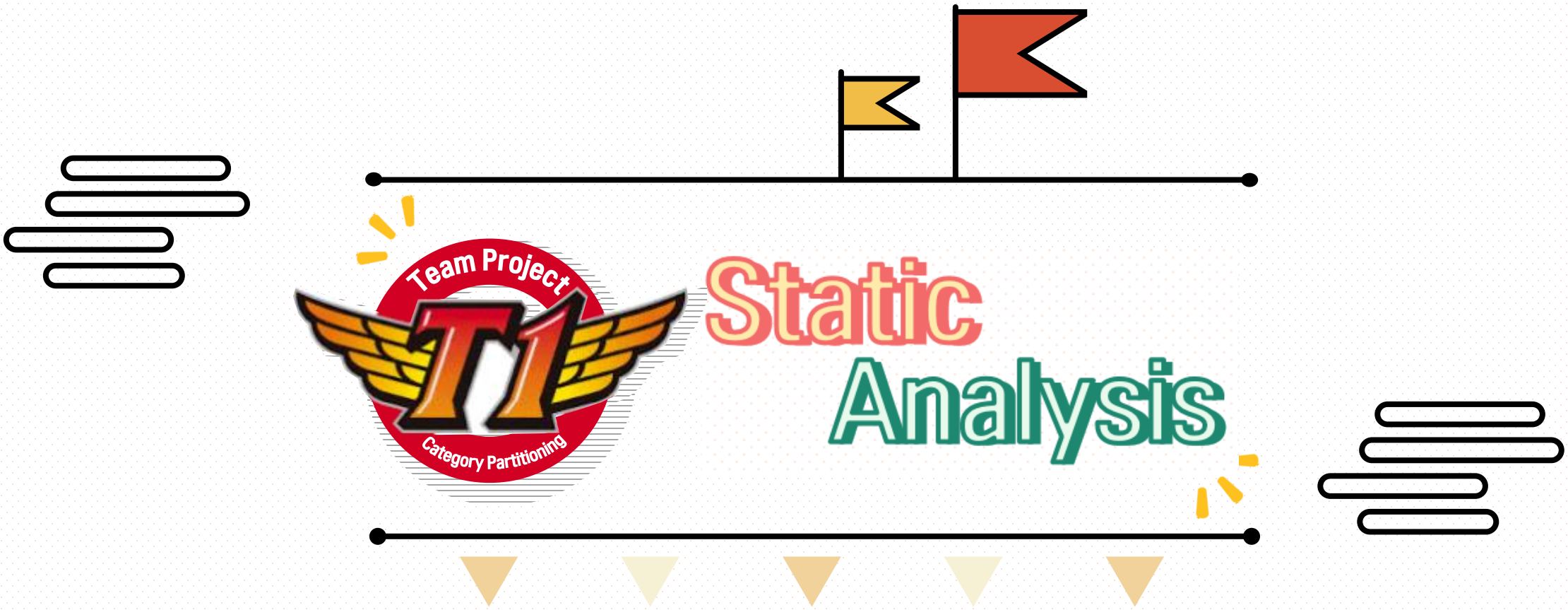

Team Project
Category Partitioning
Static
Analysis

오늘의 발표자

'김동권'

2013122243

Team Project

T1

Category Partitioning

INDEX

01 Implement &Unit test

02 Check Style

03 Find Bugs

04 Metrics

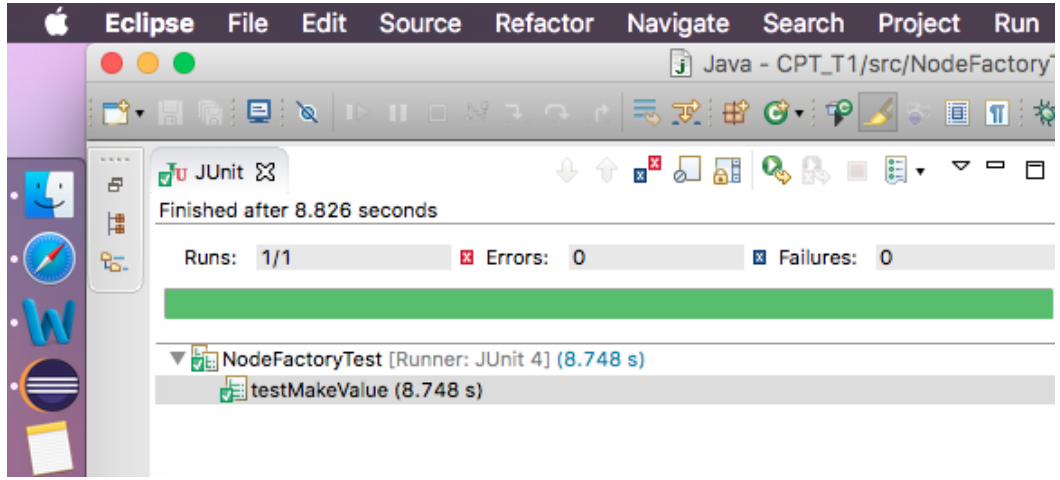
1 Implementation

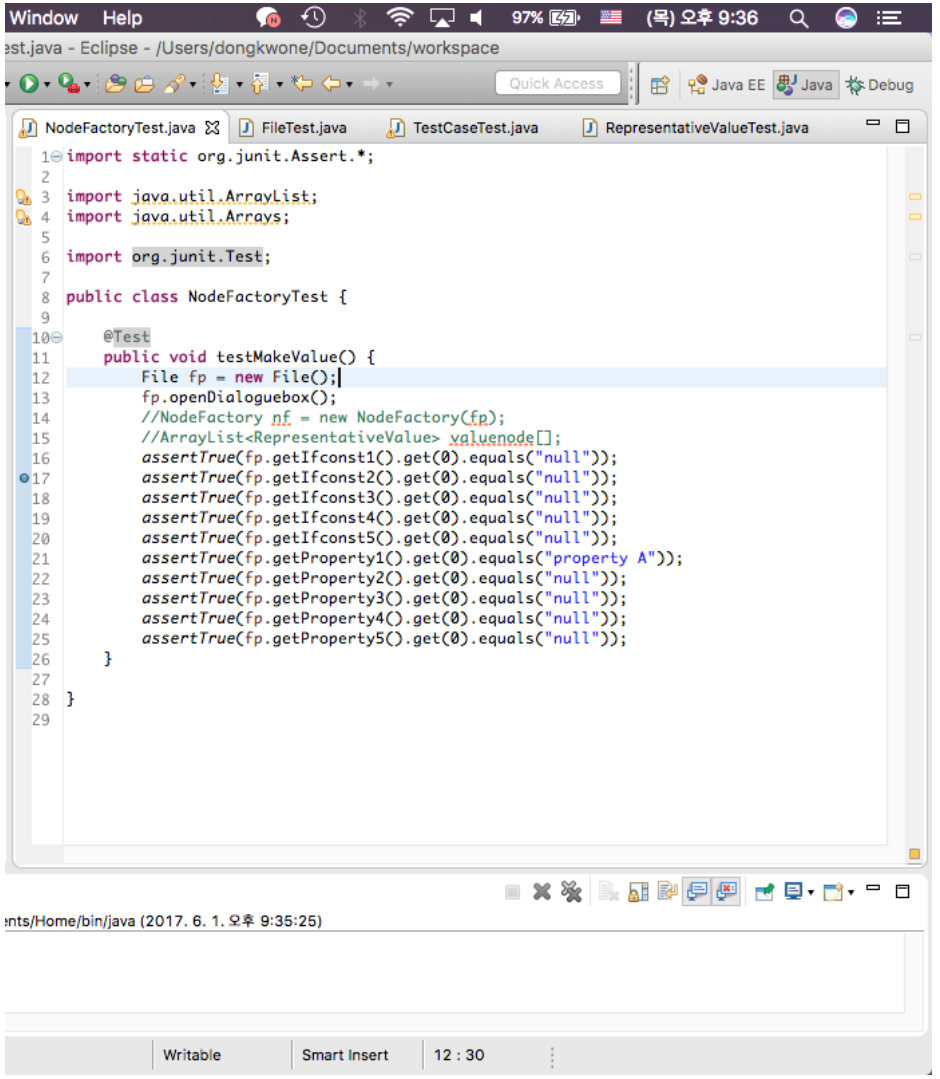
tableChanged_with GUI

```
247     }
248     //JTable 에서 특정한 열이 선택되었을때 발생하는 이벤트 처리
249     @Override
250     public void tableChanged(TableModelEvent e) {
251         // TODO Auto-generated method stub
252         System.out.println("들어오니 여기는"+e.getColumn());
253         System.out.println(e.getFirstRow());
254         Object data =getleftJTable().getValueAt(e.getFirstRow(),
255                 e.getColumn());
256         System.out.println(data);
257         manager.reqModify(e.getFirstRow(), e.getColumn(), data);
258 
259     }
```

