

Unit Test Report for Coffee Machine System

- Test Cases Specification
- Test Summary Report

Project Team

Team 5

Date

2016-11-06

Team Information

201111389 조정원

201210194 김정환

201211352 백대현

201211390 허윤제

Table of Contents

1	Introduction.....	3
	1.1 Objectives.....	3
	1.2 References.....	3
2	Unit test case specification.....	3
	2.1 Testcase specification identifier.....	3
	2.2 Test items.....	10
	2.3Input specifications.....	28
	2.4 Output specifications.....	28
3	Environmental needs.....	28
4	Unit test summary report.....	28
	4.1 Test summary report identifier.....	28
4.2	Evaluation.....	33

1 Introduction

1.1 Objectives

본 문서는 Coffee Machine System의 unit test를 수행한 결과에 대한 report 문서이다. Test 요소들에 대한 test case와 test 수행 결과에 대한 내용을 담고 있다.

1.2 References

DS-2016SE-CM-SRS-1.0

DS-2016SE-CM-SRA-2.3

DS-2016SE-CM-SDS-1.5

T5-2016.CMS.UTP-1.0

2 Unit test case specification

2.1 Test case specification identifier

Table 1 Test case Design Identification

Identifier	Feature	Valid/ Invalid value
CMS.UTC.1100.001	1.1 Extract Button Interface	추출버튼 입력
CMS.UTC.1200.001	1.2 Concentration Button Interface	Volume 이 300 일 때 농도버튼 입력이 들어온다.
CMS.UTC.1200.002	1.2 Concentration Button Interface	Volume 이 100 일 때 농도버튼 입력이 들어온다.
CMS.UTC.1200.003	1.2 Concentration Button Interface	Volume 이 200 일 때 농도버튼 입력이 들어온다.
CMS.UTC.1300.001	1.3 Hot/Cold Button Interface	temperature == 0 일 때 Hot/Cold Button Input 이 들어온다.
CMS.UTC.1300.002	1.3 Hot/Cold Button Interface	temperature == 1 일 때 Hot/Cold Button Input 이 들어온다.
CMS.UTC.1400.001	1.4 Cleaning Button Interface	청소버튼 입력
CMS.UTC.1600.001	1.6 Button Interface Controller	ButtonDetectionData.txt 파일이 없고 forcedTermination_flag=0 이다.

Identifier	Feature	Valid/ Invalid value
CMS.UTC.1600.002	1.6 Button Interface Controller	ButtonDetectionData.txt 파일이 없고 forcedTermination_flag=1 이다.
CMS.UTC.1600.003	1.6 Button Interface Controller	ButtonDetectionData.txt 파일이 있고 forcedTermination_flag=0 이다.
CMS.UTC.1600.004	1.6 Button Interface Controller	ButtonDetectionData.txt 파일이 있고 forcedTermination_flag=1 이다.
CMS.UTC.2400.001	2.4 Sensor Interface Controller	IngredientSensingData.txt 가 있다.
CMS.UTC.2400.002	2.4 Sensor Interface Controller	IngredientSensingData.txt 가 없다. 물,원두,가루의 양을 각각 100, 10, 10 으로 초기화해준다.
CMS.UTC.3110.001	3.1.1 Mode Handler	CMS 을 부팅한 상태에서 terminated == 1, extract_start_flag == 1 이고 clean_flag ==0 이다.
CMS.UTC.3110.002	3.1.1 Mode Handler	CMS 이 작동 중인 상태에서 terminated == 1, extract_start_flag ==0 이고 clean_flag ==0 이다.
CMS.UTC.3110.003	3.1.1 Mode Handler	CMS 이 작동 중인 상태에서 terminated == 0, extract_start_flag ==1 이고 clean_flag ==0 이다.
CMS.UTC.3110.004	3.1.1 Mode Handler	CMS 이 작동 중인 상태에서 terminated == 0, extract_start_flag == 0 이고 clean_flag ==1 이다.
CMS.UTC.3110.005	3.1.1 Mode Handler	CMS 이 작동 중인 상태에서 terminated == 0, extract_start_flag == 1 이고 clean_flag == 1 이다.
CMS.UTC.3110.006	3.1.1 Mode Handler	CMS 이 작동 중인 상태에서 terminated == 0, extract_start_flag ==0 이고 clean_flag == 0 이다.
CMS.UTC.3120.001	3.1.2 Reservation Check	예약 상태가 NONE 이고 current_time 이 11:11 일 때 Trigger 가 들어온다.
CMS.UTC.3120.002	3.1.2 Reservation Check	예약 상태가 NONE 이지만 reserved_clean_complete 값이 1 이고 current_time 이 11:11 일 때 Trigger 가 들어온다.
CMS.UTC.3120.003	3.1.2 Reservation Check	예약 상태가 NONE 이지만 reserved_extract_complete 값이 1 이고 current_time 이 11:11 일 때 Trigger 가 들어온다.
CMS.UTC.3120.004	3.1.2 Reservation Check	예약 상태가 CLEAN 이고 reserved_time 이 12:12 이며 current_time 이 11:11 일 때 Trigger 가 들어온다.
CMS.UTC.3120.005	3.1.2 Reservation Check	예약 상태가 EXTRACT 이고 reserved_time 이 12:12 이며 current_time 이 11:11 일 때 Trigger 가 들어온다.

