

# Project <4>

Common Project

PROGRAMMER: ODALIS R. FLORES

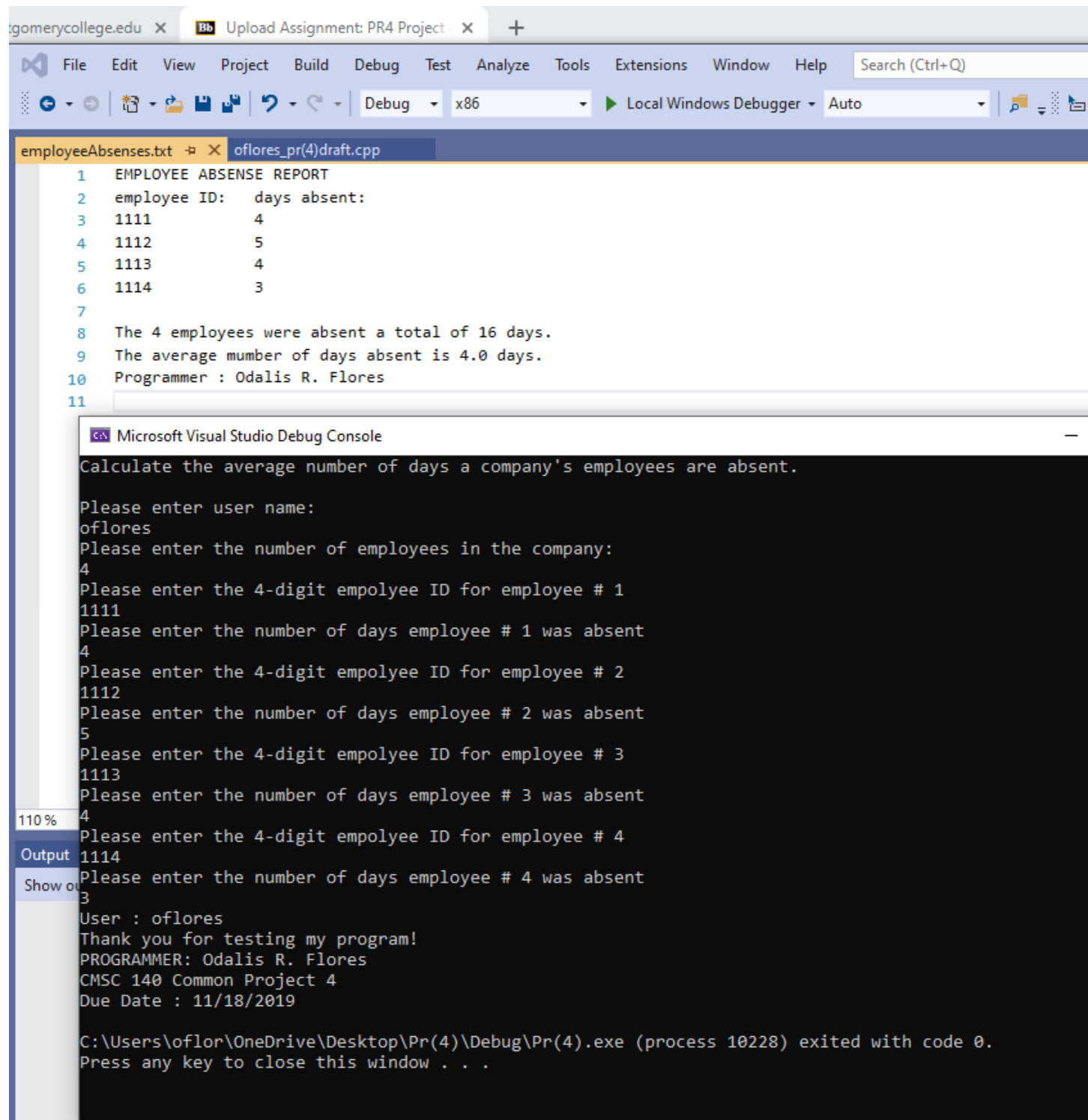
CMSC 140 CRN: 21714

DUE DATE: 11/18/2019

Test Case #	Input	Actual Input	Expected Output	Actual Output	Did the test pass?
1	Username: oflores No. of employees:4 Employee ID's/Days of absence: 1111 4 1112 5 1113 4 1114 3	Username: oflores No. of employees:4 Employee ID's/Days of absence: 1111 4 1112 5 1113 4 1114 3	Total: 16 Average: 4.0	Total: 16 Average: 4.0	Y
2	Username: oflores No. of employees:5 Employee ID's/Days of absence: 1234 2 2234 4 3234 6 4234 9 234 4	Username: oflores No. of employees:5 Employee ID's/Days of absence: 1234 2 2234 4 3234 6 4234 9 234 4	Total: 25 Average: 5.0	Total: 25 Average: 5.0	Y
3	Username: Odalis Flores No. of employees:2 Employee ID's/Days of absence: 0000 2 1111 -5	Username: Odalis Flores No. of employees:2 Employee ID's/Days of absence: 0000 2 1111 -5 / 5	Error message when entered -5 for absent days Total: 7 Average: 3.5	Error message when entered -5 for absent days Total: 7 Average: 3.5	Y
4	Username: John Travolta No. of employees:0 Employee ID's/Days of absence: 1234 5 1235 6 1236 1 1234 0	Username: John Travolta No. of employees:0 / 4 Employee ID's/Days of absence: 1234 5 1235 6 1236 1 1234 0	Error message when entered 0 for number of employees Total: 12 Average: 3.0	Error message when entered 0 for number of employees Total: 12 Average: 3.0	Y
5	Username: Lizzy McGuire No. of employees: -1 Employee ID's/Days of absence: 9999 1 8888 -3 7777 0 6666 -5	Username: Lizzy McGuire No. of employees: -1/ 4 Employee ID's/Days of absence: 9999 1 8888 -3 / 3 7777 0 6666 -5 / 5	Error message when entered -1 for number of employees  Error message when entered -3 for absent days  Error message when entered -5 for absent days Total: 9 Average: 2.3	Error message when entered -1 for number of employees  Error message when entered -3 for absent days  Error message when entered -5 for absent days Total: 9 Average: 2.3	Y

