Activity No. 2.2

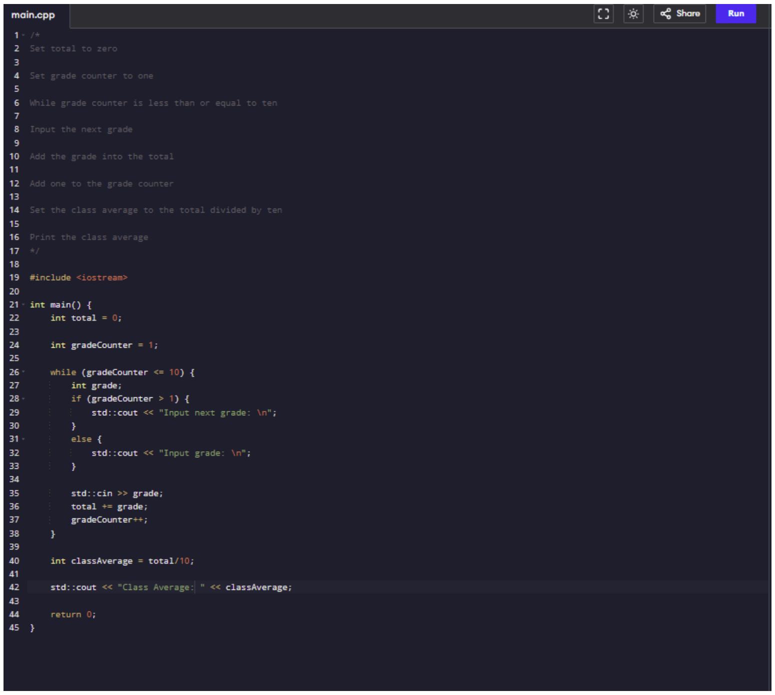
Hands-on Activity 2.2: Control Structures (part 1)

Course Code: CPE007	**Program:** Computer Engineering
Course Title: Programming Design and Logic	**Date Performed:**8/7/25
Section: CPE11S1	**Date Submitted:**8/12/25
Name(s): Niel Vincent B. Condino	**Instructor: Engr. Jimlord M. Quejado**

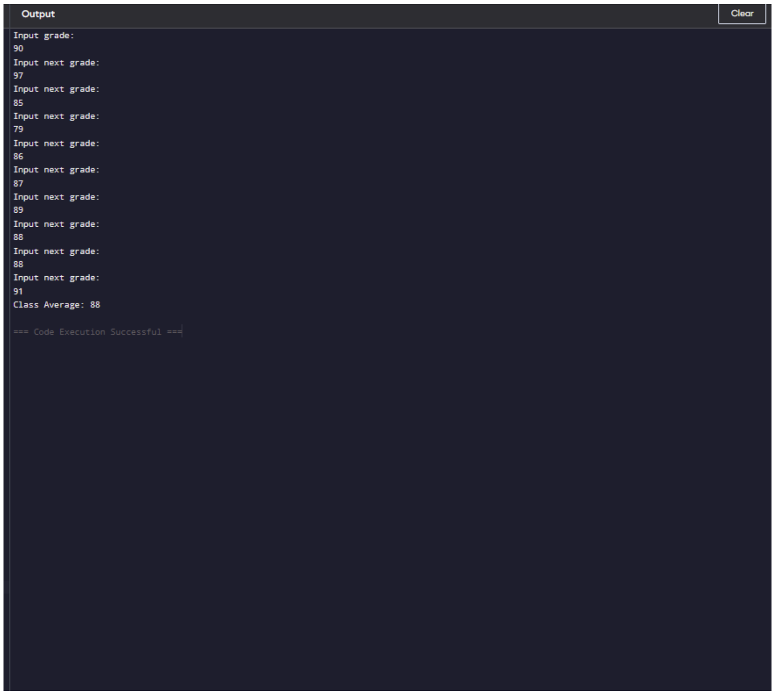
6. Output

Exercise 1:

