School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering

CS-114 - Fundamental of Programing

Home Tasks - 4
(Lab Manual 4)

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DATE:

22 October 2023

HOME 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()
{
//  HOME TASK 1
    for(int i = 0; i<=150; i+=1){
    if(i % 10 == 0){
    continue;}
    cout<<i <<endl;}
    return 0;
}
```

Result:

```
1   34  67  101
2   35  68  102
3   36  69  103
4   37  71  104
5   38  72  105
6   39  73  106
7   41  74  107
8   42  75  108
9   43  76  109
11  44  77  111
12  45  78  112
13  46  79  113
14  47  81  114
15  48  82  115
16  49  83  116
17  51  84  117
18  52  85  118
19  53  86  119
21  54  87  121
22  55  88  122
23  56  89  123
24  57  91  124
25  58  92  125
26  59  93  126
27  61  94  127
28  62  95  128
29  63  96  129
31  64  97  131
32  65  98  132
33  66  99  133
```

```
134
135
136
137
138
139
141
142
143
144
145
146
147
148
149

--------------------------------
Process exited after 0.08552 seconds with return value 0
Press any key to continue . . .
```

HOME 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()
{
//  HOME TASK 2
    int num;
    // the given number
    int cnum;
    // cumulative number, as a digit is removed, eg: 4560 --> 456 --> 45 --> 4
    int first;
    // the first digit from the right
    int sum;
    cout<<"Please enter a number: "<<endl;
    cin>>num;
    for(int d = 0; d+=1;){
        for(int i = 0; i<=10; i+=1){
            cnum = num - i;
            first = i;
            if(cnum % 10 == 0 || cnum == 0){break;}
        }
        sum = sum + first;
        num = cnum/10;
        if(cnum == 0){break;}
    }
    cout<<"The sum is: "<<sum<<endl;
    return 0;
}
```

Result:

```
Please enter a number:
199
The sum is: 19

--------------------------------
Process exited after 5.63 seconds with return value 0
Press any key to continue . . .
```

HOME 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()
{
//  HOME TASK 3
//  It is simply impossible to compile a program that can detect primes with 100% accuracy.
//  However using methods such as the Sieve of Erastothenes,
//  one can eliminate non-primes upto a large range.
    int n;
    int p;
    // the given number
    cout<<"Please enter the number:"<<endl;
    cin>>n;
    for(int j = 0; j+=1;){
        if(n<=1){break;}
        if(n % 2 == 0 && n != 2 ){break;}
        if(n % 3 == 0 && n != 3 ){break;}
        if(n % 5 == 0 && n != 5 ){break;}
        if(n % 7 == 0 && n != 7 ){break;}
        if(n % 11 == 0 && n != 11 ){break;}
        if(n % 13 == 0 && n != 13 ){break;}
        if(n % 17 == 0 && n != 17 ){break;}
        if(n % 19 == 0 && n != 19 ){break;}
        if((n-1)%6 == 0 && (n+1)%6 == 0){break;}
//      Every prime satisfies either one of the two expressions: 6x-1, or 6x+1, but never both
        p = 1;
        if(j=10){break;}
    }
    if(p == 1){cout<<"the number is a prime"<<endl;}
    else{cout<<"the number is not a prime"<<endl;}
    return 0;
}
```

Result:

```
Please enter the number:
23
the number is a prime

--------------------------------
Process exited after 0.8033 seconds with return value 0
Press any key to continue . . .
```