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Cosc 120

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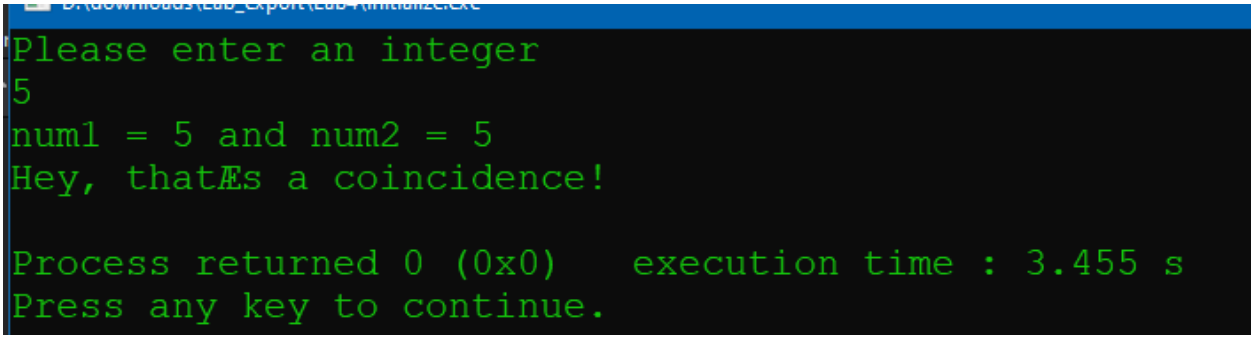
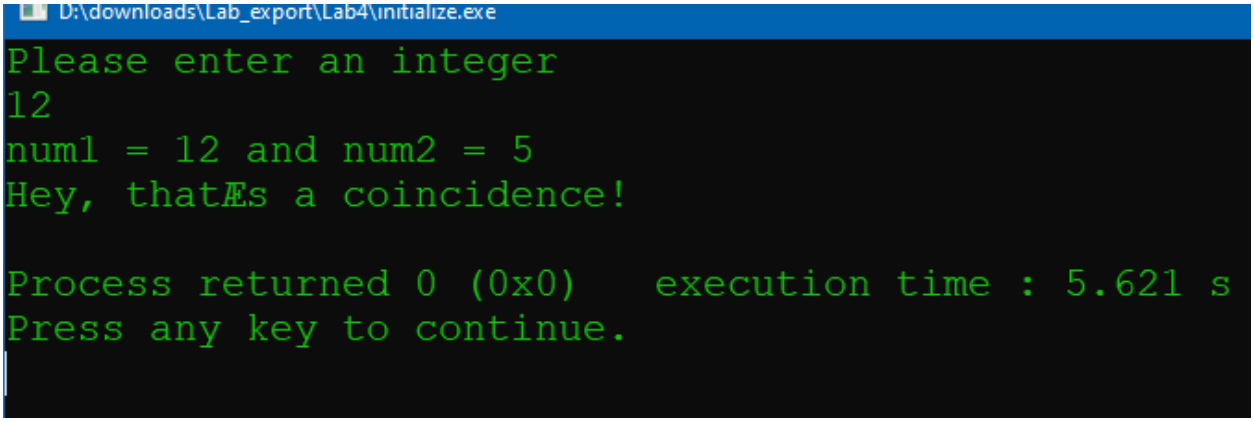
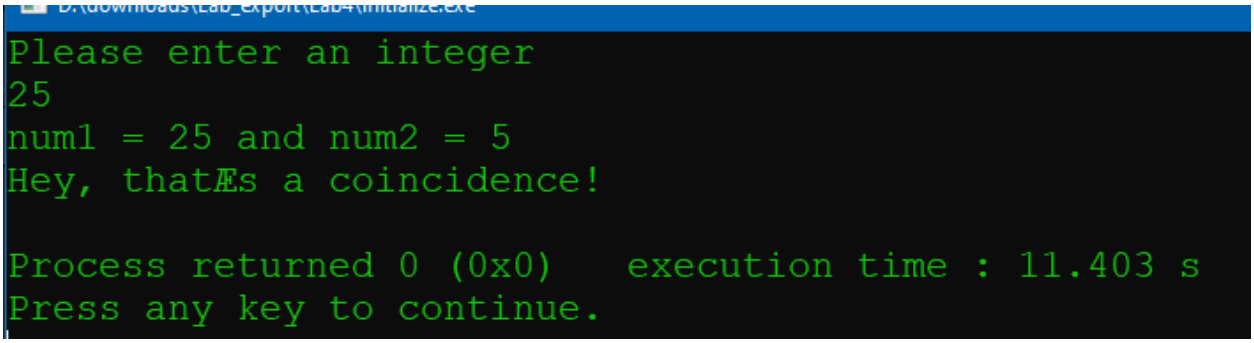
Lab 4

4.1

1.