1 Unit test

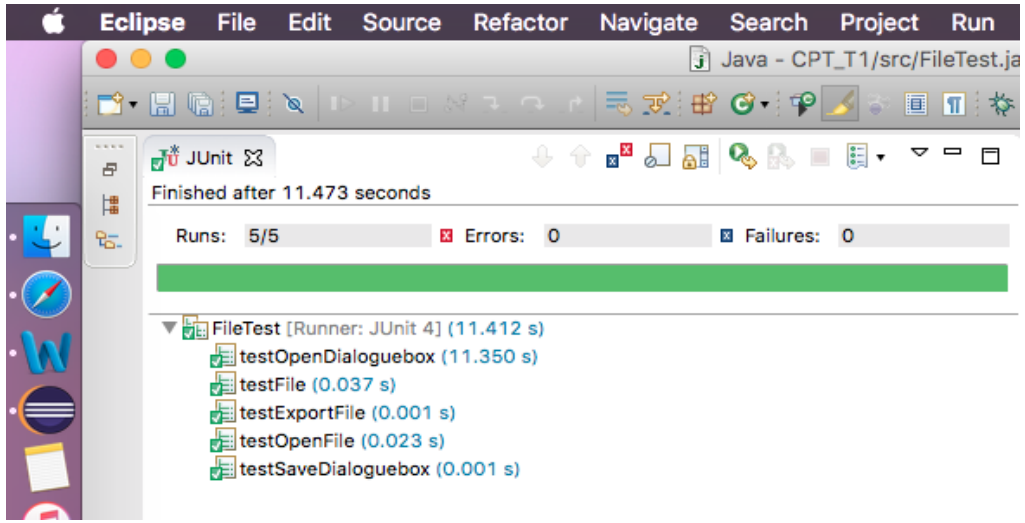
Make Value Test

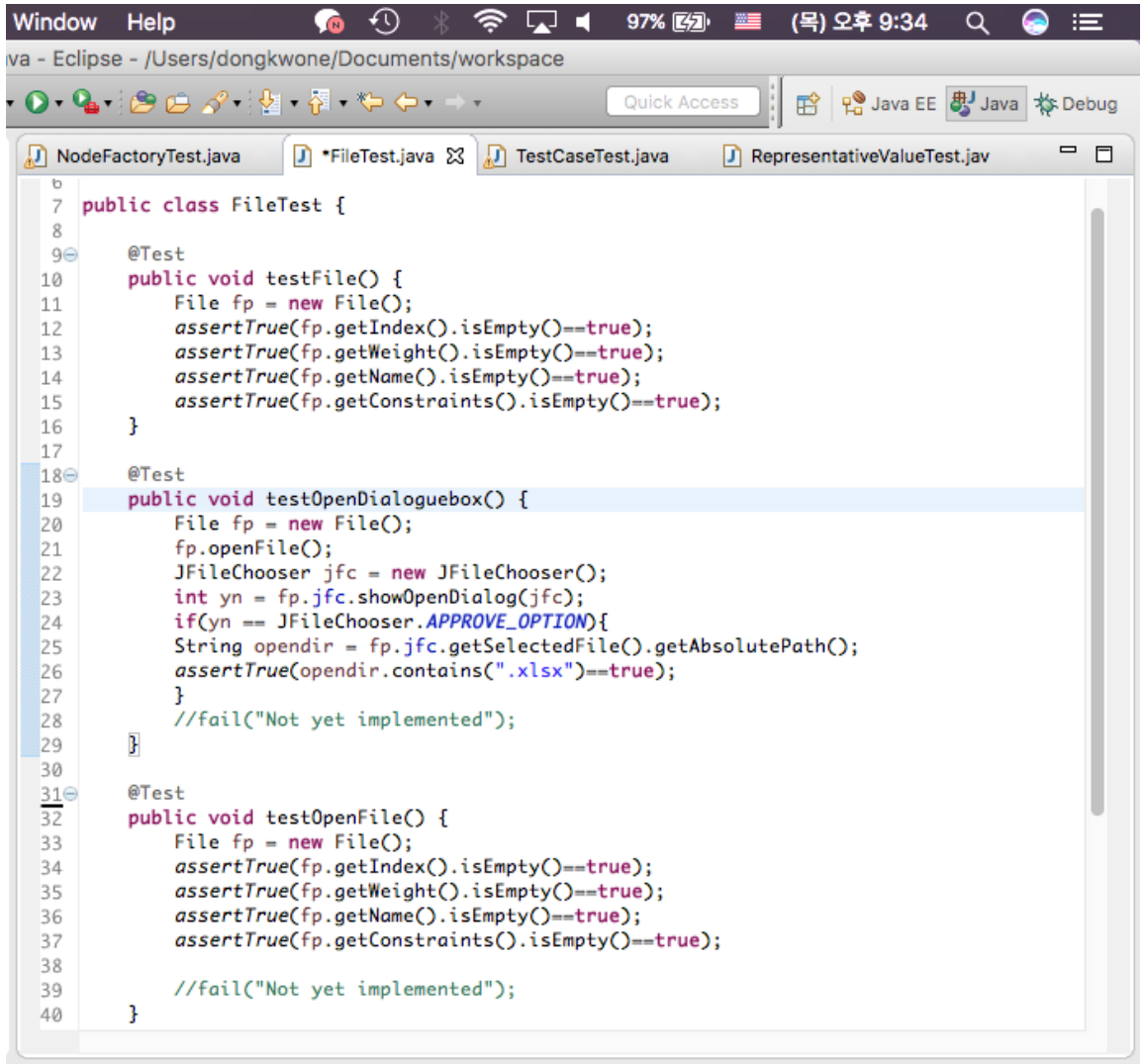




1 Unit test

OpenDialogue Box test

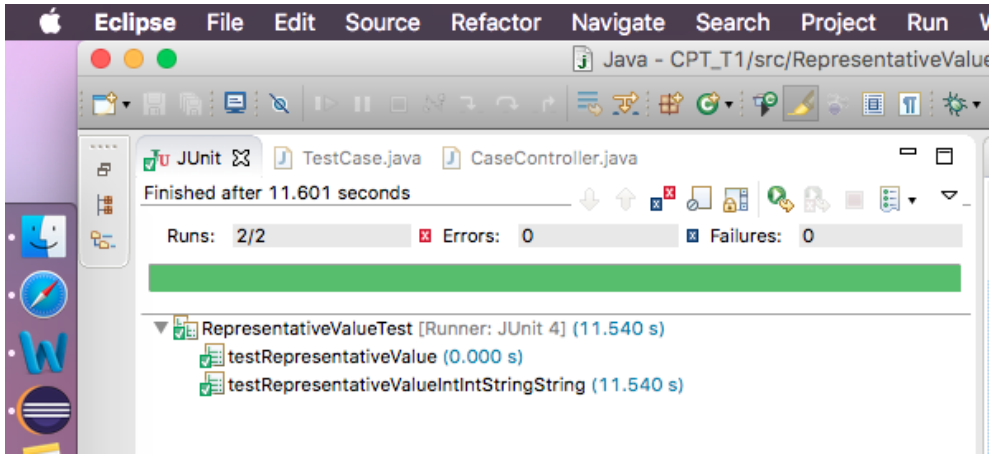


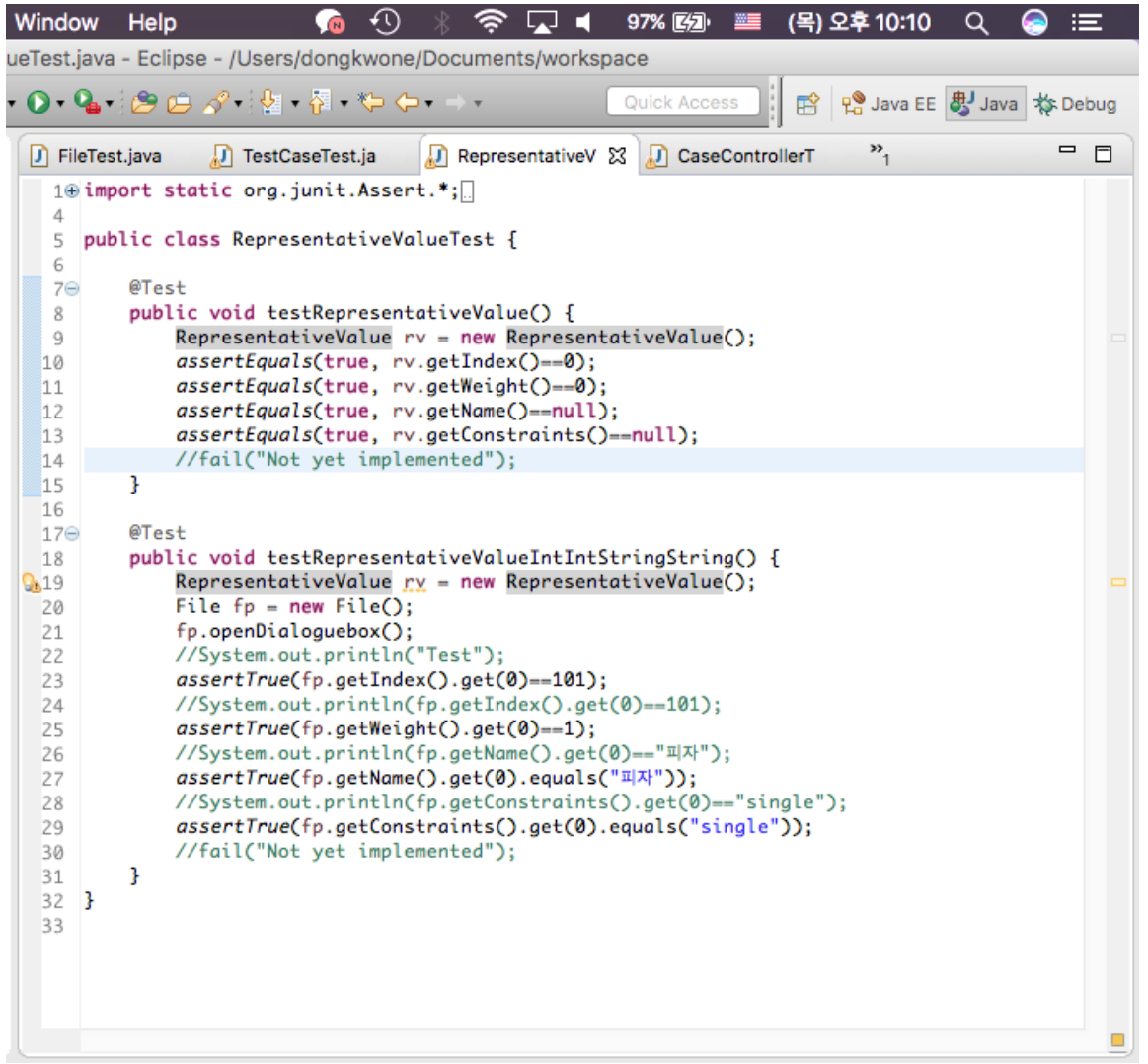



```java
public class FileTest {

    @Test
    public void testFile() {
        File fp = new File();
        assertTrue(fp.getIndex().isEmpty()==true);
        assertTrue(fp.getWeight().isEmpty()==true);
        assertTrue(fp.getName().isEmpty()==true);
        assertTrue(fp.getConstraints().isEmpty()==true);
    }

    @Test
    public void testOpenDialoguebox() {
        File fp = new File();
        fp.openFile();
        JFileChooser jfc = new JFileChooser();
        int yn = fp.jfc.showOpenDialog(jfc);
        if(yn == JFileChooser.APPROVE_OPTION){
        String opendir = fp.jfc.getSelectedFile().getAbsolutePath();
        assertTrue(opendir.contains(".xlsx")==true);
        }
        //fail("Not yet implemented");
    }

    @Test
    public void testOpenFile() {
        File fp = new File();
        assertTrue(fp.getIndex().isEmpty()==true);
        assertTrue(fp.getWeight().isEmpty()==true);
        assertTrue(fp.getName().isEmpty()==true);
        assertTrue(fp.getConstraints().isEmpty()==true);

        //fail("Not yet implemented");
    }
```

1 Unit test

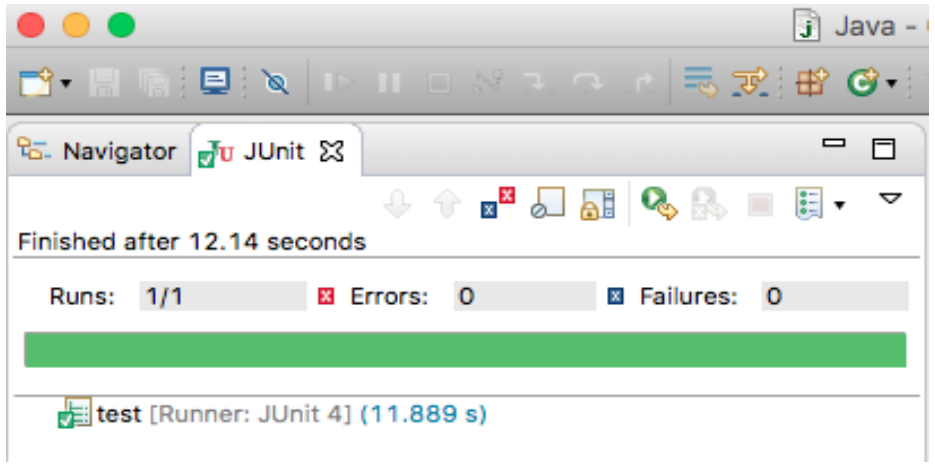
Representative Value Test





1 Unit test

Open File Test



CPT_T1/src/FileTest.java - Eclipse - /Users/dongkwone/Documents/workspace

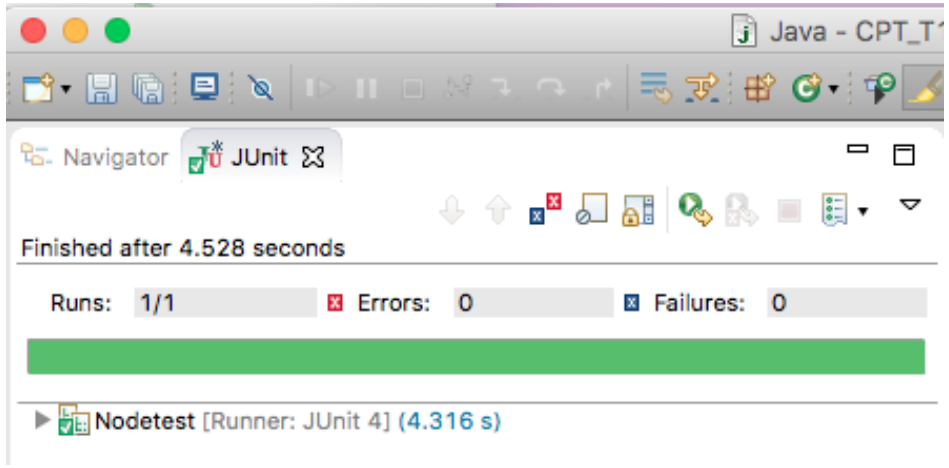
Quick Access

GUI_CPT.java | EssentialTestCa | CaseController. | FileTest.java | Managemen

```
1  import static org.junit.Assert.*;
7
8  public class FileTest {
9  /*
10     @Before
11     public void setUp() throws Exception {
12         File fp = new File();
13         CaseController control = new CaseController(fp);
14     }
15 */
16     @Test
17     public void test() {
18         ManagementSystem m = new ManagementSystem();
19         File fp = new File();
20         CaseController control = new CaseController(fp);
21         assertEquals("/Users/dongkwone/Downloads/a.xlsx", m.reqOpenfile());
22         //fail("Not yet implemented");
23     }
24
25 }
26
```

1 Unit test

Value Node Test



NodeFactory.jav | File.java | EssentialTestCa | ManagementSyste

```
5  import org.junit.Before;
6  import org.junit.Test;
7
8  import junit.framework.Assert;
9
10 public class Nodetest {
11
12     @Before
13     public void setUp() throws Exception {
14
15
16
17     }
18
19     @Test
20     public void test() {
21         //makevalue node가 null이 아닌지 test
22         ArrayList<RepresentativeValue> valuenode[];
23         int categorynum;
24         int valuenum;
25         File fp = new File();
26         NodeFactory n = new NodeFactory(fp);
27             valuenode=new ArrayList[fp.getCategoryMax()+1];
28             for(int i=0;i<fp.getCategoryMax()+1;i++)
