

일정 관리 DWS

Team 1

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Static Analysis Feedback


Remove this unused import 'X'

src/main/java/model/Beep.java

Remove this unused import 'view.BeepPanel'.

 Code Smell




Make type a static final constant or non-public and provide accessors if needed.

 Code Smell

```

1 ... package model;
2 ...
3 ... import view.BeepPanel;
4
5
6 ... import view.GUI;
7
8 ... import java.util.*;
  
```

Remove this unused import 'view.BeepPanel'. Why is this an issue?

 Code Smell  Minor  Open Not assigned 2min effort

src/main/java/model/Beep.java

```

... @@ -1,6 +1,5 @@
1 package model;
2
3 - import view.BeepPanel;
4 import view.GUI;
5
6 import java.util.*;
  
```

src/main/java/model/DWS.java

```

... @@ -1,9 +1,6 @@
1 package model;
2
3 - import view.AlarmListPanel;
4 import view.GUI;
5 -
6 - import
  java.lang.invoke.WrongMethodTypeException;
7 import java.text.SimpleDateFormat;
  
```

Static Analysis Feedback

Remove this unused method parameter 'X'

Make beepList a static final constant or non-public and provide accessors if needed.

Code Smell

Remove this unused method parameter "gui".

Code Smell +1

1 Remove this unused method parameter gui".

alt + ↑ ↓ to navigate issue locations

Replace the type specification in this

```

src/main/java/model/Beep.java
7 ...
8 public class Beep {
9 ...
10 public int type;
11 public Stack<Integer> beepList;
12 ...
13 public Beep(GUI gui) {
14     beepList = new Stack<Integer>();
15 }
16 public Stack<Integer> beepPopup(int type) { //

```

Remove this unused method parameter "gui". Why is this a

Code Smell Major Open Not assigned 5min effort

2 src/main/java/model/Beep.java

@@ -8,7 +8,7 @@

<pre> 8 public int type; 9 public Stack<Integer> beepList; 10 11 - public Beep(GUI gui) { 12 beepList = new Stack<Integer>(); 13 } 14 </pre>	<pre> 8 public int type; 9 public Stack<Integer> beepList; 10 11 + public Beep() { 12 beepList = new Stack<Integer>(); 13 } 14 </pre>
--	---

Static Analysis Feedback

Remove this unused method parameter 'X'

Make beepList a static final constant or non-public and provide accessors if needed.
Code Smell

Remove this unused method parameter "gui".
Code Smell +1

1 Remove this unused method parameter "gui".

alt + ↑ ↓ to navigate issue locations

Replace the type specification in this

```

src/main/java/model/Beep.java
7 ...
8 public class Beep {
9 ...   public int type;
10 ...  public Stack<Integer> beepList;
11
12 ...   public Beep(GUI gui) {
13 ...
14 ...   beepList = new Stack<Integer>();
15 ...
16 ...   public Stack<Integer> beepPopup(int type) { //

```

Remove this unused method parameter "gui". Why is this a
Code Smell Major Open Not assigned 5min effort

```

13 - public Object getValue(int index) {
14 -     // TODO implement here
15     return null;
16 }

```

```

18 - public Object saveValue(int index,
    Object object) {
19 -     // TODO implement here

```

```

13 + public Object getValue() {
14     return null;
15 }

```

```

17 + public Object saveValue() {

```

Static Analysis Feedback

Remove this unused variable useless assignment

Code Smell

Remove this useless assignment to local variable "itr".

Code Smell

Remove this unused "itr" local variable.

Code Smell

'10' is a magic number.

```
98 ...
99 ...
00 ... } while (Duration.between(timeStart, t
01 ...
02 ... Iterator<Alarm> itr = controller.getR
```

Remove this useless assignment to local variable "itr". Why is this an issue

Code Smell Major Open Not assigned 15min effort

Remove this unused "itr" local variable. Why is this an issue

Code Smell Minor Open Not assigned 5min effort

6 src/main/java/model/DWS.java

```
@@ -43,7 +43,7 @@ public DWS() {
43
44     public void setGui(GUI gui) {
45         this.gui = gui;
46 -        beep = new Beep(gui);
47     }
```

```
43
44     public void setGui(GUI gui) {
45         this.gui = gui;
46 +        beep = new Beep();
47     }
```

Static Analysis Feedback

Remove this unused variable useless assignment

Code Smell

Remove this useless assignment to local variable "itr".

Code Smell

Remove this unused "itr" local variable.

Code Smell

'10' is a magic number.

```
98 ...
99 ...
100 ... } while (Duration.between(timeStart, t
101 ...
102 ... Iterator<Alarm> itr = controller.getR

Remove this useless assignment to local variable "itr". W
Code Smell Major Open Not assigned 15min effort

Remove this unused "itr" local variable. Why is this an issue
Code Smell Minor Open Not assigned 5min effort
```

```
96
97         } while
          (Duration.between(timeStart,
          timeEnd).getSeconds() < 1);
98 -
99 -         Iterator<Alarm> itr =
          controller.getRunningAlarmList().iterator()
          ;
100 -
```

```
96
97         } while
          (Duration.between(timeStart,
          timeEnd).getSeconds() < 1);
98 +
```

Static Analysis Feedback

Remove redundant jump

'if' construct must use '{}'.
Code Smell

Remove this redundant jump.
Code Smell

'10' is a magic number.
Code Smell

```
        break;
    }
    return;
}
```

Remove this redundant jump. Why is this a Code Smell?
Code Smell Minor Open Not a

1 src/main/java/model/DWS.java

```
@@ -720,7 +720,6 @@ private void moveListPointer(int state) {
```

```
720         else if (listPointer <
Info.LIST_POINTER_1) listPointer =
Info.LIST_POINTER_1;
721         break;
722     }
723     return;
724 }
```

```
720         else if (listPointer <
Info.LIST_POINTER_1) listPointer =
Info.LIST_POINTER_1;
721         break;
722     }
723
724 }
```


Static Analysis Feedback

Add a default case to this switch

'60' is a magic number.

 Code Smell

Add a default case to this switch.