Identifier	Feature	Valid/ Invalid value
CMS.UTC.3120.006	3.1.2 Reservation Check	예약 상태가 BOTH 이고 reserved_clean_time 과 reserved_extract_time 이 4:12 이며 current_time 이 11:11 일 때 Trigger 가 들어온다.
CMS.UTC.3120.007	3.1.2 Reservation Check	예약 상태가 EXTRACT 이고 reserved_time 과 current_time 이 6:20 일 때 Trigger 가 들어온다.
CMS.UTC.3120.008	3.1.2 Reservation Check	예약 상태가 EXTRACT 이지만 reserved_extract_complete 값이 1 이고 reserved_time 과 current_time 이 4:46 일 때 Trigger 가 들어온다.
CMS.UTC.3120.009	3.1.2 Reservation Check	예약 상태가 CLEAN 이고 reserved_time 과 current_time 이 12:11 일 때 Trigger 가 들어온다.
CMS.UTC.3120.010	3.1.2 Reservation Check	예약 상태가 CLEAN 이고 reserved_clean_complete 값이 1 이고 reserved_time 과 current_time 이 2:1 일 때 Trigger 가 들어온다.
CMS.UTC.3120.011	3.1.2 Reservation Check	예약 상태가 BOTH 이고 reserved_clean_time, reserved_extract_time 그리고 current_time 이 10:5 일 때 Trigger 가 들어온다.
CMS.UTC.3120.012	3.1.2 Reservation Check	예약 상태가 BOTH 이지만 reserved_clean_complete 값이 1 이며 reserved_clean_time, reserved_extract_time 그리고 current_time 이 9:4 일 때 Trigger 가 들어온다.
CMS.UTC.3130.001	3.1.3 Recover	command_type == -1, temperature == -1, volume == -1 일 때 Trigger 가 들어온다.
CMS.UTC.3130.002	3.1.3 Recover	command_type == -1, temperature == COLD, volume == 100 일 때 Trigger 가 들어온다.
CMS.UTC.3130.003	3.1.3 Recover	command_type == COMMAND_CLEAN, temperature == -1, volume == -1 일 때 Trigger 가 들어온다.
CMS.UTC.3130.004	3.1.3 Recover	command_type == COMMAND_CLEAN, temperature == -1, volume == -1 일 때 Trigger 가 들어온다.
CMS.UTC.3130.005	3.1.3 Recover	command_type == COMMAND_RESERVATION_CLEAN, temperature == -1, volume == -1 일 때 Trigger 가 들어온다.
CMS.UTC.3130.006	3.1.3 Recover	command_type == COMMAND_RESERVATION_CLEAN, temperature == HOT, volume == 200 일 때 Trigger 가 들어온다.

