DSC 20 Discussion Section 10/04

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About Me

- Arda C. Bati (Call me Arda)
- The TA of the course
- Electrical & Computer Engineering Department
- M.S. in major: Machine Learning & Data Science
- Office Hours: Wednesday 11:15am – 2:15pm

Today's Plan

- A few general questions
- Going over the reading quizzes
- Talking about doctests
- Doing some algorithm questions

General Questions

How is the course going for you so far?

- A) Really good
- B) Good
- C) It's ok
- D) A bit problematic
- E) It feels hard

General Questions

What do you think about the HW & Labs until now:

- A) Very easy
- B) Easy
- C) Just right
- D) Somewhat hard
- E) Very hard

Reading Quizzes

- I assume reading quiz #1 was ok for everyone
- I will post the quiz answers after the discussion
- Let's take a quick look at quizzes 2&3

Reading Quiz Answers

QUIZ 1	QUIZ 2	QUIZ 3
1. B, C	1. E	1. F
2. A	2. C	2. E
3. A	3. A	3. B
4. C	4. B	4. C
5. D	5. C	5. D
6. C	6. A	6. B
7. C	7. C	7. D
8. A	8. D	8. A
9. A	9. C	9. C
10. B	10. A	10. A

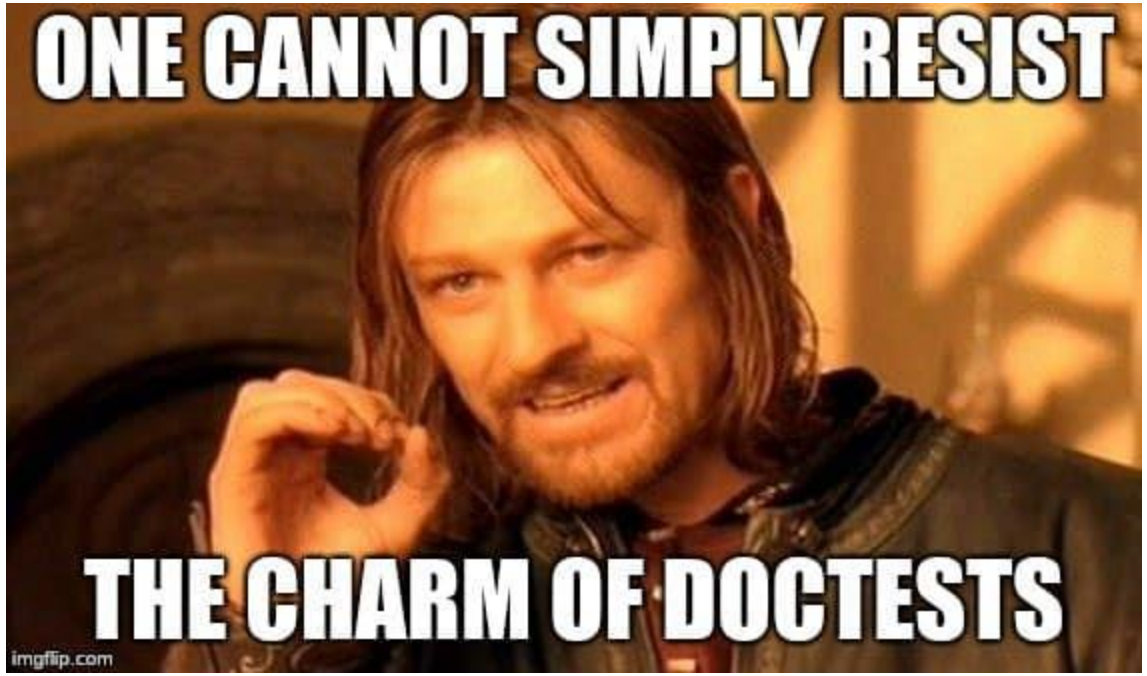
Note:

The answers were briefly explained during the discussion section.

If you have questions, please come to the office hours!

