1. C Program to Find Prime Numbers in a Given Range

**Problem Description**

The program takes the range and finds all the prime numbers between the range and also prints the number of prime numbers.

Case:1

Enter the value of num1 and num2

70 85

Prime numbers are

71

73

79

83

Number of primes between 70 and 85 = 4

Case:2

Enter the value of num1 and num2

0 1

There are no primes upto 1

1. Write a C program to check if a given number is Prime number. If the number is Prime, then display it is a prime number else display it is not a prime number.

**What is Prime Number in C?**

A prime number is a natural number that is greater than 1 and is only divisible by 1 and itself. In other words, no number except the number itself, and 1 can divide a prime number.

**Example:** 2, 3, 5, 7, 11, 13, 17, 19 …., etc.

**Problem Description**

1. C Program to Check Whether a Given Number is Perfect Number

A perfect number is a number that is equal to the sum of its proper divisors. For example, the divisors of 6 are 1, 2 and 3. The sum of the proper divisors of 6 is 1 + 2 + 3 = 6, which is a perfect number. The sum of the proper divisors of 28 is 1 + 2 + 4 + 7 + 14 = 28, which is also a perfect number.

**Problem Description**

Write a C Program that will ask the user for a number and then check whether the number is a perfect number or not.

1. Strong Number Program in C

Strong Number Program in C: A strong number is a number that is the sum of the factorial of its digits.

**Examples:**

Assume the number is 145, which equals 1! + 4! + 5! = 1 + 24 + 120 = 145.

145 is a strong number since the sum of its factorials equals the number itself.

Assume the number is 112, which equals 1! + 1! + 2! = 1 + 1 + 2 = 4

Here 4 is not equal to 112. So 112 is not a strong number.

**Problem Description**

Write a C Program that will ask the user for a number and then check whether the number is a strong number or not. Additionally, create a program that finds the strong numbers in a specified range.

1. C Program to Check Armstrong Number

Armstrong Number in C: An Armstrong number is an n-digit base b number such that the sum of its (base b) digits raised to the power n is the number itself. Armstrong numbers are 0, 1, 153, 370, 371, 407, etc.

Armstrong Number Formula: wxyz = pow(w,n) + pow(x,n) + pow(y,n) + pow(z,n)

**Example:**

Let’s look at 407 as an example to understand why it’s an Armstrong number.

407 = 4\*4\*4 + 0\*0\*0 + 7\*7\*7

= 64 + 0 + 343

= 407

**Problem Description**

Write a C program to check if a given number is Armstrong. If the number is an Armstrong then display it is an Armstrong number else display it is not an Armstrong number.

1. C Program to Display Armstrong Number between Two Intervals

Armstrong Number in C: A n-digit number is said to be an Armstrong number or Narcissistic number if the sum of its digits raised to the nth power equals the number itself.

Sequence of Armstrong numbers are: 1,2,3,4,5,…..,9,153….. etc.

**Example:** 153 (n=3) because 13 + 53 + 33 = 1 + 125 + 27 = 153.

Armstrong Number Formula: wxyz = pow(w,n) + pow(x,n) + pow(y,n) + pow(z,n)

**Problem Description**

Write a C program to print all the Armstrong numbers between two intervals.

1. Sum of First N Natural Numbers in C

**Problem Description:**

Write a C program to find the sum of first n natural numbers.

What is a Natural Number?

Natural numbers are all positive integers ranging from 1 to n or infinity. Sum of first n natural number, for any number n, sum is defined as 1+2+3—-n, which is an arithmetic series whose sum is (n \* (n + 1))/2. For example, If n=3, sum of the first 3 natural numbers is 1 + 2 + 3 = 6.

Formula:

Formula to calculate the Sum of First N Natural Numbers are (n \* (n + 1))/2.

**Example:**If n=4, sum of the first 4 natural numbers is  
=> (n \* (n + 1))/2  
=> (4 \* (4 + 1))/2  
=> 20/2  
=> 10

1. Sum of Natural Numbers using Recursion in C

This is a C program to find sum of first N numbers using recursion.

**Problem Description**

The following C program using recursion displays the first N natural number on the terminal.

