

2020 Software V&V

【 2nd Testing Report 】

Team #1
201411295 이상훈

Contents

1. Specification Review	p. 3
2. System Testing	
1) Category-Partition Test	p.4
2) Pair-wise Test	p.11
3) Brute-Force Test	p.15
3. Static Analysis	p.16

1. [A2] Specification Review

Stage	Page	Review
2041	-	모든 Use-Case에 '깜빡인다'라고 쓰여 있으나 실제로 깜빡이지 않음.
2041	6	Use Case 3. A1 시나리오에서 허용범위가 어떻게 설정되어 있으며 어떤 값이 최대/최소인지 명시되지 않았고 어떤 상황에 최대로 초기화하고 어떤 상황에 최소로 초기화되는지 명시되지 않음.
2041	7	Use Case 4. 실제로는 Sub Segment Display에 RUN 이라고 표시되나 이에 대한 설명 없음.
2041	9	Use Case 6. 실제로는 Sub Segment Display에 WAIT 이라고 표시되나 이에 대한 설명 없음.
2041	8	Use Case 5. A1 시나리오에서 허용범위가 어떻게 설정되어 있으며 어떤 값이 최대/최소인지 명시되지 않았고 어떤 상황에 최대로 초기화하고 어떤 상황에 최소로 초기화되는지 명시되지 않음.
2041	11	Use Case 8. Beep가 몇 초간 울리는 지 명시되지 않음.
2041	13	Use Case 10. Stopwatch의 증가를 멈추고 무엇을 표시하는지 명시하지 않음.
2041	14	Use Case 11. 실제로는 Main 7-Segment Display에 초기화된 시간이 표시되나 이에 대한 설명 없음.
2041	15	Use Case 12. Segment2가 무엇인지 명시되지 않음.
2041	16	Use Case 13. 해당 Use-Case의 아랫부분이 잘려있어서 보이지 않음.
2041	16	Use Case 13. 실제로는 알람이 00초로 설정이 저장되나 명시되지 않음.
2041	16	Use Case 13. A3 시나리오에서 허용범위가 어떻게 설정되어 있으며 어떤 값이 최대/최소인지 명시되지 않았고 어떤 상황에 최대로 초기화하고 어떤 상황에 최소로 초기화되는지 명시되지 않음.
2041	17	Use Case 14. 실제로는 Sub Segment Display에 SET이라고 표시되나 이에 대한 설명 없음.
2041	18	Use Case 15. 실제로는 Sub Segment Display에 ---으로 표시되나 이에 대한 설명 없음.
2041	23	Use Case 20. 시간대가 어떤 단위인지 명시되지 않음.
2041	24	Use Case 22. 시간대가 어떤 단위인지 명시되지 않음.
2041	21	Use Case 23. 시간대가 어떤 단위인지 명시되지 않음.
2044	76	Class Diagram에서 Buzzer class의 멤버 변수가 private으로 표시되어 있지만 실제 코드에서는 private이 아니다.

2. [A2] System Testing

1. Category-Partition Testing

Group	Category	Value	Constraint
State	Current Display	TimeKeeping	-
		SetTime	
		Timer	
		SetTimer	
		Timer-stopped	
		Timer-running	
		Stopwatch-stopped	
		Stopwatch-running	
		Alarm	
		SetAlarm	
		WorldTime	
		TurnipCalculator	
		TurnipCalculator-input	
		SetMode	
	Current Beep	none	
beep			
Inputs	Input Ways	button A	
		button B	
		button C	
		button D	
		Wait 5 Sec	
		Wait 60 Sec	

