Testing

Coding versus Testing

Testing in Practice

Testing Your Own Code

Types of Testing

- **Unit Tests**
  - Test individual methods to make sure they work correctly.
- **Integration Tests**
  - Test that different methods, when combined together, work correctly.
- **End-to-End Tests**
  - Test the entire piece of software as a unit to see what happens.

Unit Tests

General Testing Tip #1

Assume the code to test
is a black box of lies!

General Testing Tip #2

Design different test cases to cover different expected results.

General Testing Tip #3

Make sure your test cases cover a representative sample of the inputs.

General Testing Tip #4

Make your test cases structurally different to avoid bias.

General Testing Tip #5

Test edge cases: extreme cases often break methods!

General Testing Tip #6

Testing rarely shows the *absence* of bugs. It only shows the *presence* of bugs.

Once You Find a Bug

Time-Out for Announcements!

Assignment 4

- Assignment 4 is due in a week (next Wednesday at 3:15PM).
- **Recommendation:** Implement the first two steps by Friday.
  - These are a bit tricky – start them early!
  - Stop by the LaIR with questions!
- Review session this Thursday from 5:30PM – 6:30PM in Hewlett 200.

A Reminder: Honor Code

Midterm Grading

- We'll grade the midterm this Saturday.
- Graded midterms should be returned on Monday.
- SCPD students: we'll try to get exams sent back to you ASAP.

Back to CS106A!

Just for Fun: Testing Techniques

Fuzz Testing

- Try running the program/method on randomly-generated inputs.
- Surprisingly effective at smoking out bugs in complex code with lots of interactions.
- Challenge: how do you know whether you've found a bug or not?