 Code Smell

'10' is a magic number.




```

115
116 ...
117
118
119

```

switch (mode) {

Add a default case to this switch. Why is this an issue? [View details](#)

 Code Smell  Critical  Open Not assigned

case Info.TIMEKEEPING

screenValue = new

break;

```

@@ -148,6 +148,9 @@ public void start() {
148         case Info.SELECTMODE:
149             screenValue = new
150             Object[]{controller.getSelectedModeNum(),
151             listPointer};
152             break;
153
154
155

```

Static Analysis Feedback

Add a default case to this switch

'60' is a magic number.

 Code Smell

Add a default case to this switch.

 Code Smell



'10' is a magic number.

```

115
116 ...
117
118
119

```

switch (mode) {

Add a default case to this switch. Why is this an issue?  Code Smell  Critical Open Not assigned

case Info.TIMEKEEPING

screenValue = new

break;

```

↑... @@ -148,6 +148,9 @@ public void start() {
148         case Info.SELECTMODE:
149             screenValue = new
                Object[]{controller.getSelectedModeNum(),
                listPointer};
150             break;
151 +
152 +             default:
153 +             break;

```

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 4 times.

Code Smell +4

- 1 Duplication
- 2 Duplication
- 3 Duplication
- 4 Duplication

alt + ↑ ↓ to navigate issue locations

```
buttonA.setFont(new Font(1 "SanSerif", Font.PLAIN, 30));
```

Define a constant instead of duplicating this literal "SanSerif" 4 times. Why is this an issue?

Code Smell Critical Open Not assigned 10min effort

```
buttonB.setFont(new Font(2 "SanSerif", Font.PLAIN, 30));
buttonC.setFont(new Font(3 "SanSerif", Font.PLAIN, 30));
buttonD.setFont(new Font(4 "SanSerif", Font.PLAIN, 30));
```

```
ic static Font font40 = new Font("SanSerif", Font.PLAIN, 40);
ic static Font font50 = new Font("SanSerif", Font.PLAIN, 50);
ic static Font font75 = new Font("SanSerif", Font.PLAIN, 75);
```

```

17      22      int modeX, modeY;
18      23      TimeKeepingPanel timeKeepingPanel = new TimeKeepingPanel();
19      24      TimeKeepingSetPanel timeKeepingSetPanel = new TimeKeepingSetPanel();
@@ -79,10 +84,10 @@ public class GUI extends JFrame {
79      84      buttonC.setBackground(Color.WHITE);
80      85      buttonD.setBackground(Color.WHITE);
81      86
82      -      buttonA.setFont(new Font("SanSerif", Font.PLAIN, 30));
83      -      buttonB.setFont(new Font("SanSerif", Font.PLAIN, 30));
84      -      buttonC.setFont(new Font("SanSerif", Font.PLAIN, 30));
85      -      buttonD.setFont(new Font("SanSerif", Font.PLAIN, 30));
86      +      buttonA.setFont(GUI.font30);
87      +      buttonB.setFont(GUI.font30);
88      +      buttonC.setFont(GUI.font30);
89      +      buttonD.setFont(GUI.font30);
90
86      91
87      92      buttonA.setBounds(0, 0, 100, 100);
88      93      buttonB.setBounds(500, 0, 100, 100);

```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 7 times.

Code Smell **+7**

1 Duplication

2 Duplication

3 Duplication

```
curTimeLabel.setFont(new Font(1 "SanSerif", Font.PLAIN, 40));
```

Define a constant instead of duplicating this literal "SanSerif" 7 times. Why is this an issue?

Code Smell **Critical** Open Not assigned 16min effort

		55	-	alarmLabels[1].setFont(new Font("SanSerif", Font.PLAIN, 30));
		55	+	alarmLabels[1].setFont(GUI.font30);
27	27	56	56	alarmLabels[1].setText("[OFF] 13:20:42");
28	28	57	57	alarmLabels[1].setOpaque(true);
29	29	58	58	alarmLabels[1].setBackground(Color.WHITE);
30	-	59	59	alarmLabels[1].setHorizontalAlignment(SwingConstants.CENTER);
30	+	60	60	this.add(alarmLabels[1]);
31	31	61	61	
32	32	62	-	alarmLabels[2].setFont(new Font("SanSerif", Font.PLAIN, 30));
33	33	62	+	alarmLabels[2].setFont(GUI.font30);
		63	63	alarmLabels[2].setText("");
45	45	64	64	alarmLabels[2].setOpaque(true);
46	46	65	65	alarmLabels[2].setBackground(Color.WHITE);
47	47	66	66	alarmLabels[2].setHorizontalAlignment(SwingConstants.CENTER);
48	-	67	67	this.add(alarmLabels[2]);
48	+	68	68	
49	49	69	-	alarmLabels[3].setFont(new Font("SanSerif", Font.PLAIN, 30));
50	50	69	+	alarmLabels[3].setFont(GUI.font30);
51	51	70	70	alarmLabels[3].setText("");
52	52	71	71	alarmLabels[3].setOpaque(true);
53	53	72	72	alarmLabels[3].setBackground(Color.WHITE);
54	54			

```

@@ -27,7 +27,7 @@ public class AlarmListPanel extends JPanel {
    27         gridBagConstraints.fill = GridBagConstraints.BOTH;
    28
    29
    30         curTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 40));
    30         curTimeLabel.setFont(GUI.font40);
    31         curTimeLabel.setText("10:12:40");
    32         curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
    33         GUI.setComponentLayout(this.gridBagLayout, this.gridBagConstraints, curTimeLabel, 0, 0, 1, 1, 0.1, 0);
@@ -45,28 +45,28 @@ public class AlarmListPanel extends JPanel {
    45         this.setLayout(new GridLayout(4, 1));
    46         this.setBackground(Color.WHITE);
    47
    48         alarmLabels[0].setFont(new Font("SanSerif", Font.PLAIN, 30));
    48         alarmLabels[0].setFont(GUI.font30);
    49         alarmLabels[0].setText("[OFF] 13:30:20");
    50         alarmLabels[0].setOpaque(true);
    51         alarmLabels[0].setBackground(Color.LIGHT_GRAY);
    52         alarmLabels[0].setHorizontalAlignment(SwingConstants.CENTER);
    53         this.add(alarmLabels[0]);
    54

```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 5 times.