Identifier	Feature	Valid/ Invalid value
CMS.UTC.3130.007	3.1.3 Recover	command_type == COMMAND_EXTRACT, temperature == HOT, volume == 100 일 때 Trigger 가 들어온다.
CMS.UTC.3130.008	3.1.3 Recover	command_type == COMMAND_EXTRACT, temperature == HOT, volume == 200 일 때 Trigger 가 들어온다.
CMS.UTC.3130.009	3.1.3 Recover	command_type == COMMAND_EXTRACT, temperature == HOT, volume == 300 일 때 Trigger 가 들어온다.
CMS.UTC.3130.010	3.1.3 Recover	command_type == COMMAND_EXTRACT, temperature == COLD, volume == 100 일 때 Trigger 가 들어온다.
CMS.UTC.3130.011	3.1.3 Recover	command_type == COMMAND_EXTRACT, temperature == COLD, volume == 200 일 때 Trigger 가 들어온다.
CMS.UTC.3130.012	3.1.3 Recover	command_type == COMMAND_EXTRACT, temperature == COLD, volume == 300 일 때 Trigger 가 들어온다.
CMS.UTC.3130.013	3.1.3 Recover	command_type == COMMAND_RESERVATION_EXTRACT, temperature == HOT, volume == 100 일 때 Trigger 가 들어온다.
CMS.UTC.3130.014	3.1.3 Recover	command_type == COMMAND_RESERVATION_EXTRACT, temperature == HOT, volume == 200 일 때 Trigger 가 들어온다.
CMS.UTC.3130.015	3.1.3 Recover	command_type == COMMAND_RESERVATION_EXTRACT, temperature == HOT, volume == 300 일 때 Trigger 가 들어온다.
CMS.UTC.3130.016	3.1.3 Recover	command_type == COMMAND_RESERVATION_EXTRACT, temperature == COLD, volume == 100 일 때 Trigger 가 들어온다.
CMS.UTC.3130.017	3.1.3 Recover	command_type == COMMAND_RESERVATION_EXTRACT, temperature == COLD, volume == 200 일 때 Trigger 가 들어온다.

Identifier	Feature	Valid/ Invalid value
CMS.UTC.3130.018	3.1.3 Recover	command_type == COMMAND_RESERVATION_EXTRACT, temperature == COLD, volume == 300 일 때 Trigger 가 들어온다.
CMS.UTC.3140.001	3.1.4 Execute Controller	Command 가 COMMAND_CLEAN 이다.
CMS.UTC.3140.002	3.1.4 Execute Controller	Command 가 COMMAND_RESERVATION_CLEAN 이 다.
CMS.UTC.3140.003	3.1.4 Execute Controller	Command 가 COMMAND_EXTRACT 이다.
CMS.UTC.3140.004	3.1.4 Execute Controller	Command 가 COMMAND_RESERVATION_EXTRACT 이 다.
CMS.UTC.3150.001	3.1.5 Clean Check	물의 양이 500 미만이다.
CMS.UTC.3150.002	3.1.5 Clean Check	물의 양이 500 이상이다.
CMS.UTC.3160.001	3.1.6 Extract Check	Ingredient Sensing Data 의 커피가루가 사용한 커피가 루이다.
CMS.UTC.3160.002	3.1.6 Extract Check	Ingredient Sensing Data 의 물의 양이 설정한 농도값 보다 작다.
CMS.UTC.3160.003	3.1.6 Extract Check	Ingredient Sensing Data 의 원두의 양이 10g 보다 작 고 커피가루가 없다.
CMS.UTC.3160.004	3.1.6 Extract Check	Ingredient Sensing Data 의 물의 양이 설정한 농도보 다 많고 원두의 양이 10g 보다 많거나 커피가루가 새 것일 경우 설정한 온도가 HOT 이다.
CMS.UTC.3170.001	3.1.7 Commander	Warning 이 있다.
CMS.UTC.3170.002	3.1.7 Commander	Warning 이 없다.
CMS.UTC.3213.001	3.2.1.3 Data Updating Unit	Command 가 COMMAND_CLEAN 이거나 COMMAND_RESERVATION_CLEAN 이고 Control 이 CLEAN 이다.
CMS.UTC.3213.002	3.2.1.3 Data Updating Unit	Command 가 COMMAND_EXTRACT 이거나 COMMAND_RESERVATION_EXTRACT 이고 Control 이 HOT_100 이거나 HOT_200 이거나 HOT_300 이고 Back Up Data 의 extract_start_flag 가 1 이고 boil_flag 가 1 이고 boiling 이 10 이 아니다.