All Test Cases = 14*2*6 = 168

#	Current Display	Beep	Input	Expected Result	Test Result
1	TimeKeep	none	button A	AM/PM Switch	Pass
2	TimeKeep	none	button B	Go to next mode	Pass
3	TimeKeep	none	button C	Go to Set Time	Pass
4	TimeKeep	none	button D	Go to Mode Change	Pass
5	TimeKeep	none	Wait 5 sec	No Change	Pass
6	TimeKeep	none	Wait 60 sec	Go to TimeKeeping	Pass
7	SetTime	none	button A	Change Component	Pass
8	SetTime	none	button B	No Change	Pass
9	SetTime	none	button C	Increase Component	Pass
10	SetTime	none	button D	Decrease Component	Pass
11	SetTime	none	Wait 5 sec	No Change	Pass
12	SetTime	none	Wait 60 sec	Go to TimeKeeping	Pass
13	Timer	none	button A	Start or Stop Timer	Pass
14	Timer	none	button B	Go to next mode	Pass
15	Timer	none	button C	Go to Set Timer	Pass
16	Timer	none	button D	Reset Timer	Pass
17	Timer	none	Wait 5 sec	No Change	Pass
18	Timer	none	Wait 60 sec	Go to TimeKeeping	Pass
19	SetTimer	none	button A	Change Component	Pass
20	SetTimer	none	button B	No Change	Pass
21	SetTimer	none	button C	Increase Component	Pass
22	SetTimer	none	button D	Decrease Component	Pass
23	SetTimer	none	Wait 5 sec	No Change	Pass
24	SetTimer	none	Wait 60 sec	Go to TimeKeeping	Pass
25	Timer-stoppe d	none	button A	Start Timer	Pass
26	Timer-stoppe d	none	button B	Go to next mode	Pass
27	Timer-stoppe d	none	button C	Go to Set Timer	Pass
28	Timer-stoppe d	none	button D	Reset Timer	Pass
29	Timer-stoppe d	none	Wait 5 sec	No Change	Pass
30	Timer-stoppe d	none	Wait 60 sec	Go to TimeKeeping	Pass

31	Timer-running	none	button A	Stop Timer	Pass
32	Timer-running	none	button B	Go to next mode	Pass
33	Timer-running	none	button C	No Change	Pass
34	Timer-running	none	button D	No Change	Pass
35	Timer-running	none	Wait 5 sec	No Change	Pass
36	Timer-running	none	Wait 60 sec	Go to TimeKeeping	Pass
37	Stopwatch-stopped	none	button A	Start Stopwatch	Pass
38	Stopwatch-stopped	none	button B	Go to next mode	Pass
39	Stopwatch-stopped	none	button C	Record Lap Time	Pass
40	Stopwatch-stopped	none	button D	Reset Stopwatch	Pass
41	Stopwatch-stopped	none	Wait 5 sec	No Change	Pass
42	Stopwatch-stopped	none	Wait 60 sec	Go to TimeKeeping	Pass
43	Stopwatch-running	none	button A	Stop Stopwatch	Pass
44	Stopwatch-running	none	button B	Go to next mode	Pass
45	Stopwatch-running	none	button C	Record Lap Time	Pass
46	Stopwatch-running	none	button D	No Change	Pass
47	Stopwatch-running	none	Wait 5 sec	No Change	Pass
48	Stopwatch-running	none	Wait 60 sec	Go to TimeKeeping	Pass
49	Alarm	none	button A	Go to next Alarm	Pass
50	Alarm	none	button B	Go to next mode	Pass
51	Alarm	none	button C	Go to Set Alarm	Pass
52	Alarm	none	button D	Activate/Deactivate Alarm	Pass
53	Alarm	none	Wait 5 sec	No Change	Pass
54	Alarm	none	Wait 60 sec	Go to TimeKeeping	Pass
55	SetAlarm	none	button A	Change Component	Pass
56	SetAlarm	none	button B	No Change	Pass
57	SetAlarm	none	button C	Increase Component	Pass
58	SetAlarm	none	button D	Decrease Component	Pass
59	SetAlarm	none	Wait 5	No Change	Pass

