

Intro to C++

Session 6- Four Sample C++ Programs

By Coding-Bootcamps.com

for, while, do while and nested loop examples

Program # 1 (for loop) : Day of Date

```
//Program to find out the day of given date starting from Jan. 2001
#include <iostream>
using namespace std;
int main()
{
    // Collect data from user
    int day, month, year;
    cout << "Enter the day dd(01)= ";
    cin >> day;
    cout << "Enter the month mm(01)= ";
    cin >> month;
    cout << "Enter the year yy from (2001)= ";
    cin >> year;

    // Loop through given year's months passed so far and count
    days
    int dayCount = 0;
    for (int i = 1; i < month; i++)
    {
        // Month(s) with 31 days
        if (i == 1 || i == 3 || i == 5 || i == 7 || i
        == 8 || i == 10 || i == 12)
            dayCount = dayCount + 31;
        // Month(s) with 28 days
        else if (i == 2 && year % 4 != 0)
            dayCount = dayCount + 28;
        // Month(s) with 29 days (leap)
        else if (i == 2 && year % 4 == 0)
            dayCount = dayCount + 29;
        // Month(s) with 30 days
        else if (i == 4 || i == 6 || i == 9 || i == 11)
            dayCount = dayCount + 30;
    }
    // Loop through years and count leap years
```

```

        int leapYearCount = 0;
        for (int yearIterator = 2001; yearIterator < year;
yearIterator++)
        {
            if (yearIterator % 4 == 0)
                leapYearCount = leapYearCount + 1;
        }
        // Count years
        int yearCount;
        yearCount = (year-2000)-1;
        // Calculate total day count
        int totalDayCount, resultingDayNum;
        /* Add up:
        - days in current month
        - dayCount from previously elapsed days in the year
        - leap year count
        - year count * 365 days */
        totalDayCount = day + dayCount + leapYearCount +
(yearCount * 365);
        resultingDayNum = totalDayCount % 7;
        // Translate day number to text
        switch (resultingDayNum)
        {
            case 0: cout << "The day is Sun"; break;
            case 1: cout << "The day is Mon"; break;
            case 2: cout << "The day is Tue"; break;
            case 3: cout << "The day is Wed"; break;
            case 4: cout << "The day is Thu"; break;
            case 5: cout << "The day is Fri"; break;
            case 6: cout << "The day is Sat"; break;
        }
        return 0;
    }
}

```

#####

Program # 2 (while loop): Colorful Text

//Program to display the text in different colors

```
#include <stdlib.h>
```

```
#include <iostream>
```

```
using namespace std;
```

```

int main() {
    int i = 0;
    while (i < 20) {

```

```

        if (i % 2 == 0) {
            system("Color F2");
        }
        else {
            system("Color F1");
        }
        cout << "The value of the iterator tracker i is: " <<
i << endl;
        i++;
    }
    return 0;
}

```

#####

Program # 3 (do while loop): Prime Number

//Program to find out the given number is prime (only divisible by 1 and itself)

```
#include <iostream>
```

```
using namespace std;
```

```

int main() {
    int number, countOfNumbersDivisibleBy = 0;
    cout << "Please enter a number (any number): ";
    cin >> number;
    int i = 1;
    do {
        cout << "Checking if " << number << " is divisible by
" << i << endl;
        if (number % i == 0) {
            countOfNumbersDivisibleBy++;
            cout << "It is divisible!" << endl;
        }
        i++;
    } while(i <= number);
    if (countOfNumbersDivisibleBy == 2) {
        cout << "The number is prime." << endl;
    }
    else {
        cout << "The number is not prime." << endl;
    }
    return 0;
}

```

#####

Program # 4 (Nested Loop): Factors

```
//Program to find out the factors of given number
#include <iostream>
using namespace std;
int main()
{
    int number;
    cout << "Enter any number = ";
    cin >> number;
    // LOOP 1
    // Test out different factors
    for (int i = 1; i <= 100; i++) {
        // Track loop 1
        cout << "Loop i value: " << i << endl;
        // LOOP 2
        // Loop through 2 to the number of the factor
        for (int j = 2; j <= i; j++) {
            //Track loop 2
            cout << "Loop j value: " << j << endl;
            // Check if number is evenly divisible
            if so then factor found
            divisible by " << j << "." << endl;
            cout << "Checking if " << number << " is
            if (number % j == 0)
            {
                cout << j << " is a factor!" <<
                endl;
                number = number / j;
            }
            if (number == 1) {
                cout << "1 is a factor!" << endl;
                break;
            }
        }
        if (number == 1) {
            cout << "1 is a factor!" << endl <<
            "Factor search over.";
            break;
        }
    }
    return 0;
}
```