1) Write a program to convert string to integer using user defined function? (atoi function)
ex: input="123" output=123

```c
#include<stdio.h>
int convert(char[]);
void main()
{
    char str[20];
    int data;
    printf("Enter a string ");
    scanf("%s",str);
    data=convert(str);
    printf("%d",data);
}
int convert(char a[])
{
    int i=0,result=0,sign=0;
    if(a[i]=='-')
    {
        sign=-1;
        i++;
    }
    else
    {
        sign=1;
    }
    while(a[i])
    {
        if(a[i]<'0'||a[i]>'9')
        {
            printf("Invalid Input\n");
            return 0;
        }
        result=result*10+(a[i]-'0');
        i++;
    }
    return result*sign;
}
```

2) Write a program to print addition of two numbers without using arithmetic operator

```c
#include<stdio.h>
void main()
{
    int a,b;
    printf("Enter two numbers ");
    scanf("%d %d",&a,&b);
    while(a)
    {
        b++;
        a--;
    }
    printf("%d\n",b);
}
```

3) Write a program to print addition of two numbers using bitwise operators

```c
#include<stdio.h>
void main()
{
    int a,b,carry;
    printf("Enter two numbers ");
    scanf("%d %d",&a,&b);
    while(b!=0)
    {
        carry=a&b;
        a=a^b;
        b=carry<<1;
    }
    printf("%d\n",a);
}
```

4) C program to check palindrome or not

```c
#include<stdio.h>
#include<string.h>
void main()
{
    char str[100];
    printf("Enter a string ");
    scanf("%s",str);
    int len=strlen(str);
    for(int i=0;i<len/2;i++)
    {
        if(str[i]!=str[len-i-1])
        {
            printf("Not palindrome");
            return;
        }
    }
    printf("Palindrome");
}
```

5) C program to find the size of integer without using sizeof operator?

```c
#include<stdio.h>
void main()
{
    int a;
    int *ptr1=&a;
    int *ptr2=ptr1+1;
    printf("%d",(char *)ptr2-(char *)ptr1);
}
```

6) C program to swap two numbers?

```c
Using pointers
#include<stdio.h>
void swap(int*,int*);
void main()
{
    int a=10,b=5;
```

```c
    swap(&a,&b);
    printf("%d %d",a,b);
}
void swap(int *c,int *d)
{
    int temp;
    temp=*c;
    *c=*d;
    *d=temp;
}
```

Using temp variable
```c
#include<stdio.h>
void swap(int*,int*);
void main()
{
    int a=10,b=5;
    int temp;
    temp=a;
    a=b;
    b=temp;
    printf("%d %d",a,b);
}
```

Using Bitwise operator
```c
#include<stdio.h>
void swap(int*,int*);
void main()
{
    int a=10,b=5;
    a=a^b;
    b=a^b;
    a=a^b;
    printf("%d %d",a,b);
}
```

Using without temp variable
```c
#include<stdio.h>
void swap(int*,int*);
void main()
{
    int a=10,b=5;
    a=a+b;
    b=a-b;
    a=a-b;
    printf("%d %d",a,b);
}
```

7) C program to check whether the strings are equal or not?

```c
#include<stdio.h>
#include<string.h>
void main()
{
    char str1[100],str2[100];
    int i;
    printf("Enter 1st string ");
    scanf("%s",str1);
```

```c
    printf("Enter 2nd string ");
    scanf("%s",str2);
    int l1=strlen(str1);
    int l2=strlen(str2);
    if(l1!=l2)
    {
        printf("Strings are not equal\n");
        return;
    }
    for(i=0;i<l1;i++)
    {
        if(str1[i]!=str2[i])
        {
            printf("Strings are not equal\n");
            return;
        }
    }
    printf("Strings are equal\n");
}
```

8) Program to convert integer to binary

```c
#include<stdio.h>
void main()
{
    int num,arr[100],index=0;
    printf("Enter a number ");
    scanf("%d",&num);
    while(num>0)
    {
        arr[index]=num%2;
        num=num/2;
        index++;
    }
    printf("Binary number is ");
    for(int i=index-1;i>=0;i--)
    {
        printf("%d ",arr[i]);
    }
}
```

9) program to convert decimal to binary

```c
#include<stdio.h>
void main()
{
    float num,fractional;
    int arr[100],index=0,decimal=0;
    printf("Enter a number ");
    scanf("%f",&num);
    decimal=num;
    fractional=num-decimal;
    while(decimal>0)
    {
        arr[index]=decimal%2;
        decimal=decimal/2;
        index++;
    }
```

```c
    printf("Binary number is ");
    for(int i=index-1;i>=0;i--)
    {
        printf("%d ",arr[i]);
    }
    printf(".");
    for(int i=0;i<10;i++)
    {
        fractional=fractional*2;
        int bit=fractional;
        printf("%d ",bit);
        fractional=fractional-bit;
        if(fractional==0.0)
            break;
    }
}
```

10) Program to swap the given two arrays and print the arrays

```c
#include<stdio.h>
void main()
{
    int arr1[]={1,2,3,4,5,6},arr2[]={7,8,9,10,11,12},arr3[6],i;
    for(i=0;i<6;i++)
    {
        arr3[i]=arr1[i];
        arr1[i]=arr2[i];
        arr2[i]=arr3[i];
    }
    for(i=0;i<6;i++)
    {
        printf("%d ",arr1[i]);
    }
    printf("\n");
    for(i=0;i<6;i++)
    {
        printf("%d ",arr2[i]);
    }
}
```

