

Task 1: software design and development (part C)

A top level design for the main steps of the program (with partial refinements) is shown below.

1	Read from file into parallel arrays.	OUT: company(), numEmployees(), ceoSalary()
2	Find and display the difference between the chosen company's CEO salary and the highest CEO salary.	IN: company(), ceoSalary()
3	Find and display the highest number of employees employed by a single company, and the number of companies who employ within 10% of that figure.	IN: numEmployees()

Refinements

- 2.1 Ask user to enter the name of chosen company
- 2.2 Set found to false
- 2.3 Call findMaxPos function to return the position of highest CEO salary
- 2.4 Loop for company array
 - 2.5 If current company is the chosen company
 - 2.6 Set found to true
 - 2.7 Set position to current index
 - 2.8 End if
- 2.9 End loop
- 2.10 If chosen company name is in list
 - 2.11 Subtract and store chosen company's CEO salary from highest CEO salary
 - 2.12 Display message containing name of company with highest CEO salary, name of chosen company, and difference in salaries
- 2.13 Else
 - 2.14 Display "Company not found"
- 2.15 End if

- 3.1 Call findMaxPos function to return position of highest number of employees
- 3.2 Set count to 0
- 3.3 Loop for numEmployees array
 - 3.4 If current employees is greater than or equal to maximum employees*0.9
 - 3.5 Set count to count + 1
 - 3.6 End If
- 3.7 End Loop
- 3.8 Display message showing number of companies that employ within 10% of the highest number of employees

- 1c Using the problem description and design, implement the program in a language of your choice.

You should:

- ◆ use a single function to find and return the position of the highest CEO salary, and the position of highest number of employees
- ◆ use procedures to:
 - read data from the 'companies.csv' file to parallel arrays
 - find and display the difference between the chosen company's CEO salary and the highest CEO salary
 - find and display the highest number of employees employed by a single company, and the number of companies who employ within 10% of that figure.
- ◆ test your program by using the chosen company Goldman

(15 marks)

Print evidence of:

- ◆ your program code
- ◆ program outputs from 1(c)

Include your name and candidate number on all evidence.

1d Step 2 of the program is tested with the following sample test data.

```
Grap,724,375000
Ver,163,1031000
Meto,728,816000
TelTo,252, 1031000
Selop,555,842000
Sever,307,569000
Lehar,805,564000
EastA,401,320000
```

(i) The refinement at 2.12 is shown below:

2.12 Display message containing name of company with highest CEO salary,
 name of chosen company, and difference in salaries.

Explain why the output from the refinements provided for step 2 would be incorrect if the sample test data was used with Selop as a chosen input.

(1 mark)

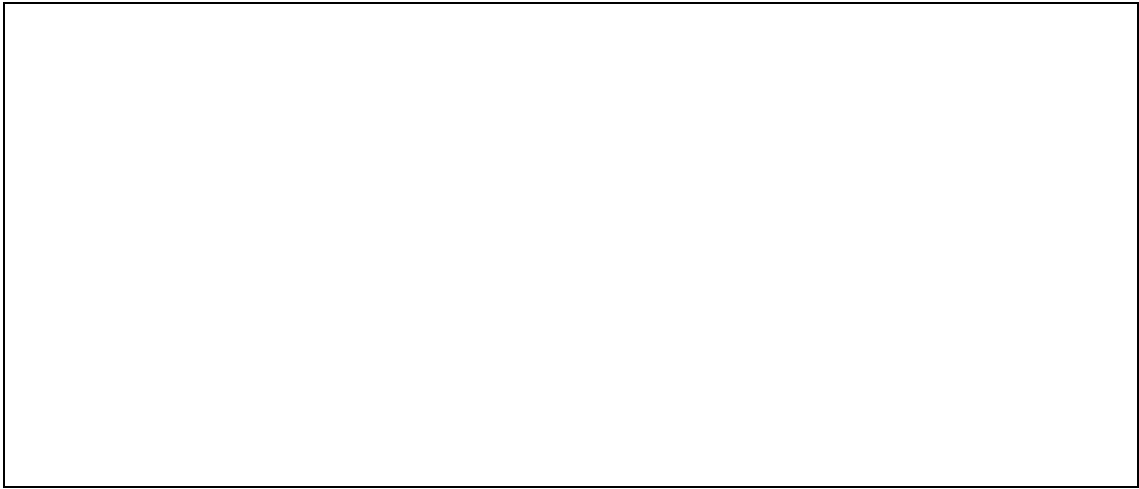
(ii) Describe the additional refinements that would be required before step 2.12 to ensure that the correct company name(s) are found.

(2 marks)

Candidate name_____ Candidate number_____

- 1e Evaluate the efficiency of your own program, with reference to the use of the `findMaxPos` function.

(1 mark)



Candidate name_____ Candidate number_____