

Assignment 1

Lab Explanation

The requirements for this assignment was to create a program that would print out a triangle based on the given input of height.

Code

```
C++ Kieran_Llarena_DrawTriangle.cpp > main()
1  #include <iostream>
2  using std::cout, std::cin;
3
4  int main() {
5      int height;
6
7      cin >> height;
8
9      for(unsigned int i = height; i > 0; --i) {
10         for(unsigned int j = 0; j < i; ++j) {
11             cout << "* ";
12         }
13         cout << '\n';
14     }
15
16     return 0;
17 }
```

In my program, I used a nested for loop. The outside loop was in charge of handling the rows and the inside loop was in charge of handling the columns. Additionally, I decided to only use `std::cout` and `std::cin` instead of the entire `std` library to save memory and increase the speed of the application. I also decided to use `'\n'` instead of `std::endl` to increase the speed of the application as well.

Test 1

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_DrawTriangle"
3
* * *
* *
*
i Compiled successfully!
```

Test 2

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_DrawTriangle"
4
* * * *
* * *
* *
*
i Compiled successfully!
```

Test 3

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_DrawTriangle"
1
*
i Compiled successfully!
```

Test 4

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_DrawTriangle"
6
* * * * *
* * * *
* * *
* *
*
*
*
i Compiled successfully!
```

Assignment 2

Lab Explanation

The requirements for this assignment were to create a program that would output the number of matching characters in two inputted strings.

Code

```
C++ Kieran_Llarena_MatchingString.cpp Lab4 1 X
C++ Kieran_Llarena_MatchingString.cpp > main()
1  #include <iostream>
2  #include <string>
3  using std::cout, std::cin, std::string;
4
5  int main() {
6      string inp1;
7      string inp2;
8
9      cin >> inp1 >> inp2;
10
11     int numOfMatchingChars = 0;
12
13     for(unsigned int i = 0; i < inp1.length(); i++) {
14         if(inp1[i] == inp2[i])
15             numOfMatchingChars++;
16     }
17
18     if(numOfMatchingChars == 1) {
19         cout << "The output is: " << numOfMatchingChars << " characters matches" << '\n';
20     } else {
21         cout << "The output is: " << numOfMatchingChars << " characters match" << '\n';
22     }
23
24     return 0;
25 }
```

I used a nested loop to iterate through the first inputted string and then compare each individual character to each individual character in the second inputted string. If a character matched, then a variable that was created to keep track of the number of matching characters would be incremented. Additionally, I decided to only use `std::cout` and `std::cin` instead of the entire `std` library to save memory and increase the speed of the application. I also decided to use `'\n'` instead of `std::endl` to increase the speed of the application as well.

Test 1

```
17 Kieran_Llarena_MatchingString
MacBook-Air-5:output kllarena$ ./"Kiera
crash crush
The output is: 4 characters match
MacBook-Air-5:output kllarena$
```

Test 2

```
MacBook-Air-5:output kllarena$ ./"Kiera
cat catnip
The output is: 3 characters match
MacBook-Air-5:output kllarena$
```

Test 3

```
17 Kieran_Llarena_MatchingString
MacBook-Air-5:output kllarena$ ./"Kiera
mall saw
The output is: 1 characters matches
MacBook-Air-5:output kllarena$
```

Test 4

```
MacBook-Air-5:output kllarena$ ./"Kiera
apple orange
The output is: 0 characters match
MacBook-Air-5:output kllarena$
```

Test 5

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_MatchingString"
xxxxxxxxx
xyxyxyxyxy
The output is: 5 characters match
MacBook-Air-5:output kllarena$
```

Assignment 3

Lab Explanation

The requirements for this assignment were to create a program that would output if every character was a digit.

Code

```
C++ Kieran_Llarena_IntegerCheck.cpp Lab4 1 X
C++ Kieran_Llarena_IntegerCheck.cpp > main()
1  #include <iostream>
2  #include <string>
3  #include <cctype>
4  using std::cout, std::cin, std::string;
5
6  int main() {
7      string input;
8      cin >> input;
9
10     int numOfNonDigits = 0;
11
12     for(unsigned int i = 0; i < input.length(); ++i) {
13         if(!isdigit(input[i]))
14             numOfNonDigits++;
15     }
16
17     const string output = (numOfNonDigits == 0) ? "Yes" : "No";
18
19     cout << "The output is: " << output << '\n';
20
21     return 0;
22 }
```

I created a for loop that would iterate through each character in an inputted string and test if it was a digit. If the character was not a digit, then a variable would be incremented causing the program to output "No". Additionally, I decided to only use std::cout and std::cin instead of the entire std library to save memory and increase the speed of the application. I also decided to use '\n' instead of std::endl to increase the speed of the application as well.

Test 1

```
MacBook-Air-5:output kllarena$ ./"Kiera
1995
The output is: Yes
```

Test 2

```
MacBook-Air-5:output kllarena$ ./"Kiera
42,000
The output is: No
```

Test 3

```
17 ./Kieran_Llarena_IntegerCheck
● MacBook-Air-5:output kllarena$ ./"Kiera
2001!
The output is: No
○ MacBook-Air-5:output kllarena$
```

Test 4

```
● MacBook-Air-5:output kllarena$ ./"Kiera
938751
The output is: Yes
```

Test 5

```
17 ./Kieran_Llarena_IntegerCheck
● MacBook-Air-5:output kllarena$ ./"Kiera
-1995
The output is: No
○ MacBook-Air-5:output kllarena$
```

Test 6

```
17 ./Kieran_Llarena_IntegerCheck
● MacBook-Air-5:output kllarena$ ./"Kiera
32.45
The output is: No
```

