

CSCI124/MCS9124 Applied Programming Autumn 2015

Lab 1 (1 mark)

Due at end of Week 2 Lab classes – last submit time of Thursday March 12 at 11:59pm.

Background:

The aim of this lab is to write a simple C++ program that tests your knowledge of previously learnt constructs in C++.

Task

Today it is not uncommon for customers to call a ‘call centre’ when they are looking to receive services from an institution. As you would expect customers would like to receive services over the phone as quickly as possible, so it comes as no surprise that call centres keep track of how long customers have to wait on the phone before they are greeted.

Below is some sample data from the Microsoft Call Centre

Microsoft	3.5	5.9	1	3.4	18.1	19	2.7	2.1	34	15	5	5.5
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The numbers represent the time taken (in seconds) to answer the phone and provide service to the customer. The elements of the record are separated by tabs with the line terminated by a newline byte. The names of such companies do not have any white spaces in them.

It turns out that Call Centres compete with one another and so there are a few awards. In this instance the organisation offering the awards gathers data like above from a number of organizations and puts it in a file.

Microsoft	3.5	5.9	6	3.4	18.1	19	2.7	2.1	34	15	5	5.5	
Intel	4.5	19.9	20	1	3	9.3							
SGI	4.6	6.7	9.1	1.1	3.4	1.2	0.5	5.5	3.4	2.3	1.1	9.9	8.1
Telstra	10.9	67.2	19.0	23.1	43.9								

You will notice in the file there are a number of companies along with a **finite number** (maximum would be 128) of wait times for each. The file can contain up to **two hundred** organisations.

Your mission is to write a program that does statistical analysis on such data. Your program should.

1. Prompt a user for the name of textfile which contains data representing organisations and waiting times as seen above. A sample text file is provided (`dataset.txt`).

2. The program has to read this data into a suitable data structure and for each organisation compute the mean and standard deviation.
3. For each organisation you need to print out the mean and standard deviation. *Do some research on Google to find out how to compute mean and standard deviation.*
4. It is well known that people do not like waiting, but where they have to wait studies have proven that they prefer less variation. This year the awards granting body is using this as the measure of success. Prior to termination, your program should print out the best performing organisation as demonstrated by the smallest standard deviation and the worst performing demonstrated by the largest standard deviation.

Your program should have appropriate functions; think about how best to break up the tasks. You should not have everything in main.

Place your solution to this problem in the file `lab1.cpp`.

Submission Procedure

You must be in attendance of the lab to submit the task. Non attendance at the lab will result in no mark being awarded. Tutors will be in the lab to help you with the task. Submission procedures are as follows.

```
submit -u USERNAME -c CSCI124 -a lab1 lab1.cpp
```

Marking for such tasks will be done on the basis of 0 for unsatisfactory, 0.5 for an ok attempt (satisfactory), and 1 for a good attempt.

Extensions will not be granted.