Code Smell +5

- 1 Duplication
- 2 Duplication
- 3 Duplication
- 4 Duplication

src/main/java/view/AlarmListPanel.java

```

27 27    @@ -27,7 +27,7 @@ public class AlarmListPanel extends JPanel {
28 28        gridBagConstraints.fill = GridBagConstraints.BOTH;
29 29
30 30 -    curTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 40));
31 31 +    curTimeLabel.setFont(GUI.font40);
32 32    curTimeLabel.setText("10:12:40");
33 33    curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
34 34    GUI.setComponentLayout(this.gridBagLayout, this.gridBagConstraints, curTimeLabel, 0, 0, 1, 1, 0.1, 0.1);
35 35
36 36 @@ -45,28 +45,28 @@ public class AlarmListPanel extends JPanel {
37 37        this.setLayout(new GridLayout(4, 1));
38 38        this.setBackground(Color.WHITE);
39 39
40 40
41 41
42 42
43 43
44 44
45 45 @@ -45,28 +45,28 @@ public class AlarmListPanel extends JPanel {
46 46        this.setLayout(new GridLayout(4, 1));
47 47        this.setBackground(Color.WHITE);
48 48
49 49 -    alarmLabels[0].setFont(new Font("SanSerif", Font.PLAIN, 30));
50 50 +    alarmLabels[0].setFont(GUI.font30);
51 51    alarmLabels[0].setText("[OFF] 13:30:20");
52 52    alarmLabels[0].setOpaque(true);
53 53    alarmLabels[0].setBackground(Color.LIGHT_GRAY);
54 54    alarmLabels[0].setHorizontalAlignment(SwingConstants.CENTER);
55 55    this.add(alarmLabels[0]);

```

```
curTimeLabel.setFont(new Font( 1 "SanSerif", Font.PLAIN, 40));
```

Define a constant instead of duplicating this literal "SanSerif" 5 times. Why is this an issue?

Code Smell Critical Open Not assigned 12min effort

```

55 55 -    alarmLabels[1].setFont(new Font("SanSerif", Font.PLAIN, 30));
56 56 +    alarmLabels[1].setFont(GUI.font30);
57 57    alarmLabels[1].setText("[OFF] 13:20:42");
58 58    alarmLabels[1].setOpaque(true);
59 59    alarmLabels[1].setBackground(Color.WHITE);
60 60    alarmLabels[1].setHorizontalAlignment(SwingConstants.CENTER);
61 61    this.add(alarmLabels[1]);
62 62
63 63 -    alarmLabels[2].setFont(new Font("SanSerif", Font.PLAIN, 30));
64 64 +    alarmLabels[2].setFont(GUI.font30);
65 65    alarmLabels[2].setText("");
66 66    alarmLabels[2].setOpaque(true);
67 67    alarmLabels[2].setBackground(Color.WHITE);
68 68    alarmLabels[2].setHorizontalAlignment(SwingConstants.CENTER);
69 69    this.add(alarmLabels[2]);
70 70
71 71 -    alarmLabels[3].setFont(new Font("SanSerif", Font.PLAIN, 30));
72 72 +    alarmLabels[3].setFont(GUI.font30);
73 73    alarmLabels[3].setText("");
74 74    alarmLabels[3].setOpaque(true);
75 75    alarmLabels[3].setBackground(Color.WHITE);

```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 5 times.

Code Smell +5

- 1 Duplication
- 2 Duplication
- 3 Duplication

src/main/java/view/ScheduleListPanel.java

```

@@ -29,7 +29,7 @@ public class ScheduleListPanel extends JPanel {
29 29
30 30     gridBagConstraints.fill = GridBagConstraints.BOTH;
31 31
32 32 -     curTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 40));
32 32 +     curTimeLabel.setFont(GUI.Font40);
33 33     curTimeLabel.setText("10 : 12 : 40");
34 34     curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
35 35     GUI.setComponentLayout(this.gridBagLayout, this.gridBagConstraints, curTimeLabel, 0, 0, 1, 1, 0.1, 0.1);
@@ -47,28 +47,28 @@ public class ScheduleListPanel extends JPanel {
47 47     this.setLayout(new GridLayout(4, 1));
48 48     this.setBackground(Color.WHITE);
49 49
50 50 -     scheduleLabels[0].setFont(new Font("SanSerif", Font.PLAIN, 30));
50 50 +     scheduleLabels[0].setFont(GUI.Font30);
51 51     scheduleLabels[0].setText("ETC 05.25 MON 13:30:20");
52 52     scheduleLabels[0].setOpaque(true);
53 53     scheduleLabels[0].setBackground(Color.GRAY);
54 54     scheduleLabels[0].setHorizontalAlignment(SwingConstants.CENTER);
55 55     this.add(scheduleLabels[0]);
56 56

```

```
curTimeLabel.setFont(new Font(1 "SanSerif", Font.PLAIN, 40));
```

Define a constant instead of duplicating this literal "SanSerif" 5 times. Why is this an issue?

Code Smell Critical Open Not assigned 12min effort

```

57 57 -     scheduleLabels[1].setFont(new Font("SanSerif", Font.PLAIN, 30));
57 57 +     scheduleLabels[1].setFont(GUI.Font30);
58 58     scheduleLabels[1].setText("CLA 05.27 15:20:42");
59 59     scheduleLabels[1].setOpaque(true);
60 60     scheduleLabels[1].setBackground(Color.WHITE);
61 61     scheduleLabels[1].setHorizontalAlignment(SwingConstants.CENTER);
62 62     this.add(scheduleLabels[1]);
63 63
64 64 -     scheduleLabels[2].setFont(new Font("SanSerif", Font.PLAIN, 30));
64 64 +     scheduleLabels[2].setFont(GUI.Font30);
65 65     scheduleLabels[2].setText("");
66 66     scheduleLabels[2].setOpaque(true);
67 67     scheduleLabels[2].setBackground(Color.WHITE);
68 68     scheduleLabels[2].setHorizontalAlignment(SwingConstants.CENTER);
69 69     this.add(scheduleLabels[2]);
70 70
71 71 -     scheduleLabels[3].setFont(new Font("SanSerif", Font.PLAIN, 30));
71 71 +     scheduleLabels[3].setFont(GUI.Font30);
72 72     scheduleLabels[3].setText("");
73 73     scheduleLabels[3].setOpaque(true);
74 74     scheduleLabels[3].setBackground(Color.WHITE);

```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 11 times.

