Software Quality FS 2010

Exercise 2 - Discussion

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Outline

- Frequent problems in exercise 2
- Introduction to exercise 3
- Formalities for the exam

Exercise 2

- In general, well solved
- Good discipline within the development environment
  - 1 broken build, fixed within 10 minutes
  - 1 ticket left open
  - (useful) commit comments

- ImageJ's quality in use VS ImageJ's internal quality
- http://imagejdev.org/

Exercise 2.2
Modularity and Testing

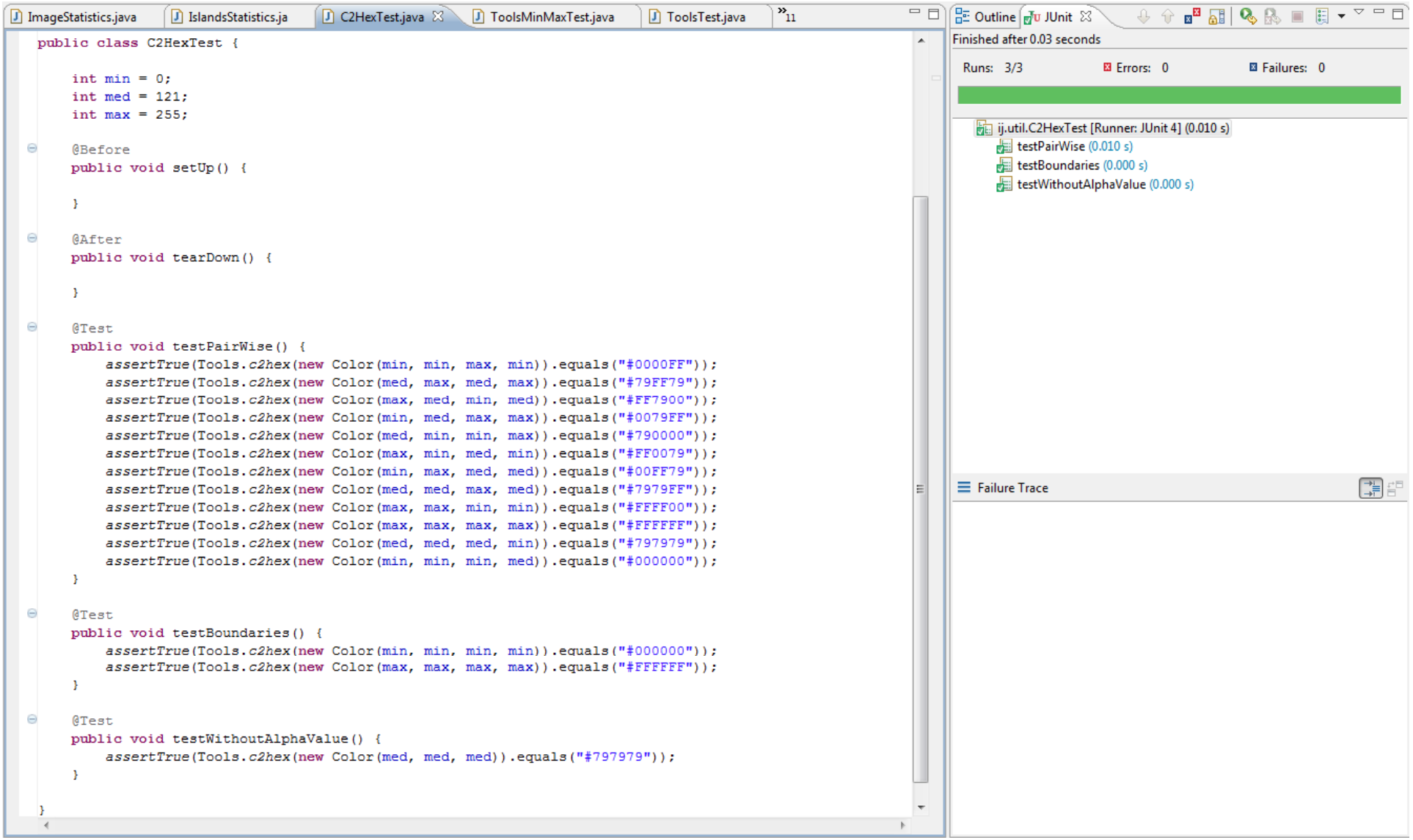
Modularity:

