1. Program of Swapping Numbers Using Temporary Variable Temp.

```c
#include<stdio.h>
int main() {
      double first, second, temp;
      printf("Enter first number: ");
      scanf("%lf", &first);
      printf("Enter second number: ");
      scanf("%lf", &second);

      // Value of first is assigned to temp
      temp = first;

      // Value of second is assigned to first
      first = second;

      // Value of temp (initial value of first) is assigned to
      second = temp;

      // %.2lf displays number up to 2 decimal points
      printf("\nAfter swapping, firstNumber = %.2lf\n", first);
      printf("After swapping, secondNumber = %.2lf", second);
      return 0;
}
```

Output

```
Enter first number: 1.20
Enter second number: 2.45

After swapping, firstNumber = 2.45
After swapping, secondNumber = 1.20
```

In the above program, the `temp` variable is assigned the value of the `first` variable.

Then, the value of the `first` variable is assigned to the `second` variable.

Finally, the `temp` (which holds the initial value of `first`) is assigned to `second`. This completes the swapping process.

2. Programs of Swapping Numbers Without Using Temporary Variables

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

```
int main() {
    double a, b;
    printf("Enter a: ");
    scanf("%lf", &a);
    printf("Enter b: ");
    scanf("%lf", &b);

    // Swapping

    // a = (initial_a - initial_b)
    a = a - b;

    // b = (initial_a - initial_b) + initial_b = initial_a
    b = a + b;

    // a = initial_a - (initial_a - initial_b) = initial_b
    a = b - a;    // %.2lf displays number up to 2 decimal points
    printf("After swapping, a = %.2lf\n", a);
    printf("After swapping, b = %.2lf", b);
    return 0;
}
```

Output

```
Enter a: 10.25

Enter b: -12.5

After swapping, a = -12.50

After swapping, b = 10.25
```

3. Program to Check Vowel or consonant

```
#include <stdio.h>
int main() {
    char c;
    int lowercase_vowel, uppercase_vowel;
    printf("Enter an alphabet: ");
    scanf("%c", &c);

    // evaluates to 1 if variable c is a lowercase vowel
    lowercase_vowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o'
|| c == 'u');

    // evaluates to 1 if variable c is a uppercase vowel
    uppercase_vowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O'
|| c == 'U');

    // evaluates to 1 (true) if c is a vowel
    if (lowercase_vowel || uppercase_vowel)
        printf("%c is a vowel.", c);
    else
        printf("%c is a consonant.", c);
    return 0;
}
```

Output

```
Enter an alphabet: G

G is a consonant.
```

4. Program to find largest of three input numbers

```
#include<stdio.h>
int main()
{
   int num1,num2,num3;

   //Ask user to input any three integer numbers
   printf("\nEnter value of num1, num2 and num3:");
```

```
   //Store input values in variables for comparsion
   scanf("%d %d %d",&num1,&num2,&num3);

   if((num1>num2)&&(num1>num3))
      printf("\n Number1 is greatest");
   else if((num2>num3)&&(num2>num1))
      printf("\n Number2 is greatest");
   else
      printf("\n Number3 is greatest");
   return 0;
}
```

Output:

```
Enter value of num1, num2 and num3: 15 200 101
 Number2 is greatest
```

5.Program of Fibonacci Series in C using loop

```
#include<stdio.h>
int main()
{
    int count, first_term = 0, second_term = 1, next_term, i;

    //Ask user to input number of terms
    printf("Enter the number of terms:\n");
    scanf("%d",&count);

    printf("First %d terms of Fibonacci series:\n",count);
    for ( i = 0 ; i < count ; i++ )
    {
       if ( i <= 1 )
          next_term = i;
       else
       {
          next_term = first_term + second_term;
          first_term = second_term;
          second_term = next_term;
       }
       printf("%d\n",next_term);
    }

    return 0;
}
```

Output:

```
Enter the number of terms: 8
First 8 terms of Fibonacci series:
0
1
1
2
3
5
8
13
```

6. Program to display Fibonacci series using recursion

```
#include<stdio.h>
int fibonacci_series(int);
int main()
{
   int count, c = 0, i;
   printf("Enter number of terms:");
   scanf("%d",&count);

   printf("\nFibonacci series:\n");
   for ( i = 1 ; i <= count ; i++ )
   {
      printf("%d\n", fibonacci_series(c));
      c++;
   }

   return 0;
}
int fibonacci_series(int num)
{
   if ( num == 0 )
     return 0;
   else if ( num == 1 )
     return 1;
   else
     return ( fibonacci_series(num-1) + fibonacci_series(num-2) );
}
```