Counter- Controlled Repetition. A class of ten students took a quiz. The grades (integers in the range of 0 to 100) for this quiz are available to you. Determine the class average on the quiz. Put your answer in the output section of the activity template. Ensure that the screen shot of the code and the output are readable.



```cpp
/*
Set total to zero

Set grade counter to one

While grade counter is less than or equal to ten

Input the next grade

Add the grade into the total

Add one to the grade counter

Set the class average to the total divided by ten

Print the class average
*/

#include <iostream>

int main() {
    int total = 0;

    int gradeCounter = 1;

    while (gradeCounter <= 10) {
        int grade;
        if (gradeCounter > 1) {
            std::cout << "Input next grade: \n";
        }
        else {
            std::cout << "Input grade: \n";
        }

        std::cin >> grade;
        total += grade;
        gradeCounter++;
    }

    int classAverage = total/10;

    std::cout << "Class Average: " << classAverage;

    return 0;
}
```

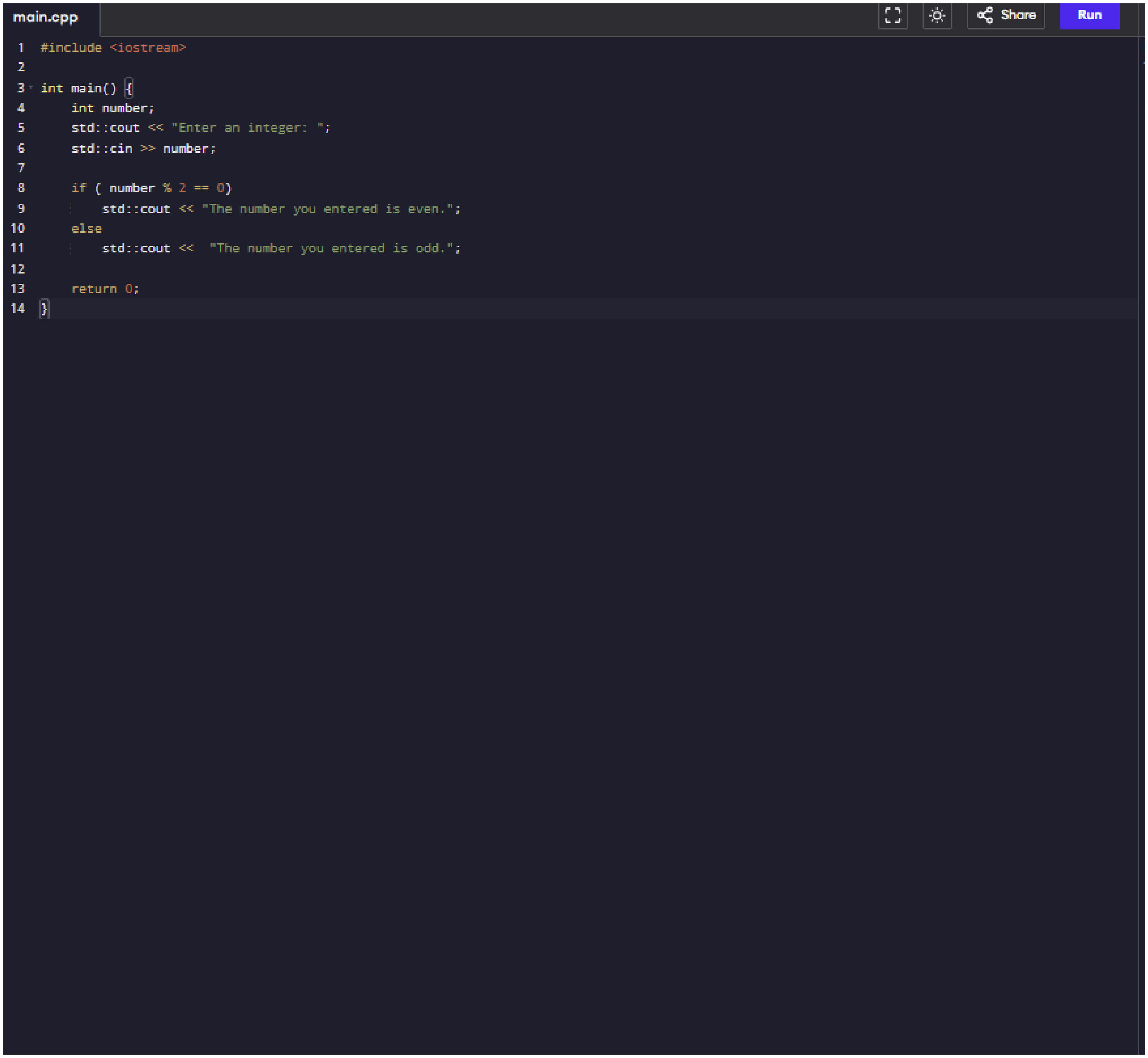


```
Input grade:
90
Input next grade:
97
Input next grade:
85
Input next grade:
79
Input next grade:
86
Input next grade:
87
Input next grade:
89
Input next grade:
88
Input next grade:
88
Input next grade:
91
Class Average: 88

=== Code Execution Successful ===
```