Code Smell +11

- 1 Duplication
- 2 Duplication
- 3 Duplication
- 4 Duplication
- 5 Duplication
- 6 Duplication
- 7 Duplication
- 8 Duplication
- 9 Duplication
- 10 Duplication
- 11 Duplication

alt + ↑ ↓ to navigate

```
src/main/java/view/ScheduleSetPanel.java
@@ -17,7 +17,7 @@ public class ScheduleSetPanel extends JPanel {
17 17     this.setLayout(new GridLayout(4, 1));
18 18     this.setBackground(Color.WHITE);
19 19
20 20 -     curTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 40));
21 21 +     curTimeLabel.setFont(GUI.font40);
22 22     curTimeLabel.setText("10:12:40");
23 23     curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
24 24     this.add(curTimeLabel);
@@ -38,17 +38,17 @@ public class ScheduleSetPanel extends JPanel {
38 38     this.setLayout(new FlowLayout(FlowLayout.CENTER));
39 39     this.setBackground(Color.WHITE);
40 40
41 41 -     hourLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
42 42 +     hourLabel.setFont(GUI.font75);
43 43     hourLabel.setText("10");
44 44     hourLabel.setHorizontalAlignment(SwingConstants.CENTER);
45 45     this.add(hourLabel);
46 46 -     colon1.setFont(new Font("SanSerif", Font.PLAIN, 75));
47 47 +     colon1.setFont(GUI.font75);
48 48     colon1.setText(":");
49 49     colon1.setHorizontalAlignment(SwingConstants.CENTER);
50 50     this.add(colon1);
51 51 -     minuteLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
52 52 +     minuteLabel.setFont(GUI.font75);
53 53     minuteLabel.setText("12");
54 54     minuteLabel.setHorizontalAlignment(SwingConstants.CENTER);
55 55     this.add(minuteLabel);
@@ -66,27 +66,27 @@ public class ScheduleSetPanel extends JPanel {
66 66     this.setLayout(new FlowLayout(FlowLayout.CENTER));
67 67     this.setBackground(Color.WHITE);
68 68
69 69 -     schtypeLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
70 70 +     schtypeLabel.setFont(GUI.font50);
71 71     schtypeLabel.setText("CLA");
72 72     schtypeLabel.setHorizontalAlignment(SwingConstants.CENTER);
73 73     this.add(schtypeLabel);
74 74 -     spaceLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
75 75 +     spaceLabel.setFont(GUI.font50);
76 76     spaceLabel.setText(" ");
77 77     spaceLabel.setHorizontalAlignment(SwingConstants.CENTER);
78 78     this.add(spaceLabel);
```

```
curTimeLabel.setFont(new Font(1 "SanSerif", Font.PLAIN, 40));
```

Define a constant instead of duplicating this literal "SanSerif" 11 times. Why is this an issue?

Code Smell Critical Open Not assigned 24min effort

```
79 79 -     monthLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
80 80 +     monthLabel.setFont(GUI.font50);
81 81     monthLabel.setText("01");
82 82     monthLabel.setHorizontalAlignment(SwingConstants.CENTER);
83 83     this.add(monthLabel);
84 84 -     dot1.setFont(new Font("SanSerif", Font.PLAIN, 50));
85 85 +     dot1.setFont(GUI.font50);
86 86     dot1.setText(".");
87 87     dot1.setHorizontalAlignment(SwingConstants.CENTER);
88 88     this.add(dot1);
89 89 -     dayLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
90 90 +     dayLabel.setFont(GUI.font50);
91 91     dayLabel.setText("01");
92 92     dayLabel.setHorizontalAlignment(SwingConstants.CENTER);
93 93     this.add(dayLabel);
@@ -171,9 +171,9 @@ public class ScheduleSetPanel {
171 171     GUI underline(labels[i]);
172 172     } else {
173 173         if ((i == 0) || (i == 1)) {
174 174 -             GUI.deleteUnderline(labels[i], new Font("SanSerif", Font.PLAIN, 75));
175 175 +             GUI.deleteUnderline(labels[i], GUI.font75);
176 176     } else {
177 177 -             GUI.deleteUnderline(labels[i], new Font("SanSerif", Font.PLAIN, 50));
178 178 +             GUI.deleteUnderline(labels[i], GUI.font50);
```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 6 times.

Code Smell +6

1 Duplication

```
curTimeLabel.setFont(new Font(1 "SanSerif", Font.PLAIN, 40));
```

Define a constant instead of duplicating this literal "SanSerif" 6 times. Why is this an issue?