29             {
30                 valuenode[i]=new ArrayList<RepresentativeValue>();
31             }
32         n.makeValue(fp);
33         Assert.assertNotNull(valuenode);
34         //fail("Not yet implemented");
35     }
```

1 Tool

Modify Weight_GUI Level

eclipse
Plug in

CSI

sonarqube

UNIVERSITY OF MARYLAND 18 56
FindBugs™
because it's easy

Eclipse Metrics Plugin

Check Style

Sonar Qube_Rules

↓	Check ResultSet
↓	Comments Indentation
↓	Custom Import Order
↑	Exception should not be created without being thrown
↓	Indentation
↑	Line Length
↑	Method Name
↑	Methods should not be empty
↑	Multiple Variable Declarations
↑	Parameter Name
↑	Return values should not be ignored when function calls don't have any side effects
↑	Variable Declaration Usage Distance

2 Check Style

Sonar Qube_T3 Result

T3_source Control/GUIManager.java

Add a nested comment explaining why this method is empty, throw an UnsupportedOperationException or complete the implementation.
Code Smell Critical Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 85).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 81).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 85).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 87).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 93).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 91).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 97).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

Line is longer than 80 characters (found 81).
Code Smell Major Closed (Removed) 할당되지 않음 5min effort

T3_source Control/ProjectManager.java

Name 'RPValueNum' must match pattern '^[a-z][a-zA-Z0-9]*$'.
Code Smell Major Closed (Removed) 할당되지 않음 10min effort

Name 'RPValueName' must match pattern '^[a-z][a-zA-Z0-9]*$'.
Code Smell Major Closed (Removed) 할당되지 않음 10min effort

'method def modifier' has incorrect indentation level 8, expected level should be 4.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'member def modifier' has incorrect indentation level 8, expected level should be 4.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'ctor def modifier' has incorrect indentation level 8, expected level should be 4.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'ctor def rcurly' has incorrect indentation level 8, expected level should be 4.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'ctor def' child has incorrect indentation level 16, expected level should be 8.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'method def modifier' has incorrect indentation level 8, expected level should be 4.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'method def' child has incorrect indentation level 16, expected level should be 8.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

'method def' child has incorrect indentation level 16, expected level should be 8.
Code Smell Minor Closed (Removed) 할당되지 않음 5min effort

+ Etc.

