School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering

CS-114 - Fundamentals of Programing

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ME-15/A

LAB REPORT # 4

Home Tasks:

1. Write a program in C++ that prints the numbers from 1 to 150 except the multiples of 10.

Make use of the continue statement.

2. Write a C++ program to find the sum of digits of a number.

The sum of digits means adding all the digits of any number, for example, we take any number

Like: 358. Its sum of all digits is 3+5+8=16.

3. Write a program in C++ to check whether a number is prime or not.

SUMMARY:

Through these tasks I learned valuable concepts in C++ programming. I discovered how to use "continue" to skip specific loop iterations for example, excluding multiples of 10 while printing numbers from 1 to 150. I also learned to calculate the sum of digits using a loop and basic arithmetic operations, which is useful for number manipulation. Additionally, I learned to check if a number is a prime number by checking its divisibility.

TASK 1

1. Write a program in C++ that prints the numbers from 1 to 150 except the multiples of 10.

CODE

```
//Code to print numbers from 1-150 excluding the multiples of 10.
/* Juveriah Waqqas - 460510
24-10-2023
Lab Report # 4 */

#include<iostream>
using namespace std;
int main()
{
    //variable i for the initilization and condition of the for loop
    for(int i=1; i<=150; i++)
    {
        if(i % 10 == 0) {continue;} //continue to exclude all multiples of 10
        cout<<i<<", ";
    }
    return 0;
}
```

EXECUTION (example)

```
1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 3
6, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 65, 66, 67, 68, 6
9, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 86, 87, 88, 89, 91, 92, 93, 94, 95, 96, 97, 98, 99, 101, 102,
 103, 104, 105, 106, 107, 108, 109, 111, 112, 113, 114, 115, 116, 117, 118, 119, 121, 122, 123, 124, 125, 126, 127, 128,
 129, 131, 132, 133, 134, 135, 136, 137, 138, 139, 141, 142, 143, 144, 145, 146, 147, 148, 149,
--------------------------------
Process exited after 0.1821 seconds with return value 0
Press any key to continue . . .
```

TASK 2

2. Write a C++ program to find the sum of digits of a number.

The sum of digits means adding all the digits of any number, for example, we take any number

Like: 358. Its sum of all digits is 3+5+8=16.

CODE

```
//Code to sum all the digits of a number
/* Juveriah Waqqas - 460510
24-10-2023
Lab Report # 4 */

#include<iostream>
using namespace std;
int main()
{
    int num; //variable to store the number which will be input by the user
    cout<<"Enter the Number ";
    cin>>num;

    int onum=num; //variable to store the orginal value of the number so that it can be used at the end

    int sum = 0; //variavle that will store the sum
    int remainder;


    while(num != 0) //loop will run until the number is equal to zero
    {
    remainder = num % 10 ;
    sum += remainder;

    num /= 10; //dividing by 10 so that the last digit is removed before the loop is run again
    }
    cout<<"The sum of the digits of the Number "<<onum<<" is ";
//printing the result in the desired format by defining a new variable num2
    int num2 = onum;
    while (num2 != 0) {
        int remainder = num2 % 10;
        cout<<remainder;
        num2 /= 10;
        if (num2 != 0) {
           cout << "+";
        }
    }
    cout<<" = "<<sum;
    return 0;
}
```

EXECUTION (example)

```
Enter the Number 5678
The sum of the digits of the Number 5678 is 8+7+6+5 = 26
--------------------------------
Process exited after 2.884 seconds with return value 0
Press any key to continue . . .
```

```
Enter the Number 358
The sum of the digits of the Number 358 is 8+5+3 = 16
--------------------------------
Process exited after 1.081 seconds with return value 0
Press any key to continue . . .
```

```
Enter the Number 9999
The sum of the digits of the Number 9999 is 9+9+9+9 = 36
--------------------------------
Process exited after 1.301 seconds with return value 0
Press any key to continue . . .
```

TASK 3

3. Write a program in C++ to check whether a number is prime or not.

CODE

```cpp
//Code to sum all the digits of a number
/* Juveriah Waqqas - 460510
24-10-2023
Lab Report # 4 */

#include<iostream>
using namespace std;
int main()
{
    int num; //variable that will be checked
    int checker = 0; //variable to which value will be assigned if the number is not prime

    cout << "Input the number to be checked: ";
    cin >> num;

    if (num > 1)
    {
        for (int i = 2; i<= num/2 ; i++)
//The loop will check if the given number is divisible by any number from 2 to half of itself."
        {
            if (num % i == 0)
/*if number is divisible then remainder will be zero and the number will not be a prime number and
 value of 1 will be assigned to checker */
            {
                checker = 1;
                break;
            }
        }

        if (checker == 1)
            {
            cout << "The number " << num << " is not prime.";
            //output to be displayed when the value of checker variable is one
            } else
            {
            cout << "The number " << num << " is prime.";
            }
    } else
        {
        cout << "Invalid input.";
        }

    return 0;
```

EXECUTION (example)

```
Input the number to be checked: 7
The number 7 is prime.
--------------------------------
Process exited after 1.003 seconds with return value 0
Press any key to continue . . .
```

```
Input the number to be checked: 87
The number 87 is not prime.
--------------------------------
Process exited after 1.16 seconds with return value 0
Press any key to continue . . .
```

```
Input the number to be checked: 200
The number 200 is not prime.
--------------------------------
Process exited after 3.696 seconds with return value 0
Press any key to continue . . .
```