7. Supplementary Activity

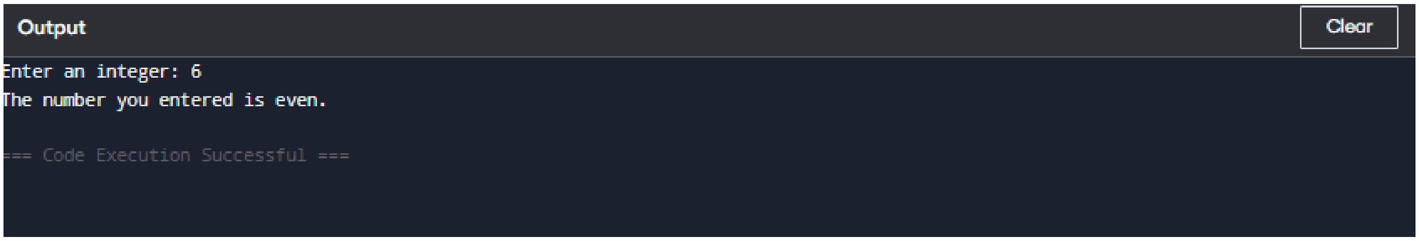
1.Using conditional statements (if-else statements), write a program that asks a user for a number and prints out if it is an even or an odd number.

Code:

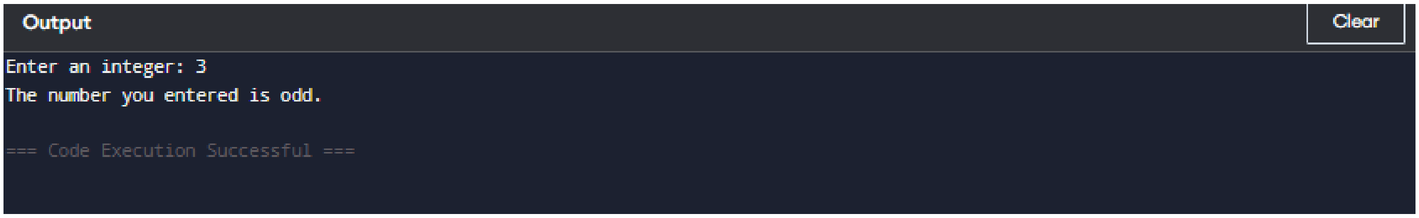


```cpp
#include <iostream>

int main() {
    int number;
    std::cout << "Enter an integer: ";
    std::cin >> number;

    if ( number % 2 == 0)
        std::cout << "The number you entered is even.";
    else
        std::cout <<  "The number you entered is odd.";

    return 0;
}
```

Output:

