

Software Unit Testing Report_2

김의섭

Content

- Introduction
- Test plan
- Test result

Introduction

- Objective
 - 본 문서는 소프트웨어 공학 개론 B반 T4 팀이 개발한 Digital watch system을 위한 문서이다.

- Reference
 - SRS Ver. DS-2012.DWS.SRS-2.1 (2012-08-17)
 - B. T4 SRA Ver. 6.0
 - B. T4 SDS Ver. 3.0

Test plan

Identifier	Feature	State	Input	Expected Output
UT.000.000	1.1 A button Interface	None	A button input, Tick	A button pressed
UT.000.001	1.2 B button Interface	None	B button input, Tick	A button pressed
UT.000.002	1.3 C button Interface	None	C button input, Tick	A button pressed
UT.000.003	1.4 D button Interface	None	D button input, Tick	A button pressed
UT.000.004	1.5 Input Data	None	a	button_data = 'a'
UT.000.005	1.5 Input Data	None	b	button_data = 'b'
UT.000.006	1.5 Input Data	None	c	button_data = 'c'
UT.000.007	1.5 Input Data	None	d	button_data = 'd'
UT.000.008	1.5 Input Data	None	Others	None

- Interface 는 test 에서 제외

Test plan

Identifier	Feature	State	Input	Expected Output
UT.001.000	2.1.1 Mode Controller	State_data=0	A	State_data==1
UT.001.001		State_data=0	C	State_data==2
UT.001.002		State_data=1	A	State_data==0
UT.001.003		State_data=2	C	State_data==0
<i>Controller</i>	2.1.2 Back light control	backtime	Button_data	Trigger
UT.002.000		None	D	ON_command()
UT.002.001		Backtime!=0	None	Decrease()
UT.002.002		Backtime=0	None	OFF_command()
UT.003.000	2.1.3 On command	None	Trigger	Backtime==200 Text_Colcr==10
UT.004.000	2.1.4 Off command	Backtime=0	Trigger	Text_Colcr==15
UT.005.000	2.1.5 Decrease	Backtime=100	Trigger	Backtime==99

Test plan

Identifier	Feature	State	Input	Expected Output
<i>Controller</i>	2.1.6 Showingtime control	None	Tick, Button_data	
UT.006.000		None	Tick, Time	T_increase() Time_Checker()
<i>Controller</i>	2.1.7 Timekeeping control	State_data	Tick, Button_data	Trigger
UT.007.000		State_data=1	B	TK_increase()
UT.007.001		State_data=1	C	Selected_change()
<i>Controller</i>	2.1.8 Stopwatch control	State_data, main_stw structure	Tick, Button_data	Enable,Disable,Trigger
UT.008.000		State_data=2 main_stw.s_flag=1	A	LT_check()
UT.008.001		State_data=2 main_stw.s_flag=0, main_stw.L_flag=0	A	STW_initialize()
UT.008.002		State_data=2 main_stw.s_flag=0	B	STW_start()
UT.008.003		State_data=2 main_stw.s_flag=0, main_stw.L_flag=0	A	STW_start()
UT.008.004		State_data=2 main_stw.L_flag=1	B	LT_check()
UT.008.005		State_data=2 STW_plustimeime=1	Tick	STW_initialize()

Test plan

Identifier	Feature	State	Input	Expected Output
UT.009.000	2.1.9 T_increase	main_time.milsec = 0	Trigger	main_time.milsec = 1
UT.010.000	2.1.10 Time checker	main_time.milsec = 100 main_time.sec = 0	Trigger	main_time.milsec == 0 main_time.sec == 1
UT.010.001		main_time.sec = 60 main_time.min = 0	Trigger	main_time.sec == 0 main_time.min == 1
UT.010.002		main_time.min = 60 main_time.Hour = 0	Trigger	main_time.min == 0 main_time.Hour == 1
UT.010.003		main_time.Hour = 12 main_time.PMIndicator = 0 main_time.min = 0 main_time.sec = 0 main_time.milsec = 0	Trigger	main_time.PMIndicator == 1
UT.010.004		main_time.Hour = 13 main_time.PMIndicator = 1 main_time.min = 0 main_time.sec = 0 main_time.milsec = 0	Trigger	main_time.Hour == 1
UT.010.005		main_time.Hour = 12 main_time.PMIndicator = 1 main_time.min = 0 main_time.sec = 0 main_time.milsec = 0 main_time.Day = 1	Trigger	main_time.Hour == 0 main_time.PMIndicator == 1 main_time.Day == 2