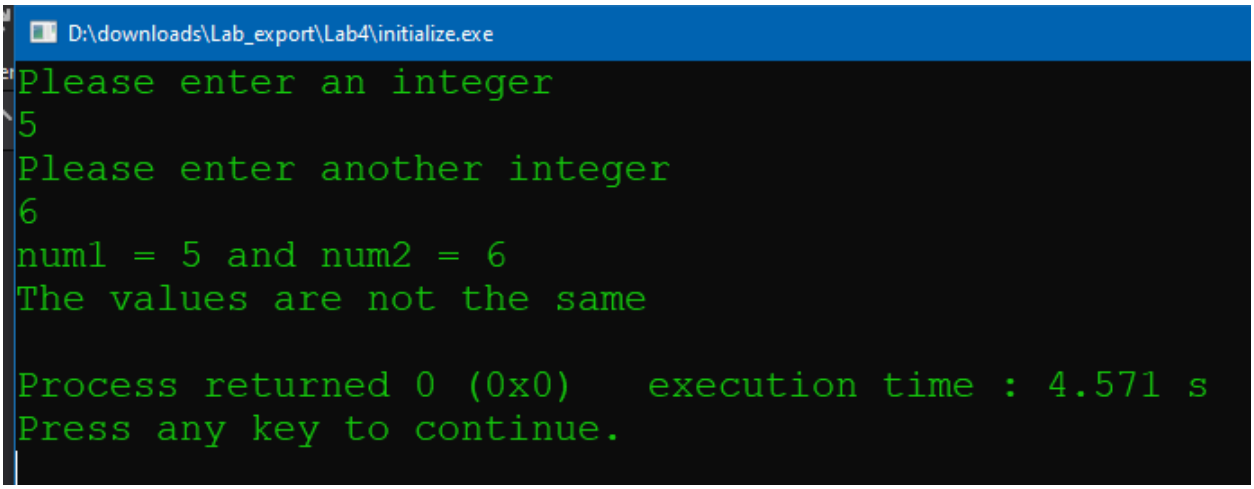


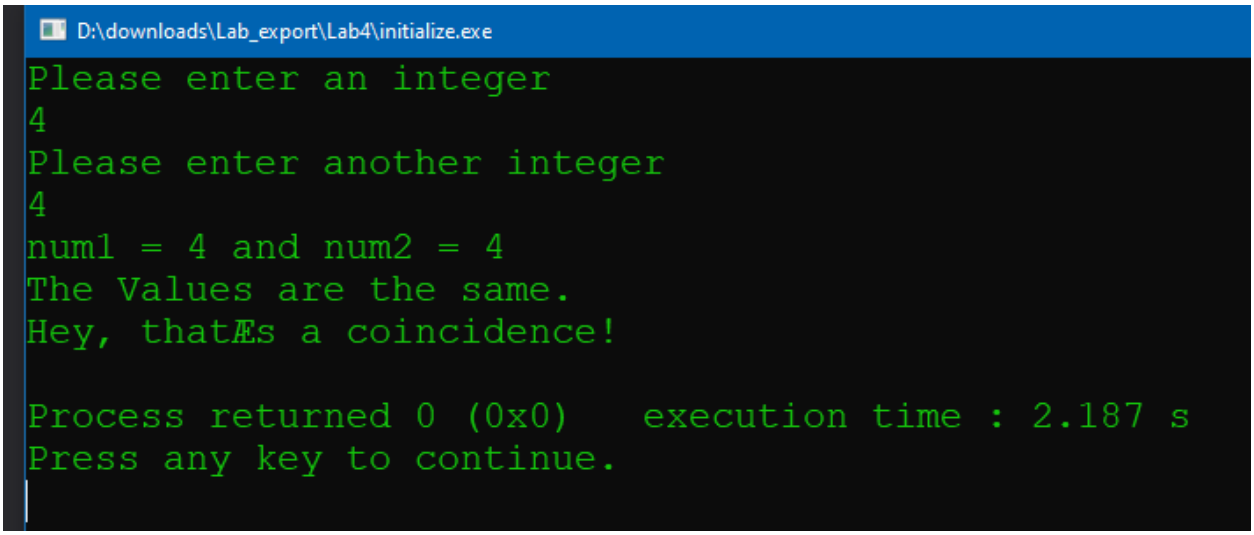


Num 2 is defined as a literal and there is a print formatting issue as well in the line below it