Doctests

- A simple and very effective tool for testing
- Very easy to write
- Do not directylu interfere with the code
- Unless you call the doctest command, it is as if they are not there
- Quite readable
- In general, a good early stop gap against bugs



Doctests

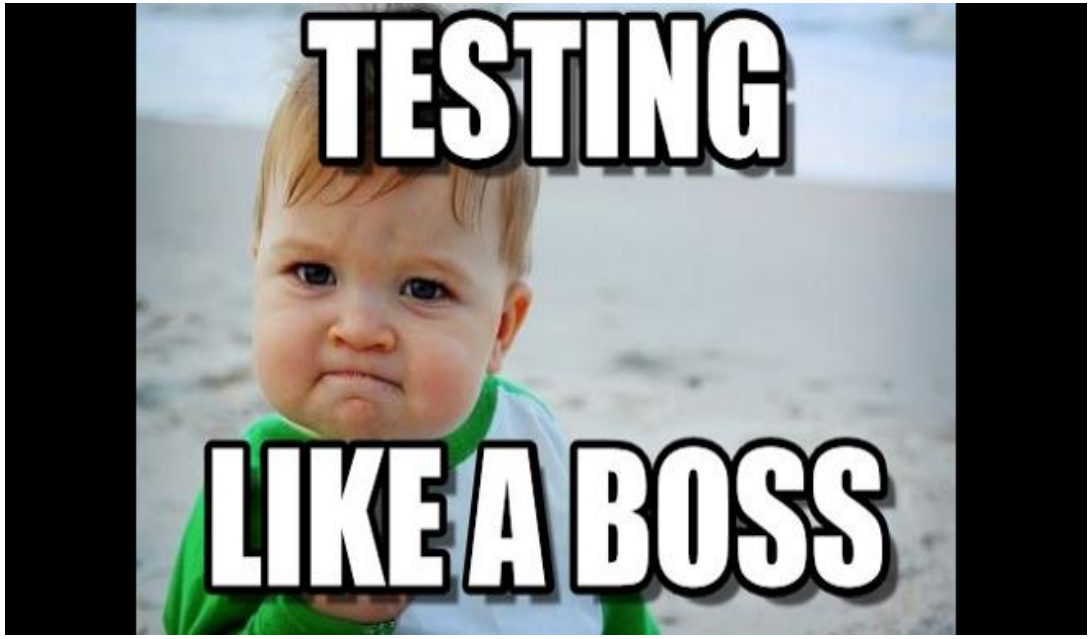
- Testing, often overlooked is what separates

Very good programmers from normal ones

- Even for the smallest functions, that may seem insignificant, never forgo tests

- The power of bugs:

https://royal.pingdom.com/10-historical-software-bugs-with-extreme-consequences/



Doctests

```
def test1():
    """
    >>> dummy1()
    test
    """
    return 'test'
```

```
def test2():
    """
    >>> dummy2()
    test
    """
    print('test')
```

```
def test3():
    """
    >>> dummy3()
    None
    """
    return None
```

iClicker: After running doctest

A) No output

B) Failed test

Doctests

```
def test1():
    """
    >>> dummy1()
    """
    return 3+None
```

```
def test2():
    """
    >>> dummy3()
    """
    3+5
```

```
def test3():
    """
    >>> dummy3()is None
    True
    """
    return None
```

iClicker: After running doctest

A) No output

B) Failed test / error

Doctests

- When planning out doctests
- A) Usual Cases
- B) Edge Cases

Example: Think of a function about determining subsets

[1, 2] subset of [1,2,3]

[ ] subset of [1,2,3]

[1,2,3,4,5] subset of [ ]

Thinking about a function on slope: Infinite slope would be the edge case

Algorithm Questions

Given 4 points in the 2D coordinate plane, which are forming a rectangle:

Write in plain English an algorithm to find the midpoint of the rectangle

Assume all points during this discussion section to be in 2D (ie. p = (x,y))

Algorithm Questions

Given 3 points in the 2D coordinate plane:

Write in plain English an algorithm that returns True if they are colinear, False Otherwise

Assume the points are distinct, and there are no infinite slopes

Assume you have the slope function from HW1

You can also assume you have a function triangle_area(p1,p2,p3), that returns the area formed by the 3 points

Algorithm Questions

Given 4 points in the 2D coordinate plane

Write an algorithm that returns True if they form a rectangle, false otherwise

Assume you have a line_length function that gives you the distance between the line segment between two points.

Hint: There are many ways to solve this problem, but there is an easy way using the midpoint of the rectangle and the line length function