

## Homework 5: Arrays For Fun (and Profit!)

Make a program that takes in the daily profits of a small business, and uses them to perform some basic math. After an introduction, the program should ask the user how many days' worth of data it will have. The user should enter an integer. It will then ask for the profit realized on each day. Once it has this information, it will perform each of the following calculations:

1. The average profit.
2. The standard deviation\* of the profits.
3. The maximum profit.
4. Which day gave the maximum profit.
5. The minimum profit.
6. Which day gave the minimum profit.

Each of these calculations should be done in its own function, that takes a `double` array as an argument and returns a `double` or `int` answer.

Your program might look like this:

```
Welcome to the profit-calculation program.
How many days' data do you have? 5
What was the profit on...
Day 1? 45.30
Day 2? 55.42
Day 3? 36.21
Day 4? 99.50
Day 5? 6.32

Average profit was $48.55 (plus or minus $30.29623871044061).
The best day was Day 4, when you made $99.5.
The worst day was Day 5, when you made $6.32.
```

Note that your six functions should not print anything themselves. Rather, it is the `main()` function that does all the printing, using the values it receives back from the functions.

This program's class should be called `Business`. Like always, all previous stylistic comments still hold.

**Extra credit:** Find a way to format the printed values nicely, so that they all have two decimal places.

---

\*The calculation shown here uses the *unbiased* standard deviation:  $\sqrt{\sum(x - \bar{x})^2/n}$ . (That is, for every value in the array, subtract the average value  $\bar{x}$  and square the result. Then average all these squares, and finally take the square root.) However, you may divide by  $(n - 1)$  rather than  $n$  if you wish.