**Problem Solution**

The user enters the Nth number as the input, the program then calculates the sum of first N numbers using recursion and then displays the final result.

1. C Program to Check Whether a Given Number is Even or Odd

Even Number:  
A number is said to be an even number if it is completely divisible by 2.  
In other words, if a number is divided by 2 and leaves a remainder of 0, then it is said to be an even number.  
Example: 36, 24

Odd Number:  
A number is said to be an odd number if it is not completely divisible by 2.  
In other words, if a number is divided by 2 and the remainder is 1, it is said to be an odd number.  
**Example: 21, 15**

**Problem Description**

Write a C Program to check whether a given number is even or odd.

1. C Program to Swap Two Numbers

Swapping two numbers in C programming means swapping the values of two variables. For example, there are two variables m & n. Value of m is “2” & value of n is “3”.  
Before Swapping: m value = 2; n value = 3  
After Swapping: m value = 3; n value = 2

**Problem Description**

Write a C program that swaps the values of two variables based on user input.

1. C Program to Find the Number of Integers Divisible by 5

This is a C Program which calculates the number of integers divisible by 5 in the given range.

**Problem Description**

1. This program takes the range as input and finds the number of integers divisible by 5 in the given range.  
2. Also finds the sum of all integers that are divisible by 5 in the given range.

1. C Program to Print Multiplication Table

A multiplication table of numbers is created by multiplying a constant integer by a number of repetitions ranging from 1 to 10.

**Example:**  
If the given input is 6, then the multiplication table is:

6 x 1 = 6

6 x 2 = 12

6 x 3 = 18

6 x 4 = 24

6 x 5 = 30

6 x 6 = 36

6 x 7 = 42

6 x 8 = 48

6 x 9 = 54

6 x 10 = 60

**Problem Description**

Write a C program that will print the multiplication table of a number.

1. Leap Year Program in C

Leap Year Program in C: A year is a Leap Year if it satisfies the following conditions:

The year is exactly divisible by 400 (such as 2000,2400) or,

The year is exactly divisible by 4 (such as 2008, 2012, 2016) and not a multiple of 100 (such as 1900, 2100, 2200).

**Problem Description**

Write a C Program to check whether a given year is a leap year or not.

1. Fibonacci Series Program in C

What is Fibonacci Series in C?

Fibonacci series are the numbers in the sequence 0, 1, 1, 2, 3, 5, 8, 13, 21….. The series in the Fibonacci sequence is equal to the sum of the previous two terms. The Fibonacci sequence’s first two terms are 0 and 1 respectively.

Mathematically, we can denote it as:

Fn = Fn-1 + Fn-2

Where, Fn denotes the nth term of Fibonacci series.

The first two terms of this series are considered to be:  
F0 = 0 (Zeroth term of Fibonacci sequence)  
F1 = 1 (First term of Fibonacci sequence)

Now, by using the above two values we can easily calculate all other terms of Fibonacci series as follows :

F2 = F1 + F0 = 0 + 1 = 1  
F3 = F2 + F1 = 1 + 1 = 2  
F4 = F3 + F2 = 2 + 1 = 3

Hence, the series continue as follows 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ……

**Problem Description**

Write a C Program that generates fibonacci series.

1. C Program to Find First N Fibonacci Numbers

This C Program calculate the Fibonacci numbers in the series. The first two numbers in the Fibonacci sequence are 0 and 1 and each subsequent number is the sum of the previous two. The formula for this program is: Fn = Fn-1 + Fn-2

1. C Program to Find Nth Fibonacci Number using Recursion

This C Program prints the fibonacci of a given number using recursion. In fibonacci series, each number is the sum of the two preceding numbers. Eg: 0, 1, 1, 2, 3, 5, 8, …  
The following program returns the nth number entered by user residing in the fibonacci series.

Here is the source code of the C program to print the nth number of a fibonacci number. The C program is successfully compiled and run on a Linux system. The program output is also shown below.

1. Factorial Program in C

What is Factorial of a Number?

When you multiply a positive integer by all the integers smaller than that positive integer, you get its factorial. This article will explain what is factorial and how to write a factorial program in C with examples.