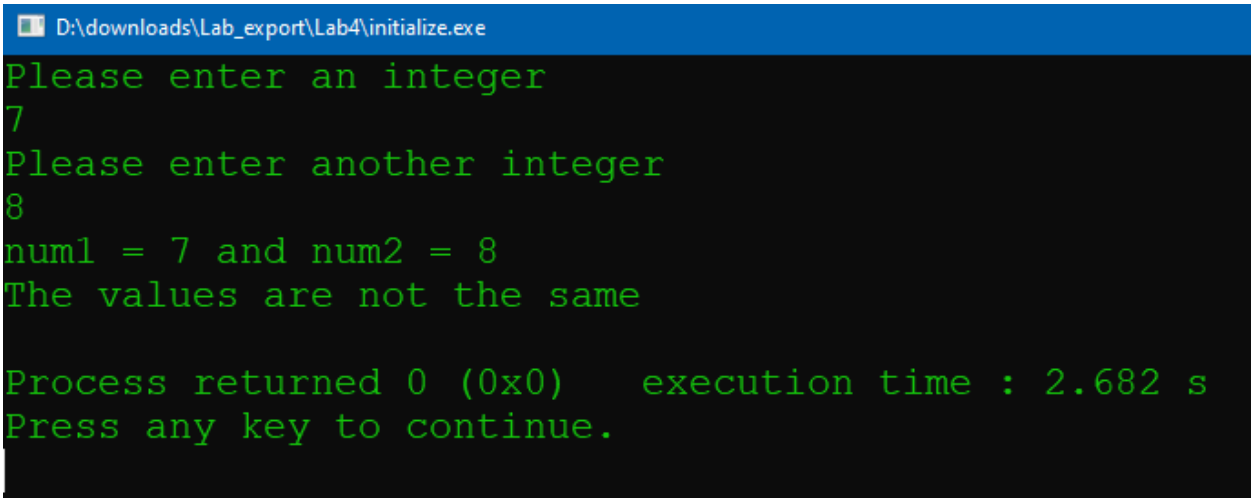
2.
```
    cout << "Please enter an integer" << endl;
    cin >> num1;

    cout << "Please enter another integer" << endl;
    cin >> num2;
```

3.





4.



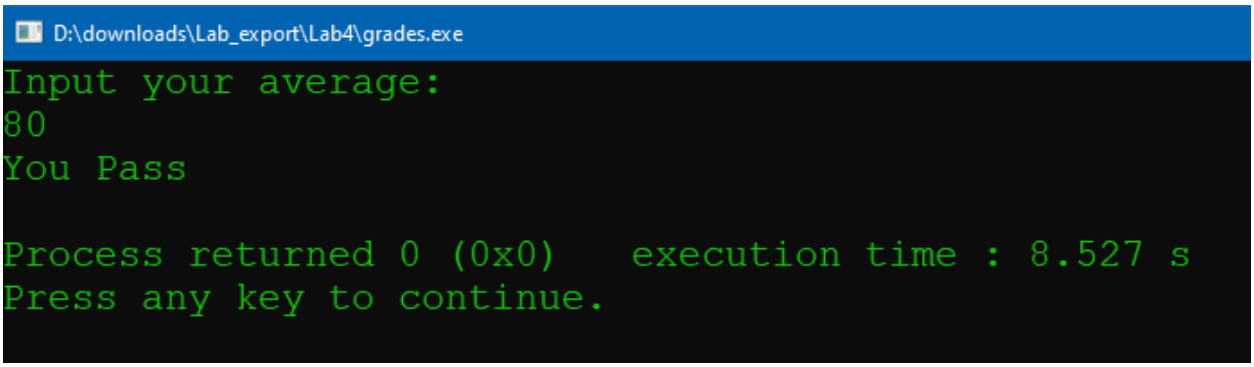
Source code

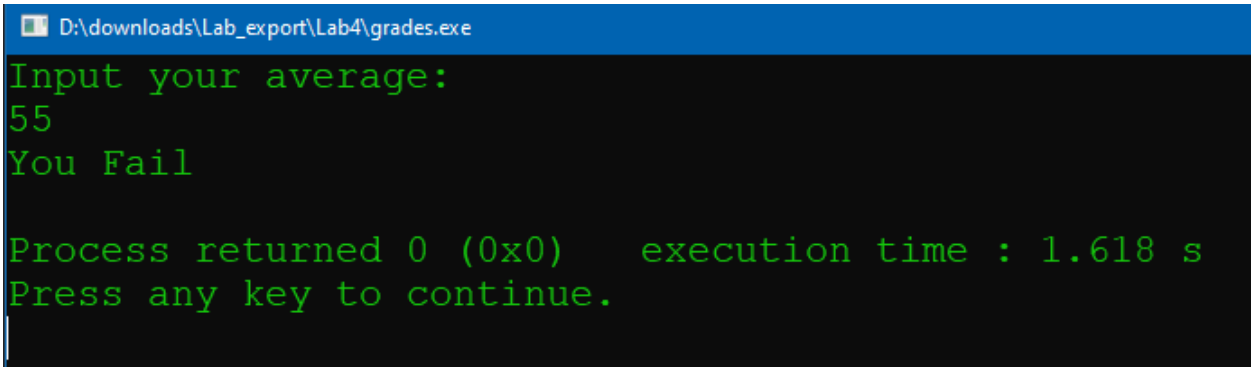
```
// This program tests whether or not an initialized value
// is equal to a value input by the user

// PLACE YOUR NAME HERE

#include <iostream>
using namespace std;

int main()
{
        int num1,num2;          // num1 is not initialized

        cout << "Please enter an integer" << endl;
        cin >> num1;
```