			sec		
60	SetAlarm	none	Wait 60 sec	Go to TimeKeeping	Pass
61	WorldTime	none	button A	Go to next WorldTime	Pass
62	WorldTime	none	button B	Go to next mode	Pass
63	WorldTime	none	button C	Change TimeKeeping	Pass
64	WorldTime	none	button D	No Change	Pass
65	WorldTime	none	Wait 5 sec	No Change	Pass
66	WorldTime	none	Wait 60 sec	Go to TimeKeeping	Pass
67	TurnipCalculator	none	button A	Go to next Turnip page	Pass
68	TurnipCalculator	none	button B	Go to next mode	Pass
69	TurnipCalculator	none	button C	Go to TurnipCalculator-input	Pass
70	TurnipCalculator	none	button D	Reset Turnip price	Pass
71	TurnipCalculator	none	Wait 5 sec	No Change	Pass
72	TurnipCalculator	none	Wait 60 sec	Go to TimeKeeping	Pass
73	TurnipCalculator-input	none	button A	Change Component	Pass
74	TurnipCalculator-input	none	button B	No Change	Pass
75	TurnipCalculator-input	none	button C	Increase Component	Pass
76	TurnipCalculator-input	none	button D	Decrease Component	Pass
77	TurnipCalculator-input	none	Wait 5 sec	No Change	Pass
78	TurnipCalculator-input	none	Wait 60 sec	Go to TimeKeeping	Pass
79	SetMode	none	button A	Go to next selectable mode	Pass
80	SetMode	none	button B	No Change	Pass
81	SetMode	none	button C	Choose this mode	Pass
82	SetMode	none	button D	Cancel Mode Change & Go to TimeKeeping	Pass
83	SetMode	none	Wait 5 sec	No Change	Pass
84	SetMode	none	Wait 60 sec	Go to TimeKeeping	Pass
85	TimeKeep	beep	button A	beep Turn off	Pass
86	TimeKeep	beep	button B	beep Turn off	Pass
87	TimeKeep	beep	button C	beep Turn off	Pass
88	TimeKeep	beep	button D	beep Turn off	Pass

89	TimeKeep	beep	Wait 5 sec	beep Turn off	Pass
90	TimeKeep	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
91	SetTime	beep	button A	beep Turn off	Pass
92	SetTime	beep	button B	beep Turn off	Pass
93	SetTime	beep	button C	beep Turn off	Pass
94	SetTime	beep	button D	beep Turn off	Pass
95	SetTime	beep	Wait 5 sec	beep Turn off	Pass
96	SetTime	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
97	Timer	beep	button A	beep Turn off	Pass
98	Timer	beep	button B	beep Turn off	Pass
99	Timer	beep	button C	beep Turn off	Pass
100	Timer	beep	button D	beep Turn off	Pass
101	Timer	beep	Wait 5 sec	beep Turn off	Pass
102	Timer	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
103	SetTimer	beep	button A	beep Turn off	Pass
104	SetTimer	beep	button B	beep Turn off	Pass
105	SetTimer	beep	button C	beep Turn off	Pass
106	SetTimer	beep	button D	beep Turn off	Pass
107	SetTimer	beep	Wait 5 sec	beep Turn off	Pass
108	SetTimer	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
109	Timer-stoppe d	beep	button A	beep Turn off	Pass
110	Timer-stoppe d	beep	button B	beep Turn off	Pass
111	Timer-stoppe d	beep	button C	beep Turn off	Pass
112	Timer-stoppe d	beep	button D	beep Turn off	Pass
113	Timer-stoppe d	beep	Wait 5 sec	beep Turn off	Pass
114	Timer-stoppe d	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
115	Timer-runnin g	beep	button A	beep Turn off	Pass
116	Timer-runnin g	beep	button B	beep Turn off	Pass
117	Timer-runnin g	beep	button C	beep Turn off	Pass
118	Timer-runnin	beep	button D	beep Turn off	Pass

119	g Timer-runnin g	beep	Wait 5 sec	beep Turn off	Pass
120	g Timer-runnin g	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
121	Stopwatch-st opped	beep	button A	beep Turn off	Pass
122	Stopwatch-st opped	beep	button B	beep Turn off	Pass
123	Stopwatch-st opped	beep	button C	beep Turn off	Pass
124	Stopwatch-st opped	beep	button D	beep Turn off	Pass
125	Stopwatch-st opped	beep	Wait 5 sec	beep Turn off	Pass
126	Stopwatch-st opped	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
127	Stopwatch-ru nning	beep	button A	beep Turn off	Pass
128	Stopwatch-ru nning	beep	button B	beep Turn off	Pass
129	Stopwatch-ru nning	beep	button C	beep Turn off	Pass
130	Stopwatch-ru nning	beep	button D	beep Turn off	Pass
131	Stopwatch-ru nning	beep	Wait 5 sec	beep Turn off	Pass
132	Stopwatch-ru nning	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
133	Alarm	beep	button A	beep Turn off	Pass
134	Alarm	beep	button B	beep Turn off	Pass
135	Alarm	beep	button C	beep Turn off	Pass
136	Alarm	beep	button D	beep Turn off	Pass
137	Alarm	beep	Wait 5 sec	beep Turn off	Pass
138	Alarm	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
139	SetAlarm	beep	button A	beep Turn off	Pass
140	SetAlarm	beep	button B	beep Turn off	Pass
141	SetAlarm	beep	button C	beep Turn off	Pass
142	SetAlarm	beep	button D	beep Turn off	Pass
143	SetAlarm	beep	Wait 5 sec	beep Turn off	Pass
144	SetAlarm	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
145	WorldTime	beep	button A	beep Turn off	Pass
146	WorldTime	beep	button B	beep Turn off	Pass
147	WorldTime	beep	button C	beep Turn off	Pass

