2019 Software Modeling & Analysis
OOPT 3rd Cycle
【 Static Analysis 】

골라보 시계

Team #1

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Contents

1. GUI Arrangement

1. GUI 변경사항

OOPT Stage 2040 - Design 단계에서 설계했던 것과 유사하도록 GUI 의 위치와 크기 등을 조정함

- Font 크기(시간 부분은 크게, 나머지는 비교적 작게)와 위치 조정
- 테스팅 편의를 위한 현재 기능 Name Tag 위치를 시계 내부에서 화면 밖(10시 방향)으로 이동
- Alarm Indicator 위치를 중앙으로 이동, Alarm 기능이 켜져 있으면서 Alarm List가 비어있지 않은 상태일 때만 표시되도록 수정 아이콘 변경(사각형에서 종 모양으로)

<기존>   **<변경>**

2. Static Analysis Feedback

1. FindBugs

Major 이상에 대해 처리할 것

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/Alarm.java

Unread field: Alarm.funcNum ···   2 hours ago ▾ L16
🐛 Bug 🔺 Major ⭕ Open Not assigned 30min effort   performance

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/Buzzer.java

Unused field: Buzzer.duration ···   2 hours ago ▾ L1
🐛 Bug 🔺 Major ⭕ Open Not assigned 30min effort   performance

Unused field: Buzzer.interval ···   2 hours ago ▾ L1
🐛 Bug 🔺 Major ⭕ Open Not assigned 30min effort   performance

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/AlarmList.java

Unread field: AlarmList.manageSnooze ···   2 hours ago ▾ L26
🐛 Bug 🔺 Major ⭕ Open Not assigned 30min effort   performance

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/Timer.java

Uninitialized read of view in new Timer(View, Buzzer) ···   2 hours ago ▾ L21
🐛 Bug 🔺 Major ⭕ Open Not assigned 30min effort   correctness

5 of 5 shown

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/rngUI.java

☐ The class name rngUI doesn't start with an upper case letter ···   20 minutes ago ▾ L7
☢ Code Smell ▾ 🔺 Major ▾ ⭕ Open ▾ Not assigned ▾ 30min effort Comment   bad-practice ▾

1) Unread field: Alarm.funcNum

```java
Alarm.java ×
1    ⊞import ...
4
5    public class Alarm {
6
7        public Alarm(View view, AlarmList alist, Buzzer buzzer) {
8            this.view = view;
9            this.alist = alist;
10           this.buzzer = buzzer;
11       }
12
13
14       public Buzzer buzzer;
15       private View view;
16       private int funcNum = 4;
17       public Vector alarm = new Vector();
18       //Delete eLCD[]
19       //Added from here
20       AlarmList alist;
```

\<수정\>

Alarm Class에서 funcNum이 사용하지 않는 변수이므로 삭제

2 & 3) Unused field: Buzzer.duration & Unused field: Buzzer.interval

```java
Buzzer.java ×
1    import java.util.*;
2
3    public class Buzzer {
4
5 @      public Buzzer(View view, AlarmList alist) {
6            this.view = view;
7            this.alist = alist;
8        }
9
10       public AlarmList alist;
11       private View view;
12       public boolean on = false;
13       private int interval;
14       private int duration;
15       public int funcType = 0;
16       public void reqStop(int func) {
```

\<수정\>

Buzzer Class에서 interval과 duration이 사용되지 않는 변수이므로 삭제

4) Unread field: AlarmList.manageSnooze

```java
import java.util.*;

public class AlarmList {

    public AlarmList(View view) {
    }

    public Vector alarm = new Vector( initialCapacity: 10);
    Thread manageSnooze;
    public int index = 0;

    public Vector getAlarmList(int indexNum) {
        // TODO implement here
        Vector rtVector = new Vector();
        rtVector.add((String)alarm.elementAt(indexNum));

        return rtVector;
    }

    public void updateList(Vector recvData) {
        // TODO implement here
        alarm.add((String)recvData.elementAt( index: 0));
    }

    public void snooze(){
        manageSnooze = new Thread(){

        };
    }
}
```