Identifier	Feature	Valid/Invalid value
CMS.UTC.3213.003	3.2.1.3 Data Updating Unit	Command 가 COMMAND_EXTRACT 이거나 COMMAND_RESERVATION_EXTRACT 이고 Back Up Data 의 extract_start_flag 가 1 이고 boil_flag 가 2 이다.
CMS.UTC.3213.004	3.2.1.3 Data Updating Unit	Command 가 COMMAND_EXTRACT 이거나 COMMAND_RESERVATION_EXTRACT 이고 Control 이 HOT_100 이거나 HOT_200 이거나 HOT_300 이고 Back Up Data 의 extract_start_flag 가 1 이고 boil_flag 가 2 이고 grind_flag 가 0 이고 drip_flag 가 1 이다.
CMS.UTC.3311.001	3.3.3.1 Monitor Controller	WARNING 상태일 때 need_water == 1, need_bean == 1, must_clean_powder == 1 이 들어온다.
CMS.UTC.3311.002	3.3.3.1 Monitor Controller	NORMAL 상태가 들어온다.
CMS.UTC.3311.003	3.3.3.1 Monitor Controller	WARNING 상태일 때 need_water == 0, need_bean == 0, must_clean_powder == 1 이 들어온다.
CMS.UTC.3311.004	3.3.3.1 Monitor Controller	WARNING 상태일 때 need_water == 1, need_bean == 0, must_clean_powder == 1 이 들어온다.
CMS.UTC.3311.005	3.3.3.1 Monitor Controller	WARNING 상태일 때 need_water == 0, need_bean == 1, must_clean_powder == 1 이 들어온다.
CMS.UTC.3311.006	3.3.3.1 Monitor Controller	WARNING 상태일 때 need_water == 1, need_bean == 1, must_clean_powder == 1 이 들어온다.
CMS.UTC.3312.001	3.3.1.2 Speaker Controller	NormalControlWarningData 의 Warning 이 1 이다.
CMS.UTC.3312.002	3.3.1.2 Speaker Controller	NormalControlWarningData 의 Warning 이 2 이다.
CMS.UTC.3312.003	3.3.1.2 Speaker Controller	NormalControlWarningData 의 Warning 이 3 이다.
CMS.UTC.3321.001	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.002	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.003	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.004	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.

Identifier	Feature	Valid/ Invalid value
CMS.UTC.3321.005	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.006	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.007	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.008	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.009	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.010	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.011	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.012	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.013	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.014	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.015	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.016	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.017	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3321.018	3.3.2.1 Status	ButtonDetectionData, IngredientSensingData, BackUpData 데이터를 가지고 상태를 출력한다.
CMS.UTC.3322.001	3.3.2.2 warning	NormalControlWarningData 의 warning 이 1 이다.
CMS.UTC.3322.002	3.3.2.2 warning	NormalControlWarningData 의 warning 이 2 이다.
CMS.UTC.3322.003	3.3.2.2 warning	NormalControlWarningData 의 warning 이 2 이다.

2.2 Test items

Table 2 Test Case Identification

Identifier	Input Specification	Output Specification
CMS.UTC.1100.001	Input 없음	리턴값 == COMMAND_EXTRACT
CMS.UTC.1200.001	Volume == 300	Volume == 100
CMS.UTC.1200.002	Volume == 100	Volume == 200
CMS.UTC.1200.003	Volume == 200	Volume == 300
CMS.UTC.1300.001	temperature == 0	is_cold == 1
CMS.UTC.1300.002	temperature == 1	is_cold == 0
CMS.UTC.1400.001	Input 없음	반환값==COMMAND_CLEAN
CMS.UTC.1600.001	struct ButtonDetectionData code, struct ButtonDetectionData file, forcedTermination_flag==0	ButtonDetectionData_generate = 1, file.command==0, file.temerature==HOT, file.volume==200, file.reservationCleanTime_hour== -1, file.reservationCleanTime_min== -1, file.reservationExtractTime_hour== -1, file.reservationExtractTime_min== -1, file.reservedTemperature== -1, file.reservedVolume== -1
CMS.UTC.1600.002	struct ButtonDetectionData file, forcedTermination_flag==1	file.command == 0, file.temperature == 0(HOT), file.volume == 200, file.reservedCleanTime_hour == -1, file.reservedCleanTime_min == -1, file.reservedExtractTime_hour == -1, file.reservedExtractTime_min == -1, file.reservedTemperature == -1, file.reservedVolume == -1