Code Smell Critical Open Not assigned 14min effort

src/main/java/view/StopWatchPanel.java

```

@@ -19,7 +19,7 @@ public class StopwatchPanel extends JPanel {
19 19
20 20     gridBagConstraints.fill = GridBagConstraints.BOTH;
21 21
22 22 -     curTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 40));
22 22 +     curTimeLabel.setFont(GUI.font40);
23 23     curTimeLabel.setText("10:12:40");
24 24     curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
25 25     GUI.setComponentLayout(this.gridBagLayout, this.gridBagConstraints, curTimeLabel, 0, 0, 1, 1, 0.1, 0.1);

@@ -43,27 +43,27 @@ public class StopwatchPanel extends JPanel {
43 43     this.setLayout(new FlowLayout(FlowLayout.CENTER));
44 44     this.setBackground(Color.WHITE);
45 45
46 46 -     hourLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
46 46 +     hourLabel.setFont(GUI.font75);
47 47     hourLabel.setText("00");
48 48     hourLabel.setHorizontalAlignment(SwingConstants.CENTER);
49 49     this.add(hourLabel);
50 50
51 51 -     colon1.setFont(new Font("SanSerif", Font.PLAIN, 75));
51 51 +     colon1.setFont(GUI.font75);
52 52     colon1.setText(":");
53 53     colon1.setHorizontalAlignment(SwingConstants.CENTER);
54 54     this.add(colon1);
55 55

```

```

-     minuteLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
56 +     minuteLabel.setFont(GUI.font75);
57     minuteLabel.setText("00");
58     minuteLabel.setHorizontalAlignment(SwingConstants.CENTER);
59     this.add(minuteLabel);
60
-     colon2.setFont(new Font("SanSerif", Font.PLAIN, 75));
61 +     colon2.setFont(GUI.font75);
62     colon2.setText(":");
63     colon2.setHorizontalAlignment(SwingConstants.CENTER);
64     this.add(colon2);
65
-     secondLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
66 +     secondLabel.setFont(GUI.font75);
67     secondLabel.setText("00");
68     secondLabel.setHorizontalAlignment(SwingConstants.CENTER);
69     this.add(secondLabel);

```


Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 3 times.

Code Smell +3

src\main\java\view\TimeKeepingPanel.java

```
1  @@ -16,17 +16,17 @@ public class TimeKeepingPanel extends JPanel {
2
3  16      16      this.setLayout(new GridLayout(4, 1));
4  17      17      this.setBackground(Color.WHITE);
5  18      18
6  19  -      19      curScheduleLabel.setFont(new Font("SanSerif", Font.PLAIN, 30));
7  19  +      19      curScheduleLabel.setFont(GUI.font30);
8  20      20      curScheduleLabel.setText("");
9  21      21      curScheduleLabel.setHorizontalAlignment(SwingConstants.CENTER);
10 22      22      this.add(curScheduleLabel);
11 23      23
12 24  -      24      curTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
13 24  +      24      curTimeLabel.setFont(GUI.font75);
14 25      25      curTimeLabel.setText("Loading...");
15 26      26      curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
16 27      27      this.add(curTimeLabel);
17 28      28
18 29  -      29      curDateLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
19 29  +      29      curDateLabel.setFont(GUI.font50);
20 30      30      curDateLabel.setText("");
21 31      31      curDateLabel.setHorizontalAlignment(SwingConstants.CENTER);
22 32      32      this.add(curDateLabel);
```

```
curScheduleLabel.setFont(new Font(1 "SanSerif", Font.PLAIN, 30));
```

Define a constant instead of duplicating this literal "SanSerif" 3 times. Why is this an

Code Smell Critical Open Not assigned 8min effort

```
);
```

```
talAlignment(SwingConstants.CENTER);
```

```
nt(2 "SanSerif", Font.PLAIN, 75));
```

```
ng...");
```

```
lignment(SwingConstants.CENTER);
```

```
nt(3 "SanSerif", Font.PLAIN, 50));
```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 12 times.

Code Smell +12

src\main\java\view\TimeKeepingSetPanel.java

```

@@ -39,27 +39,27 @@ public class TimeKeepingSetPanel extends JPanel {
39      39          this.setLayout(new FlowLayout(FlowLayout.CENTER));
40      40          this.setBackground(Color.WHITE);
41      41
42      42          hourLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
43      43          hourLabel.setText("10");
44      44          hourLabel.setHorizontalAlignment(SwingConstants.CENTER);
45      45          this.add(hourLabel);
46      46
47      47          colon1.setFont(new Font("SanSerif", Font.PLAIN, 75));
48      48          colon1.setText(":");
49      49          colon1.setHorizontalAlignment(SwingConstants.CENTER);
50      50          this.add(colon1);
51      51
52      52          minuteLabel.setFont(new Font("SanSerif", Font.PLAIN, 75));
53      53          secondLabel.setText("40");
54      54          secondLabel.setHorizontalAlignment(SwingConstants.CENTER);
55      55          this.add(secondLabel);
@@ -77,27 +77,27 @@ public class TimeKeepingSetPanel extends JPanel {
77      77          this.setLayout(new FlowLayout(FlowLayout.CENTER));
78      78          this.setBackground(Color.WHITE);
79      79

```

```
hourLabel.setFont(new Font( 1 "SanSerif", Font.PLAIN, 75));
```

Define a constant instead of duplicating this literal "SanSerif" 12 times.

Code Smell Critical Open Not assigned 26min effort

```

1.setText("10");
1.setHorizontalAlignment(SwingConstants.CENTER);
(hourLabel);
setFont(new Font( 2 "SanSerif", Font.PLAIN, 75));

```

```

80      80          yearLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
81      81          yearLabel.setFont(GUI.font50);
82      82          yearLabel.setText("2020");
83      83          yearLabel.setHorizontalAlignment(SwingConstants.CENTER);
84      84          this.add(yearLabel);
85      85
86      86          dot1.setFont(new Font("SanSerif", Font.PLAIN, 50));
87      87          dot1.setFont(GUI.font50);
88      88          dot1.setText(".");
89      89          dot1.setHorizontalAlignment(SwingConstants.CENTER);
90      90          this.add(dot1);
91      91
92      92          monthLabel.setFont(new Font("SanSerif", Font.PLAIN, 50));
93      93          monthLabel.setFont(GUI.font50);
94      94          monthLabel.setText("01");
95      95          monthLabel.setHorizontalAlignment(SwingConstants.CENTER);
96      96          this.add(monthLabel);
97      97
98      98          dot2.setFont(new Font("SanSerif", Font.PLAIN, 50));
99      99          dot2.setFont(GUI.font50);
100     100          dot2.setText(".");
101     101          dot2.setHorizontalAlignment(SwingConstants.CENTER);
102     102          this.add(dot2);
103     103
@@ -159,9 +159,9 @@ public class TimeKeepingSetPanel extends JPanel {
159     159          GUI.deleteUnderline(labels[i]);
160     160          } else {
161     161              if ((i >= 0) && (i <= 2)) {
162     162                  GUI.deleteUnderline(labels[i], new Font("SanSerif", Font.PLAIN, 75));
163     163                  GUI.deleteUnderline(labels[i], GUI.font75);
164     164              } else {
165     165                  GUI.deleteUnderline(labels[i], new Font("SanSerif", Font.PLAIN, 50));
166     166                  GUI.deleteUnderline(labels[i], GUI.font50);

```

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "San Serif" 7 times.

