C++ PROGRAMS

1.Write a program to read in two integers and perform the following operations on them: addition, subtraction, multiplication, division, and modulo.

#include<iostream>

using namespace std ;

inline int sum(int a,int b)

{

return(a+b);

}

inline int sub(int a,int b)

{

return(a-b);

}

inline int mul(int a,int b)

{

return(a\*b);

}

inline float div(float a,float b)

{

return(a/b);

}

int main()

{

int x,y;

char n;

cout<<"Enter values to process \n X=";

cin>>x;

cout<<"\n Y=";

cin>>y ;

cout<<"Press '+' for Addition \nPress '-' for Substraction \nPress '\*' for multiplication \nPress '/' for Division \n Choise Is :";

cin>>n ;

if(n=='+')

cout<<"Addition Is :"<<sum(x,y);

else if(n=='-')

cout<<"Substraction Is :"<<sub(x,y);

else if(n=='\*')

cout<<"Multiplication Is :"<<mul(x,y);

else if(n=='/')

cout<<"Division Is :"<<div(x,y);

else

cout<<"Wrong Input";

return 0;

}

2.Program to determine the integer is odd or even

#include <iostream>

using namespace std;

int main() {

int number;

cout << "Enter an integer: ";

cin >> number;

if (number % 2 == 0) {

cout << number << " is even." << endl;

} else {

cout << number << " is odd." << endl;

}

return 0;

}

3.Program to compute the average of three integers

#include <iostream>

using namespace std;

int main() {

int num1, num2, num3;

double average;

// Prompt the user to enter three integers

cout << "Enter three integers separated by spaces: ";

cin >> num1 >> num2 >> num3;

// Calculate the sum of the integers

int sum = num1 + num2 + num3;

// Calculate the average, using a double for floating-point division

average = static\_cast<double>(sum) / 3.0; // Alternative: average = (double)sum / 3.0;

// Print the average

cout << "The average of the three numbers is: " << average << endl;

return 0;

}

4.Program to check two numbers are equal or not

#include <iostream>

using namespace std;

int main() {

int num1, num2;

cout << "Enter numbre1: ";

cin >> num1;

cout<<"enter the number2:";

cin>>num2;

if (num1 == num2) {

cout << "The numbers " << num1 << " and " << num2 << " are equal." << endl;

} else {

cout << "The numbers " << num1 << " and " << num2 << " are not equal." << endl;

}

return 0;

}

5.Write a program to read in two Floating numbers and perform the following operations on them: addition, subtraction, multiplication, division, and modulo

#include <iostream>

#include <cmath>

using namespace std;

int main() {

double num1, num2;

cout << "Enter two floating-point numbers separated by a space: ";

cin >> num1 >> num2;

cout << "\*\* Results \*\*" << endl;

cout << "Addition: " << num1 << " + " << num2 << " = " << num1 + num2 << endl;

cout << "Subtraction: " << num1 << " - " << num2 << " = " << num1 - num2 << endl;

cout << "Multiplication: " << num1 << " \* " << num2 << " = " << num1 \* num2 << endl;

if (num2 != 0) {

cout << "Division: " << num1 << " / " << num2 << " = " << num1 / num2 << endl;

} else {

cout << "Division by zero is not allowed." << endl;

}

if (num2 != 0) {

cout << "Modulo: " << num1 << " % " << num2 << " = " << fmod(num1, num2) << endl;

} else {

cout << "Modulo by zero is not allowed." << endl;

}

return 0;

}

6.Program to check the character is a vowel or consonant

#include <iostream>

#include <cctype>

using namespace std;

int main() {

char ch;

cout << "Enter a character: ";

cin >> ch;

ch = toupper(ch);

if (ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {

cout << ch << " is a vowel." << endl;

} else if (isalpha(ch)) {

cout << ch << " is a consonant." << endl;

} else {

cout << ch << " is not an alphabet." << endl;

}

return 0;

}

7.Program to check the number is positive, negative or zero

#include <iostream>

using namespace std;

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

if (num > 0) {

cout << num << " is a positive number." << endl;

} else if (num < 0) {

cout << num << " is a negative number." << endl;

} else {

cout << num << " is zero." << endl;

}

return 0;

}

8.Program to determine which number is greater among two integers

#include <iostream>

using namespace std;

int main() {

int num1, num2;

cout << "Enter numbre1: ";

cin >> num1;

cout<<"enter the number2:";

cin>>num2;

if (num1 > num2) {

cout << num1 << " is greater than " << num2 << endl;

} else if (num1 < num2) {

cout << num2 << " is greater than " << num1 << endl;

} else {

cout << num1 << " and " << num2 << " are equal." << endl;

}

return 0;

}

9.Program to read a floating-number and round it to the nearest integer using the floor an ceil functions.