Identifier	Input Specification	Output Specification
CMS.UTC.1600.003	<pre> struct ButtonDetectionData code ={2,COLD,400,12,34,23,59,HOT,1 00} , struct ButtonDetectionData file, forcedTermination_flag == 0, "ButtonDetectionData.txt"={- 1,-1,-1,-1,-1,-1,-1,-1,-1} </pre>	<pre> code.command == file.command, code.temperature==file.temperatur e, code.volume==file.volume, code.reservedCleanTime_hour==file. reservedCleanTime_hour, code.reservedCleanTime_min==file.r eservedCleanTime_min, code.reservedExtractTime_hour==fil e.reservedExtractTime_hour, code.reservedExtractTime_min==file .reservedExtractTime_min, code.reservedTemperature==file.res ervedTemperature, code.reservedVolume==file.reserve dVolume </pre>
CMS.UTC.1600.004	<pre> struct ButtonDetectionData code ={2,COLD,400,12,34,23,59,HOT,1 00} , struct ButtonDetectionData file, forcedTermination_flag == 1, "ButtonDetectionData.txt"={- 1,-1,-1,-1,-1,-1,-1,-1,-1} </pre>	<pre> file.command== -1, file.temperature== -1, file.volume== -1, file.reservedCleanTime_hour== -1, file.reservedCleanTime_min== -1, file.reservedExtractTime_hour== -1, file.reservedExtractTime_min== -1, file.reservedTemperature== -1, file.reservedVolume== -1 </pre>
CMS.UTC.2400.001	<pre> struct IngredientSensingData test1, test1.water = 0, test1.bean = 0, test1.powder = 0, FILE *f_ingredientSensingData, int water = 1, int bean = 1, int powder = 1 </pre>	<pre> ingredientSensingData->water = 100, ingredientSensingData->bean = 10, ingredientSensingData- >powder = 10 </pre>

Identifier	Input Specification	Output Specification
CMS.UTC.2400.002	struct IngredientSensingData test, test.water = 100, test.bean = 10, test.powder = 10	
CMS.UTC.3110.001	terminated == 1, extract_start_flag == 1, clean_flag == 0	is_recovery == 1, is_ongoing == 0, is_waiting == 0
CMS.UTC.3110.002	terminated == 1, extract_start_flag == 0, clean_flag == 0	is_recovery == 1, is_ongoing == 0, is_waiting == 0
CMS.UTC.3110.003	terminated == 0, extract_start_flag == 1, clean_flag == 0	is_recovery == 0, is_ongoing == 1, is_waiting == 0
CMS.UTC.3110.004	terminated == 0, extract_start_flag == 0, clean_flag == 1	is_recovery == 0, is_ongoing == 1, is_waiting == 0
CMS.UTC.3110.005	terminated == 0, extract_start_flag == 1, clean_flag == 1	is_recovery == 0, is_ongoing == 1, is_waiting == 0
CMS.UTC.3110.006	terminated == 0, extract_start_flag == 0, clean_flag == 0	is_recovery == 0, is_ongoing == 0, is_waiting == 1
CMS.UTC.3120.001	current_hour == 11, current_min == 11, reserved_clean_hour == -1, reserved_clean_min == -1, reserved_extract_hour == -1, reserved_extract_min == -1, reserved_clean_complete == 0, reserved_extract_complete == 0	result_command == 3
CMS.UTC.3120.002	current_hour == 11, current_min == 11, reserved_clean_hour == -1, reserved_clean_min == -1,	result_command == 3

Identifier	Input Specification	Output Specification
	reserved_extract_hour == -1, reserved_extract_min == -1, reserved_clean_complete == 1, reserved_extract_complete == 0	
CMS.UTC.3120.003	current_hour == 11, current_min == 11, reserved_clean_hour == -1, reserved_clean_min == -1, reserved_extract_hour == -1, reserved_extract_min == -1, reserved_clean_complete == 0, reserved_extract_complete == 1	result_command == 3
CMS.UTC.3120.004	current_hour == 11, current_min == 11, reserved_clean_hour == 12, reserved_clean_min == 12, reserved_extract_hour == -1, reserved_extract_min == -1, reserved_clean_complete == 0, reserved_extract_complete == 0	result_command == 3
CMS.UTC.3120.005	current_hour == 11, current_min == 11, reserved_clean_hour == -1, reserved_clean_min == -1, reserved_extract_hour == 2, reserved_extract_min == 5, reserved_clean_complete == 0, reserved_extract_complete == 0	result_command == 3
CMS.UTC.3120.006	current_hour == 11, current_min == 11, reserved_clean_hour == 4, reserved_clean_min == 12, reserved_extract_hour == 4,	result_command == 3

