

# Unit Test Report for Digital Watch System

- Test Data
- Test Summary Report

## Project Team

이동아

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## Team Information

이동아: dalee.dslab@gmail.com

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## 1 Introduction

### 1.1 Objectives

본 문서는 2012년 2학기 SE 수업의 T2가 개발한 Digital Watch System (DWS)을 Unit Testing 결과문서이다. T2가 정의한 Unit을 Testing을 수행하고 그 결과를 T2에게 통보하기 위해 작성한다..

### 1.2 References

DS-2012.T3.DWS.UTP-1.0

## 2 Unit test case specification

### 2.1 Test case specification

<Table 1 Test Case Identification> 참조

### 2.2 Test data

<Table 1 Test Case Identification> 참조

### 2.3 Input specifications

<Table 1 Test Case Identification> 참조

### 2.4 Output specifications

<Table 1 Test Case Identification> 참조

## 3 Unit test summary report

### 3.1 Test summary report identifier

Total Number of Suites	15
Total Number of Test Cases	38

### Listing of Registered Suites & Tests

		Initialize Function?	Cleanup Function?	Test Count	Active?
Suite	<b>DWS.UTC_232</b>	Yes	Yes	1	Yes
Test	DWS.UTC_232_00				Yes
Suite	<b>DWS.UTC_231</b>	Yes	Yes	1	Yes
Test	DWS.UTC_231_00				Yes
Suite	<b>DWS.UTC_21B</b>	Yes	Yes	1	Yes
Test	DWS.UTC_21B_00				Yes
Suite	<b>DWS.UTC_21A</b>	Yes	Yes	1	Yes
Test	DWS.UTC_21A_00				Yes
Suite	<b>DWS.UTC_219</b>	Yes	Yes	1	Yes
Test	DWS.UTC_219_00				Yes
Suite	<b>DWS.UTC_218</b>	Yes	Yes	3	Yes
Test	DWS.UTC_218_00				Yes
Test	DWS.UTC_218_01				Yes
Test	DWS.UTC_218_02				Yes
Suite	<b>DWS.UTC_217</b>	Yes	Yes	1	Yes
Test	DWS.UTC_217_00				Yes
Suite	<b>DWS.UTC_216</b>	Yes	Yes	1	Yes
Test	DWS.UTC_216_00				Yes
Suite	<b>DWS.UTC_215</b>	Yes	Yes	6	Yes
Test	DWS.UTC_215_00				Yes
Test	DWS.UTC_215_01				Yes
Test	DWS.UTC_215_02				Yes
Test	DWS.UTC_215_03				Yes
Test	DWS.UTC_215_04				Yes
Test	DWS.UTC_215_05				Yes
Suite	<b>DWS.UTC_214</b>	Yes	Yes	1	Yes
Test	DWS.UTC_214_00				Yes

Suite	<b>DWS.UTC_213</b>	Yes	Yes	1	Yes
Test	DWS.UTC_213_00				Yes
Suite	<b>DWS.UTC_212</b>	Yes	Yes	17	Yes
Test	DWS.UTC_212_00				Yes
Test	DWS.UTC_212_01				Yes
Test	DWS.UTC_212_02				Yes
Test	DWS.UTC_212_03				Yes
Test	DWS.UTC_212_05				Yes
Test	DWS.UTC_212_06				Yes
Test	DWS.UTC_212_07				Yes
Test	DWS.UTC_212_08				Yes
Test	DWS.UTC_212_09				Yes
Test	DWS.UTC_212_10				Yes
Test	DWS.UTC_212_11				Yes
Test	DWS.UTC_212_12				Yes
Test	DWS.UTC_212_13				Yes
Test	DWS.UTC_212_14				Yes
Test	DWS.UTC_212_15				Yes
Test	DWS.UTC_212_16				Yes
Test	DWS.UTC_212_17				Yes
Suite	<b>DWS.UTC_211</b>	Yes	Yes	1	Yes
Test	DWS.UTC_211_00				Yes
Suite	<b>DWS.UTC_240</b>	Yes	Yes	1	Yes
Test	DWS.UTC_240_00				Yes
Suite	<b>DWS.UTC_230</b>	Yes	Yes	1	Yes
Test	DWS.UTC_230_00				Yes

