

V&V프로젝트 발표

Static Analysis

공민정, 이규은, 김태형, 최지현

1. Overall

2. Bugs

3. Vulnerability

1. Code Smell

2. Code Coverage

INDEX

적용한 Rule Set

The logo for SonarQube, featuring the word "sonarqube" in a black, lowercase, sans-serif font. To the right of the text are three blue, curved lines that resemble a signal or sound wave.The logo for Checkstyle, featuring the word "checkstyle" in a black, lowercase, sans-serif font. The letter "y" is stylized with a yellow pencil tip and a red eraser. Below the text is a red wavy line.The logo for PMD, featuring the letters "PMD" in a large, bold, red, sans-serif font. The letter "P" is black and contains a white silhouette of a handgun. Below the letters is the tagline "DON'T SHOOT THE MESSENGER" in a smaller, black, uppercase, sans-serif font.The logo for FindBugs, featuring a red cartoon beetle with large eyes and antennae. Below the beetle is the word "FindBugs" in a black, serif font, with a small "TM" trademark symbol to the right.

[Sonar](#) [PMD](#) [findBugs](#) [Checkstyle](#)

DEFAULT

192

[1401](#)

9 hours ago

9 hours ago



01

Overall

Static Analysis Result


[22](#)  Bugs

Reliability E

[69](#)  Vulnerabilities

Security D

[1](#)  Security Hotspots




 0.0% Reviewed

Security Review E






[47d](#) Debt




[1.1k](#)  Code Smells

Maintainability A






Type	BUG	Clear
	Bug	22
	Vulnerability	69
	Code Smell	1.4k




Ctrl + click to add to selection

Severity					
	Blocker	2		Minor	3
	Critical	0		Info	0
	Major	17			






Type	VULNERABILITY	Clear
	Bug	22
	Vulnerability	69
	Code Smell	1.4k

Ctrl + click to add to selection

Severity					
	Blocker	0		Minor	66
	Critical	3		Info	0
	Major	0			

Type	CODE SMELL	Clear
	Bug	22
	Vulnerability	69
	Code Smell	1.4k


Ctrl + click to add to selection

Severity					
	Blocker	3		Minor	398
	Critical	106		Info	28
	Major	846			

02 Bugs

Bugs Result

22  New Bugs

Reliability 

Blocker

▼ Rule (JAVA) METHODS "WAI... Clear

Q Search for rules...

(Java) Methods "wait(...)", "notify()" and "... 2

Major

▼ Rule

Q Search for rules...

(Java) Performance - Unused field	7
(Java) "InterruptedException" should not ...	2
(Java) Performance - Unread field	2
(Java) "notifyAll" should be used	1
(Java) Correctness - Integral value cast t...	1
(Java) Floating point numbers should not...	1
(Java) Multi-threading - Naked notify	1
(Java) Multi-threading - Wait not in loop	1
(Java) Performance - Use the nextInt me...	1

Minor

▼ Rule

Q Search for rules...

(Java) JEE applications should not "getC... 3

Example

```
public int checkTimer(long systemTime){
    if(this.state == 2){
        // System.out.println(this.settedTime + " " + this.stackedTime + " " + this.startTime + " " + systemTime);
        // System.out.println(Math.ceil(this.settedTime/1000) + " " + Math.ceil((systemTime - this.startTime + this.stackedTime)/1000));
        if(Math.ceil(this.settedTime/1000) == Math.ceil((systemTime - this.startTime + this.stackedTime)/1000)){
```

Equality tests should not be made with floating point values. Why is this an issue?
Bug Major Reopened Not assigned 5min effort Comment
UN User Name 반올림 함수> 항상 float형식의 정수값 리턴

Integral value cast to double and then passed to Math.ceil in controller.mode.Timer.checkTimer(long) Why is this an issue?
Bug Major Open Not assigned 1h effort Comment correctness

settedTime : long type
1000 : int type
>> 항상 정수 타입 return

Vulnerability Result

69

 New Vulnerabilities

Security



Critical

▼ Rule	
<input type="text" value="Search for rules..."/>	
(Java) Security - Method returns internal ...	2
(Java) Security - Array is stored directly	1

Minor

▼ Rule	
<input type="text" value="Search for rules..."/>	
(Java) Member variable visibility should...	65
(Java) Throwable.printStackTrace(...) sh...	1

03

Vulnerability

Example

```
DisplayManager displayManager;
```

Explicitly declare the visibility for "displayManager". Why is this an issue? 14 days ago ▾ L18 🔗
🔒 Vulnerability ▾ 🟢 Minor ▾ 🔵 Open ▾ Not assigned ▾ 5min effort Comment 🔖 No tags ▾

```
ModeManager modeManager;
```

Explicitly declare the visibility for "modeManager". Why is this an issue? 14 days ago ▾ L19 🔗
🔒 Vulnerability ▾ 🟢 Minor ▾ 🔵 Open ▾ Not assigned ▾ 5min effort Comment 🔖 No tags ▾

```
ClockSystem system;
```

Explicitly declare the visibility for "system". Why is this an issue? 14 days ago ▾ L20 🔗
🔒 Vulnerability ▾ 🟢 Minor ▾ 🔵 Open ▾ Not assigned ▾ 5min effort Comment 🔖 No tags ▾

```
Buzzer buzzer;
```

Explicitly declare the visibility for "buzzer". Why is this an issue? 6 days ago ▾ L21 🔗
🔒 Vulnerability ▾ 🟢 Minor ▾ 🔵 Open ▾ Not assigned ▾ 5min effort Comment 🔖 No tags ▾

```
MyMouseEvent event;
```

