

Assignment 1

Lab Explanation

The requirements for this assignment were to create a program that outputs the average of a vector.

Code

```
C++ Kieran_Llarena_CalculateAverage.cpp > main()
1  #include <iostream>
2  #include <vector>
3  using std::cout, std::vector;
4
5  double CalcAverage(vector<int> input) {
6      unsigned int i;
7      double sum = 0;
8      for(i = 0; i < input.size(); ++i) {
9          sum += input.at(i);
10     }
11     double avg = sum / input.size();
12     return avg;
13 }
14
15 int main() {
16     vector<int> nums; // initialize vector size as well
17     // code for vector elements here
18
19     cout << CalcAverage(nums) << '\n';
20
21     return 0;
22 }
```

My program used a function called CalcAverage which iterated through the entire inputted vector to then add it to a sum and then find the average by dividing the sum value by the size of the inputted vector. The function would then return the average. The inputted vector would be manually coded in the main() function. Additionally, I decided to only use std::cout and std::vector 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_CalculateAverage"
3
MacBook-Air-5:output kllarena$
```

Test 2

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_CalculateAverage"
5
MacBook-Air-5:output kllarena$
```

Test 3

```
./"Kieran_Llarena_CalculateAverage"  
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_CalculateAverage"  
50.5  
○ MacBook-Air-5:output kllarena$ █
```

Test 4

```
./"Kieran_Llarena_CalculateAverage"  
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_CalculateAverage"  
10  
○ MacBook-Air-5:output kllarena$ █
```

Test 5

```
./"Kieran_Llarena_CalculateAverage"  
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_CalculateAverage"  
0  
○ MacBook-Air-5:output kllarena$ █
```

Assignment 2

Lab Explanation

The requirements for this assignment were to create a program that would output a string with only alphabetical characters based on a given inputted string.

Code

```
1  #include <iostream>
2  #include <string>
3  #include <cctype>
4  using std::cout, std::cin, std::getline, std::string;
5
6  string RemoveNonAlpha(string input, int strLength) {
7      string modifiedInput;
8      for(unsigned int i = 0; i < strLength; ++i) {
9          if(isalpha(input[i]))
10             modifiedInput += input[i];
11      }
12      return modifiedInput;
13  }
14
15  int main() {
16      string input;
17
18      getline(cin, input);
19
20      int strLength = input.length();
21
22      cout << RemoveNonAlpha(input, strLength) << '\n';
23      return 0;
24  }
```

My program first gets a line input, and then passes it to the RemoveNonAlpha function. The RemoveNonAlpha function returns the original input but only with alphabetical characters. It does this by taking in a string input and the length of the string input. A for loop is used to iterate through each character of the inputted string. Each character is tested with the isalpha() method and if it is an alphabetical character, it is added to the string modifiedInput. Once this process is finished, the function returns the modifiedInput variable. Additionally, I decided to only use cout, cin, getline, and string from the 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

```
./ Kieran_Llarena_IsAlphabet
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_IsAlphabet"
-Hello, 1 world$!
Helloworld
● MacBook-Air-5:output kllarena$ █
```

Test 2

```
./ Kieran_Llarena_IsAlphabet
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_IsAlphabet"
This !$ @ sentence.
Thissentence
● MacBook-Air-5:output kllarena$ █
```

Test 3

```
./ Kieran_Llarena_IsAlphabet
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_IsAlphabet"
Look! Multiple spaces.
LookMultiplespaces
● MacBook-Air-5:output kllarena$ █
```

Test 4

```
./ Kieran_Llarena_IsAlphabet
● MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_IsAlphabet"
flying
flying
● MacBook-Air-5:output kllarena$ █
```