## Automated Test Run Results

Running Suite DWS.UTC_232		
Running test DWS.UTC_232_00 ...		Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\W.Test01.c	<b>Line Number</b> 35
<b>Condition</b>	0	
Running Suite DWS.UTC_231		
Running test DWS.UTC_231_00 ...		Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\W.Test01.c	<b>Line Number</b> 80
<b>Condition</b>	0	
Running Suite DWS.UTC_21B		
Running test DWS.UTC_21B_00 ...		Passed
Running Suite DWS.UTC_21A		
Running test DWS.UTC_21A_00 ...		Passed
Running Suite DWS.UTC_219		
Running test DWS.UTC_219_00 ...		Passed
Running Suite DWS.UTC_218		
Running test DWS.UTC_218_00 ...		Passed
Running test DWS.UTC_218_01 ...		Passed
Running test DWS.UTC_218_02 ...		Passed
Running Suite DWS.UTC_217		
Running test DWS.UTC_217_00 ...		Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\W.Test01.c	<b>Line Number</b> 352
<b>Condition</b>	0	
Running Suite DWS.UTC_216		
Running test DWS.UTC_216_00 ...		Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\W.Test01.c	<b>Line Number</b> 389
<b>Condition</b>	0	

Running Suite DWS_UTC_215	
Running test DWS_UTC_215_00 ...	Passed
Running test DWS_UTC_215_01 ...	Passed
Running test DWS_UTC_215_02 ...	Passed
Running test DWS_UTC_215_03 ...	Passed
Running test DWS_UTC_215_04 ...	Passed
Running test DWS_UTC_215_05 ...	Passed
Running Suite DWS_UTC_214	
Running test DWS_UTC_214_00 ...	Passed
Running Suite DWS_UTC_213	
Running test DWS_UTC_213_00 ...	Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\WTest01.c <b>Line Number</b> 570
<b>Condition</b>	0
Running Suite DWS_UTC_212	
Running test DWS_UTC_212_00 ...	Passed
Running test DWS_UTC_212_01 ...	Passed
Running test DWS_UTC_212_02 ...	Passed
Running test DWS_UTC_212_03 ...	Passed
Running test DWS_UTC_212_05 ...	Passed
Running test DWS_UTC_212_06 ...	Passed
Running test DWS_UTC_212_07 ...	Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\WTest01.c <b>Line Number</b> 768
<b>Condition</b>	a.year == 2012
Running test DWS_UTC_212_08 ...	Passed
Running test DWS_UTC_212_09 ...	Passed
Running test DWS_UTC_212_10 ...	Passed
Running test DWS_UTC_212_11 ...	Passed
Running test DWS_UTC_212_12 ...	Passed
Running test DWS_UTC_212_13 ...	Passed
Running test DWS_UTC_212_14 ...	Passed
Running test DWS_UTC_212_15 ...	Passed
Running test DWS_UTC_212_16 ...	Passed
Running test DWS_UTC_212_17 ...	Passed
Running Suite DWS_UTC_211	
Running test DWS_UTC_211_00 ...	Passed
Running Suite DWS_UTC_240	
Running test DWS_UTC_240_00 ...	Passed

Running Suite DWS_UTC_230	
Running test DWS_UTC_230_00 ...	Failed
<b>File Name</b>	C:\Users\Wdalee\W.hudson\W.jobs\WT3_Testing\W.workspace\W.src\WTest01.c <b>Line Number</b> 1121
<b>Condition</b>	0

Cumulative Summary for Run					
Type	Total	Run	Succeeded	Failed	Inactive
Suites	15	15	- NA -	0	0
Test Cases	38	38	31	7	0
Assertions	133	133	126	7	n/a

### 3.2 Evaluation

T3은 SASD를 이용하여 SRS를 분석한 결과(SRA, SDS)가 구현과 정확히 일치하지는 않으나 Code를 참조하면 일부의 Testing이 수행 가능한 수준으로 시스템이 구현되었다. 일부 UT가 불가능한 부분의 수정/보완이 필요한 것으로 판단된다.