- Allows decomposition of a system into simpler pieces & understanding that system in terms of these pieces
- Confines the search for a fault / an enhancement to a single module

  "Heavy reading and browsing of the original source code was required to even understand how to setup a test and then run it. "
- Drives the testing process: unit tests, integration tests, system tests
- Implementation units ≠ architectural components
- Allows the composition of systems from pieces (**reuse**)
- **MVC** is only one possible pattern for decomposing applications

Exercise 2.3

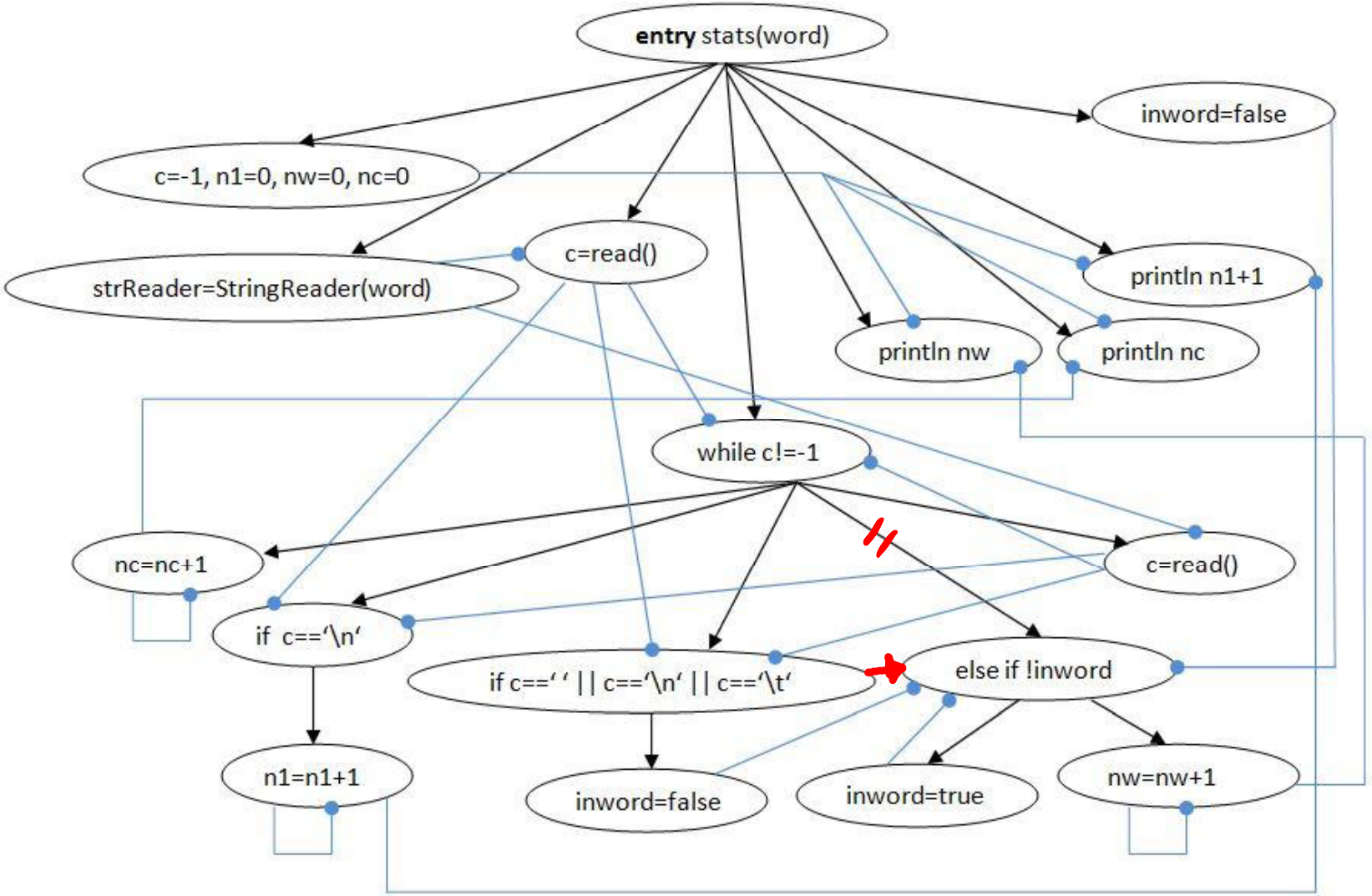
JUnit: 1 Test case = 1 Test method




```
public class C2HexTest {

    int min = 0;
    int med = 121;
    int max = 255;

    @Before
    public void setUp() {

    }

    @After
    public void tearDown() {

    }

    @Test
    public void testPairWise() {
        assertTrue(Tools.c2hex(new Color(min, min, max, min)).equals("#0000FF"));
        assertTrue(Tools.c2hex(new Color(med, max, med, max)).equals("#79FF79"));
        assertTrue(Tools.c2hex(new Color(max, med, min, med)).equals("#FF7900"));