148	WorldTime	beep	button D	beep Turn off	Pass
149	WorldTime	beep	Wait 5 sec	beep Turn off	Pass
150	WorldTime	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
151	TurnipCalculator	beep	button A	beep Turn off	Pass
152	TurnipCalculator	beep	button B	beep Turn off	Pass
153	TurnipCalculator	beep	button C	beep Turn off	Pass
154	TurnipCalculator	beep	button D	beep Turn off	Pass
155	TurnipCalculator	beep	Wait 5 sec	beep Turn off	Pass
156	TurnipCalculator	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
157	TurnipCalculator-input	beep	button A	beep Turn off	Pass
158	TurnipCalculator-input	beep	button B	beep Turn off	Pass
159	TurnipCalculator-input	beep	button C	beep Turn off	Pass
160	TurnipCalculator-input	beep	button D	beep Turn off	Pass
161	TurnipCalculator-input	beep	Wait 5 sec	beep Turn off	Pass
162	TurnipCalculator-input	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
163	SetMode	beep	button A	beep Turn off	Pass
164	SetMode	beep	button B	beep Turn off	Pass
165	SetMode	beep	button C	beep Turn off	Pass
166	SetMode	beep	button D	beep Turn off	Pass
167	SetMode	beep	Wait 5 sec	beep Turn off	Pass
168	SetMode	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass

Test Failed = 0

Test Success = 168

Test 성공률 = 168/168 * 100 = 100.00%

2. Pair Wise Testing

※ Categorized Properties Based Input

Group	Category	Value
State	Current Display	TimeKeeping
		SetTime
		Timer
		SetTimer
		Timer-stopped
		Timer-running
		Stopwatch-stopped
		Stopwatch-running
		Alarm
		SetAlarm
		WorldTime
		TurnipCalculator
		TurnipCalculator-input
		SetMode
	Current Beep	none
beep		
Inputs	Input Ways	button A
		button B
		button C
		button D
		Wait 5 Sec
		Wait 60 Sec

#	Current Display	Current Beep	Input	Expected Result	Test Result
1	Alarm	none	Wait 5 sec	beep Turn off	Pass
2	Alarm	beep	Wait 60 sec	beep Turn off & Go to TimeKeeping	Pass
3	Alarm	beep	button A	beep Turn off	Pass
4	Alarm	beep	button B	beep Turn off	Pass
5	Alarm	beep	button D	beep Turn off	Pass
6	Alarm	beep	button C	beep Turn off	Pass
7	SetAlarm	beep	Wait 5 sec	beep Turn off	Pass
8	SetAlarm	none	Wait 60 sec	Go to TimeKeeping	Pass
9	SetAlarm	beep	button A	beep Turn off	Pass
10	SetAlarm	beep	button B	beep Turn off	Pass
11	SetAlarm	beep	button D	beep Turn off	Pass
12	SetAlarm	beep	button C	beep Turn off	Pass
13	SetMode	none	Wait 60 sec	Go to TimeKeeping	Pass
14	SetMode	beep	Wait 5 sec	beep Turn off	Pass
15	SetMode	beep	button A	beep Turn off	Pass
16	SetMode	beep	button B	beep Turn off	Pass
17	SetMode	beep	button D	beep Turn off	Pass
18	SetMode	beep	button C	beep Turn off	Pass
19	SetTime	beep	button A	beep Turn off	Pass
20	SetTime	none	Wait 60 sec	Go to TimeKeeping	Pass
21	SetTime	beep	Wait 5 sec	beep Turn off	Pass
22	SetTime	beep	button B	beep Turn off	Pass
23	SetTime	beep	button D	beep Turn off	Pass
24	SetTime	beep	button C	beep Turn off	Pass
25	SetTimer	none	button B	Go to next mode	Pass
26	SetTimer	beep	Wait 60 sec	Go to TimeKeeping	Pass
27	SetTimer	beep	Wait 5 sec	beep Turn off	Pass
28	SetTimer	beep	button A	beep Turn off	Pass
29	SetTimer	beep	button D	beep Turn off	Pass
30	SetTimer	beep	button C	beep Turn off	Pass
31	Stopwatch-running	none	button D	No Change	Pass
32	Stopwatch-running	beep	Wait 60 sec	Go to TimeKeeping	Pass
33	Stopwatch-running	beep	Wait 5 sec	beep Turn off	Pass
34	Stopwatch-running	beep	button B	beep Turn off	Pass