<수정>

AlarmList Class에서 snooze(), manageSnooze() 메소드가 구현 시도 중 취소되었는데 제거하지 않고 두었던 것을 삭제

5) Uninitialized read of view in new Timer(View, Buzzer)

```
C Timer.java ×
 1     import ...
 7
 8     public class Timer {
 9
10         public Timer(View view, Buzzer buzzer) {
11             this.view = view;
12             this.buzzer = buzzer;
13         }
14
15
16
17
18         public Buzzer buzzer;
19         public View view;
20         public int funcNum = 2;
21         public TimerData timer = new TimerData(view);
22         public Thread timerThread;
23         public int part = 1;
24         public int saveValue = 0;
```

<수정>

view를 초기화하지 않은 상태로 new TimerData의 인수로 집어넣어서
발생했으므로 초기화 이후에 집어넣도록 아래와 같이 수정

```
C Timer.java ×
Q▾                                    ↵   ↑
 1     import ...
 7
 8     public class Timer {
 9
10  @      public Timer(View view, Buzzer buzzer) {
11             this.view = view;
12             this.buzzer = buzzer;
13             timer = new TimerData(view);
14         }
15
16
17
18
19         public Buzzer buzzer;
20         public View view;
21         public int funcNum = 2;
22         public TimerData timer;
23         public Thread timerThread;
24         public int part = 1;
25         public int saveValue = 0;
```

6) The class name rngUI doesn't start with an upper case letter

<수정>

구현 시 임시로 만들어두고 사용하지 않았던 rngUI Class 제거

2. PMD
Critical만 수정할 것

Display Mode

Issues	Effort

∨ Type   [Clear]

🐞 Bug	0
🔒 Vulnerability	0
☢ Code Smell	39

∨ Severity   [Clear]

🛑 Blocker	0	🔽 Minor	895
🔺 Critical	39	ℹ Info	35
🔺 Major	1.5k		

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/AlarmUI.java

Avoid empty catch blocks •••	9 minutes ago ▾ L167
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L178
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/RandomDirectionGeneratorUI.java

Avoid empty catch blocks •••	9 minutes ago ▾ L23
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L40
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L54
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L63
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/RandomNumberGeneratorUI.java

Avoid empty catch blocks •••	9 minutes ago ▾ L100
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L109
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L123
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L136
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

Avoid empty catch blocks •••	9 minutes ago ▾ L157
☢ Code Smell 🔺 Critical ○ Open Not assigned 10min effort	🏷 error-handling

39 of 39 shown

All #) Avoid empty catch blocks

```
100         ActionListener slistener = new ActionListener() {
101             public void actionPerformed(ActionEvent listener) {
102                 try {
103                     if(view.checkfunc( funcNum: 7) == 0) {
104                         return;
105                     }
106                     selectfunction.setFunction(0);
107                     showSet();
108
109                 } catch (RuntimeException e) {
110                     e.printStackTrace();
111                 }
112             }
113         };
```

<수정>

Exception의 catch block 내부가 비어있던 것을 채워 넣음

3. CheckStyle

Blocker 전체와 Critical에서 중요해 보이는 것 처리

Display Mode

| Issues | Effort |

∨ Type   Clear

🐞 Bug	171
🔓 Vulnerability	6
❁ Code Smell	4.3k

∨ Severity   Clear

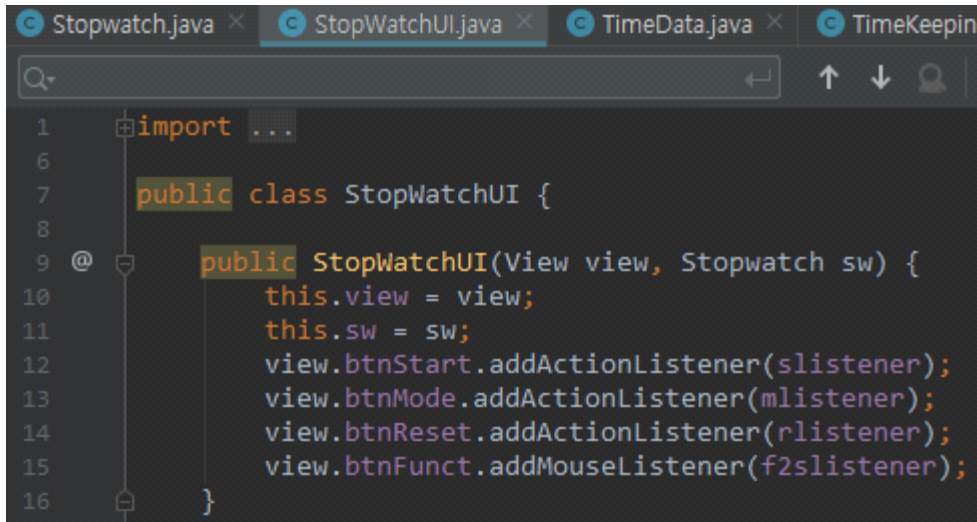| ❗ Blocker | 24 | ⬇ Minor | 5.8k |
| ⊙ Critical | 314 | ⓘ Info | 435 |
| ⬡ Major | 4.2k | | |