Identifier	Input Specification	Output Specification
	reserved_extract_min == 12, reserved_clean_complete == 0, reserved_extract_complete == 0	
CMS.UTC.3120.007	current_hour == 6, current_min == 20, reserved_clean_hour == -1, reserved_clean_min == -1, reserved_extract_hour == 6, reserved_extract_min == 20, reserved_clean_complete == 0, reserved_extract_complete == 0	result_command == 2
CMS.UTC.3120.008	current_hour == 4, current_min == 46, reserved_clean_hour == -1, reserved_clean_min == -1, reserved_extract_hour == 4, reserved_extract_min == 46, reserved_clean_complete == 0, reserved_extract_complete == 1	result_command == 3
CMS.UTC.3120.009	current_hour == 12, current_min == 11, reserved_clean_hour == 12, reserved_clean_min == 11, reserved_extract_hour == -1, reserved_extract_min == -1, reserved_clean_complete == 0, reserved_extract_complete == 0	result_command == 1
CMS.UTC.3120.010	current_hour == 2, current_min == 1, reserved_clean_hour == 2, reserved_clean_min == 1, reserved_extract_hour == -1, reserved_extract_min == -1, reserved_clean_complete == 1, reserved_extract_complete == 0	result_command == 3

Identifier	Input Specification	Output Specification
CMS.UTC.3120.011	current_hour == 10, current_min == 5, reserved_clean_hour == 10, reserved_clean_min == 5, reserved_extract_hour == 10, reserved_extract_min == 5, reserved_clean_complete == 0, reserved_extract_complete == 0	result_command == 1
CMS.UTC.3120.012	current_hour == 9, current_min == 4, reserved_clean_hour == 9, reserved_clean_min == 4, reserved_extract_hour == 9, reserved_extract_min == 4, reserved_clean_complete == 1, reserved_extract_complete == 0	result_command == 2
CMS.UTC.3130.001	command_type == -1, temperature == -1, volume == -1	result_control_command = 0
CMS.UTC.3130.002	command_type == -1, temperature == COLD, volume == 100	result_control_command = 0
CMS.UTC.3130.003	command_type == COMMAND_CLEAN, temperature == -1, volume == -1	result_control_command = CLEAN
CMS.UTC.3130.004	command_type == COMMAND_CLEAN, temperature == -1, volume == -1	result_control_command = CLEAN
CMS.UTC.3130.005	command_type == COMMAND_RESERVATION_CLEAN, temperature == -1, volume == -1	result_control_command = CLEAN;

Identifier	Input Specification	Output Specification
CMS.UTC.3130.006	command_type == COMMAND_RESERVATION_CLEAN, temperature == HOT, volume == 200	result_control_command = CLEAN;
CMS.UTC.3130.007	command_type == COMMAND_EXTRACT, temperature == HOT, volume == 100	result_control_command = HOT_100
CMS.UTC.3130.008	command_type == COMMAND_EXTRACT, temperature == HOT, volume == 200	result_control_command = HOT_200
CMS.UTC.3130.009	command_type == COMMAND_EXTRACT, temperature == HOT, volume == 300	result_control_command = HOT_300
CMS.UTC.3130.010	command_type == COMMAND_EXTRACT, temperature == COLD, volume == 100	result_control_command = COLD_100
CMS.UTC.3130.011	command_type == COMMAND_EXTRACT, temperature == COLD, volume == 200	result_control_command = COLD_200
CMS.UTC.3130.012	command_type == COMMAND_EXTRACT, temperature == COLD, volume == 300	result_control_command = COLD_300
CMS.UTC.3130.013	command_type == COMMAND_RESERVATION_EXTRACT, temperature == HOT, volume == 100	result_control_command = HOT_100

Identifier	Input Specification	Output Specification
CMS.UTC.3130.014	command_type == COMMAND_RESERVATION_EXT RACT, temperature == HOT, volume == 200	result_control_command = HOT_200
CMS.UTC.3130.015	command_type == COMMAND_RESERVATION_EXT RACT, temperature == HOT, volume == 300	result_control_command = HOT_300
CMS.UTC.3130.016	command_type == COMMAND_RESERVATION_EXT RACT, temperature == COLD, volume == 100	result_control_command = COLD_100
CMS.UTC.3130.017	command_type == COMMAND_RESERVATION_EXT RACT, temperature == COLD, volume == 200	result_control_command = COLD_200
CMS.UTC.3130.018	command_type == COMMAND_RESERVATION_EXT RACT, temperature == COLD, volume == 300	result_control_command = COLD_300
CMS.UTC.3140.001	Command == COMMAND_CLEAN, Temperature == HOT, Volume == 100, Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 30, Ingredientsensingdata.powder == POWDER_NEW, Normalcontrolwarningdata.contr ol == 0, Normalcontrolwarningdata.warn ing == 0	Call CleanCheck(ingredientsensingdata- >water, normalcontrolwarningdata)