Table 1 Test Case Identification

Identifier	Feature	Pass/Fail
DWS.UTC.100	A, B, C, D 버튼 입력을 받아 Button information에 저장함. 우선순위 고려, 규모가 큰 Unit, 단순한 Spec으로 인해 Testing 불가	
DWS.UTC.200	Button, Time, Stopwatch, Mode Information 을 받아서 Display 및 Light 를 출력해 준다. 규모가 큰 Unit, 단순한 Spec으로 인해 Testing 불가 Printf Testing 불가	
DWS.UTC.110	A가 눌리면 A Button에 1을 출력한다. Interface는 Testing 제외	
DWS.UTC.120	B가 눌리면 B Button에 1을 출력한다. Interface는 Testing 제외	
DWS.UTC.130	C가 눌리면 C Button에 1을 출력한다. Interface는 Testing 제외	
DWS.UTC.140	D가 눌리면 D Button에 1을 출력한다. Interface는 Testing 제외	
DWS.UTC.150	A, B, C button 입력을 받아 button information 1에 1(A), 2(B), 3(C)를 저장 D button 입력을 받아 Button Information 2에 저장 I/O가 다르게 구현됨.	
DWS.UTC.210	Button Info.1, Time, Stopwatch, Mode 을 받아서 Time, Stopwatch, Mode info.에 데이터 저장 및 Display Command 출력 Button Info 입력에 따라서 다른 Display Command 출력함.	

	규모가 큰 Unit, 단순한 Spec으로 인해 Testing 불가 Printf Testing 불가	
DWS.UTC.220	Display commands를 입력 받아서 화면에 출력함.	
	Interface Testing 제외	
DWS.UTC.230	Button info.2를 받아서 Light command를 출력함.	void LightControl(int Button,int* tickcount, MODE* md)
	TurnOnTheLight 함수에 Triggered 변수를 심어서 Testing 진행 하러 했으나 Process sepc의 내용만으로는 Testing 불가	
DWS.UTC.240	Light Command를 받을 때 Light를 출력함	
	Interface Testing 제외	
DWS.UTC.211	State transition diagram의 동작 확인.	
	보류	
DWS.UTC.212	Tick이 100번째 들어올 때마다 Time infor.의 초를 1 증가시킨다. 최대값 제어 포함함.	void IncreaseCurrentTime(TIME *a)
DWS.UTC.212.00	Time.year == 2012 Time.month == 1 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0	Time.year == 2012 Time.month == 1 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 1
DWS.UTC.212.01	Time.year == 2012 Time.month == 1 Time. date == 1 Time.hour == 0 Time.minute == 0	Time.year == 2012 Time.month == 1 Time. date == 1 Time.hour == 0 Time.minute == 1

	Time.second == 59	Time.second == 0
DWS.UTC.212.02	Time.year == 2012 Time.month == 1 Time.date == 1 Time.hour == 0 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 1 Time.date == 1 Time.hour == 1 Time.minute == 0 Time.second == 0
DWS.UTC.212.03	Time.year == 2012 Time.month == 1 Time.date == 1 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 1 Time.date == 2 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.04 중복	Time.year == 2012 Time.month == 1 Time.date == 1 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 1 Time.date == 2 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.05	Time.year == 2012 Time.month == 1 Time.date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 2 Time.date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0

DWS.UTC.212.06	Time.year == 2012 Time.month == 2 Time. date == 28 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 2 Time. date == 29 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.07	Time.year == 2013 Time.month == 2 Time. date == 28 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 3 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.08	Time.year == 2012 Time.month == 3 Time. date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 4 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.09	Time.year == 2012 Time.month == 4 Time. date == 30 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 5 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.10	Time.year == 2012	Time.year == 2012

	Time.month == 5 Time. date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.month == 6 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.11	Time.year == 2012 Time.month == 6 Time. date == 30 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 7 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.12	Time.year == 2012 Time.month == 7 Time. date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 8 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.13	Time.year == 2012 Time.month == 8 Time. date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 9 Time. date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.14	Time.year == 2012 Time.month == 9	Time.year == 2012 Time.month == 10