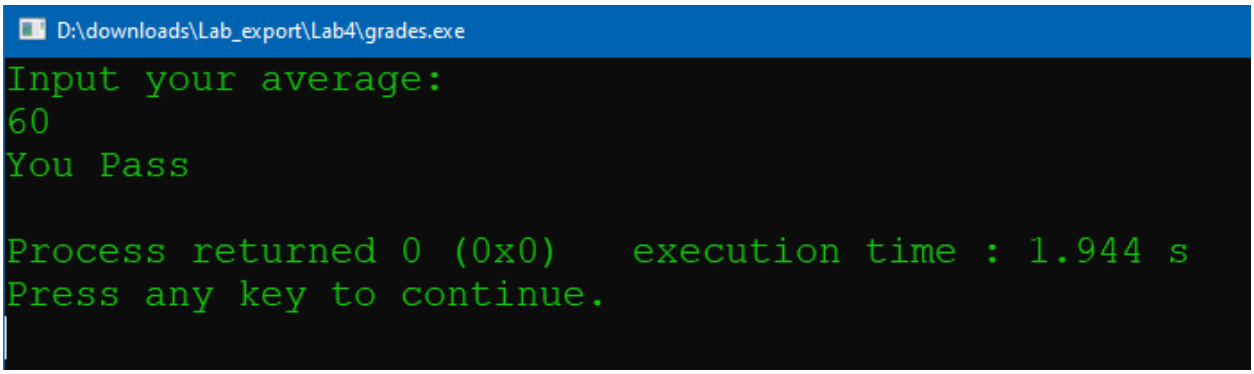
```
    cout << "Please enter another integer" << endl;
    cin >> num2;

    cout << "num1 = " << num1 << " and num2 = " << num2 << endl;

    if (num1 == num2)
        cout << "The Values are the same.\nHey, that's a coincidence!" << endl;

    else
        cout << "The values are not the same" << endl;

    return 0;
}
```

4.2

1.