Test plan

Identifier	Feature	State	Input	Expected Output
UT.010.006		main_time.Day = 32 main_time.Month = 1	Trigger	main_time.Day == 1 main_time.Month == 2
UT.010.007		main_time.Month = 13 main_time.Year = 2012	Trigger	main_time.Month == 1 main_time.min == 2013
UT.010.008		main_time.Year = 2100	Trigger	main_time.Year = 2100
UT.011.000	2.1.11 TK_increase	main_time.Selected = 0 main_time.sec = 0	Trigger	main_time.sec == 1
UT.011.001		main_time.Selected = 0 main_time.sec = 59	Trigger	main_time.sec == 0
UT.011.002		main_time.Selected = 1 main_time.Hour = 0	Trigger	main_time.Hour == 1
UT.011.003		main_time.Selected = 1 main_time.Hour = 12 main_time.PMIndicator = 0	Trigger	main_time.PMIndicator == 1
UT.011.004		main_time.Selected = 1 main_time.Hour = 13 main_time.PMIndicator = 1	Trigger	main_time.Hour == 1
UT.011.005		main_time.Selected = 1 main_time.Hour = 12 main_time.PMIndicator = 1	Trigger	main_time.Hour == 0 main_time.PMIndicator == 0

Test plan

Identifier	Feature	State	Input	Expected Output
UT.011.006		main_time.Selected = 2 main_time.min = 0	Trigger	main_time.min == 1
UT.011.007		main_time.Selected = 2 main_time.min = 59	Trigger	main_time.min == 0
UT.011.008		main_time.Selected = 3 main_time.Year = 2012	Trigger	main_time.Year == 2013
UT.011.009		main_time.Selected = 3 main_time.Year = 2100	Trigger	main_time.Year == 2012
UT.011.010		main_time.Selected = 4 main_time.Month = 1	Trigger	main_time.Month == 2
UT.011.011		main_time.Selected = 4 main_time.min = 13	Trigger	main_time.Month == 1
UT.011.012		main_time.Selected = 5 main_time.Day = 1	Trigger	main_time.Day == 2
UT.011.013		main_time.Selected = 5 main_time.Month = 1 main_time.Day = 32	Trigger	main_time.Day == 1
UT.011.014		main_time.Selected = 5 main_time.Month = 3 main_time.Day = 32	Trigger	main_time.Day == 1
UT.011.015		main_time.Selected = 5 main_time.Month = 4 main_time.Day = 31	Trigger	main_time.Day == 1

Test plan

Identifier	Feature	State	Input	Expected Output
UT.012.000	2.1.12 Selected change	main_time.Selected = 0	Trigger	main_time.Selected == 1
UT.012.001		main_time.Selected = 1	Trigger	main_time.Selected == 2
UT.012.002		main_time.Selected = 2	Trigger	main_time.Selected == 3
UT.012.003		main_time.Selected = 3	Trigger	main_time.Selected == 4
UT.012.004		main_time.Selected = 4	Trigger	main_time.Selected == 5
UT.012.005		main_time.Selected = 5	Trigger	main_time.Selected == 0
UT.013.000	2.1.13 STW start	None	Enable (check = 1)	main_stw.plustime == 1 main_stw.s_flag == 1
UT.013.001		None	Disable (check = 0)	main_stw.plustime == 0 main_stw.s_flag == 0
UT.014.000	2.1.14 STW plustime	main_stw.C_Time.milsec = 0	Trigger	main_stw. C_Time.milsec == 1
UT.014.001		main_stw.C_Time.milsec = 99 main_stw.C_Time.sec = 0	Trigger	main_stw.C_Time.milsec == 0 main_stw.C_Time.sec == 1
UT.014.002		main_stw.C_Time.sec = 60 main_stw.C_Time.min = 0	Trigger	main_stw.C_Time.sec == 0 main_stw.C_Time.min == 1