2 Check Style

Eclipse Plugin_T3 Result

Overview of Checkstyle violations - 7201 markers in 22 categories (Filter matched 7201 of 7201 items)

Checkstyle violation type	Marker count
Name 'X' must match pattern 'X'.	84
'X' is not preceded with whitespace.	483
Distance between variable 'X' declaration and its first usage is X, but a...	4
Unicode escape(s) usage should be avoided.	7
Wrong lexicographical order for 'X' import. Should be before 'X'.	73
'X' should be separated from previous statement.	4
'X' child have incorrect indentation level X, expected level should be ...	48
'X' child have incorrect indentation level X, expected level should be X.	1361
Using the '.*' form of import should be avoided - X.	2
Line is longer than X characters (found X).	122
'X' have incorrect indentation level X, expected level should be one of...	85
'X' construct must use '{}'s.	12
'X' is followed by whitespace.	26
'X' is preceded with whitespace.	19
'X' at column X should be on the same line as the next part of a mult...	16
'X' is not followed by whitespace.	474
'X' at column X should be on the previous line.	5
'X' have incorrect indentation level X, expected level should be X.	964
Abbreviation in name 'X' must contain no more than 'X' consecutive ...	34
Line contains a tab character.	3306
Missing a Javadoc comment.	62
Comment has incorrect indentation level X, expected is X, indentation...	10

2 Check Style

Eclipse Plugin_T3 Result

34 errors, 7,394 warnings, 69 others (Filter matched 278 of 7497 items)

Description	Resource	Path	Location	Type
Checkstyle Problem (100 of 7201 items)				
'(' is followed by whitespace.	AddVersionView2.java	/T3_source/GUI	line 152	Checkstyle Problem
'(' is followed by whitespace.	AddVersionView2.java	/T3_source/GUI	line 153	Checkstyle Problem
'(' is followed by whitespace.	AddVersionView3.java	/T3_source/GUI	line 81	Checkstyle Problem
'(' is followed by whitespace.	AddVersionView3.java	/T3_source/GUI	line 173	Checkstyle Problem
'(' is followed by whitespace.	AddVersionView3.java	/T3_source/GUI	line 174	Checkstyle Problem
'(' is followed by whitespace.	AddVersionView4.java	/T3_source/GUI	line 146	Checkstyle Problem
'(' is followed by whitespace.	FileChooser.java	/T3_source/GUI	line 37	Checkstyle Problem
'(' is followed by whitespace.	FileChooser.java	/T3_source/GUI	line 73	Checkstyle Problem
'(' is followed by whitespace.	LeaderFeedbackView.java	/T3_source/GUI	line 43	Checkstyle Problem
'(' is followed by whitespace.	LoginView.java	/T3_source/GUI	line 42	Checkstyle Problem
'(' is followed by whitespace.	MemberVersionDisplay.java	/T3_source/GUI	line 53	Checkstyle Problem
'(' is followed by whitespace.	MemberVersionDisplay.java	/T3_source/GUI	line 55	Checkstyle Problem
'(' is followed by whitespace.	MemberVersionDisplay.java	/T3_source/GUI	line 57	Checkstyle Problem
'(' is followed by whitespace.	MemberVersionDisplay.java	/T3_source/GUI	line 59	Checkstyle Problem
'(' is followed by whitespace.	MemberVersionDisplay.java	/T3_source/GUI	line 61	Checkstyle Problem
'(' is followed by whitespace.	NetworkManager.java	/T3_source/Control	line 35	Checkstyle Problem
'(' is followed by whitespace.	NewProjectView2.java	/T3_source/GUI	line 158	Checkstyle Problem
'(' is followed by whitespace.	NewProjectView2.java	/T3_source/GUI	line 159	Checkstyle Problem
'(' is followed by whitespace.	NewProjectView3.java	/T3_source/GUI	line 81	Checkstyle Problem
'(' is followed by whitespace.	NewProjectView3.java	/T3_source/GUI	line 174	Checkstyle Problem
'(' is followed by whitespace.	NewProjectView4.java	/T3_source/GUI	line 149	Checkstyle Problem
'(' is followed by whitespace.	VersionDisplay.java	/T3_source/GUI	line 45	Checkstyle Problem
'(' is followed by whitespace.	VersionDisplay.java	/T3_source/GUI	line 47	Checkstyle Problem
'(' is followed by whitespace.	VersionDisplay.java	/T3_source/GUI	line 49	Checkstyle Problem
'(' is followed by whitespace.	VersionDisplay.java	/T3_source/GUI	line 51	Checkstyle Problem
'(' is followed by whitespace.	VersionDisplay.java	/T3_source/GUI	line 53	Checkstyle Problem
')' is preceded with whitespace.	AddVersionView2.java	/T3_source/GUI	line 152	Checkstyle Problem
')' is preceded with whitespace.	AddVersionView2.java	/T3_source/GUI	line 153	Checkstyle Problem
')' is preceded with whitespace.	AddVersionView3.java	/T3_source/GUI	line 173	Checkstyle Problem
')' is preceded with whitespace.	AddVersionView3.java	/T3_source/GUI	line 174	Checkstyle Problem
')' is preceded with whitespace.	AddVersionView4.java	/T3_source/GUI	line 146	Checkstyle Problem
')' is preceded with whitespace.	FileChooser.java	/T3_source/GUI	line 80	Checkstyle Problem

2 Check Style

Sonar Qube_T4 Result

코드 악취

1.9k C

코드 악취

src/GUI/Explorer.java

- 'member def type' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'member def type' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- Line is longer than 80 characters (found 89). Code Smell Major Open 할당되지 않음 5min effort 코멘트
- 'member def type' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'member def type' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'ctor def modifier' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트

src/System/FileManager.java

- 'member def modifier' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'member def modifier' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'member def type' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'ctor def modifier' has incorrect indentation level 8, expected level should be 4. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'ctor def' child has incorrect indentation level 16, expected level should be 8. Code Smell Minor Open 할당되지 않음 5min effort 코멘트
- 'ctor def' child has incorrect indentation level 16, expected level should be 8. Code Smell Minor Open 할당되지 않음 5min effort 코멘트

+ Etc.

2 Check Style

Eclipse Plugin_T4 Result

Overview of Checkstyle violations - 4973 markers in 23 categories (Filter matched 4973 of 4973 items)

Checkstyle violation type	Marker count
Name 'X' must match pattern 'X'.	33
'X' is not preceded with whitespace.	512
Distance between variable 'X' declaration and its first usage is X, but a...	2
Wrong lexicographical order for 'X' import. Should be before 'X'.	27
Empty X block.	6
'X' should be separated from previous statement.	43
'X' child have incorrect indentation level X, expected level should be ...	116
'X' child have incorrect indentation level X, expected level should be X.	755
'X' at column X should have line break after.	14
Using the '.*' form of import should be avoided - X.	25
Line is longer than X characters (found X).	173
First sentence of Javadoc is incomplete (period is missing) or not pres...	1
Each variable declaration must be in its own statement.	4
'X' have incorrect indentation level X, expected level should be one of...	201
'X' at column X should be alone on a line.	14
'X' at column X should be on the same line as the next part of a mult...	14
'X' is not followed by whitespace.	446
'X' at column X should be on the previous line.	39
'X' have incorrect indentation level X, expected level should be X.	604
Line contains a tab character.	1909
Array brackets at illegal position.	1
'X' should be on a new line.	2
Missing a Javadoc comment.	32

2 Check Style

Eclipse Plugin_T4 Result

34 errors, 5,166 warnings, 69 others (Filter matched 278 of 5269 items)