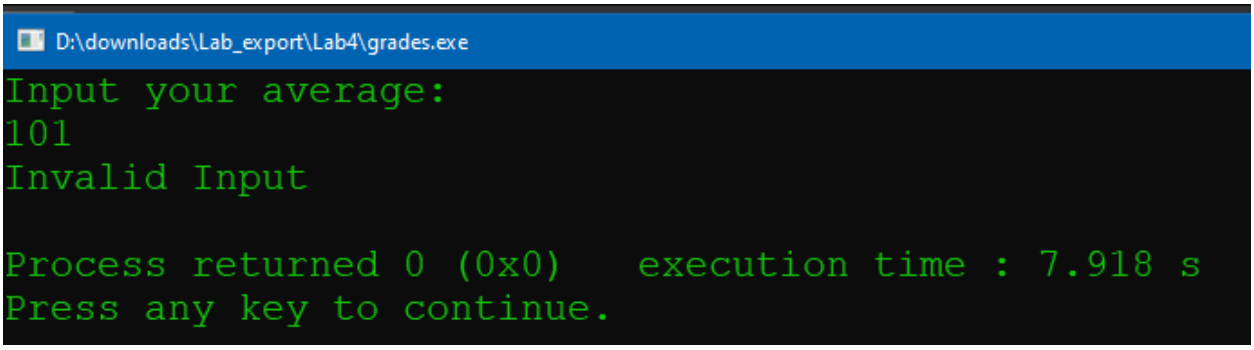


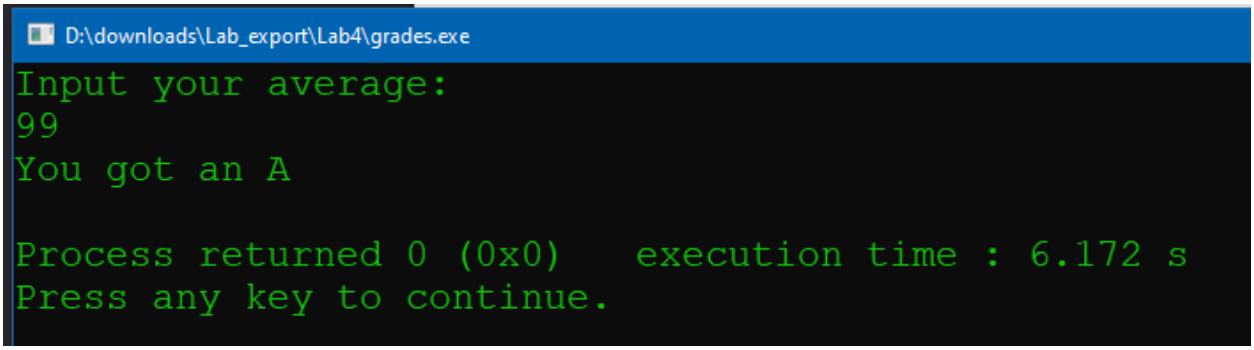


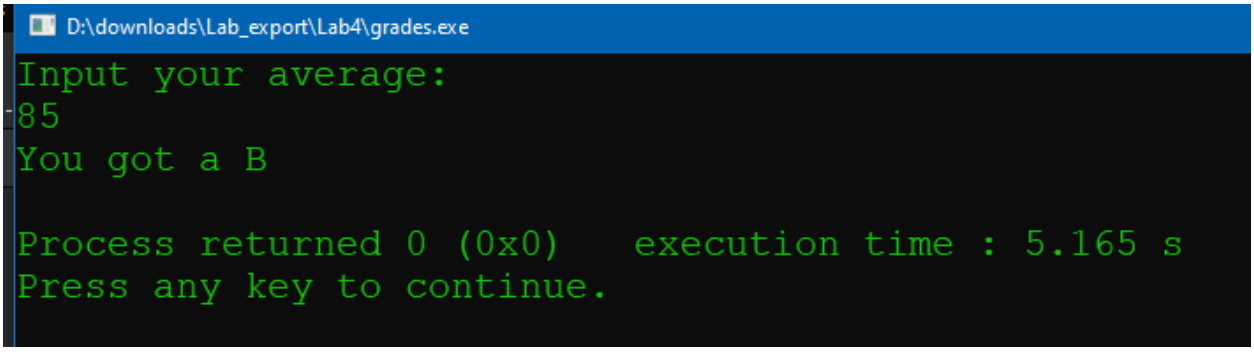
2.

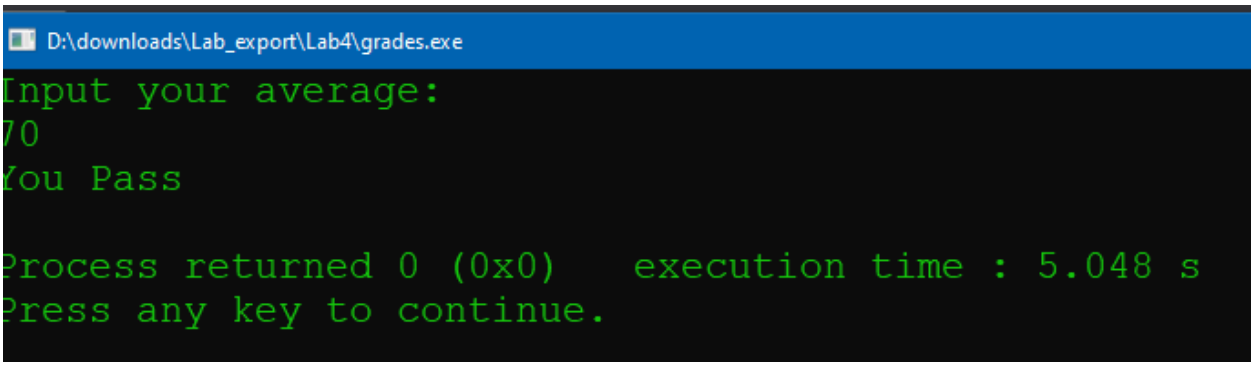
```
if (average >= 60)
    cout << "You Pass" << endl;

else
    cout << "You Fail" << endl;
```

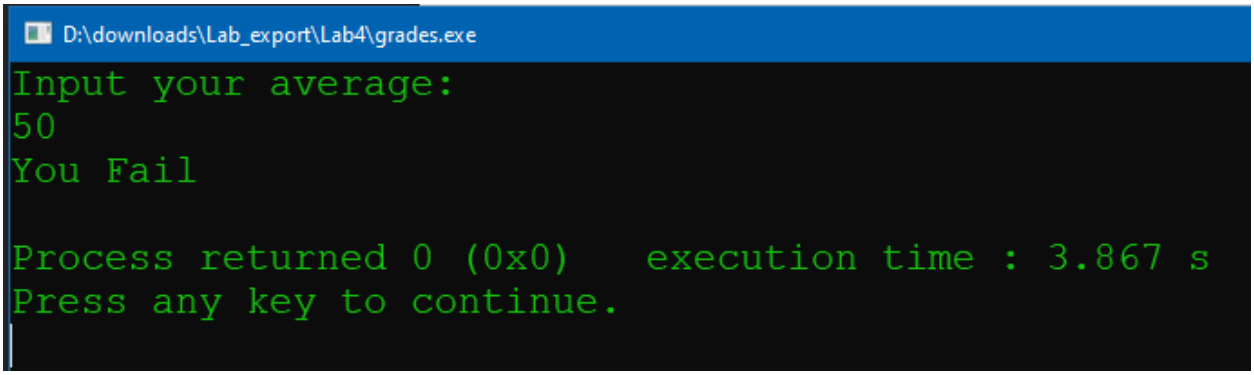
3.