Test plan

Identifier	Feature	State	Input	Expected Output	
UT.015.000	2.1.15 LT check	State_data=2	Enable (check = 1)	main_stw.L_flag == 1	
UT.015.001		State_data=2	Disable (check = 0)	main_stw.L_flag == 0	
UT.016.000	2.1.16 STW_initialize	State_data=2	Trigger	main_stw.C_Time.min == 0 main_stw.C_Time.sec == 0 main_stw.C_Time.milsec == 0 main_stw.L_flag == 0	
UT.017.000	2.1.17 LY check	main_time.Year =2012	Tick	main_time.Months[0]==31 main_time.Months[1]==29 main_time.Months[2]==31 main_time.Months[3]==30 main_time.Months[4]==31 main_time.Months[5]==30	main_time.Months[6]==31 main_time.Months[7]==31 main_time.Months[8]==30 main_time.Months[9]==31 main_time.Months[10]==30 main_time.Months[11]==31
UT.017.001		main_time.Year =2013	Tick	main_time.Months[0]==31 main_time.Months[1]==28 main_time.Months[2]==31 main_time.Months[3]==30 main_time.Months[4]==31 main_time.Months[5]==30	main_time.Months[6]==31 main_time.Months[7]==31 main_time.Months[8]==30 main_time.Months[9]==31 main_time.Months[10]==30 main_time.Months[11]==31

Test plan

Identifier	Feature	State	Input	Expected Output
UT.018.000	2.1.18 Day check	main_time.Year = 2012 main_time.Month = 1 main_time.Day = 1	Tick	main_time.Date=="SU"
UT.018.001		main_time.Year = 2012 main_time.Month = 1 main_time.Day = 2	Tick	main_time.Date=="MO"
UT.018.002		main_time.Year = 2012 main_time.Month = 1 main_time.Day = 3	Tick	main_time.Date=="TU"
UT.018.003		main_time.Year = 2012 main_time.Month = 1 main_time.Day = 4	Tick	main_time.Date=="WE"
UT.018.004		main_time.Year = 2012 main_time.Month = 1 main_time.Day = 5	Tick	main_time.Date=="TH"
UT.018.005		main_time.Year = 2012 main_time.Month = 1 main_time.Day = 6	Tick	main_time.Date=="FR"
UT.018.006		main_time.Year = 2012 main_time.Month = 1 main_time.Day = 7	Tick	main_time.Date=="SA"

Test plan

Identifier	Feature	State	Input	Expected Output
<i>Controller</i>	2.1.19 Display Control	State_data Main_time Structure main_stw structure		Trigger
UT.019.000		State_Data=0	None	TIME_display()
UT.019.001		State_Data=1	None	TK_display()
UT.019.002		State_Data=2 main_stw.L_flag = 0	None	STW_display()
UT.019.003		State_Data=2 main_stw.L_flag = 1	None	LT_display()

- Display도 test 에서 제외 하겠습니다.