Description	Resource	Path	Location	Type
Checkstyle Problem (100 of 4973 items)				
',' should be separated from previous statement.	CategoryTest.java	/T4_source/src/test	line 17	Checkstyle Problem
',' should be separated from previous statement.	CategoryTest.java	/T4_source/src/test	line 18	Checkstyle Problem
',' should be separated from previous statement.	RepresentativeValueTest.java	/T4_source/src/test	line 17	Checkstyle Problem
',' should be separated from previous statement.	RepresentativeValueTest.java	/T4_source/src/test	line 18	Checkstyle Problem
'{' at column 1 should be on the previous line.	CategoryTest.java	/T4_source/src/test	line 15	Checkstyle Problem
'{' at column 1 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 16	Checkstyle Problem
'{' at column 2 should be on the previous line.	CategoryTest.java	/T4_source/src/test	line 21	Checkstyle Problem
'{' at column 2 should be on the previous line.	CategoryTest.java	/T4_source/src/test	line 31	Checkstyle Problem
'{' at column 2 should be on the previous line.	CategoryTest.java	/T4_source/src/test	line 41	Checkstyle Problem
'{' at column 2 should be on the previous line.	CategoryTest.java	/T4_source/src/test	line 51	Checkstyle Problem
'{' at column 2 should be on the previous line.	Property.java	/T4_source/src/System	line 27	Checkstyle Problem
'{' at column 2 should be on the previous line.	Property.java	/T4_source/src/System	line 32	Checkstyle Problem
'{' at column 2 should be on the previous line.	Property.java	/T4_source/src/System	line 41	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 21	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 32	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 38	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 55	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 62	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 72	Checkstyle Problem
'{' at column 2 should be on the previous line.	RepresentativeValueTest.java	/T4_source/src/test	line 80	Checkstyle Problem
'{' at column 25 should have line break after.	FirstFrame.java	/T4_source/src/GUI	line 66	Checkstyle Problem
'{' at column 29 should have line break after.	MainFrame.java	/T4_source/src/GUI	line 315	Checkstyle Problem
'{' at column 3 should be on the previous line.	Category.java	/T4_source/src/System	line 62	Checkstyle Problem
'{' at column 3 should be on the previous line.	Property.java	/T4_source/src/System	line 34	Checkstyle Problem
'{' at column 3 should be on the previous line.	RepresentativeValue.java	/T4_source/src/System	line 42	Checkstyle Problem
'{' at column 3 should be on the previous line.	RepresentativeValue.java	/T4_source/src/System	line 84	Checkstyle Problem
'{' at column 3 should be on the previous line.	RepresentativeValue.java	/T4_source/src/System	line 95	Checkstyle Problem
'{' at column 3 should be on the previous line.	RepresentativeValue.java	/T4_source/src/System	line 135	Checkstyle Problem
'{' at column 3 should be on the previous line.	Specification.java	/T4_source/src/System	line 79	Checkstyle Problem
'{' at column 3 should be on the previous line.	Specification.java	/T4_source/src/System	line 165	Checkstyle Problem
'{' at column 30 should have line break after.	MainFrame.java	/T4_source/src/GUI	line 210	Checkstyle Problem

3 Find Bugs

Sonar Qube_Rules

FindBugs Java

코딩 규칙

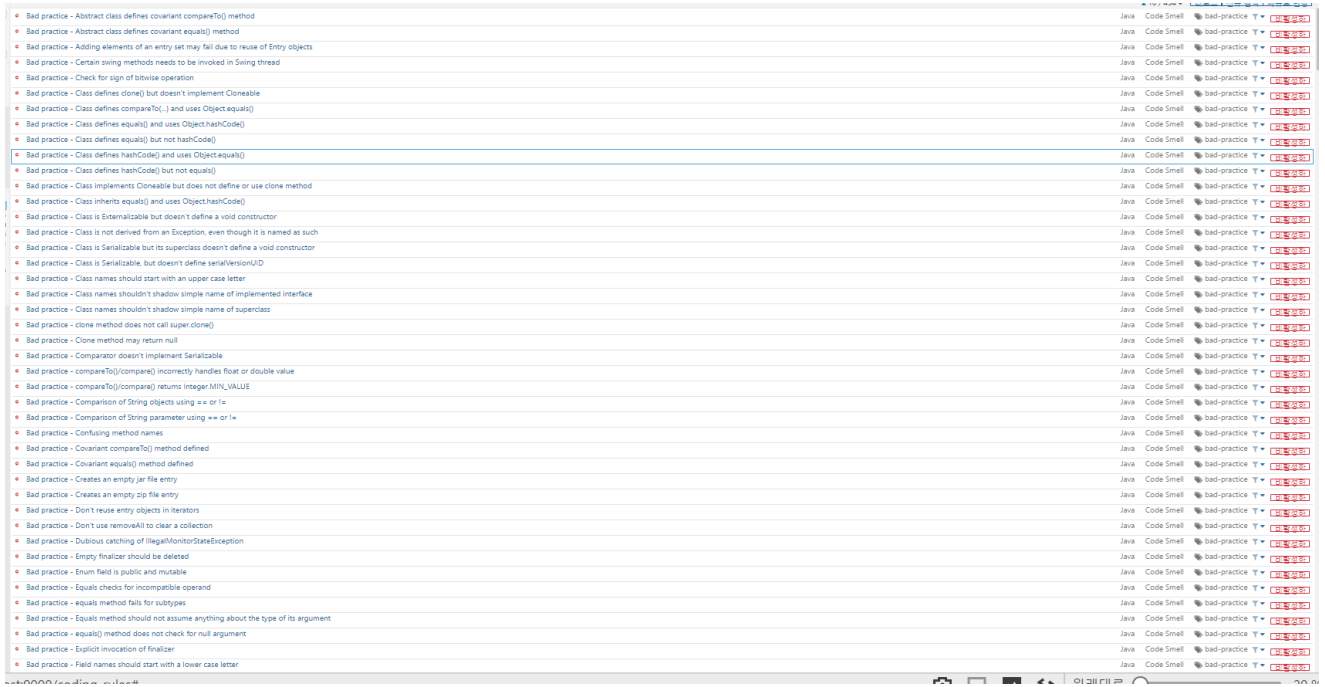
454 개의 규칙 활성화

247 Bug

10 Vulnerability

197 Code Smell

더 많은 규칙 활성화



+ Etc.

3 Find Bugs

Sonar Qube_T3 Result

Bugs & 취약점

0 A	0 A
버그	취약점

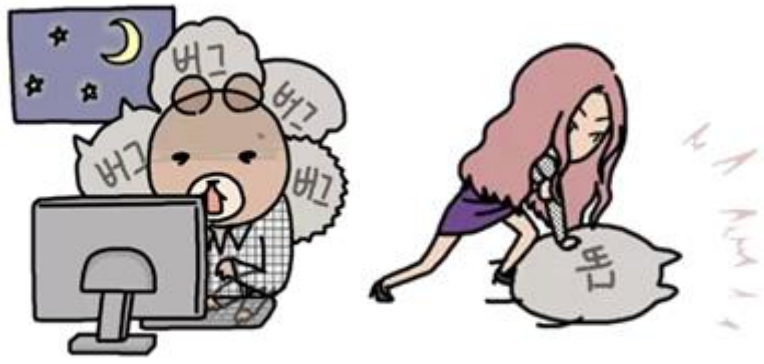
3 Find Bugs

Sonar Qube_T4 Result

Bugs & 취약점

7 C

버그



T4_source src/GUI/Explorer.java

GUI.Explorer.doit(int, FileManager, Specification) invokes inefficient new String(String) constructor ...
Bug Major Open 할당되지 않음 30min effort

T4_source src/System/Category.java

new System.Category() invokes inefficient new String() constructor ...
Bug Major Open 할당되지 않음 30min effort

new System.Category(String, Hashtable) invokes inefficient new String(String) constructor ...
Bug Major Open 할당되지 않음 30min effort

T4_source src/System/Property.java

new System.Property() invokes inefficient new String() constructor ...
Bug Major Open 할당되지 않음 30min effort

new System.Property(String) invokes inefficient new String(String) constructor ...
Bug Major Open 할당되지 않음 30min effort

T4_source src/System/RepresentativeValue.java

new System.RepresentativeValue() invokes inefficient new String() constructor ...
Bug Major Open 할당되지 않음 30min effort

new System.RepresentativeValue(String, Hashtable) invokes inefficient new String() constructor ...
Bug Major Open 할당되지 않음 30min effort

3 Find Bugs

Sonar Qube_T4 Result_Bug1

```
filePath = new String(filePath+".yzb");
```

GUI.Explorer.doit(int, FileManager, Specification) invokes inefficient new String(String) constructor ...

Bug Major Open 할당되지 않음 30min effort

3 Find Bugs

Sonar Qube_T4 Result_Bug2,3

T4_source

src/System/Category.java

```
1   package System;
2
3   import java.util.ArrayList;
4   import java.util.Hashtable;
5
6   import javax.swing.JOptionPane;
7
8   public class Category {
9           private String categoryName;
10          private ArrayList<RepresentativeValue> representativeValues;
11          private Hashtable<String, Property> pt;
12
13          //Constructor
14          public Category(){
15                  this.categoryName = new String();
```

new System.Category() invokes inefficient new String() constructor ...

Bug Major Open 할당되지 않음 30min effort

```
16                  this.representativeValues = new ArrayList<RepresentativeValue>();
17          }
18          public Category(String categoryName, Hashtable<String, Property> pt){
19                  this.categoryName = new String(categoryName);
```

new System.Category(String, Hashtable) invokes inefficient new String(String) constructor ...

Bug Major Open 할당되지 않음 30min effort

3 Find Bugs

Sonar Qube_T4 Result_Bug4,5

T4_source

src/System/Property.java

```
1   package System;
2
3   import java.util.LinkedList;
4
5   public class Property {
6           private String name;
7           private LinkedList<String> valueNames;
8
9           public Property(){
10                  this.name = new String();
```

new System.Property() invokes inefficient new String() constructor ...

Bug Major Open 할당되지 않음 30min effort

```
11          }
12
13          public Property(String name){
14                  this.name = new String(name);
```

new System.Property(String) invokes inefficient new String(String) constructor ...

