School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering

CS-114 - Fundamentals of Programming

Lab Report # 04

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School Of Mechanical & Manufacturing Engineering, NUST

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Lab Manual # 04
Loops (Part-01)

Objectives:
To understand repetition structure and the types of repetition structure.

Home Tasks:
Task 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.

Code:
```cpp
#include <iostream>
using namespace std;

int main()
{
    cout<<"This is a program that prints the numbers from 1 to 150, except for multiples of 10."<<endl;

    for(int i=0; i<=150; i++)
    {
        if (i%10 == 0)
        {
            continue;
        }

        cout<<i<<" ";
    }
    return 0;
```

Output:
```
C:\Users\ayesh\Desktop\1st s
This is a program that prints the numbers from 1 to 150, except for multiples of 10.
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 36 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 69 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 0.1237 seconds with return value 0
Press any key to continue . . .
```

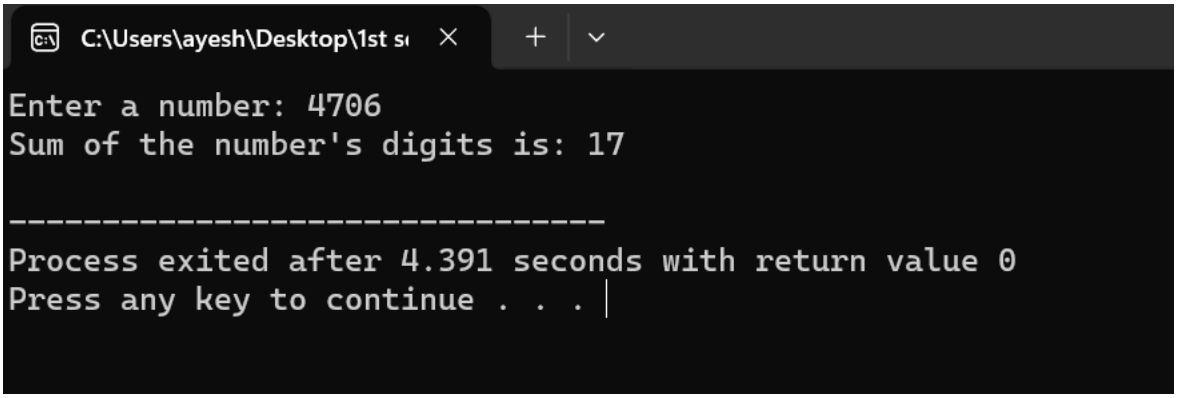
Task 2:

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:

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

int main()
{
    int num, sum, rem;
    cout<<"Enter a number: ";
    cin>>num;

    for(sum = 0; num>0; num=num/10)
    {
        rem = num%10;
        sum += rem;
    }
    cout<<"Sum of the number's digits is: "<<sum<<endl;
    return 0;
}
```

Output:



Task 3:

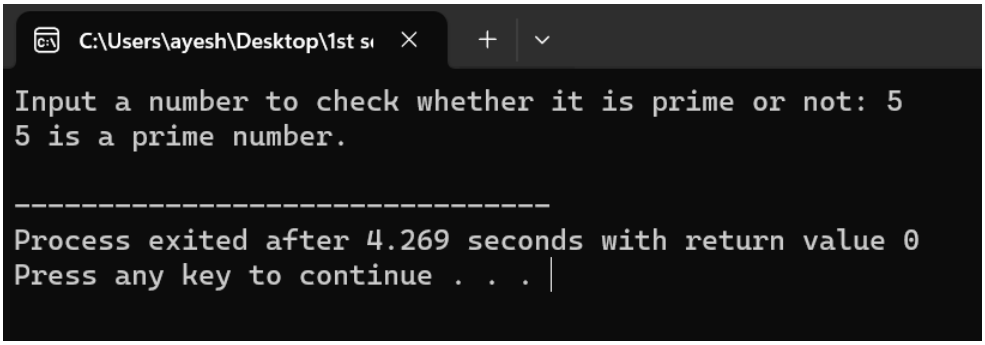
Write a program in C++ to check whether a number is prime or not.

Code:

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

int main()
{
    int num, count = 0;
    cout << "Input a number to check whether it is prime or not: ";
    cin>> num;
    for (int i = 1; i <= num; i++)
    {
        if (num % i == 0)
        {
            count++;
        }
    }
    if (count == 2)
    {
        cout <<num<<" is a prime number.\n";
    }
    else {
        cout <<num<<" is not a prime number. \n";
    }
    return 0;

}
```

Output:

```
C:\Users\ayesh\Desktop\1st s
Input a number to check whether it is prime or not: 49
49 is not a prime number.

--------------------------------
Process exited after 2.384 seconds with return value 0
Press any key to continue . . .
```



Conclusion:

In this lab, we learnt how to use loops, in specific 'for' loop to understand repetition structures and how they are used to perform tasks that would otherwise need more lines of code. We got to know that using loops is more convenient and also takes lesser time for the compiler to compile and run the program.