Explicitly declare the visibility for "event". Why is this an issue? 14 days ago ▾ L22 🔗
🔒 Vulnerability ▾ 🟢 Minor ▾ 🔵 Open ▾ Not assigned ▾ 5min effort Comment 🔖 No tags ▾

접근지정자 없음

Code Smell Result

47d Debt

1.1k  Code Smells

Maintainability



Blocker

▼ Rule	
<input type="text" value="Search for rules..."/>	
(Java) "main" should not "throw" anything	1
(Java) Child class fields should not shad...	1
(Java) Track lack of copyright and licens...	1

Critical

▼ Rule	
<input type="text" value="Search for rules..."/>	
(Java) Control flow statements "if", "for",...	37
(Java) "if ... else if" constructs should en...	29
(Java) Wildcard imports should not be u...	12
(Java) String literals should not be duplic...	5
(Java) Cognitive Complexity of methods ...	4
(Java) Empty If Stmt	4
(Java) Methods should not be empty	4
(Java) "static" base class members shoul...	3
(Java) Methods should not be too complex	2
(Java) "Object.wait(...)" and "Condition.a...	1
(Java) @FunctionalInterface annotation ...	1
(Java) Constant names should comply wi...	1
(Java) Constructors should only call non-...	1
(Java) Expressions should not be too co...	1
(Java) Fields in a "Serializable" class sho...	1

Code Smell Result

47d Debt

1.1k ☠ Code Smells

Maintainability A

Major

Rule	Count
(Java) Missing Constructor	17
(Java) At Least One Constructor	14
(Java) Enum values should be compare...	14
(Java) Immutable Field	10
(Java) Unused "private" fields should be ...	8
(Java) Unused Private Field	8
(Java) Methods should not have too man...	7
(Java) Std Cyclomatic Complexity	7
(Java) Code size - cyclomatic complexity	6

Minor

Rule	Count
(Java) Array Type Style	1
(Java) Array designators "[]" should be o...	1
(Java) Boolean checks should not be inv...	1
(Java) Boxed "Boolean" should be avoid...	1
(Java) Class Member Implied Modifier	1
(Java) Class names should comply with ...	1
(Java) Class variable fields should not ha...	1
(Java) Classes should not be empty	1
(Java) Logic Inversion	1
(Java) Loops should not contain more th...	1
(Java) Methods of "Random" that return f...	1
(Java) Simplify boolean returns	1
(Java) Unused local variables should be ...	1

04

Code Smell

Example

기존에 존재하는 field와
같은 이름의 Variable

```
ImageIcon[][] icons;
```

"icons" is the name of a field in "Window". Why is this an issue?

6 days ago ▾ L252 🔗

☠ Code Smell ▾ ⚠ Blocker ▾ ○ Open ▾ Not assigned ▾ 5min effort Comment

👉 confusing ▾

전체 class를 import

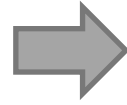
```
import java.time.*;
```

Explicitly import the specific classes needed. Why is this an issue?

13 days ago ▾ L3 🔗

☠ Code Smell ▾ ⚠ Critical ▾ ○ Open ▾ Not assigned ▾ 5min effort Comment

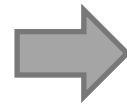
👉 pitfall ▾



JUnit 

The JUnit 5 logo, consisting of the word 'JUnit' in a gray sans-serif font followed by a large number '5' inside a circle that is vertically split into red and green halves.

Jenkins



JACOCO
Java Code Coverage

The Jacoco logo, featuring the word 'JACOCO' in a large, bold, red, stencil-style font, with 'Java Code Coverage' written in a smaller, blue, sans-serif font below it.

05

Code Coverage

Code Coverage Result

✘ Tests failed: 2, passed: 18 of 20 tests – 12 s 308 ms

Coverage: Tests in 'sleepy-watch' x

100% classes, 80% lines covered in package 'controller.mode'

Element	Class, %	Method, %	Line, %
Alarm	100% (1/1)	71% (5/7)	83% (25/30)
FunctionList	100% (1/1)	100% (3/3)	100% (11/11)
GlobalTime	100% (1/1)	80% (4/5)	82% (24/29)
SleepingTime	100% (1/1)	100% (8/8)	94% (53/56)
StopWatch	100% (1/1)	87% (7/8)	66% (18/27)
TimeKeeping	100% (1/1)	50% (3/6)	75% (12/16)
Timer	100% (1/1)	75% (6/8)	58% (21/36)

$$18/20 = 90\%$$

Code Coverage Result

Failed tests

- [StopWatchTest. 스탑워치 상태 테스트\(\)](#)
- [StopWatchTest. 스탑워치 재시작 테스트\(\)](#)

Packages

Package	Tests	Failures	Ignored	Duration	Success rate
controller.mode	20	2	0	12.477s	90%

Classes

Class	Tests	Failures	Ignored	Duration	Success rate
controller.mode.AlarmTest	2	0	0	0.091s	100%
controller.mode.FunctionListTest	1	0	0	0.027s	100%
controller.mode.GlobalTimeTest	1	0	0	0.006s	100%
controller.mode.SleepingTimeTest	7	0	0	0.291s	100%
controller.mode.StopWatchTest	5	2	0	0.035s	60%
controller.mode.TimeKeepingTest	1	0	0	0.004s	100%
controller.mode.TimerTest	3	0	0	12.023s	100%

$$18/20 = 90\%$$

감사합니다!