

Worksheet-1: C++ Basics

TASK - 2



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Task 2: Programming Exercises:[Control Statements]

1. Create a program that takes a positive integer as input and determines whether it's a "bouncy number". A bouncy number is one where the digits neither consistently increase nor consistently decrease when read from left to right. For example:

- 123 is NOT bouncy (digits consistently increase)
- 321 is NOT bouncy (digits consistently decrease)
- 120 is bouncy (neither consistently increasing nor decreasing)

```
#include <iostream>

using namespace std;

class BouncyNumberChecker
{
public:
    bool isBouncy(int number)
    {
        bool increasing = false, decreasing = false;

        int lastDigit = number % 10;

        number /= 10;

        while (number > 0)
        {
            int currentDigit = number % 10;

            if (currentDigit < lastDigit)
                increasing = true;

            if (currentDigit > lastDigit)
```

```

        decreasing = true;

        lastDigit = currentDigit;

        number /= 10;

        if (increasing && decreasing)
            return true;
    }

    return false;
}

void checkNumber()
{
    int number;

    cout << "NOW Enter any positive integer: "<<endl;

    cin >> number;

    if (number < 100)
    {

        cout << "Entered Number = "<<number <<endl<<endl<< " It is NOT a
bouncy number (IT starts from 3-digit numbers)." << endl;

    }
    else if (isBouncy(number))
    {
        cout << number << " it is a bouncy number!!!! ." << endl;

    }
    else

    {
        cout << number << "THIS is NOT a bouncy number!!!!." << endl;

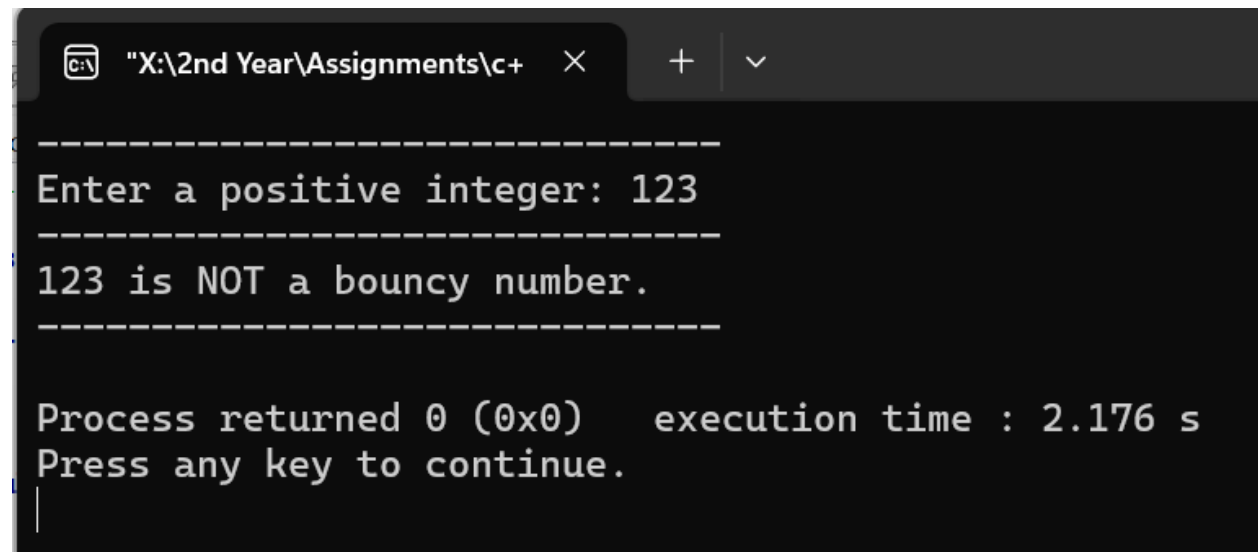
    }
}

};

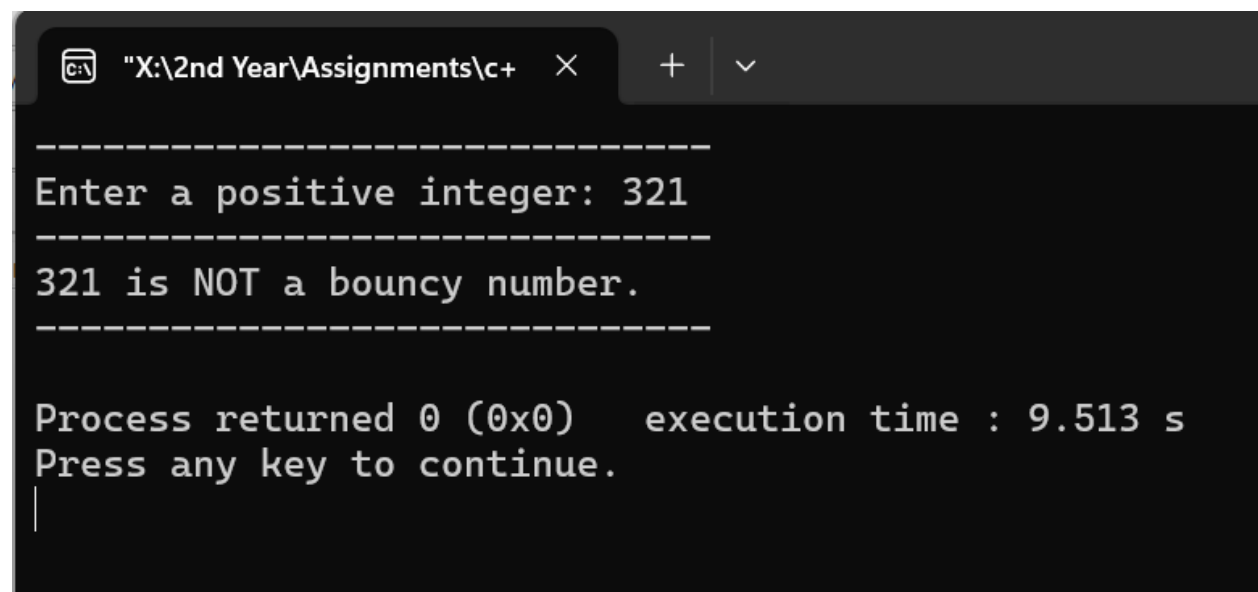
int main()
{
    BouncyNumberChecker c1;

```

```
c1.checkNumber();  
  
return 0;  
}
```



```
"X:\2nd Year\Assignments\c+  X  +  v  
-----  
Enter a positive integer: 123  
-----  
123 is NOT a bouncy number.  
-----  
  
Process returned 0 (0x0)    execution time : 2.176 s  
Press any key to continue.  
|
```



```
"X:\2nd Year\Assignments\c+  X  +  v  
-----  
Enter a positive integer: 321  
-----  
321 is NOT a bouncy number.  
-----  
  
Process returned 0 (0x0)    execution time : 9.513 s  
Press any key to continue.  
|
```

```
"X:\2nd Year\Assignments\c+  X  +  v

-----
Enter a positive integer: 120
-----
120 is a bouncy number!
-----

Process returned 0 (0x0)    execution time : 2.970 s
Press any key to continue.
|
```

```
"X:\2nd Year\Assignments\c+  X  +  v

-----
Enter a positive integer: 10
-----
Entered Number = 10
It is NOT a bouncy number (It starts from 3-digit numbers).
-----

Process returned 0 (0x0)    execution time : 3.698 s
Press any key to continue.
|
```