#include <iostream>

#include <cmath>

using namespace std;

int main() {

double num;

cout << "Enter a floating-number: ";

cin >> num;

int rounded\_down = floor(num);

int rounded\_up = ceil(num);

if (abs(num - rounded\_down) < abs(num - rounded\_up)) {

cout << num << " rounded to the nearest integer is: " << rounded\_down << endl;

} else if (abs(num - rounded\_down) > abs(num - rounded\_up)) {

cout << num << " rounded to the nearest integer is: " << rounded\_up << endl;

} else {

cout << num << " is exactly halfway between " << rounded\_down << " and " << rounded\_up << endl;

}

return 0;

}

10.Program to swap two numbers using bitwise XOR operator

11.Largest among three numbers using ternary conditional operator

#include <iostream>

using namespace std;

int main() {

int num1, num2, num3;

cout << "Enter numbre1: ";

cin >> num1;

cout<<"enter the number2:";

cin>>num2;

cout<<"enter the number3:";

cin>>num3;

int largest = (num1 > num2) ? (num1 > num3 ? num1 : num3) : (num2 > num3 ? num2 : num3);

cout << "The largest number is: " << largest << endl;

return 0;

}

12.Program to check two numbers are equal or not using ternary conditional operator

#include <iostream>

using namespace std;

int main() {

int num1, num2;

cout << "Enter tnumber1: ";

cin >> num1 >> num2;

cout<<"enter number2:";

cin>>num2;

string result = (num1 == num2) ? "The numbers are equal." : "The numbers are not equal.";

cout << result << endl;

return 0;

}

13.Program to check the integer is divisible by 3 or not using ternary conditional operator

#include <iostream>

using namespace std;

int main() {

int num;

cout << "Enter an integer: ";

cin >> num;

string result = (num % 3 == 0) ? "Divisible by 3" : "Not divisible by 3";

cout << num << " is " << result << endl;

return 0;

}

14.Program to print numbers from 1 to 10 using for loop

#include <iostream>

using namespace std;

int main() {

for (int i = 1; i <= 10; ++i) {

cout << i << " ";

}

cout << endl;

return 0;

}

15.Factorial of a number using for loop

#include <iostream>

using namespace std;

int main() {

int num, factorial = 1;

cout << "Enter a non-negative integer: ";

cin >> num;

if (num < 0) {

cout << "Error: Factorial is not defined for negative numbers." << endl;

return 1;

}

for (int i = 1; i <= num; ++i) {

factorial \*= i;

}

cout << "The factorial of " << num << " is: " << factorial << endl;

return 0;

}

16.Print multiplication table using for loop

#include <iostream>

using namespace std;

int main() {

int num;

cout << "Enter a number for its multiplication table: ";

cin >> num;

cout << "Multiplication table of " << num << ":" << endl;

for (int i = 1; i <= 10; ++i) {

cout << num << " x " << i << " = " << num \* i << endl;

}

return 0;

}

17.Fibonacci series using for loop

#include <iostream>

using namespace std;

int main() {

int number\_of\_terms, a = 0, b = 1, c;

cout << "Enter the number of terms: ";

cin >> number\_of\_terms;

cout << a << " " << b << " ";

for (int i = 2; i < number\_of\_terms; i++) {

c = a + b;

cout << c << " ";

a = b;

b = c;

}

cout << endl;

return 0;

}

18.Prime number using for loop

#include <iostream>

#include <cmath>

using namespace std;

bool isPrime(int num) {

if (num <= 1) {

return false;

}

for (int i = 2; i <= sqrt(num); ++i) {

if (num % i == 0) {

return false;

}

}

return true;

}

int main() {

int num,r;

cout << "Enter a positive integer: ";

cin >> num;

if (isPrime(num)) {

cout << num << " is a prime number." << endl;

} else {

cout << num << " is not a prime number." << endl;

}

return 0;

}

19.Check the string is palindrome or not using while loop

#include <iostream>

#include <cctype>

using namespace std;

bool isPalindrome(string str) {

int left = 0, right = str.length() - 1;

for (int i = 0; i < str.length(); ++i) {

str[i] = tolower(str[i]);

}

while (left < right) {

while (left < right && !isalnum(str[left])) {

left++;

}

while (left < right && !isalnum(str[right])) {

right--;

}

if (tolower(str[left]) != tolower(str[right])) {

return false;

}

left++;

right--;

}

return true;

}

int main() {

string str;

cout << "Enter a string: ";

getline(cin, str);

if (isPalindrome(str)) {

cout << str << " is a palindrome." << endl;

} else {

cout << str << " is not a palindrome." << endl;

}

return 0;

}

20.Sum of all digits using while loop (n=123 output:1+2+3=6)

#include <iostream>

using namespace std;

int main() {

int num, sum = 0, remainder;

cout << "Enter a non-negative integer: ";

cin >> num;\

if (num < 0) {

cout << "Error: Sum of digits is not defined for negative numbers." << endl;

return 1;

}

while (num > 0) {

remainder = num % 10;

sum += remainder;

num /= 10;

}

cout << "The sum of digits of " << num << " is: " << sum << endl;

return 0;