## Screenshots

### Test Case 1:



The screenshot displays the Visual Studio IDE with a C++ project named 'oflores\_pr(4)draft.cpp'. The code in the editor calculates the average number of days absent for four employees. The debug console shows the program's execution, including user input for employee IDs and days absent, and the final output of the average and a thank-you message.

```
1  EMPLOYEE ABSENSE REPORT
2  employee ID:   days absent:
3  1111           4
4  1112           5
5  1113           4
6  1114           3
7
8  The 4 employees were absent a total of 16 days.
9  The average number of days absent is 4.0 days.
10 Programmer : Odalis R. Flores
11
```

Microsoft Visual Studio Debug Console

```
Calculate the average number of days a company's employees are absent.

Please enter user name:
oflores
Please enter the number of employees in the company:
4
Please enter the 4-digit employee ID for employee # 1
1111
Please enter the number of days employee # 1 was absent
4
Please enter the 4-digit employee ID for employee # 2
1112
Please enter the number of days employee # 2 was absent
5
Please enter the 4-digit employee ID for employee # 3
1113
Please enter the number of days employee # 3 was absent
4
Please enter the 4-digit employee ID for employee # 4
1114
Please enter the number of days employee # 4 was absent
3
User : oflores
Thank you for testing my program!
PROGRAMMER: Odalis R. Flores
CMSC 140 Common Project 4
Due Date : 11/18/2019

C:\Users\oflor\OneDrive\Desktop\Pr(4)\Debug\Pr(4).exe (process 10228) exited with code 0.
Press any key to close this window . . .
```

## Test Case 2:

The screenshot displays the Microsoft Visual Studio IDE. The main editor window shows a C++ file named `oflores_pr(4)draft.cpp` with the following code:

```
1  EMPLOYEE ABSENSE REPORT
2  employee ID:   days absent:
3  1234           2
4  2234           4
5  3234           6
6  4234           9
7  234            4
8
9  The 5 employees were absent a total of 25 days.
10 The average number of days absent is 5.0 days.
11 Programmer : Odalis R. Flores
12
```

The Solution Explorer on the right shows the project structure for `Pr(4)`.

