

Practical – 1

Aim: Write a C program to perform the following conversions.

a) Decimal to Binary Conversion

Code:

```
#include <stdio.h>

#include <stdlib.h>

int main()
{
    int c;
    do
    {
        int a[5],b,i;
        printf("Enter The Value Of Decimal No.:\\n");
        scanf("%d",&b);
        for(i=0;i<5;i++)
        {
            a[i]=b%2;
            b=b/2;
        }
        for(i=4;i>=0;i--)
        {
            printf("%d",a[i]);
        }
        printf("\\n\\nEnter 1 TO DO OPERATION AGAIN... : ");
    }
```

```
scanf("%d",&c);  
  
}while(c==1);  
  
}
```

Output:

```
Enter The Value Of Decimal No.:  
15  
01111  
Enter 1 TO DO OPERATION AGAIN... : 1  
Enter The Value Of Decimal No.:  
13  
01101  
Enter 1 TO DO OPERATION AGAIN... : 1  
Enter The Value Of Decimal No.:  
5  
00101  
Enter 1 TO DO OPERATION AGAIN... : 0  
  
Process returned 0 (0x0)   execution time : 29.071 s  
Press any key to continue.
```

b) Decimal to Hexadecimal Conversion

Code:

```
#include <stdio.h>  
  
#include <stdlib.h>  
  
int main()  
{  
    int c;  
  
    do  
    {  
        int d,r,i=0;
```

```
char hexa[100];

printf("Enter Decimal No. :\n");

scanf("%d",&d);

while(d != 0)

{

    r = d % 16;

    if(r<10)

    {

        r = r + 48;

    }

    else

    {

        r = r + 55;

    }

    hexa[i] = r;

    i++;

    d = d / 16;

}

for(i=i-1;i>=0;i--)

{

    printf("%c",hexa[i]);

}

printf("\nENTER 1 TO DO OPERATION AGAIN... : ");

scanf("%d",&c);
```

```
}while(c==1);  
  
}
```

Output:

```
Enter Decimal No. :  
12  
C  
ENTER 1 TO DO OPERATION AGAIN... : 1  
Enter Decimal No. :  
172  
AC  
ENTER 1 TO DO OPERATION AGAIN... : 1  
Enter Decimal No. :  
168  
A8  
ENTER 1 TO DO OPERATION AGAIN... : 0  
  
Process returned 0 (0x0)   execution time : 18.215 s  
Press any key to continue.
```

c) Binary to Decimal Conversion

Code:

```
#include <stdio.h>  
  
#include <stdlib.h>  
  
#include <math.h>  
  
int main()  
{  
    int c;  
  
    do  
    {  
        int a[4],d[]={0,0,0,0},i,sum=0,temp;
```

```
printf("Enter The Binary No.:\n");

for(i=0;i<4;i++)

{

    scanf("%d",&a[i]);

}

for(i=3;i>=0;i--)

{

    temp=pow(2,3-i);

    d[i]=temp*a[i];

}

for(i=0;i<5;i++)

{

    sum+=d[i];

}

printf("%d\n",sum);

printf("ENTER 1 TO DO OPERATION AGAIN... : ");

scanf("%d",&c);

}while(c==1);

}
```

Output:

```
Enter The Binary No.:
1
1
1
1
1
15
ENTER 1 TO DO OPERATION AGAIN... : 1
Enter The Binary No.:
1
1
0
0
12
ENTER 1 TO DO OPERATION AGAIN... : 1
Enter The Binary No.:
1
0
0
1
9
ENTER 1 TO DO OPERATION AGAIN... : 0

Process returned 0 (0x0)   execution time : 25.041 s
Press any key to continue.
```

Practical – 2

Aim: Write a C program to perform the following compliment Operations.

a) 1's Complement

Code:

```
#include <stdio.h>

#include <string.h>

int main()
{
    int c;
    do
    {
        char b[100], a[100];
        int i, d;
        printf("Enter a Binary Number : ");
        scanf("%s", b);
        d = strlen(b);
        for(i=0; i < d; i++)
        {
            if(b[i]=='1')
            {
                a[i] = '0';
            }
            else if(b[i]=='0')
            {
                a[i] = '1';
            }
        }
    } while(1);
}
```

```
        a[i] = '1';
    }
    else
    {
        printf("Invalid Data!!!");
        return 1;
    }
}

printf("1's Complement      : %s",a);

printf("\nEnter 1 TO DO OPERATION AGAIN... : ");

scanf("%d",&c);

}while (c==1);
}
```

Output:

```
Enter a Binary Number : 111000
1's Complement      : 000111
ENTER 1 TO DO OPERATION AGAIN... : 1
Enter a Binary Number : 101010
1's Complement      : 010101
ENTER 1 TO DO OPERATION AGAIN... : 1
Enter a Binary Number : 10002
Invalid Data!!!
Process returned 1 (0x1)   execution time : 28.728 s
Press any key to continue.
```


b) 2's Complement

Code:

```
#include <stdio.h>
```

```
#include <string.h>
```

```
int main()
```

```
{
```

```
    int c;
```

```
    do
```

```
    {
```

```
        char b[100];
```

```
        char o[100];
```

```
        char t[100];
```

```
        int carry=1,d,i;
```

```
        printf("Enter The Binary No. : ");
```

```
        scanf("%s", b);
```

```
        d = strlen(b);
```

```
        for(i=0;i<d;i++)
```

```
        {
```

```
            if(b[i]=='1')
```

```
            {
```

```
                o[i] = '0';
```

```
            }
```

```
            else if(b[i]=='0')
```

```
            {
```

```
        o[i] = '1';
    }
}
o[d]='\0';
printf("The ones complement of the binary number is : ");
printf("%s",o);
for(i=d-1; i>=0; i--)
{
    if(o[i] == '1' && carry == 1)
    {
        t[i] = '0';
    }
    else if(o[i] == '0' && carry == 1)
    {
        t[i] = '1';
        carry = 0;
    }
    else
    {
        t[i] = o[i];
    }
}
t[d]='\0';
printf("\nThe twos complement of the binary number is : ");
```

```
printf("%s",t);

printf("\nENTER 1 TO DO OPERATION AGAIN... : ");

scanf("%d",&c);

}while(c==1);

}
```

Output:

```
Enter The Binary No. : 100010001
The ones complement of the binary number is : 011101110
The twos complement of the binary number is : 011101111
ENTER 1 TO DO OPERATION AGAIN... : 1
Enter The Binary No. : 101001010
The ones complement of the binary number is : 010110101
The twos complement of the binary number is : 010110110
ENTER 1 TO DO OPERATION AGAIN... : 0

Process returned 0 (0x0)   execution time : 13.013 s
Press any key to continue.
```