Output:

```
Enter number of terms: 6
Fibonacci series:
0
```

```
1
1
2
3
5
```

7. Program to find factorial of given number

```c
 #include<stdio.h>
int find_factorial(int);
int main()
{
   int num, fact;
   //Ask user for the input and store it in num
   printf("\nEnter any integer number:");
   scanf("%d",&num);

   //Calling our user defined function
   fact =find_factorial(num);

   //Displaying factorial of input number
   printf("\nfactorial of %d is: %d",num, fact);
   return 0;
}
int find_factorial(int n)
{
   //Factorial of 0 is 1
   if(n==0)
      return(1);

   //Function calling itself: recursion
   return(n*find_factorial(n-1));
}
```

Output:

```
Enter any integer number: 4
factorial of 4 is: 24
```

8. Program to find prime numbers

```c
#include <stdio.h>
int main()
{
   int num1, num2, flag_var, i, j;
```

```
   /* Ask user to input the from/to range
    * like 1 to 100, 10 to 1000 etc.
    */
   printf("Enter two range(input integer numbers only):");
   //Store the range in variables using scanf
   scanf("%d %d", &num1, &num2);

   //Display prime numbers for input range
   printf("Prime numbers from %d and %d are:\n", num1, num2);
   for(i=num1+1; i<num2; ++i)
   {
      flag_var=0;
      for(j=2; j<=i/2; ++j)
      {
         if(i%j==0)
         {
            flag_var=1;
            break;
         }
      }
      if(flag_var==0)
         printf("%d\n",i);
  }
  return 0;
}
```

Output:

```
Enter two range(input integer numbers only):Prime numbers from 1 and 50
are: 1 50
2
3
5
7
11
13
17
19
23
29
31
37
41
43
47
```

9. Program to check Armstrong number

```
#include<stdio.h>
int main()
```

```
{
   int num,copy_of_num,sum=0,rem;

   //Store input number in variable num
   printf("\nEnter a number:");
   scanf("%d",&num);

   /* Value of variable num would change in the
      below while loop so we are storing it in
      another variable to compare the results
      at the end of program
   */
   copy_of_num = num;

   /* We are adding cubes of every digit
    * and storing the sum in variable sum
    */
   while (num != 0)
   {
      rem = num % 10;
      sum = sum + (rem*rem*rem);
      num = num / 10;
   }

   /* If sum of cubes of every digit is equal to number
    * itself then the number is Armstrong
    */
   if(copy_of_num == sum)
      printf("\n%d is an Armstrong Number",copy_of_num);
   else
      printf("\n%d is not an Armstrong Number",copy_of_num);
   return(0);
}
```

Output:

```
Enter a number: 370
370 is an Armstrong Number
```

You can verify the result like this:

```
370 = 3*3*3 + 7*7*7 + 0*0*0
    = 27 + 343 + 0
    = 370
```

As you can see that sum of digits of number 370 is equal to the number itself.

10. Program to check if a number is palindrome or not

```c
#include <stdio.h>
int main()
{
   int num, reverse_num=0, remainder,temp;
   printf("Enter an integer: ");
   scanf("%d", &num);

   /* Here we are generating a new number (reverse_num)
    * by reversing the digits of original input number
    */
   temp=num;
   while(temp!=0)
   {
      remainder=temp%10;
      reverse_num=reverse_num*10+remainder;
      temp/=10;
   }

   /* If the original input number (num) is equal to
    * to its reverse (reverse_num) then its palindrome
    * else it is not.
    */
   if(reverse_num==num)
      printf("%d is a palindrome number",num);
   else
      printf("%d is not a palindrome number",num);
   return 0;
}
```

Output:

Enter an integer: 123321

123321 is a palindrome

Enter an integer: 12345

12345 is not a palindrome

11. Program to check Leap Year

```c
#include <stdio.h>
int main()
{
    int y;

    printf("Enter year: ");
    scanf("%d",&y);

    if(y % 4 == 0)
    {
        //Nested if else
        if( y % 100 == 0)
        {
            if ( y % 400 == 0)
                printf("%d is a Leap Year", y);
            else
                printf("%d is not a Leap Year", y);
        }
        else
            printf("%d is a Leap Year", y );
    }
    else
        printf("%d is not a Leap Year", y);

    return 0;
}
```