Code Smell +7

1 Duplication

```
curTimeLabel.setFont(new Font(1 "San Serif", Font.PLAIN, 40));
```

Define a constant instead of duplicating this literal "San Serif" 7 times. Why is this an issue?

Code Smell Critical Open Not assigned 16min effort

File	Line	Original Code	Issue	Proposed Code
src/main/java/view/TimerPanel.java	22	<code>curTimeLabel.setFont(new Font("San Serif", Font.PLAIN, 40));</code>	Duplication	<code>curTimeLabel.setFont(GUI.font40);</code>
	23	<code>curTimeLabel.setText("10:12:40");</code>		
	24	<code>curTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);</code>		
	25	<code>GUI.setComponentLayout(this.gridBagLayout, this.gridBagConstraints, curTimeLab</code>		
	43	<code>@@ -43,27 +43,27 @@ public class TimerPanel extends JPanel {</code>		
	44	<code> this.setLayout(new FlowLayout(FlowLayout.CENTER));</code>		
	45	<code> this.setBackground(Color.WHITE);</code>		
	46	<code>hourLabel.setFont(new Font("San Serif", Font.PLAIN, 75));</code>	Duplication	<code>hourLabel.setFont(GUI.font75);</code>
	47	<code>hourLabel.setText("03");</code>		
	48	<code>hourLabel.setHorizontalAlignment(SwingConstants.CENTER);</code>		
	49	<code>this.add(hourLabel);</code>		
	50			
	51	<code>colon1.setFont(new Font("San Serif", Font.PLAIN, 75));</code>	Duplication	<code>colon1.setFont(GUI.font75);</code>
	52	<code>colon1.setText(":");</code>		
	53	<code>colon1.setHorizontalAlignment(SwingConstants.CENTER);</code>		
	54	<code>this.add(colon1);</code>		
	55			
	56	<code>minuteLabel.setFont(new Font("San Serif", Font.PLAIN, 75));</code>	Duplication	<code>minuteLabel.setFont(GUI.font75);</code>
	57	<code>minuteLabel.setText("07");</code>		
	58	<code>minuteLabel.setHorizontalAlignment(SwingConstants.CENTER);</code>		
	59	<code>this.add(minuteLabel);</code>		
	60			
	61	<code>colon2.setFont(new Font("San Serif", Font.PLAIN, 75));</code>	Duplication	<code>colon2.setFont(GUI.font75);</code>
	62	<code>colon2.setText(":");</code>		
	63	<code>colon2.setHorizontalAlignment(SwingConstants.CENTER);</code>		
	64	<code>this.add(colon2);</code>		
	65			
	66	<code>secondLabel.setFont(new Font("San Serif", Font.PLAIN, 75));</code>	Duplication	<code>secondLabel.setFont(GUI.font75);</code>
	67	<code>secondLabel.setText("31");</code>		
	68	<code>secondLabel.setHorizontalAlignment(SwingConstants.CENTER);</code>		
	69	<code>this.add(secondLabel);</code>		
		<code>@@ -112,7 +112,7 @@ public class TimerPanel extends JPanel {</code>		
	112	<code> if (i == idx) {</code>		
	113	<code> GUI underline(labels[i]);</code>		
	114	<code> } else {</code>		
	115	<code> GUI.deleteUnderline(labels[i], new Font("San Serif", Font.PLAIN, 75));</code>	Duplication	<code> GUI.deleteUnderline(labels[i], GUI.font75);</code>

Static Analysis Feedback

Define a constant instead of duplicating ~

Define a constant instead of duplicating this literal "SanSerif" 6 times.

Code Smell +6

src\main\java\view\WorldTimePanel.java

```

@@ -38,37 +38,37 @@ public class WorldTimePanel extends JPanel {
38 38     this.setLayout(new GridLayout(6, 1));
39 39     this.setBackground(Color.WHITE);
40 40
41 41 -     newYorkTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 25));
41 41 +     newYorkTimeLabel.setFont(GUI.font25);
42 42     newYorkTimeLabel.setText("[GMT-5][New York] 13:30:30");
43 43     newYorkTimeLabel.setBackground(Color.WHITE);
44 44     newYorkTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
45 45     this.add(newYorkTimeLabel);
46 46
47 47 -     londonTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 25));
47 47 +     londonTimeLabel.setFont(GUI.font25);
48 48     londonTimeLabel.setText("[GMT+0][London] 03:51:30");
49 49     londonTimeLabel.setBackground(Color.WHITE);
50 50     londonTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
51 51     this.add(londonTimeLabel);
52 52
53 53 -     parisTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 25));
53 53 +     parisTimeLabel.setFont(GUI.font25);
54 54     parisTimeLabel.setText("[GMT+2][Paris] 05:51:30");
55 55     parisTimeLabel.setBackground(Color.WHITE);
56 56     parisTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
57 57     this.add(parisTimeLabel);
58 58

```

```
newYorkTimeLabel.setFont(new Font(1 "SanSerif", Font.PLAIN, 25));
```

Define a constant instead of duplicating this literal "SanSerif" 6 times. Why is this an issue?