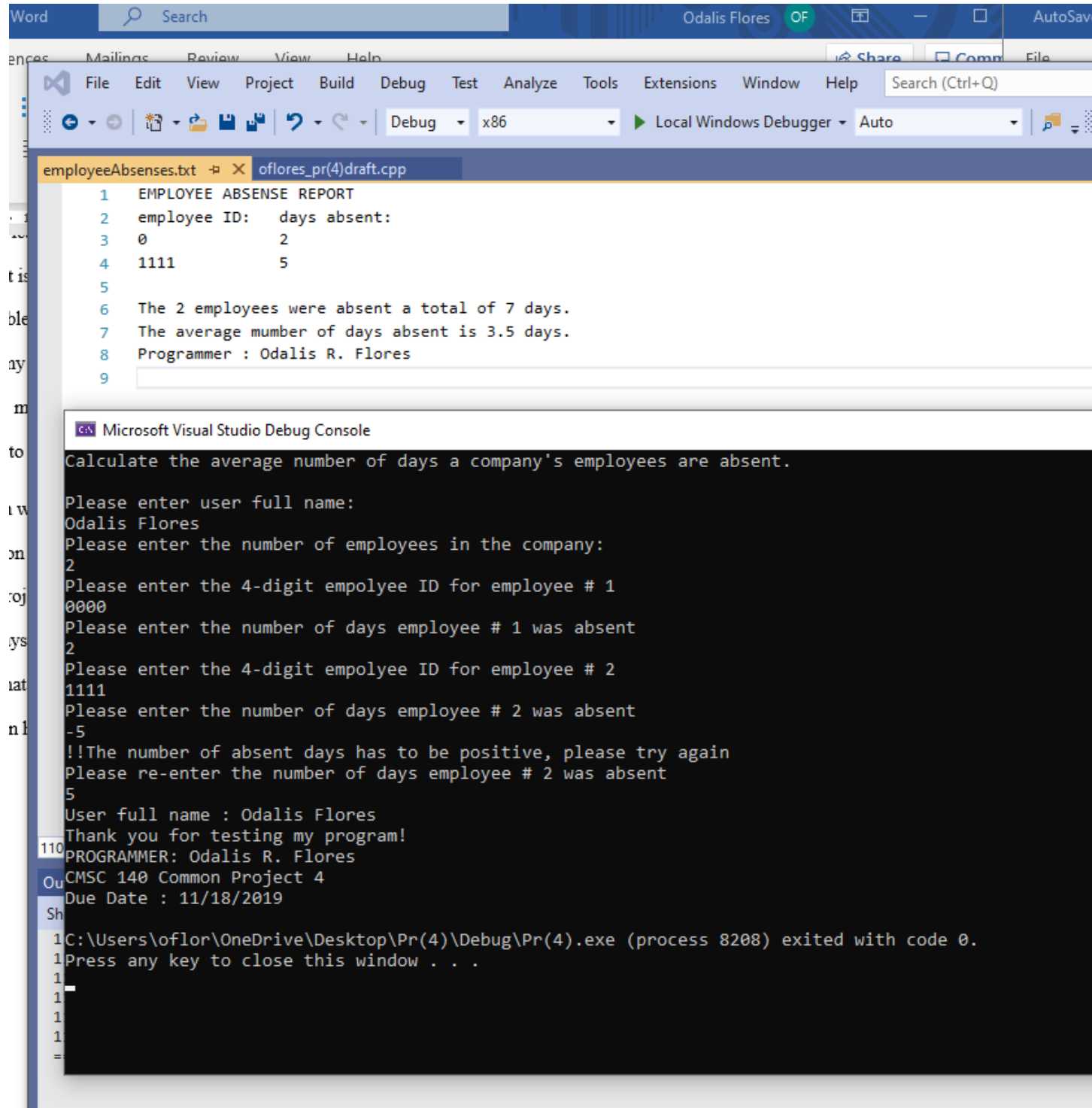
A "Select Microsoft Visual Studio Debug Console" window is open, showing the program's execution output:

```
5
Please enter the 4-digit employee ID for employee # 1
1234
Please enter the number of days employee # 1 was absent
2
Please enter the 4-digit employee ID for employee # 2
2234
Please enter the number of days employee # 2 was absent
4
Please enter the 4-digit employee ID for employee # 3
3234
Please enter the number of days employee # 3 was absent
6
Please enter the 4-digit employee ID for employee # 4
4234
Please enter the number of days employee # 4 was absent
9
Please enter the 4-digit employee ID for employee # 5
234
Please enter the number of days employee # 5 was absent
4
User : oflores
Thank you for testing my program!
PROGRAMMER: Odalis R. Flores
CMSC 140 Common Project 4
Due Date : 11/18/2019

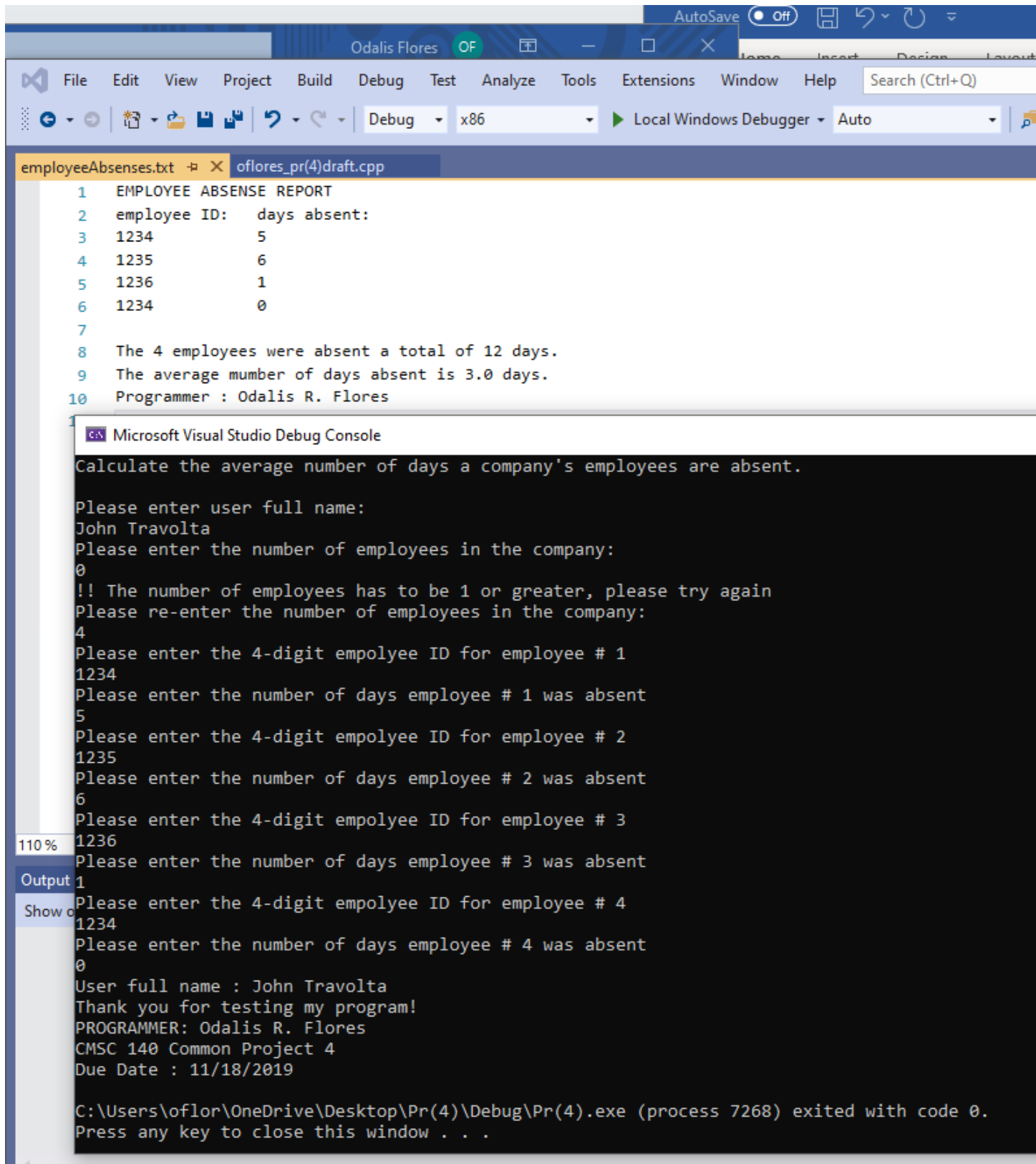
C:\Users\oflor\OneDrive\Desktop\Pr(4)\Debug\Pr(4).exe (process 18384) exited with code 0.
Press any key to close this window . . .
```

The bottom status bar shows the program is ready, with the current line being line 6, column 31, character 31, in the `INS` state.

### Test Case 3:



#### Test Case 4:



The screenshot displays the Microsoft Visual Studio IDE. The top menu bar includes File, Edit, View, Project, Build, Debug, Test, Analyze, Tools, Extensions, Window, and Help. The toolbar shows icons for file operations and debugging. The status bar at the bottom indicates the current configuration: Debug, x86, Local Windows Debugger, and Auto.

The active window is `oflores_pr(4)draft.cpp`, which contains the following C++ code:

```
1  EMPLOYEE ABSENSE REPORT
2  employee ID:    days absent:
3  1234           5
4  1235           6
5  1236           1
6  1234           0
7
8  The 4 employees were absent a total of 12 days.
9  The average number of days absent is 3.0 days.
10 Programmer : Odalis R. Flores
```

The Microsoft Visual Studio Debug Console shows the program's execution output:

```
Calculate the average number of days a company's employees are absent.
Please enter user full name:
John Travolta
Please enter the number of employees in the company:
0
!! The number of employees has to be 1 or greater, please try again
Please re-enter the number of employees in the company:
4
Please enter the 4-digit employee ID for employee # 1
1234
Please enter the number of days employee # 1 was absent
5
Please enter the 4-digit employee ID for employee # 2
1235
Please enter the number of days employee # 2 was absent
6
Please enter the 4-digit employee ID for employee # 3
1236
Please enter the number of days employee # 3 was absent
1
Please enter the 4-digit employee ID for employee # 4
1234
Please enter the number of days employee # 4 was absent
0
User full name : John Travolta
Thank you for testing my program!
PROGRAMMER: Odalis R. Flores
CMSC 140 Common Project 4
Due Date : 11/18/2019

C:\Users\oflor\OneDrive\Desktop\Pr(4)\Debug\Pr(4).exe (process 7268) exited with code 0.
Press any key to close this window . . .
```

### Test Case 5:

```
employeeAbsenses.txt  x oflores_pr(4)draft.cpp
1  EMPLOYEE ABSENSE REPORT
2  employee ID:   days absent:
3  9999           1
4  8888           3
5  7777           0
6  6666           5
7
8  The 4 employees were absent a total of 9 days.
9  The average number of days absent is 2.3 days.
10 Programmer : Odalis R. Flores
11

Select Microsoft Visual Studio Debug Console

Calculate the average number of days a company's employees are absent.

Please enter user full name:
Lizzy McGuire
Please enter the number of employees in the company:
-1
!! The number of employees has to be 1 or greater, please try again
Please re-enter the number of employees in the company:
4
Please enter the 4-digit employee ID for employee # 1
9999
Please enter the number of days employee # 1 was absent
1
Please enter the 4-digit employee ID for employee # 2
8888
Please enter the number of days employee # 2 was absent
-3
!!The number of absent days has to be positive, please try again
110 Please re-enter the number of days employee # 2 was absent
3
Please enter the 4-digit employee ID for employee # 3
7777
Please enter the number of days employee # 3 was absent
0
Please enter the 4-digit employee ID for employee # 4
6666
Please enter the number of days employee # 4 was absent
-5
!!The number of absent days has to be positive, please try again
Please re-enter the number of days employee # 4 was absent
5
User full name : Lizzy McGuire
Thank you for testing my program!
PROGRAMMER: Odalis R. Flores
CMSC 140 Common Project 4
Due Date : 11/18/2019
```

## Lessons learned

Common project number 4 allowed me to understand the concept of using functions. I learned that it is easier to use a function because it can be used many times within a program. I find that this is useful because it makes long codes become shorter and easier to read. I felt that if we had used functions for our last common project, it could've saved students more time when coding.

I also learned how to properly create a text file and send information directly to it so that it displays what is needed. In the processing requirements I found it helpful that it was mentioned to create a global variable of type ofstream. I felt that because that was mentioned I was able to use that variable anywhere in my program so when I created the function that asked for employee id and absent days I just made sense to me that I would use the global variable to display those variables in the text file. Then I was also able to use it in my main function with does the calculations.

I learned how to also use a for loop in a function and using parameters as the variable that is tested with in the function. I felt that it was easy to do since we had to use for loop in the last project. I wish we were able to do Boolean functions in this project to learn how to properly code for that type of function and see how it can be used with-in a program. There are some minor changes I would make to the project description, like on page 1 of document [CMSC140 Common Project4 Fall2019.docx](#), the section that says project specifications input for this project, I would add that user must enter their full name. I feel that this would eliminate some confusion in the output section. Overall, I felt this a great project to learn how to use global variables and functions with return values.



## Pseudocode Pr<4>

1. Start
2. Declare functions
  - a. numEmployees();
  - b. totDaysAbsent(int);
  - c. averageAbsent(double, double);
3. declare text file ofstream fout;
4. start main function
  - a. declare variables
    - i. numberOfEmployees
    - ii. sumOfnumOfAbsentDays
    - iii. average;
    - iv. PROGRAMMER\_NAME = "Odalis R. Flores";
    - v. DUE\_DATE = "11/18/2019";
    - vi. ASSIGNMENT\_NUMBER = 4;
    - vii. userName;
  - b. display program description = Calculate the average number of days a company's employees are absent
  - c. prompt user to enter user full name
  - d. get user full name
  - e. Open text file "EmployeeAbsent.txt"
  - f. Display header "EMPLOYEE ABSENT REPORT"

employee ID:	days absent:"
--------------	---------------
  - g. Call for function numEmployees and initialize return value to variable numberOfEmployees
  - h. Call for function totDaysAbsent with parameter set to numberOfEmployees and initialize return value to variable sumOfnumOfAbsentDays
  - i. Call for function averageAbsent with parameter set to numberOfEmployees and sumOfnumOfAbsentDays, initialize to variable average
  - j. Display "the numberOfEmployees number of employees were absent a total of sumOfnumOfAbsentDays. In text file "EmployeeAbsent.txt"
  - k. Display "the average of absent days is average" in text file "EmployeeAbsent.txt"
  - l. Display "Programmer: PROGRAMMER\_NAME"
  - m. Close text file PROGRAMMER\_NAME =
  - n. Display the users full name
  - o. Display thank you message: include
    - i. Programmer name
    - ii. Project number
    - iii. Due date
5. Define function numEmployees() with no parameter
  - a. Declare variable x
  - b. Prompt user to enter number of employees
  - c. Get number and store in variable x

- i. While x is less than 1
      1. ERROR MESSAGE
      2. Prompt user to enter number of employees
      3. Get number and store in variable x
      4. Repeat as long as while expression is true
    - d. Return value of variable x
6. Define function totDaysAbsent(int z) with parameter of data type integer and argument z
  - a. Declare variables
    - i. employeeID
    - ii. numOfAbsentDays
    - iii. sumOfnumOfAbsentDays initialize to value 0
  - b. start for loop, for int = count, if count is less than or equal to z, increment count
    - i. prompt user to enter 4-digit
    - ii. ID number for employee
    - iii. get employeeID
    - iv. display employeeID in text file "EmployeeAbsent.txt"
    - v. Enter the number of absent days for employee #
    - vi. Get numOfAbsentDays
      1. While numOfAbsentDays is less than 0
        - a. ERROR MESSAGE
        - b. Enter the number of absent days for employee #
        - c. Get numOfAbsentDays
        - d. Repeat as long as while expression is true
    - vii. Display numOfAbsentDays in text file "EmployeeAbsent.txt"
    - viii. Add the sum of numOfAbsentDays and initialize to variable sumOfnumOfAbsentDays
    - ix. Return value of sumOfnumOfAbsentDays
7. Define function double averageAbsent with parameters with two arguments a, b of data type double
  - a. Declare variable for averageOfAbs
  - b. Calculate b divided by a and initialize value to variable averageOfAbs
  - c. Return the value of variable averageOfAbs
8. End