35	Stopwatch-running	beep	button A	beep Turn off	Pass
36	Stopwatch-running	beep	button C	beep Turn off	Pass
37	Stopwatch-stopped	beep	button D	beep Turn off	Pass
38	Stopwatch-stopped	none	Wait 60 sec	Go to TimeKeeping	Pass
39	Stopwatch-stopped	beep	Wait 5 sec	beep Turn off	Pass
40	Stopwatch-stopped	beep	button B	beep Turn off	Pass
41	Stopwatch-stopped	beep	button A	beep Turn off	Pass
42	Stopwatch-stopped	beep	button C	beep Turn off	Pass
43	TimeKeeping	none	button A	AM/PM Switch	Pass
44	TimeKeeping	beep	Wait 60 sec	Go to TimeKeeping	Pass
45	TimeKeeping	beep	Wait 5 sec	beep Turn off	Pass
46	TimeKeeping	beep	button B	beep Turn off	Pass
47	TimeKeeping	beep	button D	beep Turn off	Pass
48	TimeKeeping	beep	button C	beep Turn off	Pass
49	Timer	beep	button B	beep Turn off	Pass
50	Timer	none	Wait 60 sec	Go to TimeKeeping	Pass
51	Timer	beep	Wait 5 sec	beep Turn off	Pass
52	Timer	beep	button A	beep Turn off	Pass
53	Timer	beep	button D	beep Turn off	Pass
54	Timer	beep	button C	beep Turn off	Pass
55	Timer-running	beep	button C	beep Turn off	Pass
56	Timer-running	none	Wait 60 sec	Go to TimeKeeping	Pass
57	Timer-running	beep	Wait 5 sec	beep Turn off	Pass
58	Timer-running	beep	button B	beep Turn off	Pass
59	Timer-running	beep	button A	beep Turn off	Pass
60	Timer-running	beep	button D	beep Turn off	Pass
61	Timer-stopped	none	button C	Go to Set Timer	Pass
62	Timer-stopped	beep	Wait 60 sec	Go to TimeKeeping	Pass
63	Timer-stopped	beep	Wait 5 sec	beep Turn off	Pass
64	Timer-stopped	beep	button B	beep Turn off	Pass
65	Timer-stopped	beep	button A	beep Turn off	Pass
66	Timer-stopped	beep	button D	beep Turn off	Pass
67	TurnipCalculator	none	Wait 60 sec	Go to TimeKeeping	Pass
68	TurnipCalculator	beep	Wait 5 sec	beep Turn off	Pass

69	TurnipCalculator	beep	button A	beep Turn off	Pass
70	TurnipCalculator	beep	button B	beep Turn off	Pass
71	TurnipCalculator	beep	button D	beep Turn off	Pass
72	TurnipCalculator	beep	button C	beep Turn off	Pass
73	TurnipCalculator-i nput	none	Wait 60 sec	Go to TimeKeeping	Pass
74	TurnipCalculator-i nput	beep	Wait 5 sec	beep Turn off	Pass
75	TurnipCalculator-i nput	beep	button A	beep Turn off	Pass
76	TurnipCalculator-i nput	beep	button B	beep Turn off	Pass
77	TurnipCalculator-i nput	beep	button D	beep Turn off	Pass
78	TurnipCalculator-i nput	beep	button C	beep Turn off	Pass
79	WorldTime	beep	Wait 60 sec	Go to TimeKeeping	Pass
80	WorldTime	none	Wait 5 sec	beep Turn off	Pass
81	WorldTime	beep	button A	beep Turn off	Pass
82	WorldTime	beep	button B	beep Turn off	Pass
83	WorldTime	beep	button D	beep Turn off	Pass
84	WorldTime	beep	button C	beep Turn off	Pass

