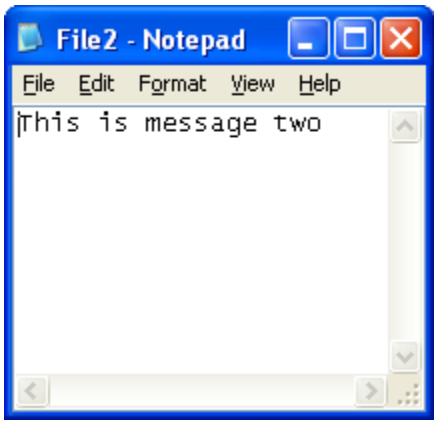


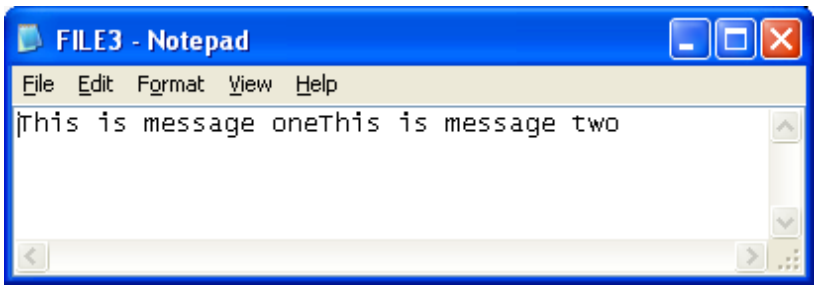
B) Write a C program to merge two files into a third file

```
#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:





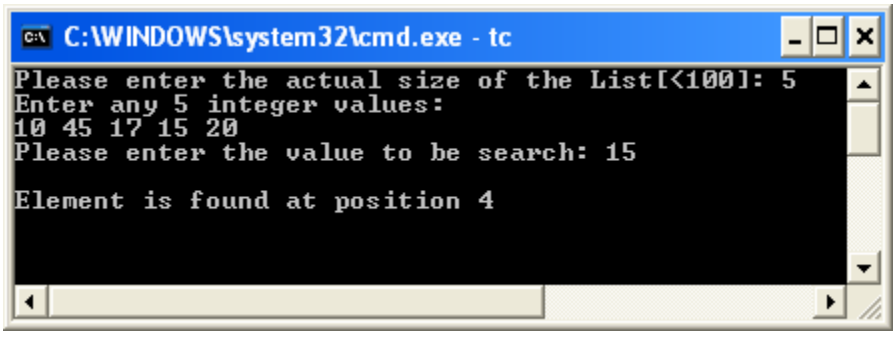


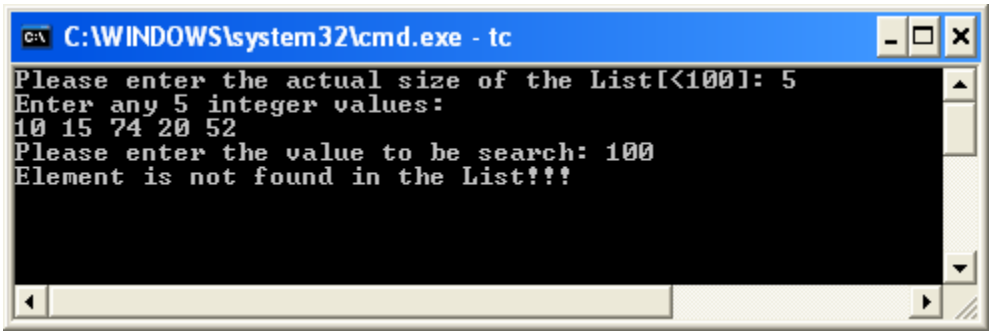
Week – 14

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:





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: