

CSCI 2010 Assignment 4

OBJECTIVES

This assignment has you work with pointers and dynamic memory.

INSTRUCTIONS

Write a program that can be used to gather statistical data about the number of new clients a team of insurance agents get in a month. The program should perform the following steps:

- a) Ask the user how many insurance agents are there in the team. An array of integers with this many elements should then be **dynamically** allocated.
:: This should be done in a **function**. The function should return at least the newly created array (using **pointer**).
- b) Allow the user to enter the number of new clients each insurance agent get into the array.
:: This should be done in a **function**. The function should return at least the updated array (using **pointer**).
- c) Calculate and display the data collected, the average, highest, and lowest of the values entered.
:: This should be done in a **function**. The function should return the values using **pointer**.
- d) **Input Validation**: Do not accept negative numbers for input for steps (a) & (b).

Estimated time: **5 hours**

SAMPLE RUN

Your output should look similar to the following. Things in bold are typed by the user.

```
How many insurance agents are there in the team? 10
```

```
Enter the number of new clients each agent managed to get.
```

```
Agent 1: 9  
Agent 2: 7  
Agent 3: 5  
Agent 4: 8  
Agent 5: 15  
Agent 6: 3  
Agent 7: 4  
Agent 8: 5  
Agent 9: 6  
Agent 10: 13
```

```
REPORT
```

```
-----
```

```
Number of clients (data collected): 9 7 5 8 15 3 4 5 6 13
```

```
The average number of clients: 7.5
```

The lowest number of clients: 3
The highest number of clients: 15

Submission instructions:

You need to compile the above program, and provide **two test cases** (if applicable). Do a screen capture of the input and related output for each test case. Use any graphic editing software (e.g. Microsoft Paint, Adobe Fireworks) to cut out the program input and output (from the screen capture), paste them into a word document under a related question number, save the document as a pdf file. A sample input/output (screen capture) can be found at the end of this document.

You need to submit the following:

1. A pdf file containing the screen captures of program input and output of all test cases, name the file **lastname_firstname_assignment04.pdf**.
2. A .cpp file **<my name>pass4.cpp** (e.g. lastname_firstname_pass2.cpp).

Please submit electronic copy (the above mentioned **two files**) to D2L digital dropbox.
If you cannot follow the above instructions, points would be deducted.

Grading guidelines (programming questions):

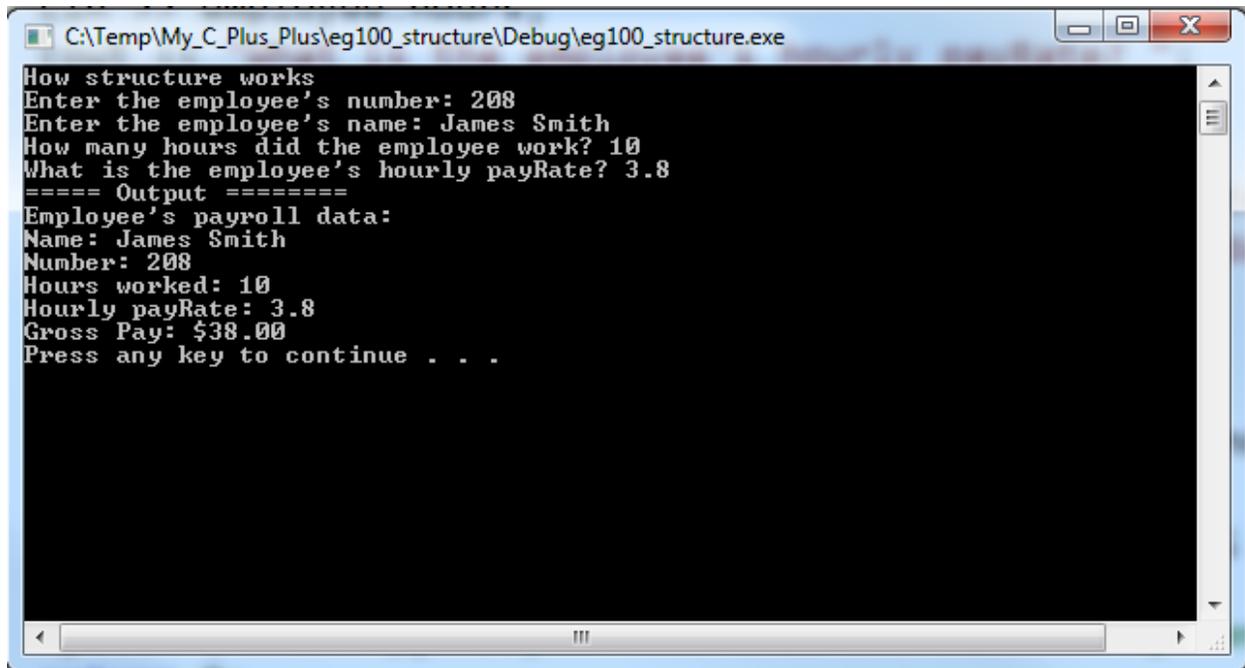
Your programs will be judged on several criteria, which are shown below.

- Correctness (50%): Does the program compile correctly? Does the program do what it's supposed to do?
- Design (20%): Are operations broken down in a reasonable way (e.g. classes and methods)?
- Style (10%): Is the program **indented** properly? Do variables have **meaningful names**?
- Robustness (10%): Does the program handle erroneous or unexpected input gracefully?
- Documentation (10%): Do all program files begin with a **comment** that identifies the author, the course code, and the program date? Are all the classes, methods and data fields clearly **documented (comments)**? Are unclear parts of code **documented (comments)**? (Some items mentioned may not apply to some languages)

A program that does not compile will get at most **50% of the possible points**.

Sample input/output (screen captures)

Assignment X, test case 1, input/output:



```
C:\Temp\My_C_Plus_Plus\eg100_structure\Debug\eg100_structure.exe
How structure works
Enter the employee's number: 208
Enter the employee's name: James Smith
How many hours did the employee work? 10
What is the employee's hourly payRate? 3.8
===== Output =====
Employee's payroll data:
Name: James Smith
Number: 208
Hours worked: 10
Hourly payRate: 3.8
Gross Pay: $38.00
Press any key to continue . . .
```

Screen capture must be readable by the instructor, or 0 point will be given.

Please note that you can use more than one screen captures for each test case.