Test Failed = 0

Test Success = 84

Test 성공률 = 84/84 * 100 = 100.00%

3. Brute-Force Testing

#	Test Case	Test Result	Description
-	여러 Beep가 1초 이상 5초 미만으로 중첩되어 발생할 때 모든 Beep가 정확히 5초 동안 울리다가 끝나는가	-	-
1	Set Mode에서 Mode가 저장되지 않은 상태에서 60초간 입력이 없을 때 Set Mode가 취소되고 TimeKeeping 화면으로 돌아가지는가	Pass	Set Mode에서 60초간 입력이 없을 때 TimeKeeping으로 화면이 바뀐다.
2	Timer나 Stopwatch를 실행시키고 모드를 변경해도 시간이 정상적으로 흐르는가	Pass	Timer와 Stopwatch를 실행시키고 모드를 변경해도 시간이 정상적으로 흐른다.
3	Timer나 Stopwatch를 실행시키고 Set Mode에서 모드 선택 중에도 시간이 흐르는가	Pass	Timer와 Stopwatch를 실행시키고 Set Mode에서 모드 선택을 하고 있을 때도 시간이 정상적으로 흐른다.
4	Alarm 시간을 24시 표기로 설정하고 TimeKeeping의 시간을 AM/PM으로 설정했을 때 알람이 정상 작동 하는가	Pass	Alarm을 22시로 설정하고 TimeKeeping의 시간이 PM 10시일 때 Alarm이 정상 작동
5	Timer가 시간이 0초가 되어 Beep가 울리기 시작한 후 5초 이내로 다시 타이머를 리셋하고 시작할 수 있는가	Fail	Timer가 시간이 0초가 되어 Beep가 울리기 시작한 후 5초 이내로 Timer를 리셋할 수 없다.
6	Alarm이 울리자마자 1분 내로 Deactivate한 후 다시 Activate하였을 때 알람이 울리지 않는가.	Pass	Alarm이 울린 뒤 1분 내로 Deactive후 다시 Active 하여도 알람이 울리지 않는다.

기존 테스트중 하나가 Spec 변경으로 인해 실행할 수 없는 테스트로 바뀌었다.

Test Failed = 1

Test Success = 6

Test 성공률 = 5/6 = 83.3%

3. [A2] Static Analysis

※ Sonarqube에서 Sonarqube 자체 Rule 358개와 PMD Rule 3개, Checkstyle Rule 11개를 모은 Custom Sonar Way를 적용하여 코드 정적 분석 실행.
 그 중, SQA가 보기에 유의미한 정적 분석 결과를 정리.

Dir	Line	Rule	Severity	Review
Alarm.java	45	Code Smell	Minor	코드를 지울 때는 주석 처리가 아니라 완전히 지우는 것이 좋다.
Buzzer.java	-	Code Smell	Major	static 변수를 class 인스턴스로 접근 가능하면 위험하다.
Buzzer.java	-	Code Smell	Major	static 변수를 non-static 메소드에서 사용하면 위험하다.
Buzzer.java	33	Code Smell	Minor	try-catch문 뒤에 무의미한 세미 콜론이 붙어있다.
Controller.java	1	Code Smell	Minor	사용되지 않는 패키지 (java.lang.reflect.UndeclaredThrowableException)가 import 되어있다.
Controller.java	405	Bug	Major	404라인에서 할당되었던 alarm[i] 변수의 값이 곧장 새로 할당되었다.
GUI.java	94 ~97	Code Smell	Minor	new Integer(n) 같은 생성자 메소드를 사용하는 것 보다 valueOf를 사용하는 것이 메모리 낭비도 적고 더 깔끔하다.
GUI.java	108 ~112	Code Smell	Minor	modelIndicator부터 segPath2까지의 멤버 변수들은 하나의 메소드 안에서만 할당되고 쓰이는 변수이므로 지역 변수로 바꾸는 것이 좋다.
GUI.java	157	Code Smell	Minor	catch문이 비어있는 것은 권장되지 않는다.
TurnipCalc.java	6	Code Smell	Minor	switch문에 default case가 없는 것은 권장되지 않는다.
TurnipCalc.java	63	Security Hotspot	Minor	Random보다 안전한 SecureRandom과 getInstance메소드를 사용하길 권장한다.