11) Program to swap two strings

```c
#include <stdio.h>
#include<string.h>
void main()
{
    char str[10]="hi",str1[10]="hello",str3[10];
    int l1=strlen(str);
    int l2=strlen(str1);
    for(int i=0;i<=l1;i++)
        str3[i]=str[i];
    for(int i=0;i<=l2;i++)
        str[i]=str1[i];
    for(int i=0;i<=l1;i++)
        str1[i]=str3[i];
    printf("%s %s",str,str1);
}
```

```c
#include<stdio.h>
#include<string.h>
void main()
{
    char *str="hii";
    char str1[]="hello";
    char str2[20];
    strcpy(str2,str1);
    strcpy(str1,str);
    str=str2;
    printf("%s %s",str,str1);
}
```

12) program to remove duplicates in a string

```c
#include<stdio.h>
#include<string.h>
void main()
{
    char str[]="embedded";
    int len=strlen(str);
    int i,j,k;
    for(i=0;i<len;i++)
    {
        for(j=i+1;j<len;)
        {
            if(str[i]==str[j])
            {
                for(k=j;k<len;k++)
                {
                    str[k]=str[k+1];
                }
                len--;
            }
            else
            {
                j++;
            }
        }
    }
    str[len]='\0';
    printf("%s",str);
}
```

13) Program using function pointer to add, sub, mul, div.

```c
#include<stdio.h>
void add(int,int);
void sub(int,int);
void mul(int,int);
void divi(int,int);
void main()
{
    int a,b,ch;
    printf("Enter two numbers ");
    scanf("%d %d",&a,&b);
    void (*fun_ptr[])(int,int)={add,sub,mul,divi};
    printf("Enter your choice 0.add 1.sub 2.mul 3.divi ");
```

```c
    scanf("%d",&ch);
    (fun_ptr[ch])(a,b);
}
void add(int c,int d)
{
    printf("%d",c+d);
}
void sub(int c,int d)
{
    printf("%d",c-d);
}
void mul(int c,int d)
{
    printf("%d",c*d);
}
void divi(int c,int d)
{
    printf("%d",c/d);
}
```

14) Program to subtract two numbers without using '-' operator

```c
#include<stdio.h>
void main()
{
    int a,b,c=0;
    printf("Enter two numbers ");
    scanf("%d %d",&a,&b);
    int min=a<b? a:b;
    int max=a>b? a:b;
    for(int i=min;i<max;i++)
    {
        c++;
    }
    printf("%d",c);
}
```

Using btwise operators
```c
#include<stdio.h>
void main()
{
    int a,b,borrow;
    printf("Enter two numbers ");
    scanf("%d %d",&a,&b);
    while(b!=0)
    {
        borrow=(~a)&b;
        a=a^b;
        b=borrow<<1;
    }
    printf("%d",a);
}
```

15) Program to check no of set bits

```c
#include<stdio.h>
void main()
{
```

```c
    int a,mask,b=1,count=0;
    printf("Enter a number ");
    scanf("%d",&a);
    for(int i=0;i<=7;i++)
    {
        mask=b<<i;
        if(mask&a)
        {
            count++;
        }
    }
    printf("%d",count);
}
```

16) Write A Program To Swap the given two strings?
Input :
char *str = "Hyderabad"
char *str1 = "Bangalore"
Output:
Str = "Bangalore"
Str1 = "Hydreabad"

```c
#include<stdio.h>
#include<string.h>
void main()
{
    char *str1="Hyderabad";
    char *str2="bangalore";
    char str3[20];
    strcpy(str3,str1);
    str1=str2;
    str2=str3;
    printf("%s %s",str1,str2);
}
```

17) Program to print largest and second largest elements in an array

```c
#include<stdio.h>
void main()
{
    int size,arr[20],i;
    printf("Enter size of an array ");
    scanf("%d",&size);
    printf("Enter elements in an array ");
    for(i=0;i<size;i++)
    {
        scanf("%d",&arr[i]);
    }
    int large=arr[0],slarge;
    for(i=1;i<size;i++)
    {
        if(arr[i]>large)
        {
            slarge=large;
            large=arr[i];
        }
        else if(arr[i]>slarge&&arr[i]<large)
        {
```

```c
                slarge=arr[i];
        }
    }
    printf("%d %d",large,slarge);
}
```

18) Write a program to find the missing odd number in a sequenced array?
Input:
int arr[] = {3,5,9,13,15};
Output:
Missing Nums = 7,11

```c
#include<stdio.h>
void main()
{
    int size,arr[20],i;
    printf("Enter size of an array ");
    scanf("%d",&size);
    printf("Enter only odd numbers in sequence ");
    for(i=0;i<size;i++)
    {
        scanf("%d",&arr[i]);
    }
    for(i=0;i<size-1;i++)
    {
        if(arr[i]+2!=arr[i+1])
        {
            printf("%d ",arr[i]+2);
        }
    }
}
```

19) Write a C program that takes a string as input and converts all
uppercase letters in the string to lowercase
and all lowercase letters to uppercase.
Input:
Enter a string: â€œVivEn EmBeDded ACadeMyâ€;
Output:
Output = â€œvIVeN eMbEdDED acADEmY";

```c
#include<stdio.h>
void main()
{
    char str[100],i;
    printf("Enter a string ");
    fgets(str,100,stdin);
    for(i=0;str[i];i++)
    {
        if(str[i]>='a'&&str[i]<='z')
            str[i]=str[i]-32;
        else if(str[i]==' ')
            str[i]=' ';
        else if(str[i]=='\n')
            str[i]='\n';
        else
            str[i]=str[i]+32;
    }
    printf("%s",str);
```

}