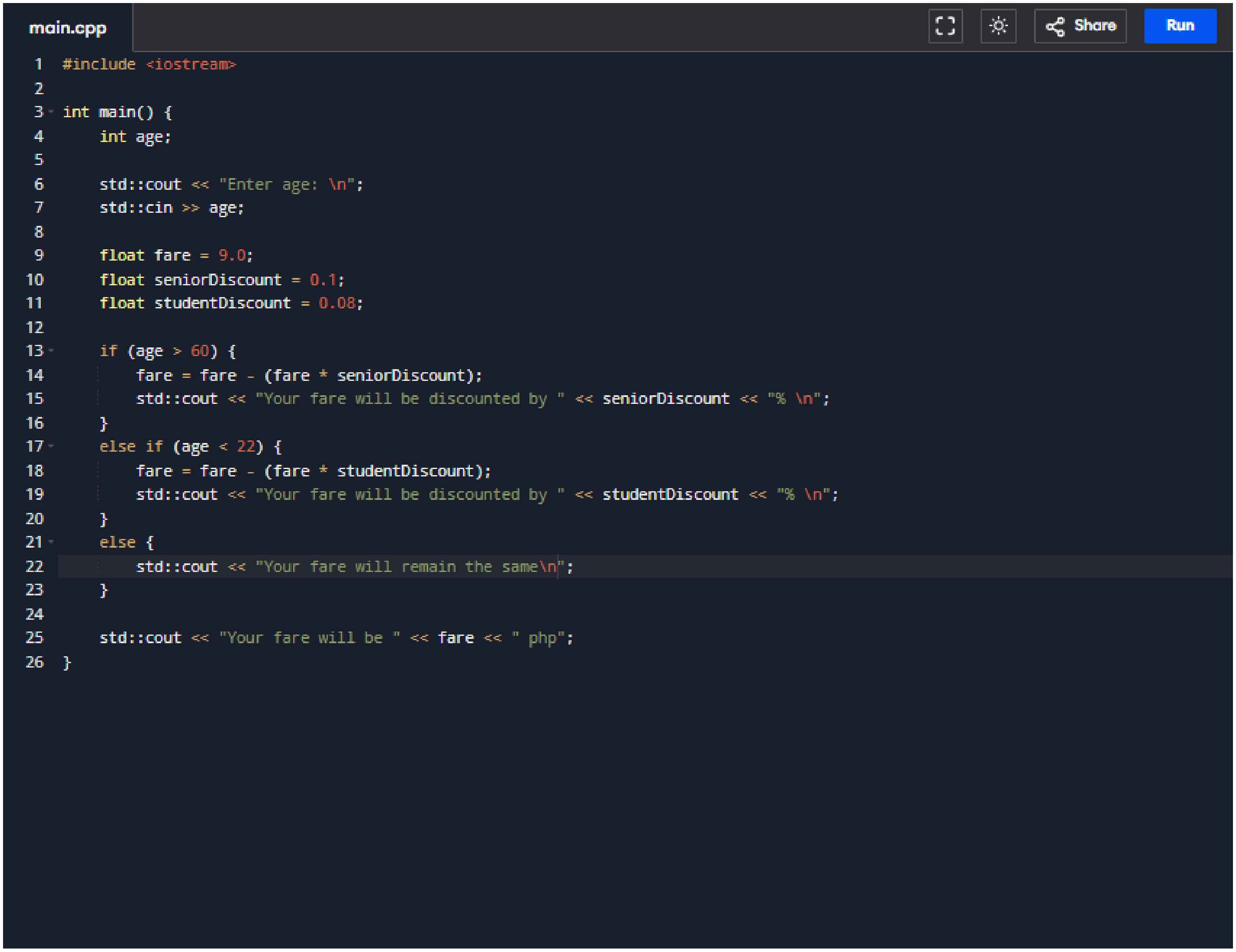


```
Enter an integer: 6
The number you entered is even.

=== Code Execution Successful ===
```