Output:

```
Enter year: 1991
1991 is not a Leap Year
```

12. Program to find the Sum of First n Natural numbers

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

```
    int n, count, sum = 0;

    printf("Enter the value of n(positive integer): ");
    scanf("%d",&n);

    for(count=1; count <= n; count++)
    {
        sum = sum + count;
    }

    printf("Sum of first %d natural numbers is: %d",n,
sum);

    return 0;
}
```

Output:

```
Enter the value of n(positive integer): 6
Sum of first 6 natural numbers is: 21
```

13. Program to convert uppercase string to lowercase string

```
#include<stdio.h>
#include<string.h>
int main(){
   /* This array can hold a string of upto 25
    * chars, if you are going to enter larger string
    * then increase the array size accordingly
    */
   char str[25];
   int i;
   printf("Enter the string: ");
   scanf("%s",str);

   for(i=0;i<=strlen(str);i++){
      if(str[i]>=65&&str[i]<=90)
         str[i]=str[i]+32;
   }
   printf("\nLower Case String is: %s",str);
```

```
   return 0;
}
```

Output:

Enter the string: RAJAram

Lower Case String is:rajaRAM

14. Program to convert lowercase string to uppercase string

```
#include<stdio.h>
#include<string.h>
int main(){
   char str[25];
   int i;

   printf("Enter the string:");
   scanf("%s",str);

   for(i=0;i<=strlen(str);i++){
      if(str[i]>=97&&str[i]<=122)
         str[i]=str[i]-32;
   }
   printf("\nUpper Case String is: %s",str);
   return 0;
}
```

Output:

Enter the string: rajaram

Upper Case String is:RAJARAM

15.Program to find the length of a String without using function strlen()

```
#include <stdio.h>
int main()
{
    /* Here we are taking a char array of size
     * 100 which means this array can hold a string
     * of 100 chars. You can change this as per
requirement
     */
    char str[100],i;
    printf("Enter a string: \n");
    scanf("%s",str);

    // '\0' represents end of String
    for(i=0; str[i]!='\0'; ++i);
       printf("\nLength of input string: %d",i);

    return 0;
}
```

Output:

Enter a String: RAJARAM

Length of input string : 7

16. Program to concatenate two strings without using strcat().

```
#include <stdio.h>
int main()
{
   char str1[50], str2[50], i, j;
   printf("\nEnter first string: ");
   scanf("%s",str1);
   printf("\nEnter second string: ");
   scanf("%s",str2);
   /* This loop is to store the length of str1 in i
```

```
    * It just counts the number of characters in str1
    * You can also use strlen instead of this.
    */
   for(i=0; str1[i]!='\0'; ++i);

   /* This loop would concatenate the string str2 at
    * the end of str1
    */
   for(j=0; str2[j]!='\0'; ++j, ++i)
   {
      str1[i]=str2[j];
   }
   // \0 represents end of string
   str1[i]='\0';
   printf("\nOutput: %s",str1);

   return 0;
}
```

Output:

Enter first string: RAJA

Enter Second String: RAM

Output:RAJARAM

17. program check if an integer is prime or not

```
#include <stdio.h>

int main()
{
  int n, c;

  printf("Enter a number\n");
  scanf("%d", &n);

  if (n == 2)
    printf("Prime number.\n");
  else
  {
    for (c = 2; c <= n - 1; c++)
    {
      if (n % c == 0)
        break;
```

```
    }
    if (c != n)
      printf("Not prime.\n");
     else
       printf("Prime number.\n");
  }
  return 0;
}
```

18. Program to Calculate Square of a Number

```
#include<stdio.h>
 int main()
{
int number, Square;
  printf(" \n Please Enter any integer Value : ");
  scanf("%d", &number);
  Square = number * number;
  printf("\n Square of a given number %d is  =  %d", number, Square);
  return 0;
}
```

19.Program to find Square root of a Number

```
#include<stdio.h>
#include<math.h>
int main()
{
        double number, result;
```

```
        printf(" \n Please Enter any Number to find Square root : ");
        scanf("%lf", &number);
        result = sqrt(number);
        printf("\n Square Root a given number %.2lf  =  %.2lf", number, result);
        return 0;
}
```