        assertTrue(Tools.c2hex(new Color(min, med, max, max)).equals("#0079FF"));
        assertTrue(Tools.c2hex(new Color(med, min, min, max)).equals("#790000"));
        assertTrue(Tools.c2hex(new Color(max, min, med, min)).equals("#FF0079"));
        assertTrue(Tools.c2hex(new Color(min, max, med, med)).equals("#00FF79"));
        assertTrue(Tools.c2hex(new Color(med, med, max, med)).equals("#7979FF"));
        assertTrue(Tools.c2hex(new Color(max, max, min, min)).equals("#FFFF00"));
        assertTrue(Tools.c2hex(new Color(max, max, max, max)).equals("#FFFFFF"));
        assertTrue(Tools.c2hex(new Color(med, med, med, min)).equals("#797979"));
        assertTrue(Tools.c2hex(new Color(min, min, min, med)).equals("#000000"));
    }

    @Test
    public void testBoundaries() {
        assertTrue(Tools.c2hex(new Color(min, min, min, min)).equals("#000000"));
        assertTrue(Tools.c2hex(new Color(max, max, max, max)).equals("#FFFFFF"));
    }

    @Test
    public void testWithoutAlphaValue() {
        assertTrue(Tools.c2hex(new Color(med, med, med)).equals("#797979"));
    }

}
```