Bug Major Open 할당되지 않음 30min effort

3 Find Bugs

Sonar Qube_T4 Result_Bug6,7

src/System/RepresentativeValue.java

```
1   package System;
2
3   import java.util.ArrayList;
4   import java.util.Hashtable;
5
6   import javax.swing.JOptionPane;
7
8   public class RepresentativeValue {
9           private String representativeValueName;
10          private ArrayList<Property> propertyConstraint;
11          private ArrayList<Property> if_propertyConstraint;
12          private int singleErrorConstraint;
13          private int priority;
14          private Hashtable<String, Property> propertyTable;
15
16          //Constructor
17          public RepresentativeValue() {
18                  this.representativeValueName = new String();
```

new System.RepresentativeValue() invokes inefficient new String() constructor ...

Bug Major Open 할당되지 않음 30min effort

```
19                  this.propertyConstraint = new ArrayList<Property>();
20                  this.if_propertyConstraint = new ArrayList<Property>();
21                  this.priority=1;
22          }
23          public RepresentativeValue(String representativeValueName, Hashtable<String, Property> pt) {
24                  this.representativeValueName = new String();
```

new System.RepresentativeValue(String, Hashtable) invokes inefficient new String() constructor ...

Bug Major Open 할당되지 않음 30min effort

3 Find Bugs

Eclipse Plugin_T3 Result

GUIManager.java: 244

Navigation

Dead store to fc in Control.GUIManager.openFileChooser()
Local variable named fc

Bug: Dead store to fc in Control.GUIManager.openFileChooser()

This instruction assigns a value to a local variable, but the value is not read or used in any subsequent instruction. Often, this indicates an error, because the value computed is never used.

Note that Sun's javac compiler often generates dead stores for final local variables. Because FindBugs is a bytecode-based tool, there is no easy way to eliminate these false positives.

Rank: Of Concern (15), **confidence**: High
Pattern: DLS_DEAD_LOCAL_STORE
Type: DLS, **Category**: STYLE (Dodgy code)

XML output:

```
<BugInstance type="DLS_DEAD_LOCAL_STORE" priority="1" rank="15" abbrev="DLS" category="STYLE" first="1">
  <Class classname="Control.GUIManager">
    <SourceLine classname="Control.GUIManager" sourcefile="GUIManager.java" sourcepath="Control/GUIManager.java"/>
  </Class>
  <Method classname="Control.GUIManager" name="openFileChooser" signature="()V" isStatic="false">
    <SourceLine classname="Control.GUIManager" start="244" end="246" startBytecode="0" endBytecode="8" sourcefile="GUIManager.java" sourcepath="Control/GUIManager.java"/>
  </Method>
  <LocalVariable name="fc" register="1" pc="9" role="LOCAL_VARIABLE_NAMED"/>
  <SourceLine classname="Control.GUIManager" start="244" end="244" startBytecode="8" endBytecode="8" sourcefile="GUIManager.java" sourcepath="Control/GUIManager.java"/>
  <SourceLine classname="Control.GUIManager" start="244" end="244" startBytecode="8" endBytecode="8" sourcefile="GUIManager.java" sourcepath="Control/GUIManager.java"/>
  <Property name="edu.umd.cs.findbugs.detect.DeadLocalStoreProperty.DEAD_OBJECT_STORE" value="true"/>
  <Property name="edu.umd.cs.findbugs.detect.DeadLocalStoreProperty.LOCAL_NAME" value="fc"/>
  <Property name="edu.umd.cs.findbugs.detect.DeadLocalStoreProperty.METHOD_RESULT" value="true"/>
</BugInstance>
```

---

3 Find Bugs

Eclipse Plugin_T3 Result

MainSystem.java: 22

Navigation

Write to static field Control.MainSystem.gm from instance method new Control.MainSystem()
Field Control.MainSystem.gm

Bug: Write to static field Control.MainSystem.gm from instance method new Control.MainSystem()

This instance method writes to a static field. This is tricky to get correct if multiple instances are being manipulated, and generally bad practice.

Rank: Of Concern (15), **confidence**: High
Pattern: ST_WRITE_TO_STATIC_FROM_INSTANCE_METHOD
Type: ST, **Category**: STYLE (Dodgy code)

XML output:

```
<BugInstance type="ST_WRITE_TO_STATIC_FROM_INSTANCE_METHOD" priority="1" rank="15" abbrev="ST" category="STYLE" first="1">
  <Class classname="Control.MainSystem">
    <SourceLine classname="Control.MainSystem" sourcefile="MainSystem.java" sourcepath="Control/MainSystem.java"/>
  </Class>
  <Method classname="Control.MainSystem" name="<init>" signature="()V" isStatic="false">
    <SourceLine classname="Control.MainSystem" start="20" end="25" startBytecode="0" endBytecode="106" sourcefile="MainSystem.java" sourcepath="Control/MainSystem.java"/>
  </Method>
  <Field classname="Control.MainSystem" name="gm" signature="LControl/GUIManager;" isStatic="true">
    <SourceLine classname="Control.MainSystem" sourcefile="MainSystem.java" sourcepath="Control/MainSystem.java"/>
  </Field>
  <SourceLine classname="Control.MainSystem" start="22" end="22" startBytecode="21" endBytecode="21" sourcefile="MainSystem.java" sourcepath="Control/MainSystem.java"/>
  <SourceLine classname="Control.MainSystem" start="22" end="22" startBytecode="21" endBytecode="21" sourcefile="MainSystem.java" sourcepath="Control/MainSystem.java"/>
</BugInstance>
```

(static) gm, rm, nm, pm 모두 해당. 여러 인스턴스가 조작 될 경우 오류 가능성 존재.

3 Find Bugs

Sonar Qube_T4 Result_Code Smell

T4_source src/GUI/FirstFrame.java

GUI.FirstFrame$6.actionPerformed(ActionEvent) invokes System.exit(...), which shuts down the entire virtual machine ...

Code Smell Major Open 할당되지 않음 1h effort

T4_source src/GUI/MainFrame.java

GUI.MainFrame$18.actionPerformed(ActionEvent) invokes System.exit(...), which shuts down the entire virtual machine ...

Code Smell Major Open 할당되지 않음 1h effort

T4_source src/System/Category.java

new System.Category(String, Hashtable) may expose internal representation by storing an externally mutable object into Category.pt ...

Code Smell Info Open 할당되지 않음 30min effort

외부에서 변경 가능한 객체를 저장-> expose internal reprsentation

3 Find Bugs

Sonar Qube_T4 Result_Code Smell

T4_source src/System/FileManager.java

Found reliance on default encoding in new System.FileManager(Specification): new java.io.FileReader(String) ...
Code Smell Info Open 할당되지 않음 1h effort

Found reliance on default encoding in System.FileManager.loadSpecification(String): new java.io.FileReader(File) ...
Code Smell Info Open 할당되지 않음 1h effort

Found reliance on default encoding in System.FileManager.loadSpecification(String): new java.io.FileReader(String) ...
Code Smell Info Open 할당되지 않음 1h effort

Found reliance on default encoding in System.FileManager.loadSpecification(String): new java.io.FileWriter(String) ...
Code Smell Info Open 할당되지 않음 1h effort

Found reliance on default encoding in System.FileManager.saveSpecification(): new java.io.FileWriter(File) ...
Code Smell Info Open 할당되지 않음 1h effort

Found reliance on default encoding in System.FileManager.saveSpecification(String): new java.io.FileWriter(File) ...
Code Smell Info Open 할당되지 않음 1h effort

Find Bugs

Sonar Qube_T4 Result_Code Smell

T4_source src/System/RepresentativeValue.java

new System.RepresentativeValue(String, Hashtable) may expose internal representation by storing an externally mutable object into RepresentativeValue.propertyTable ...
Code Smell Info Open 할당되지 않음 30min effort

T4_source src/test/FileManagerTest.java

Write to static field test.FileManagerTest.file from instance method test.FileManagerTest.testNewSpecification1() ...
Code Smell Info Open 할당되지 않음 5h effort

Exceptional return value of java.io.File.delete() ignored in test.FileManagerTest.testNewSpecification1() ...
Code Smell Major Open 할당되지 않음 1h effort

Write to static field test.FileManagerTest.file from instance method test.FileManagerTest.testLoadSpecification1() ...
Code Smell Info Open 할당되지 않음 5h effort

Write to static field test.FileManagerTest.file from instance method test.FileManagerTest.testLoadSpecification2() ...
Code Smell Info Open 할당되지 않음 5h effort

T4_source src/test/RepresentativeValueTest.java

The method name test.RepresentativeValueTest.BeforeClass() doesn't start with a lower case letter ...
Code Smell Major Open 할당되지 않음 30min effort

The method name test.RepresentativeValueTest.Before() doesn't start with a lower case letter ...
Code Smell Major Open 할당되지 않음 30min effort

3 Find Bugs

Eclipse Plugin_T4 Result

FileManagerTest.java: 46

Navigation

Write to static field test.FileManagerTest.file from instance method test.FileManagerTest.testLoadSpecification1()
Field test.FileManagerTest.file

Bug: Write to static field test.FileManagerTest.file from instance method test.FileManagerTest.testLoadSpecification1()

This instance method writes to a static field. This is tricky to get correct if multiple instances are being manipulated, and generally bad practice.

