PRACTICAL – 12 CTSD

1 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. Write a C program to find the 2's complement of a binary number.

```
#include<stdio.h>
#include<conio.h>
main()
{
  int a[10],i,n;
  clrscr();
  printf("Enter no of bits \n");
  scanf("%d",&n);
  printf("Enter binary numbers \n");
  for(i=0;i<n;i++)
     scanf("%d",&a[i]);
  for(i=0;i<n;i++)
  {
     if(a[i]==0)
     a[i]=1;
     else
     a[i]=0;
  }
  for(i=n-1;i>=0;i--)
  {
     if(a[i]==0)
     {
   a[i]=1;
   break;
     }
     else
     {
   a[i]=0;
   if(a[i-1]==0)
   {
     a[i-1]=1;
     break;
   }
     }
  }
  printf("The complement form is \n");
  for(i=0;i<n;i++)
```

```
  printf("%d",a[i]);
  getch();
}
```

output:

```
Enter no of bits
5
Enter binary numbers
1
1
1
0
0
The complement form is
00100
```

2 Write a C program to convert a Roman numeral to its decimal Equivalent.

```
#include <stdio.h>
#include <conio.h>
main(){
  char roman[30];
  int deci=0;
  int length,i,d[30];
  printf("The Roman equivalent to decimal
");
  printf("Decimal:.....Roman
");
  printf("%5d.....%3c
",1,'I');
  printf("%5d.....%3c
",5,'V');
  printf("%5d.....%3c
",10,'X');
  printf("%5d.....%3c
",50,'L');
  printf("%5d.....%3c
",100,'C');
  printf("%5d.....%3c
",500,'D');
  printf("%5d.....%3c
",1000,'M');
  printf("Enter a Roman numeral:");
  scanf("%s",roman);
  length=strlen(roman);
```

```
  for(i=0;i<length;i++){
    switch(roman[i]){
      case 'm':
      case 'M': d[i]=1000; break;
      case 'd':
      case 'D': d[i]= 500; break;
      case 'c':
      case 'C': d[i]= 100; break;
      case 'l':
      case 'L': d[i]= 50; break;
      case 'x':
      case 'X': d[i]= 10; break;;
      case 'v':
      case 'V': d[i]= 5; break;
      case 'i':
      case 'I': d[i]= 1;
    }
  }
  for(i=0;i<length;i++){
    if(i==length-1 || d[i]>=d[i+1])
      deci += d[i];
    else
      deci -= d[i];
  }
  printf("The Decimal equivalent of Roman numeral %s is %d", roman, deci);
}
```

OUTPUT:

The Roman equivalent to decimal

Decimal:.....Roman

1..... I

5..... V

10..... X

50..... L

100..... C

500..... D

1000..... M

Enter a Roman numeral: M

The Decimal equivalent of Roman Numeral M is 1000