	Time.date == 30 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.15	Time.year == 2012 Time.month == 10 Time.date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 11 Time.date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.16	Time.year == 2012 Time.month == 11 Time.date == 30 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2012 Time.month == 12 Time.date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0
DWS.UTC.212.17	Time.year == 2012 Time.month == 12 Time.date == 31 Time.hour == 23 Time.minute == 59 Time.second == 59	Time.year == 2013 Time.month == 11 Time.date == 1 Time.hour == 0 Time.minute == 0 Time.second == 0

DWS.UTC.213	Enable 되면 Display Command에 Time info.Time을 출력함.	void DisplayCurrentTime(TIME *time,MODE *mode)
	Printf 검사 불가	
DWS.UTC.214	Enable 되면 Display Command에 Time setting을 출력함	void DisplaySetting(TIME *time,MODE *mode)
	Printf 검사 불가	
DWS.UTC.214.00	Enable	Mode.M_TS = 1 Mode.M_STW = 0 Mode.M_TK = 0
DWS.UTC.215	Trigger 되면 Mode Info의 선택 대상을 바꾼다.	void SwitchSection(MODE *md)
DWS.UTC.215.00	Mode info.sec == 1	Mode info.hour == 1
DWS.UTC.215.01	Mode info.hour == 1	Mode info.minute == 1
DWS.UTC.215.02	Mode info.minute == 1	Mode info.year == 1
DWS.UTC.215.03	Mode info.year == 1	Mode info.month == 1
DWS.UTC.215.04	Mode info.month == 1	Mode info.day == 1
DWS.UTC.215.05	Mode info.day == 1	Mode info.sec == 1
DWS.UTC.216	Trigger되면 Mode info에 선택된 대상 (현재 spec 상으로 알아올 수 없음)의 값을 증가시킨다.	void IncreaseValue(MODE *m, TIME *t)
	Spec 만으로 선택된 대상이 mode info에서 어떻게 표현되는지 알 수 없음	
DWS.UTC.217	Enable 되면 M_STW=true, M_TK, M_TS = false Time info의 hour, minute 정보를 아래와 함께 출력 Mode info.Lap_on == 1 이면 stopwatch info.lap time을 display command로 출력  Mode info.Lap_on == 0 이면 stopwatch 값을 출력	

	Printf 문 Testing 불가	
DWS.UTC.218	Mode info.R_STW == true stopwatch info의 시간정보 1 증가 Mode info.R_STW == true , button info == B → R_STW = false Mode info.R_STW == false , button info == B → R_STW = true	void RunStopwatch(STOPWATCH *sw, MODE *md, int button_info)
DWS.UTC.218.00	md.R_SWT == true	Sw.time ++
DWS.UTC.218.01	Mode info.R_STW == true , button info == B(2)	R_STW = false
DWS.UTC.218.02	Mode info.R_STW == false , button info == B(2)	R_STW = true
DWS.UTC.219	Trigger되면 mode info.LAP_ON = true; stiowatch info.lap time = stopwatch info.stopwatch time;	void RecordLapTime(STOPWATCH *sw, MODE *md)
DWS.UTC.219.00	Trigger Stopwatch time = 10:23:93	Stopwatch laptime = 10:23:93 md.LAP_ON = 1
DWS.UTC.21A	Trigger되면 Stopwatch info의 값을 0으로 수정	void StopwatchReset(STOPWATCH *sw)
DWS.UTC.21A.00	Trigger	Stopwatch time = 0
DWS.UTC.21B	LAP_ON = false; stopwatch info. lap time = 0;	void LapTimeReset(STOPWATCH *sw, MODE *md)
DWS.UTC.21B.00	Trigger	Lap time = 0; LAP_ON = 0
DWS.UTC.231	Button info 2에 값이 들어오거나 Light_time == false 일 때 2.3.2를 trigger 시킴. Button info 2에 값이 들어오면 Light_time = false; Tick이 200번 들어오면 Light_time = true	
DWS.UTC.231.00	Button info 2에 어떤 값이 있어야 하는지 알 수 없음	
DWS.UTC.232	Process Spec 분석 불가	
	SRA의 내용만으로 Testing이 불가능하며, SDS의 구조와도 맞지 않는 형태로 구현된 것으로 판단함.	