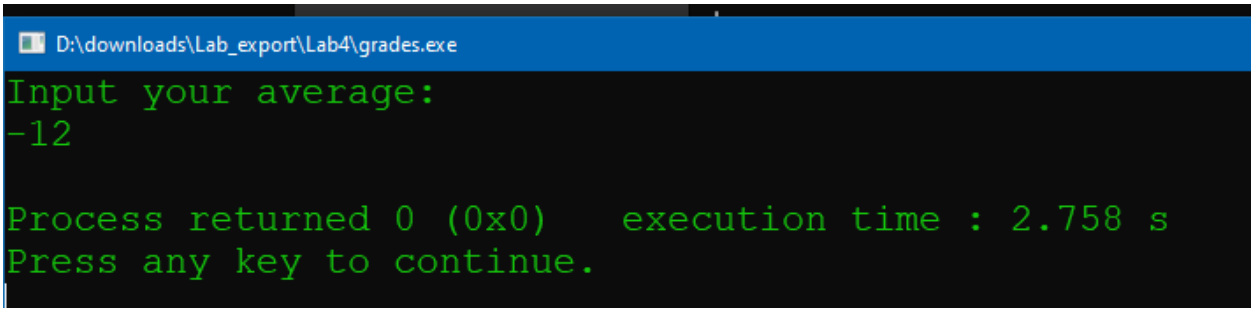



D:\downloads\Lab_export\Lab4\grades.exe
Input your average:
99
You got an A
Process returned 0 (0x0)   execution time : 6.172 s
Press any key to continue.


D:\downloads\Lab_export\Lab4\grades.exe
Input your average:
85
You got a B
Process returned 0 (0x0)   execution time : 5.165 s
Press any key to continue.


D:\downloads\Lab_export\Lab4\grades.exe
Input your average:
70
You Pass
Process returned 0 (0x0)   execution time : 5.048 s
Press any key to continue.


D:\downloads\Lab_export\Lab4\grades.exe
Input your average:
50
You Fail
Process returned 0 (0x0)   execution time : 3.867 s
Press any key to continue.



-12 returns nothing, could put it into error check

Source Code

```
// This program prints "You Pass" if a student's average is
// 60 or higher and prints "You Fail" otherwise


// PLACE YOUR NAME HERE


#include <iostream>
using namespace std;


int main()
{
   float average;          // holds the grade average


   cout << "Input your average:" << endl;
   cin >> average;
   if (average >100)
      cout<<"Invalid Input"<<endl;
   else if (average >= 90 && average<=100)
```

```
        cout << "You got an A" << endl;


            else if (average >= 80 && average<=99)
                cout << "You got a B" << endl;


        else if (average >= 60 && average<=79)


            cout << "You Pass" << endl;


        else if (average >= 0 && average<=59)


            cout << "You Fail" << endl;
    return 0;
}
```

4.3

1.

```
if (!(gpa <= 2.0) && year == '4')
    cout << "It is time to graduate soon" << endl;
```

2. You could with a else if because you can check for all other values , however it is easiest to just use the !=4 so you only have to check for that value

3.4 year students or students wit higher than or equal to a 2.0 will graduate

Else if

They haven't been there for 4 years (even if it's a 5th year) and their gpa is less than 2.0 they need more schooling

4. No because that would work for all other values

Source COde

```
// This program illustrates the use of logical operators


// PLACE  YOUR NAME HERE


#include <iostream>
using namespace std;


int main()
{
	char year;
	float gpa;


	cout << "What year student are you ?" << endl;
	cout << "Enter 1 (freshman), 2 (sophomore), 3 (junior), or 4 (senior)"
	<< endl << endl;
	cin >> year;


	cout << "Now enter your GPA" << endl;
	cin >> gpa;


	if (!(gpa <= 2.0) && year == '4')
```

```
        cout << "It is time to graduate soon" << endl;


    else if (year != '4' || gpa <2.0)
        cout << "You need more schooling" << endl;


    return 0;
}
```

4.4

1.