Test result

Automated Test Run Results

Running Suite 2.1.1 Mode Controller		
	Running test DWS.UTC_001_000 ...	Passed
	Running test DWS.UTC_001_001 ...	Passed
	Running test DWS.UTC_001_002 ...	Passed
	Running test DWS.UTC_001_003 ...	Passed
Running Suite 2.1.2 Back light control		
	Running test DWS.UTC_002_000 ...	Passed
	Running test DWS.UTC_002_001 ...	Passed
	Running test DWS.UTC_002_002 ...	Passed
Running Suite 2.1.3 On command		
	Running test DWS.UTC_003_000 ...	Passed
Running Suite 2.1.4 Off command		
	Running test DWS.UTC_004_000 ...	Passed
Running Suite 2.1.5 Decrease		
	Running test DWS.UTC_005_000 ...	Passed
Running Suite 2.1.6 Showingtime control		
	Running test DWS.UTC_006_000 ...	Passed
Running Suite 2.1.7 Timekeeping control		
	Running test DWS.UTC_007_000 ...	Passed
	Running test DWS.UTC_007_001 ...	Passed
Running Suite 2.1.8 Stopwatch control		
	Running test DWS.UTC_008_000 ...	Passed
	Running test DWS.UTC_008_001 ...	Passed
	Running test DWS.UTC_008_002 ...	Passed
	Running test DWS.UTC_008_003 ...	Failed
File Name	C:\Users\SubW.hudson\jobs\test_T4_2\workspace\src\Test1.c	Line Number 209
Condition	strcmp(Verification,"STW_start") == 0	
	Running test DWS.UTC_008_004 ...	Passed
	Running test DWS.UTC_008_005 ...	Passed
Running Suite 2.1.9 T_increase		
	Running test DWS.UTC_009_000 ...	Passed
Running Suite 2.1.10 Time checker		
	Running test DWS.UTC_010_000 ...	Passed
	Running test DWS.UTC_010_001 ...	Passed
	Running test DWS.UTC_010_002 ...	Passed
	Running test DWS.UTC_010_003 ...	Passed
	Running test DWS.UTC_010_004 ...	Passed

Test result

Running test DWS.UTC_010_005 ...		Failed
File Name	C:\Users\Sub\W.hudson\jobs\test_T4_2\workspace\src\Test1.c	Line Number 341
Condition	main_time.Hour == 0 && main_time.PMIndicator == 1 && main_time.Day == 2	
Running test DWS.UTC_010_006 ...		Failed
File Name	C:\Users\Sub\W.hudson\jobs\test_T4_2\workspace\src\Test1.c	Line Number 354
Condition	main_time.Day == 1 && main_time.Month == 2	
Running test DWS.UTC_010_007 ...		Passed
Running test DWS.UTC_010_008 ...		Passed
Running Suite 2.1.11 TK_Increase		
Running test DWS.UTC_011_000 ...		Passed
Running test DWS.UTC_011_001 ...		Passed
Running test DWS.UTC_011_002 ...		Passed
Running test DWS.UTC_011_003 ...		Passed
Running test DWS.UTC_011_004 ...		Passed
Running test DWS.UTC_011_005 ...		Passed
Running test DWS.UTC_011_006 ...		Passed
Running test DWS.UTC_011_007 ...		Passed
Running test DWS.UTC_011_008 ...		Passed
Running test DWS.UTC_011_009 ...		Passed
Running test DWS.UTC_011_010 ...		Passed
Running test DWS.UTC_011_011 ...		Passed
Running test DWS.UTC_011_012 ...		Passed
Running test DWS.UTC_011_013 ...		Failed
File Name	C:\Users\Sub\W.hudson\jobs\test_T4_2\workspace\src\Test1.c	Line Number 567
Condition	main_time.Day == 1	
Running test DWS.UTC_011_014 ...		Failed
File Name	C:\Users\Sub\W.hudson\jobs\test_T4_2\workspace\src\Test1.c	Line Number 581
Condition	main_time.Day == 1	
Running test DWS.UTC_011_015 ...		Failed
File Name	C:\Users\Sub\W.hudson\jobs\test_T4_2\workspace\src\Test1.c	Line Number 595
Condition	main_time.Day == 1	
Running Suite 2.1.12 Selected change		
Running test DWS.UTC_012_000 ...		Passed
Running test DWS.UTC_012_001 ...		Passed
Running test DWS.UTC_012_002 ...		Passed
Running test DWS.UTC_012_003 ...		Passed
Running test DWS.UTC_012_004 ...		Passed
Running test DWS.UTC_012_005 ...		Passed