20. Program to Print Sum of all Even Numbers from 1 to n.

```
#include<stdio.h>
int main()
{
  int i, number, Sum = 0;
  printf("\n Please Enter the Maximum Limit Value : ");
  scanf("%d", &number);
  printf("\n Even Numbers between 0 and %d are : ", number);
  for(i = 1; i <= number; i++)
  {
    if ( i%2 == 0 ) //Check whether remainder is 0 or not
    {
        printf("%d  ", i);
      Sum = Sum + i;
    }
  }
  printf("\n The Sum of All Even Numbers upto %d  = %d", number, Sum);
```

```
  return 0;
}
```

Output:

Please Enter the Maximum Limit Value : 10

Even Numbers between 0 and 10 are : 2 4 6 8 10

The Sum of All Even Numbers upto 10 = 30

21.Program to Reverse a Number

```
#include <stdio.h>
int main()
{
  int Number, Reminder, Reverse = 0;
  printf("\nPlease Enter any number to Reverse\n");
  scanf("%d", & Number);

  while (Number > 0)
   {
     Reminder = Number %10;
     Reverse = Reverse *10+ Reminder;
     Number = Number /10;
   }
  printf("Reverse of entered number is = %d\n", Reverse);
  return 0;
}
```

Output

Please Enter any number to Reverse 1234

Reverse of entered number is = 4321

22. Program to convert Celsius to Fahrenheit

The formula behind the temperature conversion of Celsius to Fahrenheit in C is: Fahrenheit = (9/5) * Celsius) + 32

```
#include <stdio.h>
int main()
{
   float celsius, fahrenheit;
   printf("Please Enter temperature in Celsius: \n");
   scanf("%f", &celsius);
   // Convert the temperature from celsius to fahrenheit
   fahrenheit = ((celsius * 9)/5) + 32;
   // fahrenheit = ((9/5) * celsius) + 32;
   // fahrenheit = ((1.8 * celsius) + 32;
   printf("\n %.2f Celsius = %.2f Fahrenheit", celsius, fahrenheit);
   return 0;
}
```

23. Program to Convert Fahrenheit to Celsius

The mathematical formula behind the temperature conversion from degree Fahrenheit to Celsius in C is: Celsius = (5 / 9) * (Fahrenheit – 32)

```
#include <stdio.h>
int main()
{
   float celsius, fahrenheit;
   printf("Please Enter the temperature in Fahrenheit: \n");
   scanf("%f", &fahrenheit);
   // Convert th temperature from fahrenheit to celsius formula
   celsius = (fahrenheit - 32) * 5 / 9;
   //celsius = 5 * (fahrenheit - 32) / 9;
   //celsius = (fahrenheit - 32) * 0.55556;
   printf("\n %.2f Fahrenheit = %.2f Celsius", fahrenheit, celsius);
   return 0;
}
```

24.Program to Reverse a String

```
#include <stdio.h>
#include <string.h>
 int main()
{
        char Str[100], RevStr[100];
        int i, j, len;
        printf("\n Please Enter any String :  ");
        gets(Str);
        j = 0;
```

```
        len = strlen(Str);
        for (i = len - 1; i >= 0; i--)
        {
                RevStr[j++] = Str[i];
        }
        RevStr[i] = '\0';
        printf("\n String after Reversing = %s", RevStr);
        return 0;
}
```

25.Program to Compare Two Strings

```
#include <stdio.h>
#include <string.h>
int main()
{
        char Str1[100], Str2[100];
        int result, i;
        printf("\n Please Enter the First String :  ");
        gets(Str1);
        printf("\n Please Enter the Second String :  ");
        gets(Str2);
        for(i = 0; Str1[i] == Str2[i] && Str1[i] == '\0'; i++);
        if(Str1[i] < Str2[i])
        {
                printf("\n str1 is Less than str2");
        }
        else if(Str1[i] > Str2[i])
```

```
        {
                printf("\n str2 is Less than str1");
        }
        else
        {
                printf("\n str1 is Equal to str2");
        }
        return 0;
}
```

26.program to Copy String

```
#include <stdio.h>
#include <string.h>
int main()
{
        char Str[100], CopyStr[100];
        int i;
        printf("\n Please Enter any String :  ");
        gets(Str);
        for (i = 0; Str[i]!='\0'; i++)
        {
                CopyStr[i] = Str[i];
        }
        CopyStr[i] = '\0';
        printf("\n String that we coped into CopyStr = %s", CopyStr);
```

```
        printf("\n Total Number of Characters that we copied = %d\n", i);
        return 0;
}
```