CST 383: Intro to Data Science
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NumPy basics

Purpose. A data scientist who uses Python needs to be fluent with NumPy. The purpose of this assignment is to help you build your NumPy skills.

Instructions. Download numpy-basics.py Open the file in Spyder. Read the instructions in the file and then edit the file to enter your answers. Your file will be graded by a script so please read the instructions in the file very carefully.

Hints. Here are some reminders from lecture. If we run this NumPy code:

```
x = np.array([1.5, 6.1, 3.2])
m = np.array([True, False, True])
s = 'anchovy'
```

then:

- `x.size` is the number of elements in x
- `x.sum()` is the sum of the values in x
- `x.mean()` is the average of the values in x
- numeric functions, like sum() and mean() will treat the values in m as if they were 1, 0, 1.
- for example, `m.sum()` is 2. What is `m.mean()`?
- m can be used as a boolean mask, so x[m] is an array with values 1.5, 3.2
- don't forget that slicing can be applied to strings, for example s[2:] is 'chovy'.

Testing. To test your code, download numpy-basics-testing.py and translate_to_functions.py and put them in the same folder with your numpy-basics.py file. Then run the command 'python numpy-basics-testing.py'.

- On a Mac: run this command in a terminal
- On a Windows machine: run this command in the Anaconda prompt

In either case, the current directory of the terminal must be the one where you have numpy-basics.py. Use the 'cd' command to change directory, if needed.

If the tests all pass, you will see output like this:

```
.............
----------------------------------------------------------------------
Ran 13 tests in 0.002s

OK
```

Please note that the test set only has tests for certain problems, and, even for problems that have tests, the test set is not complete. This testing code is new; please let me know about any problems you have.

Submission. Submit your edited numpy-basics.py on Canvas.

Grading. Each problem is worth one point.

You can use the assignments channel of our Slack team to ask for clarification about homework problems, but please don't post answers or hints.