Is our Code “Correct”?

• Formal Verification
  • What’s good about it?
  • What’s bad about it?
  • Where might this be used?

• Testing
  • What’s good about it?
  • What’s bad about it?
  • Where might this be used?
  • What is “Unit Testing”?
  • What is “Integrated Testing”?
JUnit

- What is JUnit?
  - Used on our Submission Server
- When are tests written?
- Where are they kept?
- How long are they kept?
Assertions

• `assertTrue(<boolean expression>)`
• `assertFalse(<boolean expression>)`
• `assertEquals(x, y)`
• Many others
Demonstration: AddNumbers

This class has some bugs. Let’s test it with JUnit!

public double addDoubles(double a, double b)
returns sum of a and b

public String returnName(String c, String d)
returns a concatenated string
Recommendations

- Lots of tests!
- Keep test code “simple”
Observations

• Tests are run in an arbitrary order!
• Two ways to fail:
  • Failing an assertion
  • Throwing an exception (more about this later)
• All tests will run, even if one (or more) fail
• If an assertion fails, the test is aborted. (Subsequent assertions are not attempted).

• Note: Project #3 does NOT lend itself to use of JUnit.