RESIT ASSESSED LAB

You are to write a program that displays company information in terms of the company name and annual turnover (as a whole number to the nearest million pounds).

You will need Input.java, ArrayUtility.java and InsertionSort.java from the Library folder on Moodle.

You are required to implement a Company class, and a CompanyList class with appropriate attributes and methods. The main method should be in a class called CompanyListTest.

You should develop the program one step at a time and keep a copy of working versions.

For steps 1 and 2, you can assume that there is space available in the array to add a company object and that company names will be unique.

Step 1 (functionality is worth 5 marks)

- create a Company class with suitable attributes to represent the name and turnover
- create a CompanyList class that will maintain an array of Company objects
- create a main method in CompanyListTest that instantiates a CompanyList object and offers options to add a company and to display the details of the companies
- keep a copy of this version of the programme.

Step 2 (additional functionality is worth 8 marks)

- update the program to allow the company details to be sorted on turnover (in descending order) and if turnovers match then on company name (in ascending order). Company names should not be case sensitive.
- keep a copy of this version of the programme

Step 3 (additional functionality is worth 12 marks)

- update the program to use exception handing to trap attempts to overfill the array and to ensure that company names are unique
- calculate and display the total turnover across all the companies
- create JUnit classes to test the sorting of the data (step 2) and exception handling
- format the information to make the output more presentable
- e.g.

```
company name: IBM
turnover(to the nearest million): 500
company name: Apple
turnover(to the nearest million): 500
company name: Microsoft
turnover(to the nearest million): 1200
company name: Google
turnover(to the nearest million): 800
company name: Facebook
turnover(to the nearest million): 500
```

after sorting, the display should look like:

ANNUAL TURNOVER	COMPANY
1200	Microsoft
800	Google
500	Apple
500	Facebook
500	IBM
TOTAL 3500	

- keep a copy of this version of the programme

When complete (or time runs out)

- upload your work via Moodle
    - create a folder based on your Banner ID e.g. *B00123456*
    - copy the project folders for the different versions of the program into this folder
    - create a compressed zip version of this folder
        - in Windows Explorer, select the folder with the right button then select Send To then Compressed (zip) Folder
    - select the Resit Assessed Lab Submission link in the Resit Assessed Lab tab on Moodle and follow the instructions to upload the zip file

The lab is marked out of 30. In addition to the 25 marks for functionality, 5 marks will be for programming style. **Please note that overall mark will be capped at 40%**

Marking Scheme

		Max
Step 1		
	display array empty message if appropriate	1
	can add an object	1
	displays all objects	1
	only displays occupied slots	1
	traps invalid options	1
Step 2		
	sort on turnover	2
	in descending order	2
	if match sort on name	2
	in ascending order	1
	not case sensitive	1
Step 3		
	exception handling	
	check space in array	1
	suitable error message	1
	check name unique	1
	not case sensitive	1
	suitable error message	1
	calculate total turnover	2
	JUnit classes	2
	suitable formatting	
	annual turnover right adjusted	1
	company name left adjusted	1
	total turnover lines up	1
Style		
	Aode layout/indentation	1
	Meaningful names	1
	Appropriate use of public/private	1
	Use of this to identify object components	1
	Adherence to structured programming	1