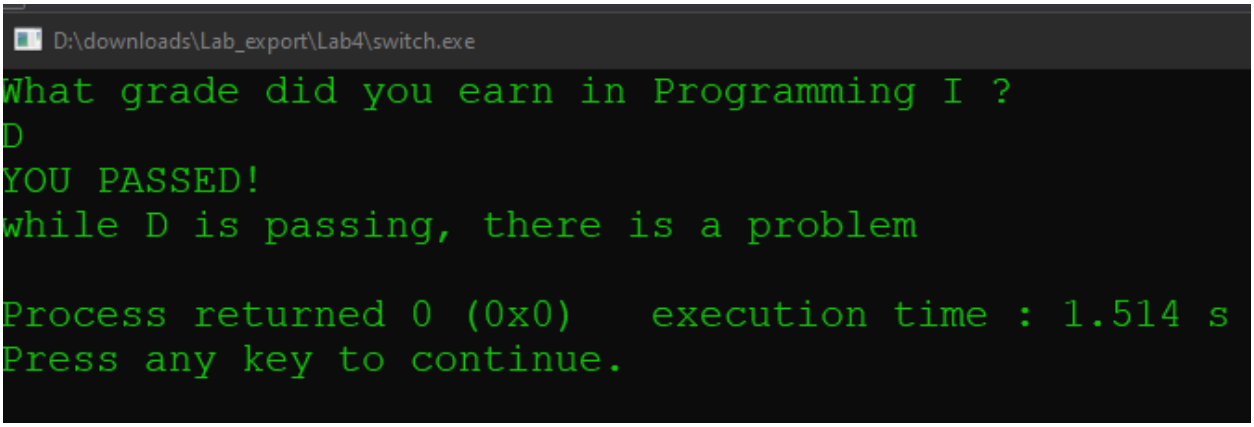
```
case 'A': cout << "ar
          // break;
case 'B': cout << "yo
         //  break;
case 'C': cout << "ea
         //  break;
case 'D': cout << "wh
         //  break;
case 'F': cout << "yo
          // break;
```

```
D:\downloads\Lab_export\Lab4\switch.exe
What grade did you earn in Programming I ?
B
you got a B - good job
earning a C is satisfactory
while D is passing, there is a problem
you failed - better luck next time
You did not enter an A, B, C, D, or F

Process returned 0 (0x0)   execution time : 8.610 s
Press any key to continue.
```

It will execute through multiple cases instead of just the one

2.

```
{
case 'A':
    cout << "YOU PASSED!\nan A -
    break;
case 'B':
    cout << "YOU PASSED!\nyou go
    break;
case 'C':
    cout << "YOU PASSED!\nearnin
    break;
case 'D':
    cout << "YOU PASSED!\nwhile
    break;
case 'F':
    cout << "you failed - better
    break;
```



3. trailing else corresponds with the default statements

Pre change source code switch

```
    switch (grade)        // This is where the switch statement begins
    {
    case 'A':
        cout << "YOU PASSED!\nan A - excellent work !" << endl;
        break;
    case 'B':
        cout << "YOU PASSED!\nyou got a B - good job" << endl;
```

```
        break;
    case 'C':
        cout << "YOU PASSED!\nearning a C is satisfactory" << endl;
        break;
    case 'D':
        cout << "YOU PASSED!\nwhile D is passing, there is a problem" << endl;
        break;
    case 'F':
        cout << "you failed - better luck next time" << endl;
        break;
    default:
        cout << "You did not enter an A, B, C, D, or F" << endl;
```