Code Smell Critical Open Not assigned 14min effort

```

59 59 -     romeTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 25));
59 59 +     romeTimeLabel.setFont(GUI.font25);
60 60     romeTimeLabel.setText("[GMT+2][Rome] 05:51:30");
61 61     romeTimeLabel.setBackground(Color.WHITE);
62 62     romeTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
63 63     this.add(romeTimeLabel);
64 64
65 65 -     beijingTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 25));
65 65 +     beijingTimeLabel.setFont(GUI.font25);
66 66     beijingTimeLabel.setText("[GMT+8][Beijing] 11:51:30");
67 67     beijingTimeLabel.setBackground(Color.WHITE);
68 68     beijingTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);
69 69     this.add(beijingTimeLabel);
70 70
71 71 -     tokyoTimeLabel.setFont(new Font("SanSerif", Font.PLAIN, 25));
71 71 +     tokyoTimeLabel.setFont(GUI.font25);
72 72     tokyoTimeLabel.setText("[GMT+9][Tokyo] 12:51:30");
73 73     tokyoTimeLabel.setBackground(Color.WHITE);
74 74     tokyoTimeLabel.setHorizontalAlignment(SwingConstants.CENTER);

```

Remove redeclared local variable

src/test/java/model/AlarmModeTest.java

Rename "alarmMode" which hides the field declared at line 9.

Code Smell

'23' is a magic number.

Code Smell

```

24 ...     public void validHourAlarmMode(){
25         AlarmMode alarmMode = new AlarmMode();

```

Rename "alarmMode" which hides the field declared at line 9.

Code Smell Major Open Not assigned 5min effort

```

26         Alarm alarm = new Alarm();
27         alarm.alarmTime = new Time();
28         alarmMode.getList().add(alarm);

```

```

@@ -22,7 +22,6 @@ public void setAlarm(){

```

```

22
23     @Test
24     public void validHourAlarmMode(){
25 -     AlarmMode alarmMode = new AlarmMode();
26         Alarm alarm = new Alarm();
27         alarm.alarmTime = new Time();
28         alarmMode.getList().add(alarm);

```

```

22
23     @Test
24     public void validHourAlarmMode(){
25         Alarm alarm = new Alarm();
26         alarm.alarmTime = new Time();
27         alarmMode.getList().add(alarm);

```

Static Analysis Feedback

Remove redeclared local variable

'23' is a magic number.

Code Smell

Rename "alarmMode" which hides the field declared at line 9.

Code Smell

'59' is a magic number.

Code Smell

```
41     @Test
42     public void validMinuteAlarmMode(){
43         AlarmMode alarmMode = new AlarmMode();
```

Rename "alarmMode" which hides the field declared at line 9.

Why is this an issue?

Code Smell Major Open Not assigned 5min effort

```
44         Alarm alarm = new Alarm();
45         alarm.alarmTime = new Time();
46         alarmMode.getList().add(alarm);
```

```
@@ -40,7 +39,6 @@ public void validHourAlarmMode(){
```

```
40
41     @Test
42     public void validMinuteAlarmMode(){
43 -     AlarmMode alarmMode = new AlarmMode();
44         Alarm alarm = new Alarm();
45         alarm.alarmTime = new Time();
46         alarmMode.getList().add(alarm);
```

```
39
40     @Test
41     public void validMinuteAlarmMode(){
42         Alarm alarm = new Alarm();
43         alarm.alarmTime = new Time();
44         alarmMode.getList().add(alarm);
```

Remove redeclared local variable

'59' is a magic number.

☹ Code Smell

Rename "alarmMode" which hides the field declared at line 9.

☹ Code Smell

'59' is a magic number.

☹ Code Smell

```

59     @Test
60     public void validSecondAlarmMode(){
61         AlarmMode alarmMode = new AlarmMode();

```

Rename "alarmMode" which hides the field declared at line 9.

Why is this an issue?

☹ Code Smell ⬆ Major ○ Open Not assigned 5min effort

```

62         Alarm alarm = new Alarm();
63         alarm.alarmTime = new Time();
64         alarmMode.getList().add(alarm);

```

```
@@ -58,7 +56,6 @@ public void validMinuteAlarmMode(){
```

```

58
59     @Test
60     public void validSecondAlarmMode(){
61 -     AlarmMode alarmMode = new AlarmMode();
62         Alarm alarm = new Alarm();
63         alarm.alarmTime = new Time();
64         alarmMode.getList().add(alarm);

```

```


56
57     @Test
58     public void validSecondAlarmMode(){
59         Alarm alarm = new Alarm();
60         alarm.alarmTime = new Time();
61         alarmMode.getList().add(alarm);

```

Static Analysis Feedback

Remove unused code

This block of commented-out lines of code should be removed.

 Code Smell

src/test/java/model/WorldTimeModeTest.java

The return value of "substring" must be used.




 Bug

```

34 ... worldTimeValue.substring(worldTimeValue.length() - 8);

```

The return value of "substring" must be used. Why is this an issue?

 Bug  Major  Open Not assigned 10min effort

```

35     assertEquals(tmp.format(date), worldTimeValue.substring(
36         )
37     }
38 }

```

```

@@ -31,7 +31,6 @@ public void makeWorldTimeMode(){
31     for(int i=0; i<6; i++) {
32
33         tmp.setTimeZone(TimeZone.getTimeZone(worldName[i]));
34         String worldTimeValue =
35             worldTimeMode.getValue()[i].cityInfo;
36     }
37 }

```

```

31     for(int i=0; i<6; i++) {
32
33         tmp.setTimeZone(TimeZone.getTimeZone(worldName[i]));
34         String worldTimeValue =
35             worldTimeMode.getValue()[i].cityInfo;
36         assertEquals(tmp.format(date),
37             worldTimeValue.substring(worldTimeValue.length() - 8));
38     }
39 }