**For example,**

factorial of 3 is 3! = 1\*2\*3 = 6 and factorial of 6 is 6! = 6 \* 5 \* 4 \* 3 \* 2 \* 1 which equals to 720.

By default, the factorial of 0 is 1, and Factorial of a negative number is not defined.

In mathematics, a factorial is denoted by “!“. Therefore, the factorial of n is given by the formula  
n! = n x (n-1) x (n-2) x (n-3) … x1.

Factorial can also be calculated using Euler’s gamma function which is  
n! = γ(n+1) = ∫∞0 xn e-x dx

**Problem Description**

Write a program to find the factorial of a positive number. If number is negative print the message otherwise find the factorial of the number.

1. C Program to Find the Factorial of a Number using Recursion

This is a C Program to find the factorial of a number using recursion.

**Problem Description**

This C Program Finds the Factorial of a Number using Recursion.

**Problem Solution**

This C Program prints the factorial of a given number using recursion. A factorial is product of all the number from 1 to the user specified number.

1. C Program to Print Diamond Pattern

Pattern problems are one of the most common problems encountered by programmers. This article contains a diamond pattern problem in C with its proper approach, algorithm and codes.

**Problem Description**

Write a C program that prints a diamond pattern upon receiving number of rows as input.

1. C Program to Print Floyd’s Triangle

Floyds Triangle in C is a right-angled triangular array of natural numbers. It is defined by filling the rows of the triangle with consecutive numbers, starting with a 1 in the top left corner: 1. Number of rows of Floyd’s triangle to print is entered by the user. For loop is used to print the output of the program.

**Example:**  
A Floyd’s triangle is a triangle in which each number is the sum of the two numbers above it. For example, the first row of the Floyd’s triangle is 1, the second row is 2 + 1 = 3, and so on. The following is a diagram of the Floyd’s triangle:

1

2 3

4 5 6

7 8 9 10

**Problem Description**

Write a C program to display floyd’s triangle.

1. C Program to Print Pascal Triangle

Pascal Triangle is a pattern similar to a triangle. Firstly, 1 is placed at the top, and then we start putting the numbers in a triangular pattern. The numbers which we get in each step are **the addition of the above two numbers.**

**Example:**

Row no.

1. 1 -------------> Top of the triangle

2. 1 1

\+/

3. 1 2 1

\+/ \+/

4. 1 3 3 1

\+/ \+/ \+/

5. 1 4 6 4 1

\+/ \+/ \+/ \+/

6. 1 5 10 10 5 1

**Problem Description**

Write a C program to print the pascal triangle.

1. Star Pattern Programs in C

**Problem Description**

Create star pattern programs in C programming upon receiving number of rows as input. star patterns like rhombus star pattern, hollow star pyramid pattern, plus star pattern, star patterns using while loop and functions.

What is Star pattern in C?

A star pattern is a pattern that shows up as a staircase of stars. It is a very common pattern in programming.

**Example:**Input: – 5

Output:

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1. Pyramid Patterns in C

What is a Pyramid Pattern?

A pyramid pattern in a two-dimensional plane is equal to an equilateral triangle. There are many variations of these pyramid patterns such as half pyramid, inverted pyramid, and diamond shape. Let us see how we can draw all these shapes using C language and understand the process.

**Problem Description**

Write a C program that prints a pyramid patterns upon receiving number of rows as input. Pyramid patterns like full pyramid, half pyramid, inverted pyramid, left aligned pyramid and combine two half pyramids.

**Example:**Input: – 6

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\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

\* \* \* \* \* \*

1. C program to Convert Fahrenheit to Celsius

**Problem Description**

Write a C program that takes a fahrenheit value as input and convert it to a celsius value.

What is Fahrenheit and Fahrenheit scale?  
Fahrenheit is a unit to measure the temperature on Fahrenheit scale. It is expressed in °F (degree Fahrenheit). On the Fahrenheit scale, the freezing point and boiling point of water are defined as 32° and 212°F, with 180 degrees divided between them.

What is Celsius and Celsius scale?  
Celsius is also a unit used to measure the temperature on Celsius scale. It is expressed in °C (degree Celsius). The celsius scale is based on the freezing and boiling points of water at a pressure of 1 atm, which are 0° and 100°C respectively. The scale is divided into 100 divisions between the two extreme temperatures of water and hence it is often referred to as centigrade scale.