Identifier	Input Specification	Output Specification
CMS.UTC.3140.002	Command == COMMAND_RESERVATION_CLEAN, Temperature == HOT, Volume == 100, Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 30, Ingredientsensingdata.powder == POWDER_NEW, Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == 0	Call CleanCheck(ingredientsensingdata->water, normalcontrolwarningdata)
CMS.UTC.3140.003	Command == COMMAND_EXTRACT, Temperature == HOT, Volume == 100, Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 30, Ingredientsensingdata.powder == POWDER_NEW, Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == 0	Call ExtractCheck(ingredientsensingdata, temperature, volume, normalcontrolwarningdata)
CMS.UTC.3140.004	Command == COMMAND_RESERVATION_EXTRACT, Temperature == HOT, Volume == 100, Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 30,	Call ExtractCheck(ingredientsensingdata, temperature, volume, normalcontrolwarningdata)

Identifier	Input Specification	Output Specification
	Ingredientsensingdata.powder == POWDER_NEW, Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == 0	
CMS.UTC.3150.001	water==499, struct NormalControlWarningData test = {-1, -1}	test.control == -1, test.warning == WARNING_WATER_SHORT
CMS.UTC.3150.002	Water==500, Struct NormalControlWarningData test = {-1, -1}	test.control == CLEAN, test.warning== -1
CMS.UTC.3160.001	Temperature == HOT, Volume == 100, Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 30, Ingredientsensingdata.powder == POWDER_USED, Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == 0	
CMS.UTC.3160.002	Temperature == HOT, Volume == 200, Ingredientsensingdata.water == 100, Ingredientsensingdata.bean == 30, Ingredientsensingdata.powder == POWDER_NEW, Normalcontrolwarningdata.control == 0,	Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == WARNING_WATER_SHORT

Identifier	Input Specification	Output Specification
	Normalcontrolwarningdata.warning == 0	
CMS.UTC.3160.003	Temperature == HOT, Volume == 100, Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 0, Ingredientsensingdata.powder == POWDER_NO, Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == 0	Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == WARNING_BEAN_SHORT
CMS.UTC.3160.004	Temperature == HOT, COLD, Volume == 100, 200, 300 , Ingredientsensingdata.water == 300, Ingredientsensingdata.bean == 30, Ingredientsensingdata.powder == POWDER_NEW, Normalcontrolwarningdata.control == 0, Normalcontrolwarningdata.warning == 0	Normalcontrolwarningdata.control == HOT_100 HOT_200 HOT_300 COLD_100 COLD_200 COLD_300, Normalcontrolwarningdata.warning == 0
CMS.UTC.3170.001	warning==0, command==-1, extractController==0, cleanController==0, dataUpdatingUnit==0, monitorController==0, speakerController==0 (extractController, cleanController, dataUpdatingUnit,	command == -1, extractController == 1, cleanController==1, dataUpdatingUnit==1, monitorController==1, speakerController==1

Identifier	Input Specification	Output Specification
	monitorController, speakerController 는 각 함수가 호출되었음을 표시하는 값)	
CMS.UTC.3170.002	warning==1, command==-1, extractController==0, cleanController==0, dataUpdatingUnit==0, monitorController==0, speakerController==0 (extractController, cleanController, dataUpdatingUnit, monitorController, speakerController 는 각 함수가 호출되었음을 표시하는 값)	command == 0, extractController == 1, cleanController==1, dataUpdatingUnit==1, monitorController==1, speakerController==1
CMS.UTC.3213.001	Command == COMMAND_CLEAN, Control == CLEAN, ingredientsensingdata.water == 500, ingredientsensingdata.bean == 30, ingredientsensingdata.powder == POWDER_NEW, backupdata.extract_start_flag == 0, backupdata.boil_flag == 0, backupdata.grind_flag == 0, backupdata.drip_flag == 0, backupdata.clean_flag == 1, backupdata.backupWater == 500, backupdata.backupBean == 30, boiling == 0, reservedCleanComplete == 0, reservedExtractComplete == 0	IngredientSensingData.txt Water == 500, Bean == 30, Powder == POWDER_NEW, BackUpData.txt Extract_start_flag == 0, Boil_flag == 0, Grind_flag == 0, Drip_flag == 0, Clean_flag == 1, BackupWater == 500, backupBean == 30, boiling == 0, reservedCleanComplete == 0, reservedExtractComplete == 0