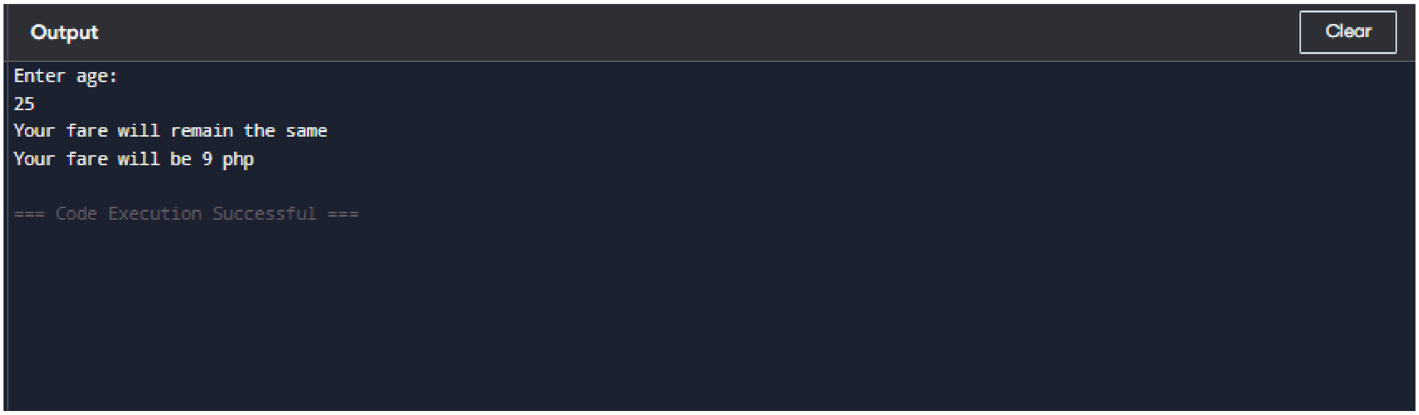
```
Enter an integer: 3
The number you entered is odd.

=== Code Execution Successful ===
```

2.Using conditional statements, write a program that computes for 10 percent fare discount of a senior citizen and 8 percent fare discount of a student. There will be no discount if not a senior citizen and not a student. The user will be asked to enter age. The minimum fare is 9 pesos.

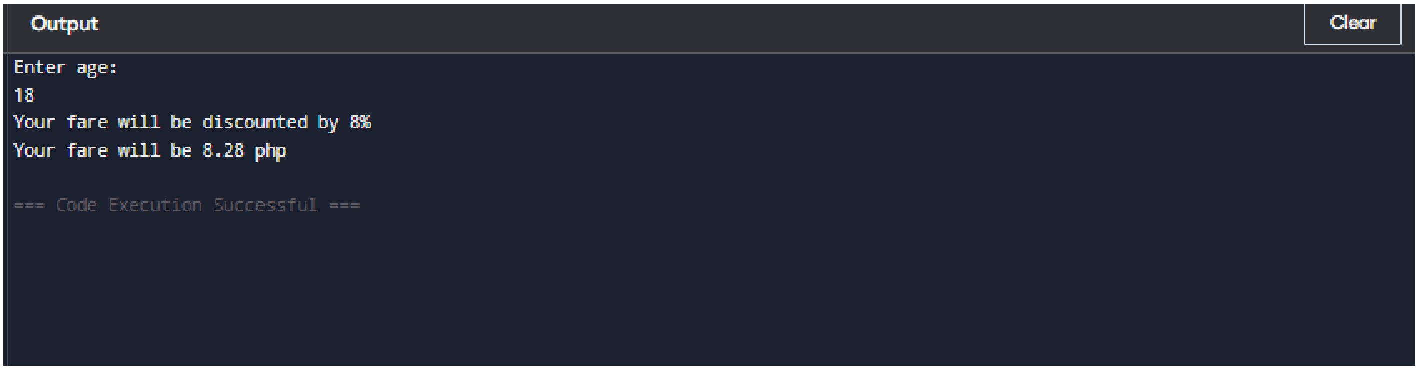


```cpp
#include <iostream>

int main() {
    int age;

    std::cout << "Enter age: \n";
    std::cin >> age;

    float fare = 9.0;
    float seniorDiscount = 0.1;
    float studentDiscount = 0.08;

    if (age > 60) {
        fare = fare - (fare * seniorDiscount);
        std::cout << "Your fare will be discounted by " << seniorDiscount << "% \n";
    }
    else if (age < 22) {
        fare = fare - (fare * studentDiscount);
        std::cout << "Your fare will be discounted by " << studentDiscount << "% \n";
    }
    else {
        std::cout << "Your fare will remain the same\n";
    }

    std::cout << "Your fare will be " << fare << " php";
}
```

