Assignment 1

Lab Explanation

The requirements for this lab were to create a program that would output a customer's choice of food at McDonalds along with the cost of the food.

Code

Kieran_Llarena_McDonalds.cpp > ...

```cpp
#include <iostream>
using std::cin, std::cout;

int main() {
  int choice;

  cin >> choice;

  switch(choice) {
    case 1:
      cout << "Hamburger is $4.00" << '\n';
    break;

    case 2:
      cout << "Cheeseburger is $5.00" << '\n';
    break;

    case 3:
      cout << "Fries is $3.00" << '\n';
    break;

    case 4:
      cout << "Soda is $2.00" << '\n';
    break;

    case 5:
      cout << "Water is $1.00" << '\n';
    break;

    default:
      cout << "Your choice is invalid! Run the program again!" << '\n';
    break;
  }

  return 0;
}
```

In my program, I used a switch to decide what would be outputted based on the user's input. Each case in the switch is assigned to one certain output. 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_McDonalds"
1
Hamburger is $4.00
```

Test 2

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_McDonalds"
2
Cheeseburger is $5.00
```

Test 3

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_McDonalds"
3
Fries is $3.00
```

Test 4

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_McDonalds"
4
Soda is $2.00
```

Test 5

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_McDonalds"
5
Water is $1.00
```

Test 6

```
MacBook-Air-5:output kllarena$ ./"Kieran_Llarena_McDonalds"
6
Your choice is invalid! Run the program again!
```

Assignment 2

Lab Explanation

The requirements for this lab were to create a program that would calculate the area of a shape. Both the type of shape and the dimensions of the shape were chosen by the user.

Code

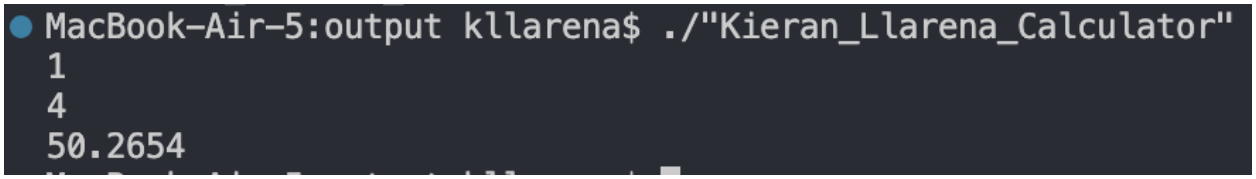
Kieran_Llarena_Calculator.cpp > main()

```cpp
#include <iostream>
using std::cout, std::cin;

int main() {
  int choice;

  cin >> choice;

  switch(choice) {
    case 1:
    {
      const double PI = 3.14159;
      double radius;

      cin >> radius;

      cout << PI * radius * radius << '\n';
    }
    break;

    case 2:
    {
      double length;
      double width;

      cin >> length;
      cin >> width;

      cout << length * width << '\n';
    }
    break;

    case 3:
    {
      double base;
      double height;

      cin >> base;
      cin >> height;

      cout << 0.5 * base * height << '\n';
    }
    break;

    case 4:
      cout << "Program ending!" << '\n';
    break;

    default:
      cout << "The valid choices are 1 through 4! Run the program again." << '\n';
    break;
  }

  return 0;
}
```

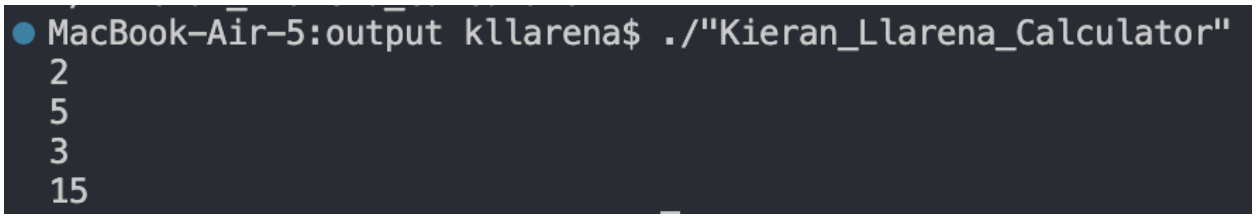
First off, I decided to only use std::cout, std::cin, and ‘\n’ to save memory and increase the speed of the application. To handle what calculations would be needed based on the user input,

I used a switch block. Within the switch blocks are code that would run the math needed to calculate the chosen shape. Curly brackets are wrapped around the code under the cases since they are needed when declaring variables within cases. I also decided to declare the variables within the scope of the case and not globally for safety and memory reasons.

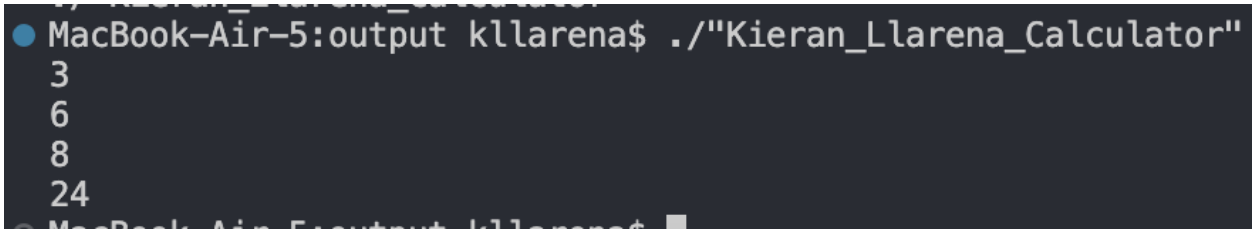
Test 1



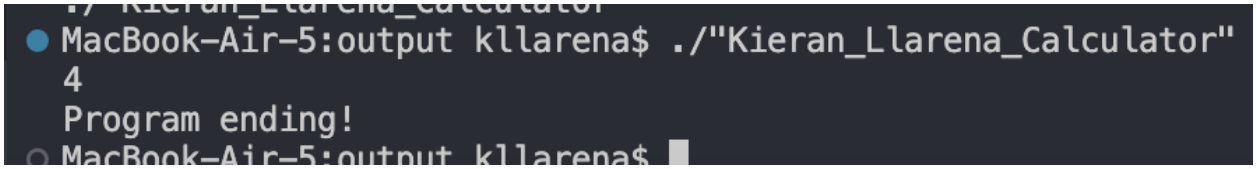
Test 2



Test 3



Test 4



Test 5