```


Static Analysis Feedback

Issue Fixed

Resolve - Add a default case to switch



minjyo committed 15 minutes ago

Resolve - Remove redundant jump



minjyo committed 19 minutes ago

Resolve - Remove unused method parameter X



minjyo committed 21 minutes ago

Resolve - Remove unused local variable



minjyo committed 25 minutes ago

Resolve - Remove unused method parameter X



minjyo committed 28 minutes ago

Resolve - Remove unused import X



minjyo committed 31 minutes ago

Static Analysis Feedback

카테고리

SQA Review

관리자

재범 박 민우 김

최초작성시간

Jun 16, 2020 10:08 PM

종류

버그

우선순위

높은 우선순위

담당자

지희 한 재현 김 지호 민 kyueun lee

기한

Jun 21, 2020

상태

완료

요약

Feedback을 참고하여 코드 수정

최종수정자

재범 박

OOAD 수행 소감

김재현

- 팀원들도 다들 바빴을텐데 팀 내 소통이 원활하고 피드백도 빠르게 해줘서 프로젝트를 완성도 높게 마무리할 수 있었습니다.
- SQA를 해주신 분도 다른 사람이 작성한 코드의 버그를 파악하는 것이 꽤 번거로운 일이었을텐데, 다방면으로 저희 프로그램을 검사해주셨습니다. 덕분에 프로젝트를 더 견고히 만들 수 있었습니다.
- 여태까지 여러 사람과 함께 프로그램을 만든 경험은 있었지만, 기획에 이만큼 공을 들여 만든 것은 처음이라 기획 당시에는 힘들었습니다. 하지만 디자인 및 개발을 할 때 기획하며 만든 문서를 참고하며 진행해서, 혼란과 수고를 줄일 수 있었습니다. 객체지향개발방법론 팀 프로젝트를 마무리하면서, 개발방법론이 존재해야하는 이유와 그 필요성에 대해 다시 한 번 생각해보는 계기가 되었습니다.

OOAD 수행 소감

민지호

- 우리 팀의 SQA분들이 정말 꼼꼼하게 피드백을 잘해주셔서 스펙 리뷰에서 많은 도움이 되었다. 나름 문서를 충분히 자세히 썼다고 생각했었는데, 우리 팀이 아닌 다른 사람들이 보기에는 모호한 표현들이 존재했다. SQA분들 덕분에 더 명확한 표현들로 바꾸게 되어서 이후의 문서화 작업 시에 많은 도움이 될 것 같다.
- 기획-분석-디자인 과정을 거쳐서 문서를 작업할 때 모든 팀원들이 함께 모여서 진행해야 하는 이유가 구현 단계에서 잘 나타난 것 같다. 디자인 단계에서 다같이 설계했던 클래스 다이어그램과 시퀀스 다이어그램을 기반으로 코드를 짜서 서로의 코드를 알아보기가 쉽고, 이후에 생기는 버그를 고칠 때도 빠른 시간 내에 해결할 수 있었다. 예전에 교수님이 언급하셨던 페어 프로그래밍 방식으로 2명이 Controller 코드를 짜고, GUI와 Unit test 코드를 1명씩 맡아 작업하여 분업화가 잘 되었다. 또, 코로나로 인해 온라인으로 진행한 수업 임에도 직접 만나서 팀플을 수행해야하는 수업 이기도 하고, 팀원들 모두가 3,4학년이라 일정이 바빠 이전에 수행했던 팀플들보다 시간 약속의 중요성이 더 잘 나타났던 학기였다.
- 이번 학기에 이 수업과 소프트웨어 검증 V&V 수업을 병행하면서, 개발과 검증 중 나와 맞는 분야도 더 확실히 알게 되었고, 양쪽의 입장을 이해하게 된 뜻 깊은 경험이었다.

OOAD 수행 소감

이규은

- SQA가 매우 꼼꼼하게 저희 팀에서 예상치 못한 버그를 알려주셨고, 덕분에 양질의 결과물을 만들 수 있었습니다. 또한, 각 버그들이 어떤 순서로 버튼 입력이 들어왔을 때 발생하였는지 등 세세한 부분까지 알려주셔서 버그를 고칠 때 수월하게 진행할 수 있었습니다. slack을 통한 질문과 그에 따른 피드백도 빠르게 이루어져 SQA 팀과 소통의 문제 없이 프로젝트를 진행할 수 있었습니다.
- 온라인 수업이기 때문에 모임에 제한이 있었습니다. 이를 극복하기 위해 역할 분담을 통해 팀원들이 각자의 할 일에만 집중할 수 있게 하였고, 결과적으로 팀프로젝트를 효율성 있게 진행할 수 있었습니다.
- 설계를 상세하게 하고, 만들어진 모델을 보며 코딩을 시작하니 코드를 짜는 것이 생각보다 어렵지 않았습니다. 또한, 버그를 고칠 때에도 큰 틀을 보며 문제점을 찾고 그 부분만 수정할 수 있다 보니 유지 보수도 비교적 간단하다고 느꼈습니다. 이를 통해 설계 단계의 중요성을 다시 한 번 깨달았습니다.

OOAD 수행 소감

한지희

- 초반 설계 과정을 진행할 때는 사실 과연 이렇게까지 상세한 설계가 꼭 필요한 것일까, 설계를 하는 데 필요 이상의 시간을 소모하여서 결국 비효율적인 방법이지 아닐까 하는 의문도 가지고 있었다. 하지만 최종 구현과 테스트 단계에서 앞부분의 설계가 없었다면 담당 파트끼리 구조가 달라지거나, 생각한 기능 역시 조금씩 달라서 코드를 합칠 때 오류가 발생하고, 팀원과의 소통 과정에서도 문제가 생겼을 것이라는 생각을 하게 되었다. 또한 설계 과정을 통해서 해당 시스템을 유지·보수를 하기에 유리한 구조로 시스템을 개발할 수 있었다.
- 내가 직접 작성한 문서와 코드를 보았을 때는 모두 문제가 없어 보였고 완벽해 보였지만, 실제 테스트 결과는 꼭 완벽하지만은 않았다. SQA 없이 진행했다면 찾지 못했을 버그도 많았을 것이고, 이 과정을 통해서 결국 더욱 견고한 시스템을 만들 수 있게 된 것 같다. 꼼꼼한 테스트와 SQA와의 의사소통 역시 잘 진행되어서 좋았다.
- 실제 버그가 발생하지 않아도, 그렇게 될 확률이 높은 코드를 알려주는 것이 매우 신기했다. 평소 위험한 방식으로 코드를 구현했던 것 같아서 반성도 하게 되었고, 조금 더 좋은 코드를 작성할 수 있는 개발자로 성장하였다.