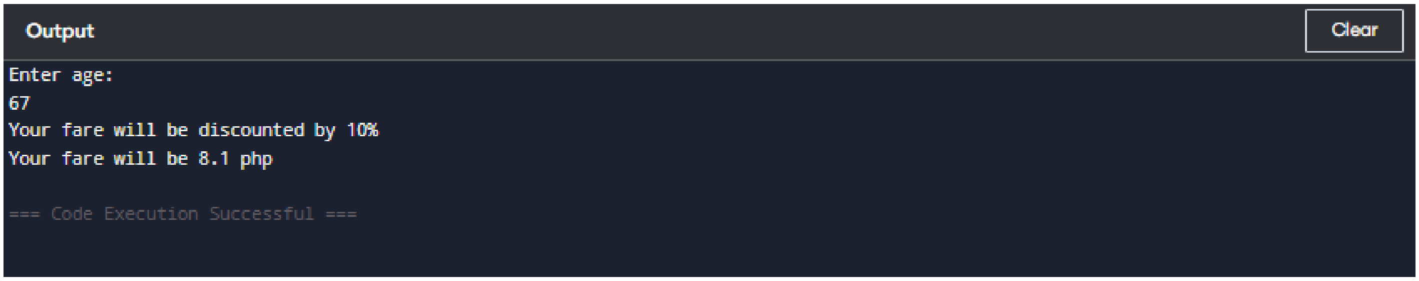
Output:



```
Enter age:
25
Your fare will remain the same
Your fare will be 9 php

=== Code Execution Successful ===
```