team1 / 19-06-02 Watch 0.6.2_BugFix/src/main/java/Alarm.java

Add or update the header of this file. ···
❁ Code Smell ▾ ❗ Blocker ▾ ○ Open ▾ Not assigned ▾ 5min effort Comment
20 minutes ago ▾ 🔗 ▼ ▾
🏷 No tags ▾

149 more lines of code need to be covered by tests to reach the minimum threshold of 65.0% lines coverage. ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 4h58min effort Comment
20 minutes ago ▾ 🔗 ▼ ▾
🏷 bad-practice ▾

59 more comment lines need to be written to reach the minimum threshold of 25.0% comment density. ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 1h58min effort Comment
20 minutes ago ▾ 🔗 ▼ ▾
🏷 convention ▾

2 duplicated blocks of code must be removed. ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 30min effort Comment
20 minutes ago ▾ 🔗 ▼ ▾
🏷 pitfall ▾

Explicitly import the specific classes needed. ···
❁ Code Smell ▾ ⊙ Critical ▾ ○ Open ▾ Not assigned ▾ 5min effort Comment
20 minutes ago ▾ L3 🔗 ▼ ▾
🏷 pitfall ▾

All classes and interfaces must belong to a named package ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 10min effort Comment
20 minutes ago ▾ L345 🔗 ▼ ▾
🏷 No tags ▾

Possible God Class (WMC=70, ATFD=9, TCC=31.818%) ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 2h effort Comment
20 minutes ago ▾ L345 🔗 ▼ ▾
🏷 No tags ▾

The class 'Alarm' has a Modified Cyclomatic Complexity of 3 (Highest = 20). ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 1h effort Comment
20 minutes ago ▾ L345 🔗 ▼ ▾
🏷 size ▾

The class 'Alarm' has a Standard Cyclomatic Complexity of 5 (Highest = 46). ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 1h effort Comment
20 minutes ago ▾ L345 🔗 ▼ ▾
🏷 size ▾

Too many fields ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 1h effort Comment
20 minutes ago ▾ L345 🔗 ▼ ▾
🏷 size ▾

Found non-transient, non-static member. Please mark as transient or provide accessors. ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 30min effort Comment
20 minutes ago ▾ L14 🔗 ▼ ▾
🏷 No tags ▾

Variable 'buzzer' must be private and have accessor methods. ···
❁ Code Smell ▾ ⬡ Major ▾ ○ Open ▾ Not assigned ▾ 10min effort Comment
20 minutes ago ▾ L14 🔗 ▼ ▾
🏷 No tags ▾

1) Add or update the header of this file.
/*Each source file should start with a header stating file ownership and the license which must be used to distribute the application. This rule must be fed with the header text that is expected at the beginning of every file.*/

<수정>
파일이 꼭 header를 포함해야 하는 것은 아니므로 변동사항 없음

2) Add an end condition to this loop.

```
private Thread manage = new Thread(new Runnable() {
    public void run() {
        while(true) {...}
    }
});
```

<수정>

TimeData는 현재 시간을 관리하는 클래스로 run() 메소드는 프로그램 (시계)이 시작하는 시점으로부터 끝날 때까지 계속 유지되어야 하므로 break가 불필요하기 때문에 변동사항 없음

3) Add a default case to this switch.

```
252            case 9://tue
253                tue = 0;
254                break;
255            case 10://wed
256                wed = 0;
257                break;
258            case 11://thu
259                thu = 0;
260                break;
261            case 12://fri
262                fri = 0;
263                break;
264            case 13://sat
265                sat = 0;
266                break;
267            default:
268                break;
269        }
```

<수정>

모든 Case문에 default 옵션을 추가해줌