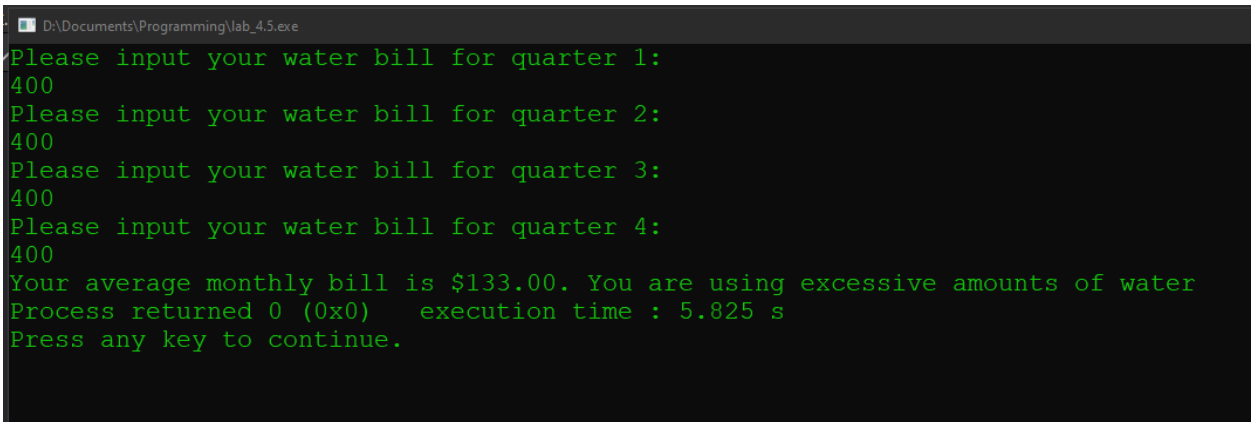
Fully changed source code

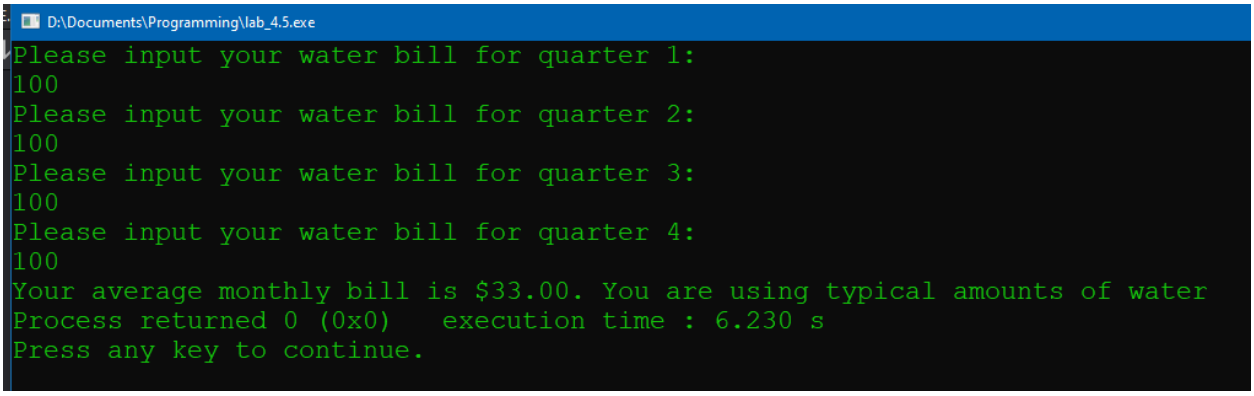
```
// This program illustrates the use of the switch statement.

// PLACE YOUR NAME HERE

#include <iostream>
using namespace std;

int main()
{
    char grade;
```

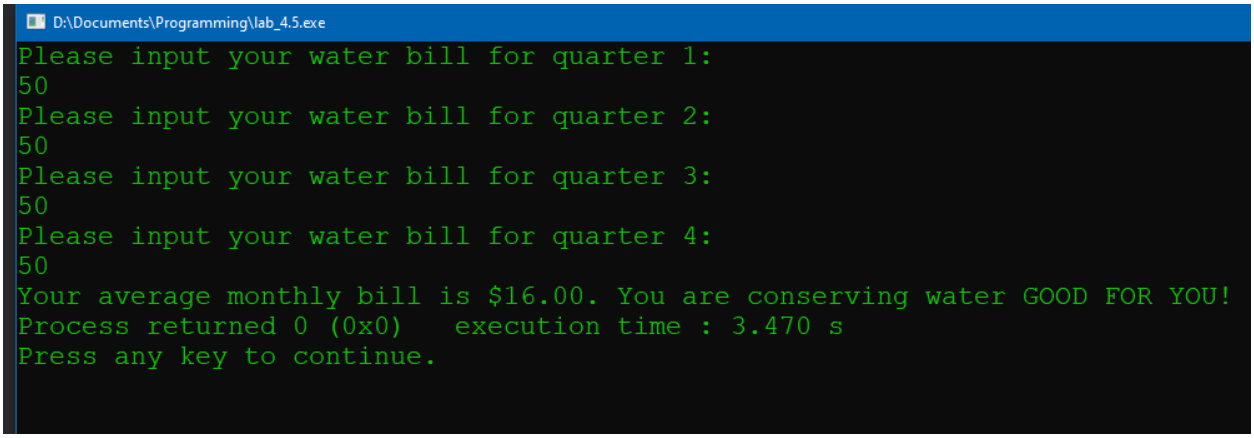
```
    cout << "What grade did you earn in Programming I ?" << endl;
    cin >> grade;

    if (grade=='A')
        cout << "YOU PASSED!\nan A - excellent work !" << endl;
    else if(grade=='B')
        cout << "YOU PASSED!\nyou got a B - good job" << endl;
    else if(grade=='C')
        cout << "YOU PASSED!\nearning a C is satisfactory" << endl;
    else if(grade=='D')
        cout << "YOU PASSED!\nwhile D is passing, there is a problem" << endl;
    else if(grade=='F')
        cout << "you failed - better luck next time" << endl;
    else
        cout << "You did not enter an A, B, C, D, or F" << endl;

    return 0;
}
```

4.5

Option 1







Source Code

```
#include <iostream>

#include <iomanip>

using namespace std;
```

```
int main()
{
    int bill_1,bill_2,bill_3,bill_4;
    double average;

    cout <<"Please input your water bill for quarter 1:"<<endl;
    cin >>bill_1;
    cout <<"Please input your water bill for quarter 2:"<<endl;
    cin >>bill_2;
    cout <<"Please input your water bill for quarter 3:"<<endl;
    cin >>bill_3;
    cout <<"Please input your water bill for quarter 4:"<<endl;
    cin >>bill_4;

    average = (bill_1+bill_2+bill_3+bill_4)/12;

    cout <<"Your average monthly bill is $"<<fixed<<setprecision(2)<<average;
    if (average >75)
       cout<<". You are using excessive amounts of water";
    else if(average>=25 && average <=75)
       cout<<". You are using typical amounts of water";
    else if(average <=25)
```

```
    cout<<". You are conserving water GOOD FOR YOU!"


}
```