Josh Harbison
Reading Response Wk. 5
CM: 2229

1)

Equivalence relation is important because in order for an object to participate in collections it must be reflexive, symmetric, and transitive or else unseen bugs could develop.

2)

The first layer performs “inter-procedural, path-based data-flow analyses to check for possible low-level error” while the second layer builds an Alloy model by “recognizing the various abstractions involved in defining equality”.

3)

There was a reflexivity violation.

4)

Java types are modeled as sigs while inheritance is modeled by sig-extensions.

5)

Fields are modeled as fields in the appropriate sigs with primitive types being modeled as Alloy Ints while reference fields are modeled as Alloy signature RefFrield with 0 representing null.

6)

They were modeled as nondeterministic functions.

7)

First EQ searches for methods that override Object.equals() then for each of the receiver classes, EQ analyzes it by applying a path enumeration algorithm to the control flow graph.

8)

Loop Unrolling is a strategy to produce paths where a loop condition is evaluated to the same truth value at most once. It is important to EQ because it generates a minimal set of paths while preserving the semantics of the original control flow.

9)

230 including false alarms

10)

it was returning false when it should have been returning true, resulting in a violation of reflexivity.

11)

12)