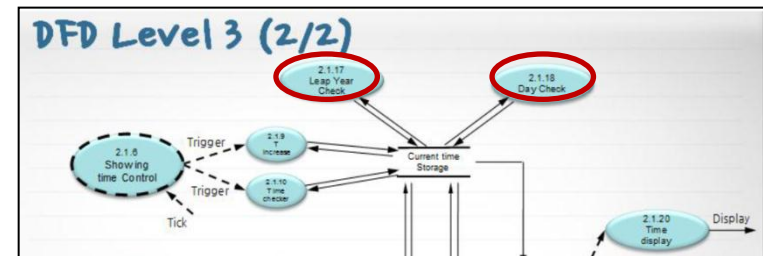
Test result

Running Suite 2.1.13 STW start			Running test DWS.UTC_013_000 ...	Passed		
			Running test DWS.UTC_013_001 ...	Passed		
Running Suite 2.1.14 STW plustime			Running test DWS.UTC_014_000 ...	Passed		
			Running test DWS.UTC_014_001 ...	Passed		
			Running test DWS.UTC_014_002 ...	Passed		
Running Suite 2.1.15 LT check			Running test DWS.UTC_015_000 ...	Passed		
			Running test DWS.UTC_015_001 ...	Passed		
Running Suite 2.1.16 STW_initialize			Running test DWS.UTC_016_000 ...	Passed		
Running Suite 2.1.17 LY check			Running test DWS.UTC_017_000 ...	Passed		
			Running test DWS.UTC_017_001 ...	Passed		
Running Suite 2.1.18 Day check			Running test DWS.UTC_018_000 ...	Passed		
			Running test DWS.UTC_018_001 ...	Passed		
			Running test DWS.UTC_018_002 ...	Passed		
			Running test DWS.UTC_018_003 ...	Passed		
			Running test DWS.UTC_018_004 ...	Passed		
			Running test DWS.UTC_018_005 ...	Passed		
			Running test DWS.UTC_018_006 ...	Passed		
Running Suite 2.1.19 Display Control			Running test DWS.UTC_019_000 ...	Passed		
			Running test DWS.UTC_019_001 ...	Passed		
			Running test DWS.UTC_019_002 ...	Passed		
			Running test DWS.UTC_019_003 ...	Passed		
Cumulative Summary for Run						
Type	Total	Run	Succeeded	Failed	Inactive	
Suites	19	19	- NA -	0	0	
Test Cases	72	72	66	6	0	
Assertions	72	72	66	6	n/a	

Test result

- Fail일 처리된 UT_008_003, UT_010_005, UT_010_008 은 문서에 오타가 있는 것 같아요.
- UT_010_006, UTC_011_013, UTC_011_014, UTC_011_015는 Process 2.1.17과 2.1.18이 먼저(필수) 실행 되어야 제대로 작동하는 것 같아 보입니다. 그래서 Fail 처리 되었습니다.
 - 변수들을 공유하고 있기 때문에 문제가 된 것이라 볼 수 있는데.. 함수간에 의존성이 존재한다? 라는 뜻이 될 까요?
 - 일단 Fail은 되었지만, 그렇다고 이것이 잘했다 못했다 로 말할 수 있을지는 모르겠습니다.
 - 하지만 확실한 것은 문서상 언급이 없었기 때문에 UT는 Fail로 나오게 되었습니다.
- **사소**하지만... **굳이** 이야기를 하자면...
 - SRA에 Process 1.5 은 Process Description에 정의되어있지 않은 Back light button 이란 표현을 쓰셨어요.
 - SRA에 Process 2.1.6 은 입력이 Tick, Button_data이라고 적혀 있는데 구현에서는 Time을 사용하시는 것 같아요.
 - SRA에 Process 2.1.7 은 버튼 a에 대한 언급이 없는 것 같아요.

- 문서도 구현도 잘 하셨습니다~~



2.1.17과 2.1.18은 Tick이 없는 것 같아요