Winter Domain Camp

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Semester: 5th
Date of Performance:19/12/ 2024

Day 1 (Easy)

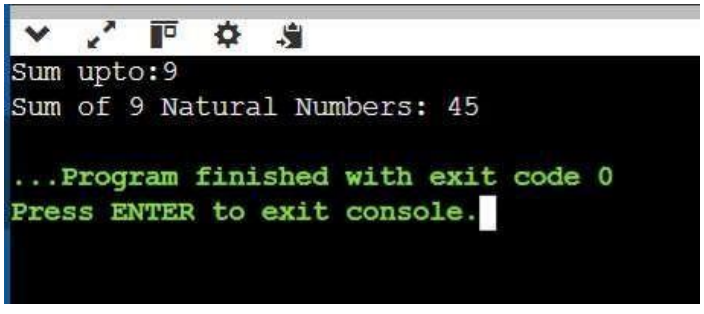
Problem 1: Sum of Natural Numbers up to N
Calculate the sum of all natural numbers from 1 to n, where n is a positive integer. Use the formula: Sum=n×(n+1)/2.
Take n as input and output the sum of natural numbers from 1 to n .

Solution :

```
#include<iostream>
using namespace std;

int main()
{
          cout << "Sum upto:";
         int n;
         cin >> n;
          cout << "Sum of " << n << " Natural Numbers: ";
          int sum = n * (n + 1) / 2;
 cout << sum;  return 0;
}
```

Output:

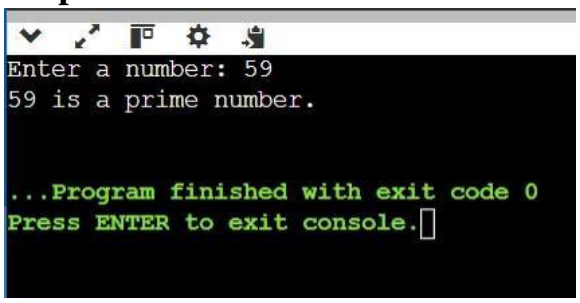


Problem 2: Check if a Number is Prime.
Check if a given number n is a prime number. A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself.

Solution:

```
#include
<iostream> using
namespace std; bool
isPrime(int n) {     if
(n <= 1) {
return false;
    }
    for (int i = 2; i * i <= n; i++) {
if (n % i == 0) {            return
false;
        }
}
    return true;
} int main()
{     int n;
    cout << "Enter a number: ";
    cin >> n;     if
(isPrime(n)) {
        cout << n << " is a prime number." << endl;
    } else {
        cout << n << " is not a prime number." << endl;
    }
return 0;
}
```

Output:

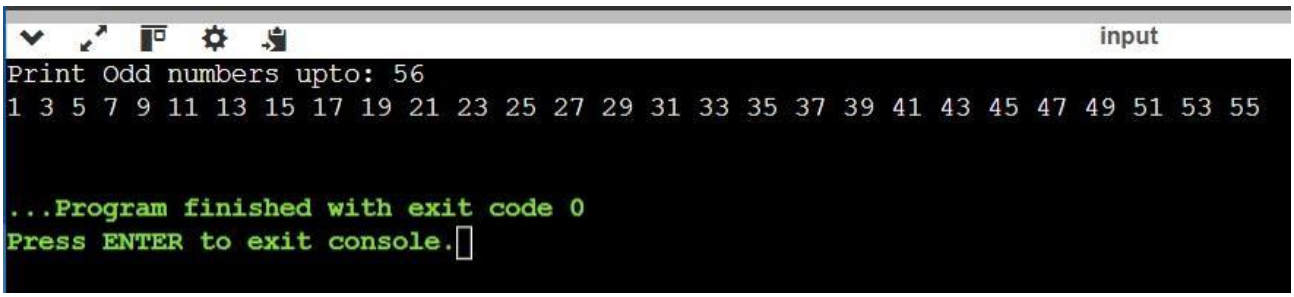


Problem 3: Print Odd Numbers up to N.
Print all odd numbers between 1 and n, inclusive. Odd numbers are integers that are not divisible by 2. These numbers should be printed in ascending order, separated by spaces.

Solution:

```
#include <iostream> using
namespace std; void
printOddNumbers(int n) {
   for (int i = 1; i <= n; i += 2) {
cout << i << " ";
   }
   cout << endl;
} int main()
{    int n;
   cout << "Print Odd numbers upto: ";
cin >> n;    if (n < 1) {
      cout << "Invalid input! n should be greater than or equal to 1." << endl;
return 1;
   }
   printOddNumbers(n);
return 0;
}
```

Output:

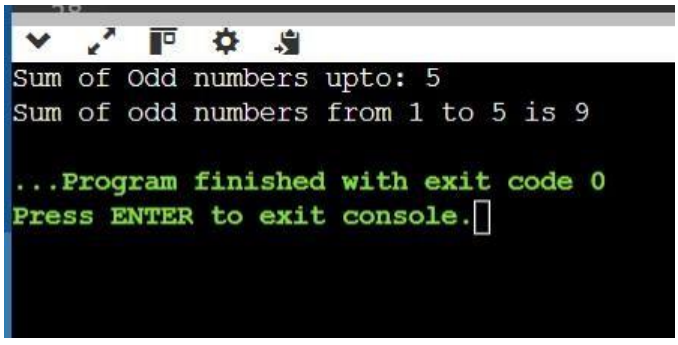


Problem 4: Sum of Odd Numbers up to N**.**
Calculate the sum of all odd numbers from 1 to n. An odd number is an integer that is not divisible by 2. The sum of odd numbers, iterate through all the numbers from 1 to n, check if each number is odd, and accumulate the sum.

Solution:

```
#include <iostream> using
namespace std;
void SumOddNumbers(int n)
{
   int sum = 0;
   for (int i = 1; i <= n; i += 2)
   {
      sum =sum+i;
   }
   cout <<"Sum of odd numbers from 1 to "<<n<<" is "<<sum;
} int main()
{    int n;
   cout << "Sum of Odd numbers upto: ";
cin >> n;     if (n < 1) {
      cout << "Invalid input! n should be greater than or equal to 1." << endl;
return 1;
   }
   SumOddNumbers(n);
   return 0;
}
```

Output:



Problem 5: Print Multiplication Table of a Number.
Print the multiplication table of a given number n. A multiplication table for a number n is a list of products of n with integers from 1 to 10. For example, the multiplication table for 3 is:

3×1=3,3×2=6,…,3×10=30

Solution:

```
#include <iostream> using
namespace std;
void multiplicationTable(int n) {
for (int i = 1; i <= 10; i++) {
        cout << n << " × " << i << " = " << n * i << endl;
    }
}
 int main(){
     int n;
    cout << "Enter a number: ";
cin >> n;
    multiplicationTable(n);

    return 0;

}
```

Output: