PROJECT 4

KIERAN YALLA

Test Case #	Input	Actual input	Expected Output	Actual Output	Did Test Pass?
1	3 id's and 3 regular days	3 1234 5 4567 0 9988 2	3 employees 7 days 2.333 average	3 employees 7 days 2.333 average	YES
2	Negative numbers or 0 for employee number	5 -1 0 -4 -6	"The number of employees must be 1 or more"	"The number of employees must be 1 or more"	YES
3	5 employees, different id's, all 0 days	5 690 0 1337 0 910 0 20 0 9 0	5 employees 0 days 0 average	5 employees 0 days 0 average	YES

SAMPLE OUTPUT #1:

```
Enter number of employees in the company : 3
Enter an employee ID: 1234
Enter the number of days missed/absent: 5
Enter an employee ID: 4567
Enter the number of days missed/absent: 0
Enter an employee ID: 9988
Enter the number of days missed/absent: 2


...Program finished with exit code 0
Press ENTER to exit console.
```

FILE OUTPUT #1:

```
1   ABSENCE REPORT
2
3   ID   Total Days missed
4   1234      5
5   4567      0
6   9988      2
7
8   The 3 employees were absent a total of 7
9
10  The average number of days absent is 2.33 days
11
12  Programmer: Kieran Yalla
13
```

SAMPLE OUTPUT #2:

```
Enter number of employees in the company : -1
Number of employees should not be less than 1
Enter number of employees in the company : 0
Number of employees should not be less than 1
Enter number of employees in the company : -4
Number of employees should not be less than 1
Enter number of employees in the company : -6
Number of employees should not be less than 1
Enter number of employees in the company : []
```

FILE OUTPUT #2: EMPTY

SAMPLE OUTPUT #3:

```
Enter number of employees in the company : 5
Enter an employee ID: 690
Enter the number of days missed/absent: 0
Enter an employee ID: 1337
Enter the number of days missed/absent: 0
Enter an employee ID: 910
Enter the number of days missed/absent: 0
Enter an employee ID: 20
Enter the number of days missed/absent: 0
Enter an employee ID: 9
Enter the number of days missed/absent: 0


...Program finished with exit code 0
Press ENTER to exit console.[]
```

FILE OUTPUT #3:

```
 1  ABSENCE REPORT
 2
 3  ID  Total Days missed
 4  690      0
 5  1337        0
 6  910      0
 7  20       0
 8  9        0
 9
10  The 5 employees were absent a total of 0
11
12  The average number of days absent is 0.00 days
13
14  Programmer: Kieran Yalla
15
```

FLOWCHART:

```
                    ┌─────────────┐
                    (   START     )
                    └──────┬──────┘
                           │
              ┌────────────▼───────────┐◄──────────────────┐
              │  Ask for # of employees│                   │
              └────────────┬───────────┘                   │
                           │                                │
                        ╱─────╲          no      ┌──────────────────────┐
                       ╱ is #   ╲────────────────►  output error message │
                       ╲positive?╱                └──────────────────────┘
                        ╲─────╱
                           │ yes
              ┌────────────▼───────────┐
              │  ask for employee id and│
              │       write in file     │
              └────────────┬───────────┘
                           │
              ┌────────────▼───────────┐◄──────────────────┐
              │    ask for absent days │                   │
              └────────────┬───────────┘                   │
                           │                                │
                        ╱─────╲          no      ┌──────────────────────┐
                       ╱is input╲────────────────►  output error message │
                       ╲0 or     ╱                └──────────────────────┘
                        ╲positive╱
                        ╲─────╱
                           │ yes
              ┌────────────▼───────────┐
              │ write total employees and│
              │       absent days       │
              └────────────┬───────────┘
                           │
              ┌────────────▼───────────┐
              │  calculate average of  │
              │      absent days       │
              └────────────┬───────────┘
                           │
              ┌────────────▼───────────┐
              │ write programmer name to│
              │          file           │
              └────────────┬───────────┘
                           │
                    ┌──────▼──────┐
                    (    EXIT     )
                    └─────────────┘
```
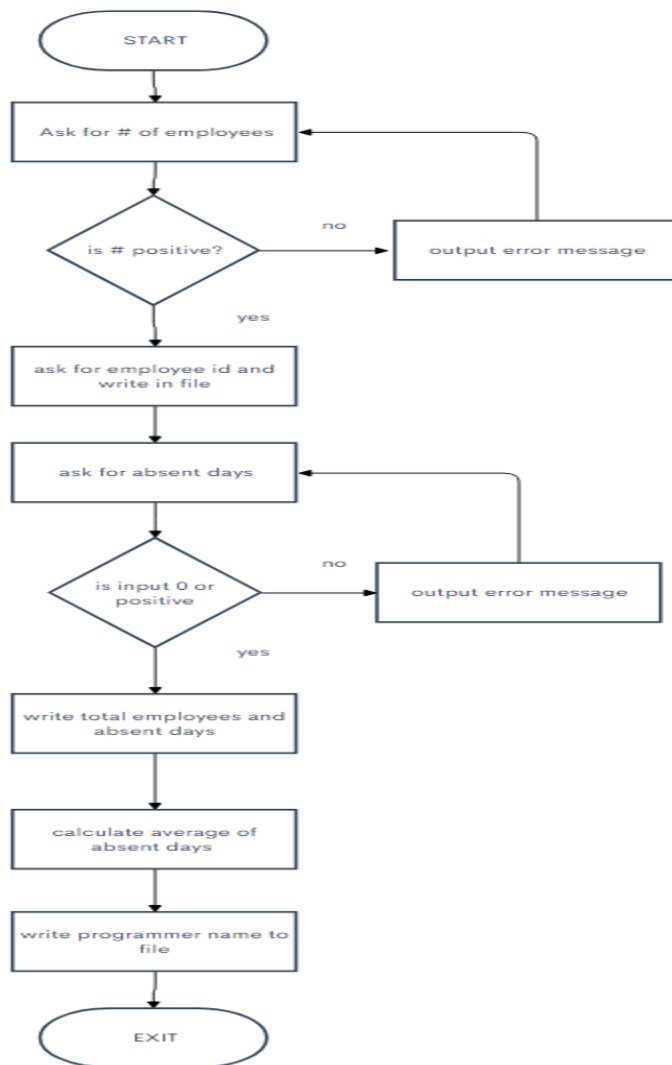
Lessons learned:

When passing an ofstream file as a parameter to a function, you cannot pass it as you would pass an int or a double since these are primitive data types in C++. An oftream file is an object, and if you pass an object as a parameter, you are passing by value. This means you pass a copy of the object, not the object itself.
When you create an object, like: ofstream file(filename)   the object is in memory, and file is a reference or a pointer to the object, like the address to your house.
When you pass this as parameter, you are creating a copy of your house, but it's not the same house. If you modify this new object, this new house, if you go back to your house, it's just like it was before, there's no change.

So, if you want the object, like the ofstream, to be modified, you need to pass it by reference, which means, pass the pointer to the object.