Rank: Of Concern (15), **confidence**: High
Pattern: ST_WRITE_TO_STATIC_FROM_INSTANCE_METHOD
Type: ST, **Category**: STYLE (Dodgy code)

XML output:

```
<BugInstance type="ST_WRITE_TO_STATIC_FROM_INSTANCE_METHOD" priority="1" rank="15" abbrev="ST" category="STYLE" first="1">
  <Class classname="test.FileManagerTest">
    <SourceLine classname="test.FileManagerTest" sourcefile="FileManagerTest.java" sourcepath="test/FileManagerTest.java"/>
  </Class>
  <Method classname="test.FileManagerTest" name="testLoadSpecification1" signature="()V" isStatic="false">
    <SourceLine classname="test.FileManagerTest" start="46" end="54" startBytecode="0" endBytecode="137" sourcefile="FileManagerTest.java" sourcepath="test/FileManagerTest.java"/>
  </Method>
  <Field classname="test.FileManagerTest" name="file" signature="Ljava/io/File;" isStatic="true">
    <SourceLine classname="test.FileManagerTest" sourcefile="FileManagerTest.java" sourcepath="test/FileManagerTest.java"/>
  </Field>
  <SourceLine classname="test.FileManagerTest" start="46" end="46" startBytecode="9" endBytecode="9" sourcefile="FileManagerTest.java" sourcepath="test/FileManagerTest.java"/>
  <SourceLine classname="test.FileManagerTest" start="46" end="46" startBytecode="9" endBytecode="9" sourcefile="FileManagerTest.java" sourcepath="test/FileManagerTest.java"/>
</BugInstance>
```

LoadSpecification1, 2, new Specification1() 모두 해당.

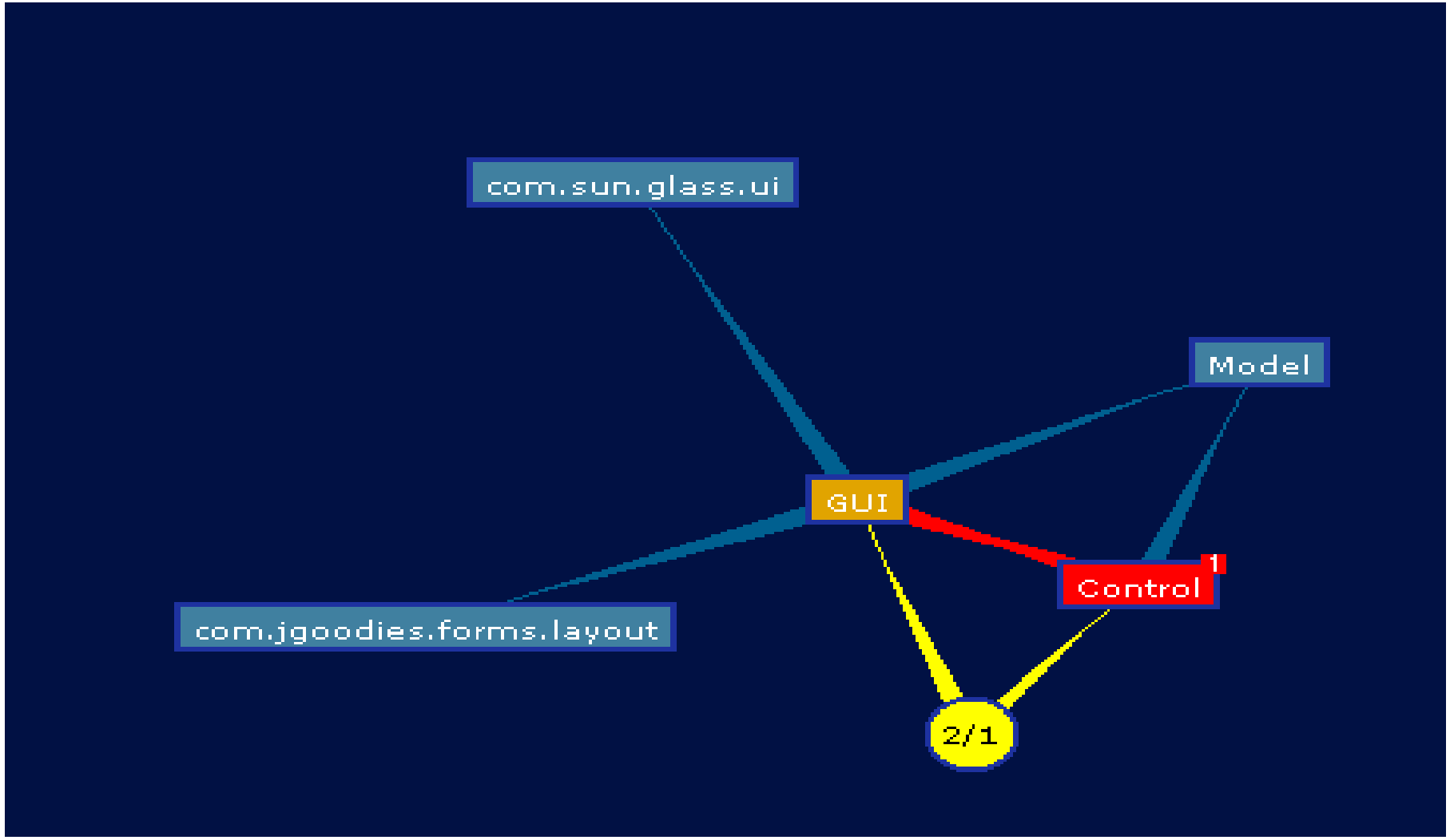
4 Metrics

Eclipse Plugin_T3 Result

Metric	Total	Mean	Std. Dev.	Maxim...	Resource causing Maximum	Method
McCabe Cyclomatic Complexity (avg/max per method)		2.152	3.83	42	/T3_source/Control/ResultManager.java	calculateTestCaseNum
Number of Parameters (avg/max per method)		0.865	0.87	8	/T3_source/Control/ResultManager.java	recurse
Nested Block Depth (avg/max per method)		1.68	1.148	8	/T3_source/Control/ResultManager.java	recurse
Afferent Coupling (avg/max per packageFragment)		6.5	6.801	17	/T3_source/Control	
Efferent Coupling (avg/max per packageFragment)		5.75	6.942	17	/T3_source/GUI	
Instability (avg/max per packageFragment)		0.551	0.431	1	/T3_source/Server	
Abstractness (avg/max per packageFragment)		0	0	0	/T3_source/Control	
Normalized Distance (avg/max per packageFragment)		0.449	0.431	1	/T3_source/Model	
Depth of Inheritance Tree (avg/max per type)		3.833	2.368	6	/T3_source/GUI/NewProjectView2.java	
Weighted methods per Class (avg/max per type)	383	12.767	13.431	78	/T3_source/Control/ResultManager.java	
Number of Children (avg/max per type)	0	0	0	0	/T3_source/Control/GUIManager.java	
Number of Overridden Methods (avg/max per type)	2	0.067	0.249	1	/T3_source/Control/NetworkManager.java	
Lack of Cohesion of Methods (avg/max per type)		0.623	0.372	1.333	/T3_source/GUI/MemberVersionPanel.java	
Number of Attributes (avg/max per type)	189	6.3	4.212	14	/T3_source/Control/GUIManager.java	
Number of Static Attributes (avg/max per type)	4	0.133	0.718	4	/T3_source/Control/MainSystem.java	
Number of Methods (avg/max per type)	161	5.367	5.504	24	/T3_source/Control/GUIManager.java	
Number of Static Methods (avg/max per type)	17	0.567	2.872	16	/T3_source/Control/MainSystem.java	
Specialization Index (avg/max per type)		0.056	0.212	1	/T3_source/Control/NetworkManager.java	
Number of Classes (avg/max per packageFragment)	30	7.5	6.225	18	/T3_source/GUI	
Number of Interfaces (avg/max per packageFragment)	0	0	0	0	/T3_source/Control	
Number of Packages	4					
Total Lines of Code	2920					
Method Lines of Code (avg/max per method)	1936	10.876	21.151	173	/T3_source/Control/ResultManager.java	calculateTestCaseNum