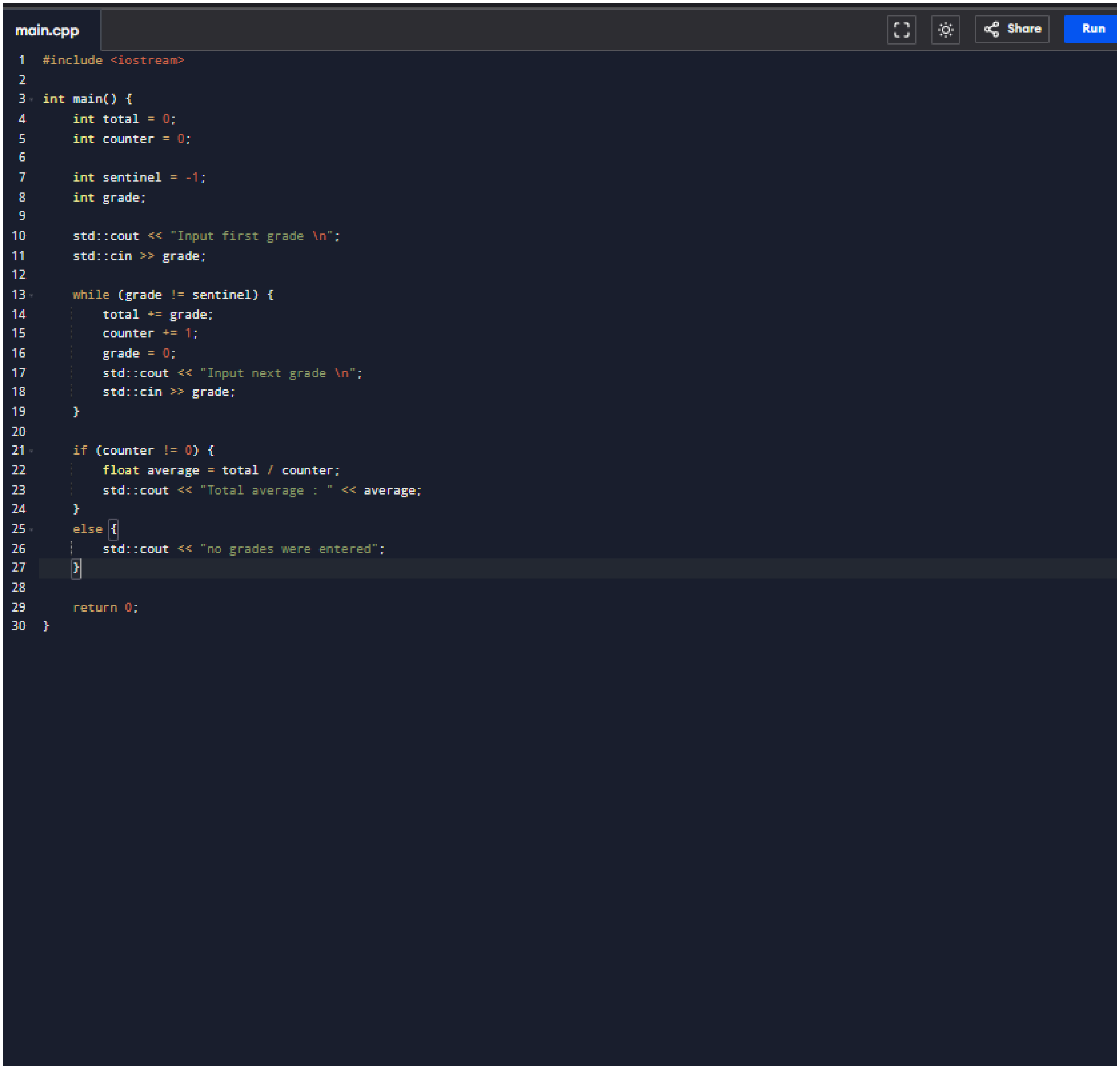


```
Enter age:
18
Your fare will be discounted by 8%
Your fare will be 8.28 php

=== Code Execution Successful ===
```



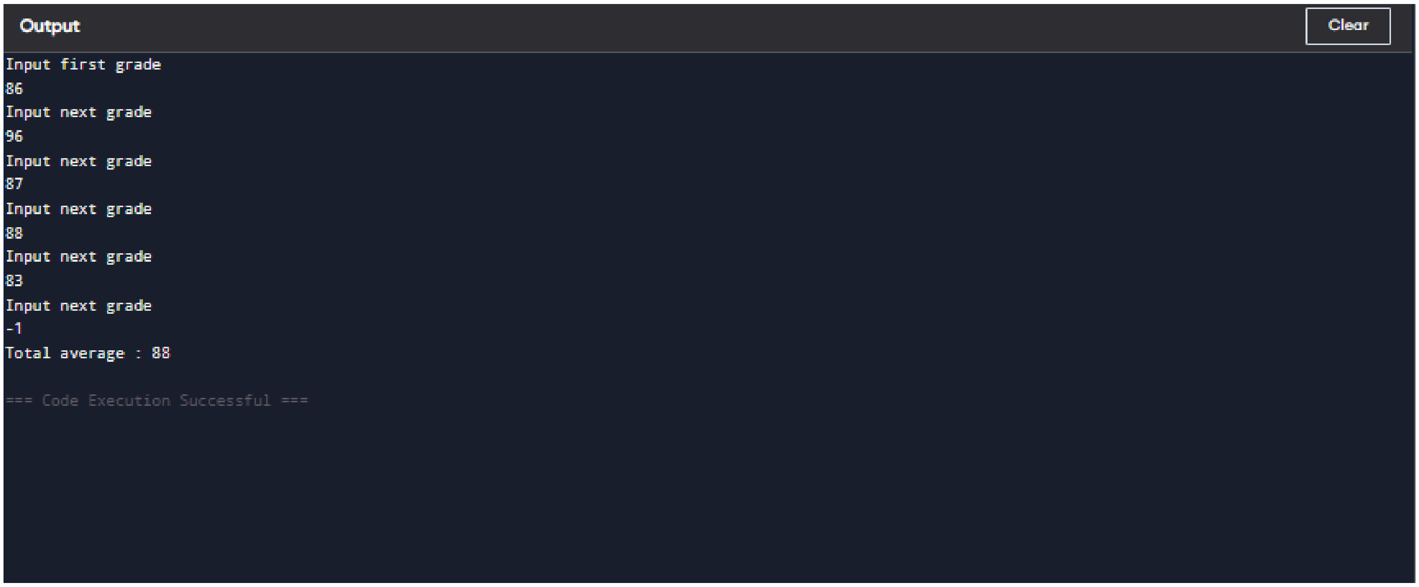
```
Enter age:
67
Your fare will be discounted by 10%
Your fare will be 8.1 php

=== Code Execution Successful ===
```