}

21.GCD of two numbers using do-while loop

#include <iostream>

using namespace std;

int main() {

int num1, num2, temp;

cout << "Enter numbre1: ";

cin >> num1;

cout<<"enter the number2:";

cin>>num2;

if (num1 <= 0 || num2 <= 0) {

cout << "Error: Please enter positive integers." << endl;

return 1;

}

if (num1 < num2) {

temp = num1;

num1 = num2;

num2 = temp;

}

do {

temp = num1 % num2;

num1 = num2;

num2 = temp;

} while (temp != 0);

cout << "The GCD of " << num1 << " and " << num2 << " is: " << num2 << endl;

return 0;

}

22.Check whether the number is perfect or not

#include <iostream>

using namespace std;

int main() {

int num, sum = 0, i = 1;

cout << "Enter a positive integer: ";

cin >> num;

if (num <= 0) {

cout << "Error: Perfect numbers are not defined for non-positive integers." << endl;

return 1;

}

while (i < num) {

if (num % i == 0) {

sum += i;

}

i++;

}

if (sum == num) {

cout << num << " is a perfect number." << endl;

} else {

cout << num << " is not a perfect number." << endl;

}

return 0;

}

23.Armstrong number

#include <iostream>

#include <cmath>

using namespace std;

bool isArmstrong(int num) {

int originalNum = num;

int sum = 0;

int numberOfDigits = 0;

do {

originalNum /= 10;

numberOfDigits++;

} while (originalNum != 0);

originalNum = num;

while (originalNum != 0) {

int remainder = originalNum % 10;

sum += pow(remainder, numberOfDigits);

originalNum /= 10;

}

return sum == num;

}

int main() {

int num;

cout << "Enter a non-negative integer: ";

cin >> num;

if (num < 0) {

cout << "Error: Armstrong numbers are not defined for negative integers." << endl;

return 1; /

}

if (isArmstrong(num)) {

cout << num << " is an Armstrong number." << endl;

} else {

cout << num << " is not an Armstrong number." << endl;

}

return 0;

}

24.Harshad number

#include <iostream>

using namespace std;

int checkHarshad(int num){

int sum = 0;

int temp = num;

while(temp != 0){

sum = sum + temp % 10;

temp /= 10;

}

return num % sum == 0;

}

int main ()

{

int n;

cout<<"enter a number to check harshad number:";

cin>>n;

if(checkHarshad(n))

cout << n << " is a Harshad's number";

else

cout << n << " is not a Harshad's number";

return 0;

}

26.strong number

#include <iostream>

using namespace std;

int factorial(int n) {

if (n == 0) {

return 1;

} else {

return n \* factorial(n - 1);

}

}

bool isStrong(int n) {

int original = n, sum = 0;

while (n > 0) {

int digit = n % 10;

sum += factorial(digit);

n /= 10;

}

return sum == original;

}

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

if (isStrong(num)) {

cout << num << " is a Strong number!" << endl;

} else {

cout << num << " is not a Strong number." << endl;

}

return 0;

}

27.buzz number

#include <iostream>

using namespace std;

bool isBuzz(int n) {

return n % 7 == 0 || n % 10 == 0;

}

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

if (isBuzz(num)) {

cout << num << " is a Buzz number!" << endl;

} else {

cout << num << " is not a Buzz number." << endl;

}

return 0;

}

28.neon number

29.Abundant number

#include <iostream>

using namespace std;

bool isAbundant(int n) {

int sum = 0;

for (int i = 1; i < n; i++) {

if (n % i == 0) {

sum += i;

}

}

return sum > n;

}

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

if (isAbundant(num)) {

cout << num << " is an Abundant number!" << endl;

} else {

cout << num << " is not an Abundant number." << endl;

}

return 0;

}

30.narcissistic number

#include <iostream>

#include <cmath> // for pow function

using namespace std;

bool isNarcissistic(int n) {

int original = n, numDigits = 0, sum = 0;

// Count the number of digits

while (original > 0) {

original /= 10;

numDigits++;

}

original = n;

// Calculate the sum of nth powers of digits

while (original > 0) {

int digit = original % 10;

sum += pow(digit, numDigits);

original /= 10;

}

return sum == n;

}

int main() {

int num;

cout << "Enter a number: ";

cin >> num;

if (isNarcissistic(num)) {

cout << num << " is a Narcissistic number!" << endl;

} else {

cout << num << " is not a Narcissistic number." << endl;

}

return 0;

}

31. print the pattern 1 22 333 4444 55555

#include<iostream>

using namespace std;

int main()

{

int row,i,j;

cout<<"ENTER THE NUMBER OF ROWS => ";

cin>>row;

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

{

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

{

cout<<i+1;

}

cout<<"\n";

}

}

32. print the pattern \* \*\* \*\*\* \*\*\*\* \*\*\*\*\*

#include <iostream>

int main() {

int rows = 5; // Number of rows in the pattern

// Outer loop for the number of rows

for (int i = 0; i < rows; ++i) {

// Inner loop for printing '\*' characters

for (int j = 0; j <= i; ++j) {

std::cout << "\*";

}

std::cout << std::endl; // Move to the next line after each row

}

return 0;

}