**Problem Solution**

Fahrenheit to Celsius conversion:

The conversion of Fahrenheit to Celsius takes place by the given relation –

C−0100−0=F−32212−32  
  
Which on further simplifying gives –

C100=F−32180  
  
C=5(F−32)9=(F−32)∗0.555555  
  
59=0.555555  
Here, F is temperature in Fahrenheit and C is temperature is Celsius.

**Example:**  
Let’s say the question goes like convert 100°F to Celsius  
So using the equation –

C=(F–32)∗59  
  
Substituting the value by solving the equation for C we have,

C=(F–32)∗59  
C=(100–32)∗59  
C = (100 – 32) \* 0.555555  
C = 68 \* 0.55555  
C = 37.78°C

1. C Program to Convert Celsius to Fahrenheit

**Problem Description**

Write a C program that takes a celsius value as input and convert it to a fahrenheit value.

What is Celsius?  
Celsius is a unit used to measure the temperature on Celsius scale. It was developed by Swedish astronomer Anders Celsius and is often denoted by °C(degree Celsius).

What is Celsius scale in C?  
Celsius scale is based on freezing and boiling point of water at 1 atm pressure that is 0° and 100°C respectively. The scale is divided into 100 divisions between the two extreme temperatures of water and hence it is often referred to as centigrade scale.

What is Fahrenheit?  
Fahrenheit is also a unit to measure the temperature on Fahrenheit scale. It was developed by polish physicist Daniel Gabriel Fahrenheit in 1724 and is often denoted by symbol °F(degree Fahrenheit).

What is Fahrenheit scale?  
On Fahrenheit scale the freezing and boiling point of water is defined at 32° and 212°F respectively with 180 divisions between them.

Problem Solution

Celsius to Fahrenheit conversion in C:

The conversion of Celsius to Fahrenheit takes place by the given relation –

C−0100−0=F−32212−32  
  
Which on further simplifying gives –

C100=F−32180  
  
C=5(F−32)9 Or F=9C5+32  
  
Here, F is temperature in Fahrenheit and C is temperature is Celsius.

Example:  
Let’s say the question goes like convert 37°C to Fahrenheit  
So using the equation –

F=9C5+32  
  
Substituting the values of C and solving the equation for F we have,

F=(9×37)5+32  
F=3335+32  
F = 66.6 + 32

1. Decimal to Binary in C

Decimal Numbers:  
Decimal numbers are the numbers in the decimal system. They are represented by the digits 0 to 9. For example, the number 123 is represented by the digits 1, 2, and 3. The number 0 is represented by the digit 0. The number 123456789 is represented by the digits 1, 2, 3, 4, 5, 6, 7, 8, and 9. In order to represent number system, we need a base. Decimal numbers are represented in the base 10. The base 10 is the most common base in the world.

Binary Numbers:  
Binary numbers are the numbers in the binary system. They are represented by the digits 0 and 1. For example, the number 101 is represented by the digits 1 and 0. The number 0 is represented by the digit 0. The number 101010101 is represented by the digits 0, and 1. Binary numbers are represented in the base 2.

**Problem Description**

Write a C program that takes a decimal number as input and convert it to a binary number.

**Examples:**

Suppose the input is -123, the program should give output as 10000101.

Suppose the input is 100, the program should give output as 1100100.

1. C Program to Convert Roman Number to Decimal Number

This is a C Program to Convert Roman Number to Decimal Number.

**Problem Description**

This program takes a roman number as input and converts it to decimal number.

**Problem Solution**

1. Take a roman number as input.  
2. Using switch statement define the value of each roman digit.  
3. Through switch statement access each digit of a roman number and compute the value.  
4. Print the value and exit.

1. ASCII Value Program in C

Ascii value of a character is the numerical value associated with it. Each Character has a unique ascii value ranging from 0-127 (128 characters in total).

**Examples:**

Ascii Value of ‘a’ is: 97  
Ascii Value of ‘A’ is: 65

**Problem Description**

Write a C program to find the ascii value of a character or a string.