3.**Case Study**: Sentinel Controlled Repetition. Given the following pseudocode, create a program that will implement a sentinel controlled repetition. For example, you can use (-1) as the sentinel value. You can use Problem 1 as your reference.

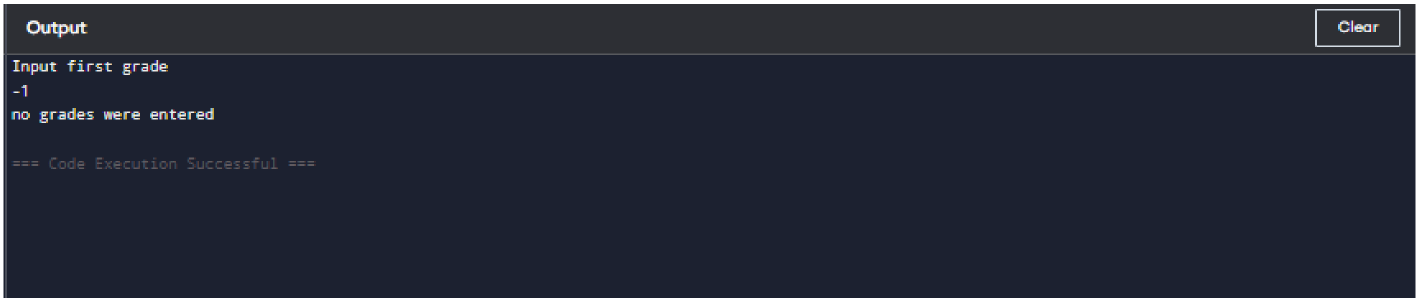


```cpp
#include <iostream>

int main() {
    int total = 0;
    int counter = 0;

    int sentinel = -1;
    int grade;

    std::cout << "Input first grade \n";
    std::cin >> grade;

    while (grade != sentinel) {
        total += grade;
        counter += 1;
        grade = 0;
        std::cout << "Input next grade \n";
        std::cin >> grade;
    }

    if (counter != 0) {
        float average = total / counter;
        std::cout << "Total average : " << average;
    }
    else {
        std::cout << "no grades were entered";
    }

    return 0;
}
```

Output:



```
Input first grade
86
Input next grade
96
Input next grade
87
Input next grade
88
Input next grade
83
Input next grade
-1
Total average : 88

=== Code Execution Successful ===
```



```
Input first grade
-1
no grades were entered

=== Code Execution Successful ===
```

8. Conclusion

While I have prior knowledge on how to make use of if else statements, this activity made me learn about different repetition. The first one being counter repetition where you will check if the counter has reached a certain amount. The other one being sentinel, this where you will input a certain number in order to stop the repetition.

9. Assessment Rubric