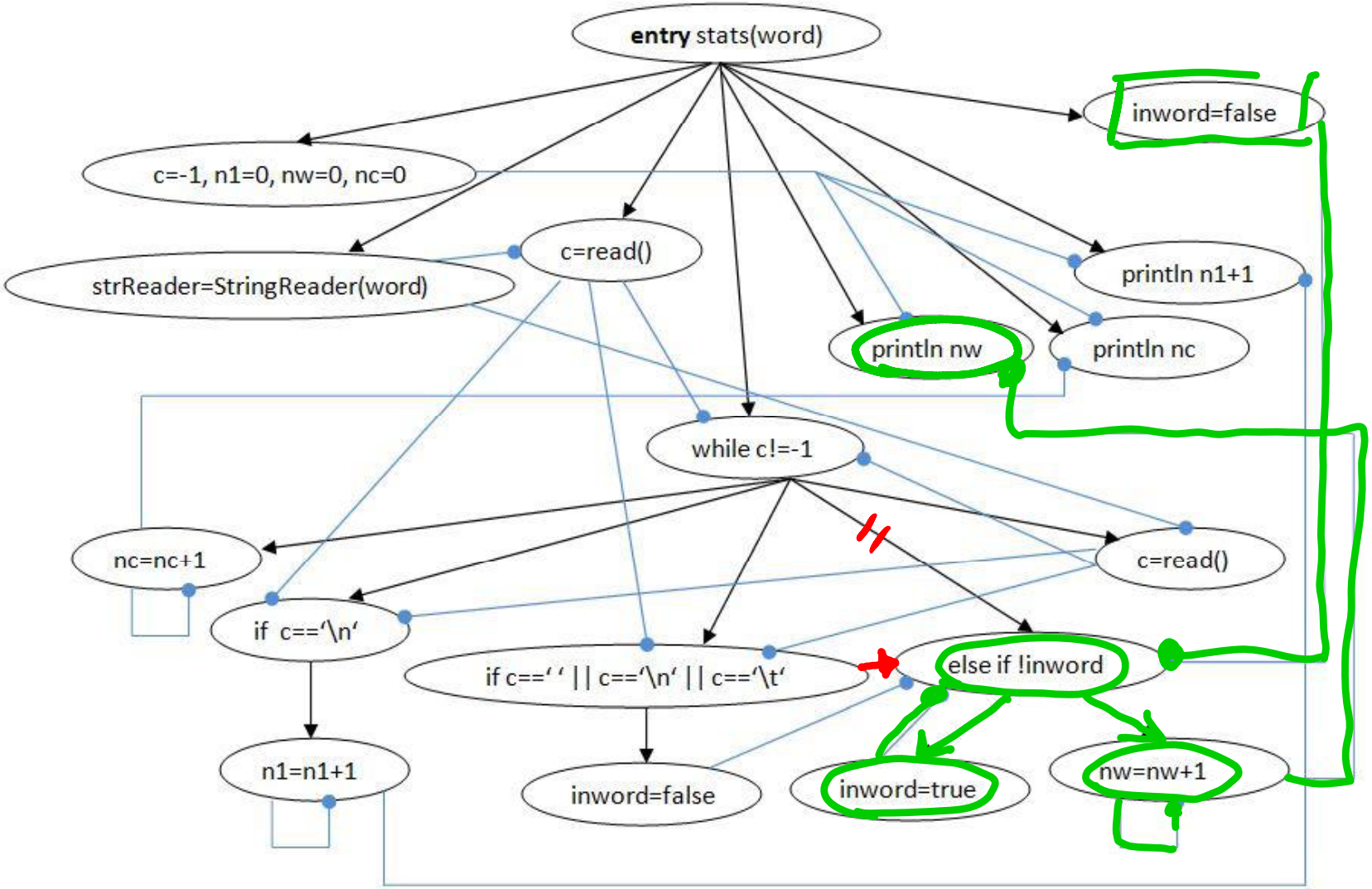
Exercise 2.5

Static Analysis – PDG



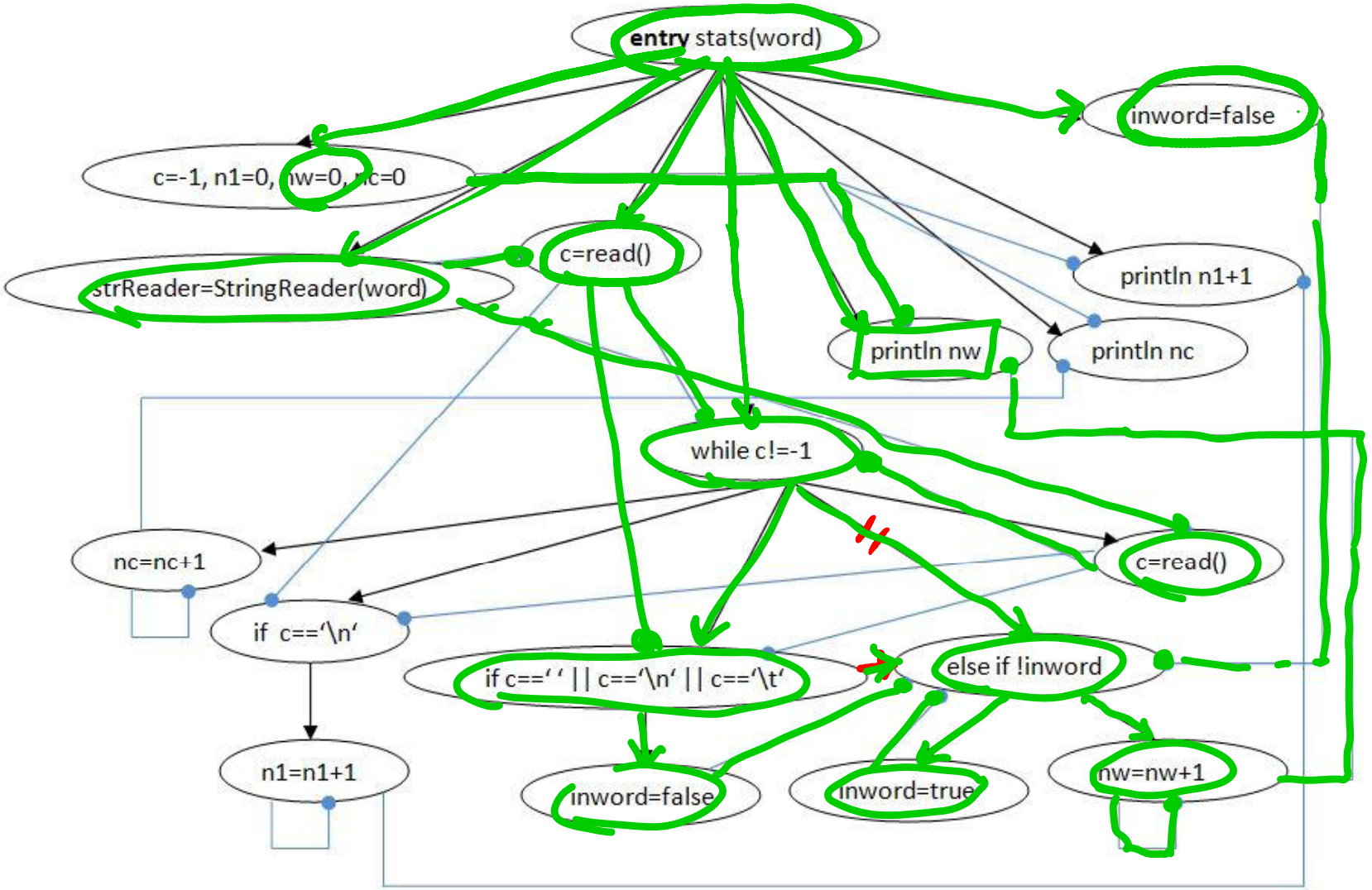
Exercise 2.5

Static Analysis – Forward Slice



Exercise 2.5

Static Analysis – Backward Slice



Exercise 2.6
Hypothesizing about a defect

Hypothesis 1: All numbers are translated with a unit (1) less.

#	Test Input	Expected Output	Actual Output	Test Result
1	9	IX	IX	PASS
2	16	XVI	XV	FAIL
3	21	XXI	XXI	PASS

All tests should fail. Reject hypothesis 1, because of test cases 1 and 3.

Exercise 3

- Defining & Achieving Quality
  - Use of standard ISO / IEC 9126-1
    - Printed copies available in my office (BIN 2.B.17)
- Wiki contributions
  - Tutorials and sample solutions
  - Peer-reviewed during the assignment
    - Stay on schedule!

Exam

Location: BIN 2.A.10

Date: Monday June 7, 2pm

Duration: 90 minutes

Language: German

Structure: 1/3 MCQ, 1/3 Case study and 1/3 Essay

- Sample exam is available on the lecture's website

Scope: Lecture's slides + Exercises

Cheat sheet: 1 double-sided handwritten A4 page