4 Metrics

Eclipse Plugin_T3 Result_Dependency Graph View



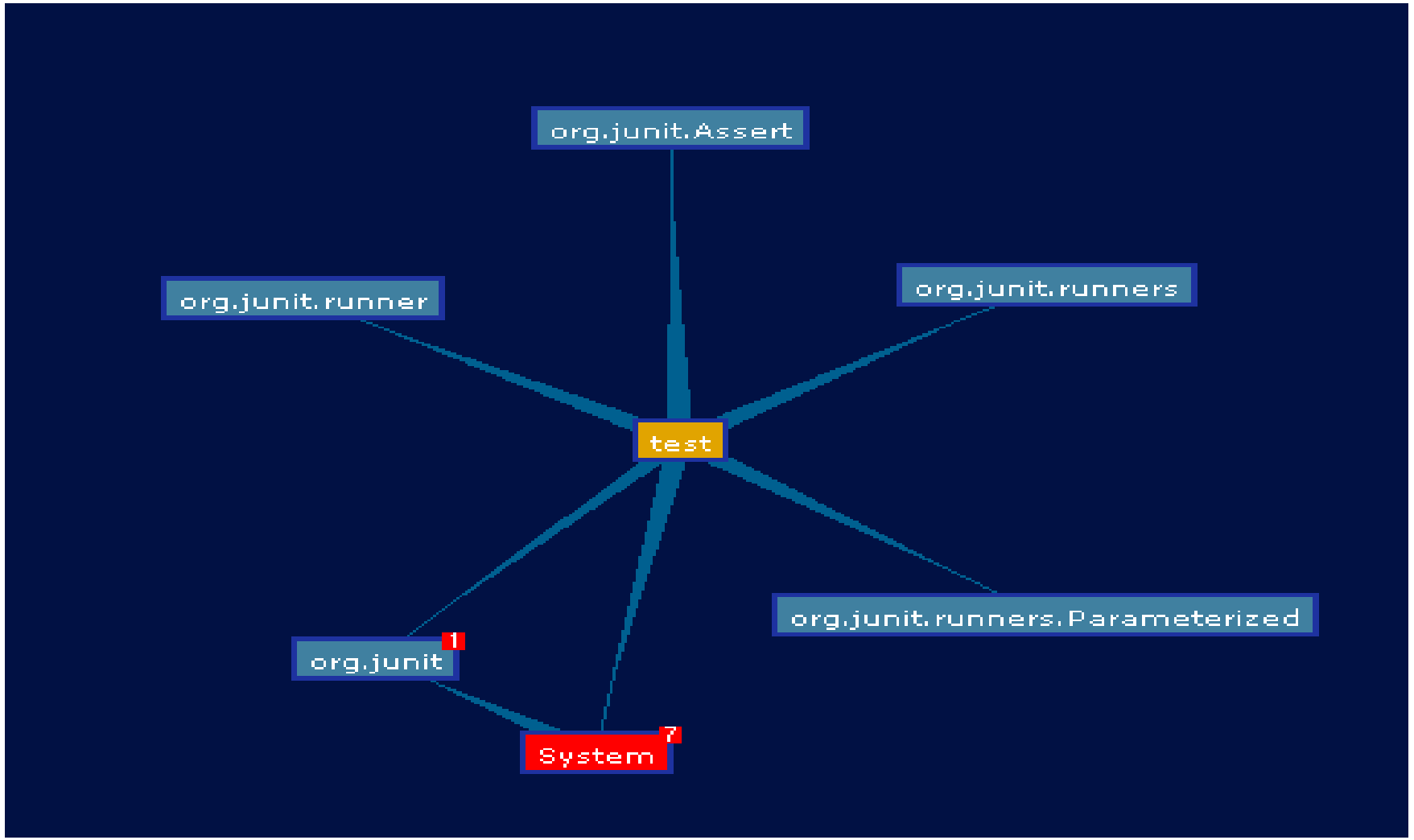
4 Metrics

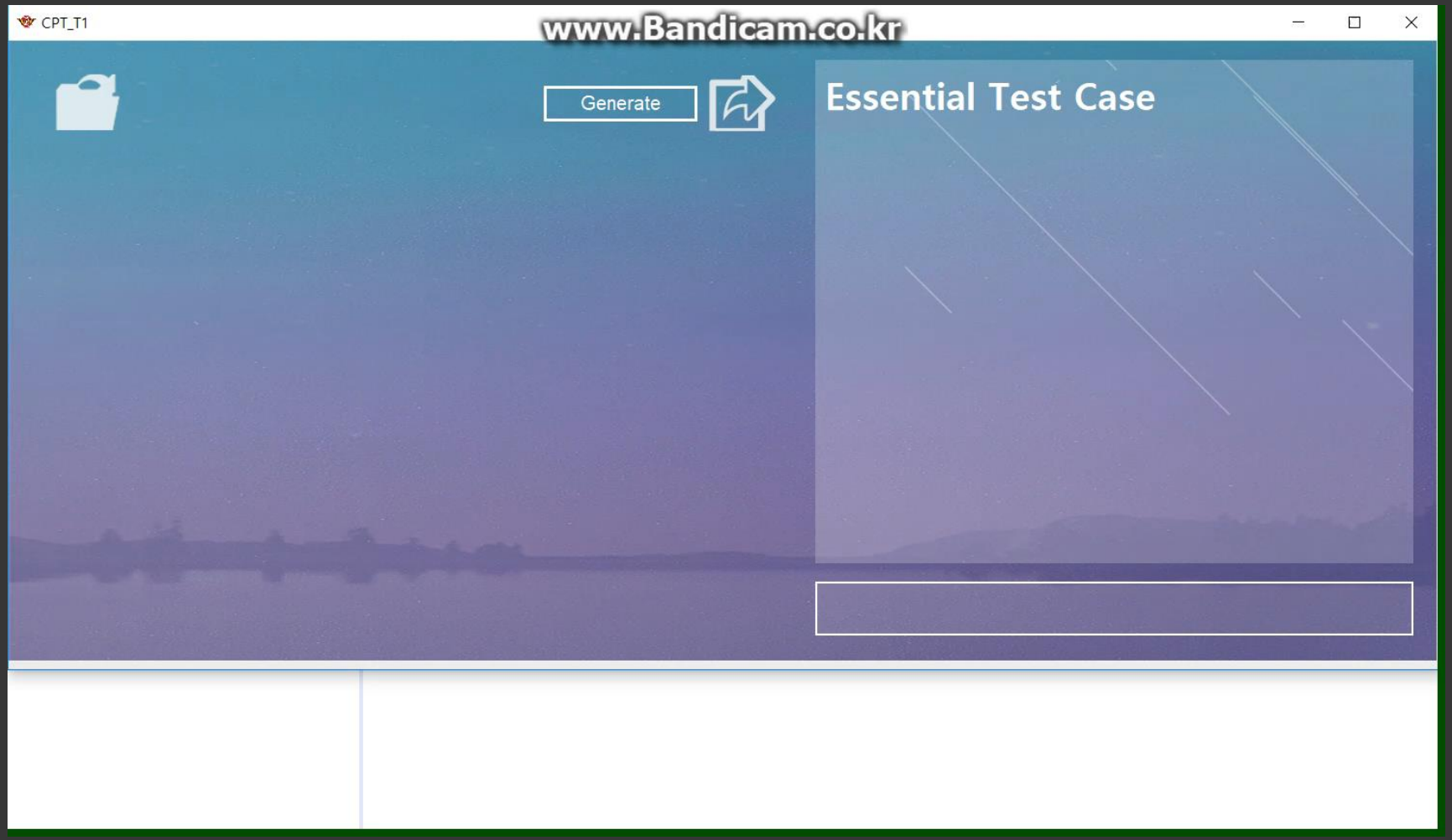
Eclipse Plugin_T4 Result

Metric	Total	Mean	Std. Dev.	Maxim...	Resource causing Maximum	Method
McCabe Cyclomatic Complexity (avg/max per method)		2.516	3.185	20	/T4_source/src/System/FileManager.java	loadSpecification
Number of Parameters (avg/max per method)		0.731	0.985	5	/T4_source/src/System/Specification.java	f
Nested Block Depth (avg/max per method)		1.946	1.498	8	/T4_source/src/System/FileManager.java	loadSpecification
Afferent Coupling (avg/max per packageFragment)		3	3.559	8	/T4_source/src/System	
Efferent Coupling (avg/max per packageFragment)		4.333	0.943	5	/T4_source/src/GUI	
Instability (avg/max per packageFragment)		0.702	0.311	1	/T4_source/src/test	
Abstractness (avg/max per packageFragment)		0	0	0	/T4_source/src/GUI	
Normalized Distance (avg/max per packageFragment)		0.298	0.311	0.727	/T4_source/src/System	
Depth of Inheritance Tree (avg/max per type)		2.071	2.052	6	/T4_source/src/GUI/NewSpecification.java	
Weighted methods per Class (avg/max per type)	234	16.714	18.223	58	/T4_source/src/System/FileManager.java	
Number of Children (avg/max per type)	0	0	0	0	/T4_source/src/GUI/NewSpecification.java	
Number of Overridden Methods (avg/max per type)	0	0	0	0	/T4_source/src/GUI/NewSpecification.java	
Lack of Cohesion of Methods (avg/max per type)		0.381	0.342	0.846	/T4_source/src/GUI/FirstFrame.java	
Number of Attributes (avg/max per type)	46	3.286	3.594	13	/T4_source/src/GUI/FirstFrame.java	
Number of Static Attributes (avg/max per type)	14	1	2	6	/T4_source/src/test/RepresentativeValueTest.java	
Number of Methods (avg/max per type)	89	6.357	4.922	18	/T4_source/src/System/RepresentativeValue.java	
Number of Static Methods (avg/max per type)	4	0.286	0.452	1	/T4_source/src/System/MainSystem.java	
Specialization Index (avg/max per type)		0	0	0	/T4_source/src/GUI/NewSpecification.java	
Number of Classes (avg/max per packageFragment)	14	4.667	0.943	6	/T4_source/src/System	
Number of Interfaces (avg/max per packageFragment)	0	0	0	0	/T4_source/src/GUI	
Number of Packages	3					
Total Lines of Code	1888					
Method Lines of Code (avg/max per method)	1481	15.925	53.513	498	/T4_source/src/GUI/MainFrame.java	MainFrame

4 Metrics

Eclipse Plugin_T4 Result_Dependency Graph View



DEMO PLAY

DEMO VIDEO