Identifier	Input Specification	Output Specification
CMS.UTC.3213.002	Command == COMMAND_EXTRACT, Control == HOT_100, ingredientsensingdata.water == 500, ingredientsensingdata.bean == 30, ingredientsensingdata.powder == POWDER_NEW, backupdata.extract_start_flag == 1, backupdata.boil_flag == 1, backupdata.grind_flag == 0, backupdata.drip_flag == 0, backupdata.clean_flag == 0, backupdata.backupWater == 500, backupdata.backupBean == 30, boiling == 1, reservedCleanComplete == 0, reservedExtractComplete == 0	IngredientSensingData.txt Water == 500, Bean == 30, Powder == POWDER_NEW, BackUpData.txt Extract_start_flag == 1, Boil_flag == 1, Grind_flag == 0, Drip_flag == 0, Clean_flag == 0, BackupWater == 500, backupBean == 30, boiling == 2, reservedCleanComplete == 0, reservedExtractComplete == 0
CMS.UTC.3213.003	Command == COMMAND_EXTRACT, Control == HOT_100, ingredientsensingdata.water == 500, ingredientsensingdata.bean == 30, ingredientsensingdata.powder == POWDER_NO, backupdata.extract_start_flag == 1, backupdata.boil_flag == 2, backupdata.grind_flag == 1, backupdata.drip_flag == 0, backupdata.clean_flag == 0, backupdata.backupWater == 500, backupdata.backupBean	IngredientSensingData.txt Water == 500, Bean == 28, Powder == POWDER_NO, BackUpData.txt Extract_start_flag == 1, Boil_flag == 2, Grind_flag == 1, Drip_flag == 0, Clean_flag == 0, BackupWater == 500, backupBean == 30, boiling == 0, reservedCleanComplete == 0, reservedExtractComplete == 0

Identifier	Input Specification	Output Specification
	== 30, boiling == 0, reservedCleanComplete == 0, reservedExtractComplete == 0	
CMS.UTC.3213.004	Command == COMMAND_EXTRACT, Control == HOT_100, ingredientsensingdata.water == 500, ingredientsensingdata.bean == 30, ingredientsensingdata.powder == POWDER_NEW, backupdata.extract_start_flag == 1, backupdata.boil_flag == 2, backupdata.grind_flag == 0, backupdata.drip_flag == 1, backupdata.clean_flag == 0, backupdata.backupWater == 500, backupdata.backupBean == 30, boiling == 0, reservedCleanComplete == 0, reservedExtractComplete == 0	IngredientSensingData.txt Water == 490, Bean == 30, Powder == POWDER_NEW, BackupData.txt Extract_start_flag == 1, Boil_flag == 2, Grind_flag == 0, Drip_flag == 1, Clean_flag == 0, BackupWater == 500, backupBean == 30, boiling == 0, reservedCleanComplete == 0, reservedExtractComplete == 0
CMS.UTC.3311.001	need_water == 1, need_bean ==1, must_clean_powder == 1, warning == 1	output == 1, is_warning ==0
CMS.UTC.3311.002	need_water == 0, need_bean == 0, must_clean_powder == 0, warning == 0	output == 0, is_warning ==0
CMS.UTC.3311.003	need_water == 1, need_bean ==0, must_clean_powder == 0, warning == 1	output == 1, is_warning ==0
CMS.UTC.3311.004	need_water == 0, need_bean ==1, must_clean_powder == 0, warning == 1	output == 1, is_warning ==0

Identifier	Input Specification	Output Specification
CMS.UTC.3311.005	need_water == 0, need_bean ==0, must_clean_powder == 1, warning == 1	output == 1, is_warning ==0
CMS.UTC.3311.006	need_water == 1, need_bean ==1, must_clean_powder == 1, warning == 1	output == 1, is_warning ==0
CMS.UTC.3312.001	int wsw = 0, struct NormalControlWarningData ncwd1, ncwd1.control = 0, ncwd1.warning = 1	NormalControlWarningData.warning = 1
CMS.UTC.3312.002	int bsw = 0, struct NormalControlWarningData ncwd2, ncwd2.control = 0, ncwd2.warning = 2	NormalControlWarningData.warning = 2
CMS.UTC.3312.003	int psw = 0, struct NormalControlWarningData ncwd3, ncwd3.control = 0, ncwd3.warning = 3	NormalControlWarningData.warning = 3
CMS.UTC.3321.001	struct ButtonDetectionData bdd = {100,0,3,24,60,24,60,3,0}, struct IngredientSensingData isd={3,3,1}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0};	
CMS.UTC.3321.002	struct ButtonDetectionData bdd = {100,0,3,24,60,12,13,3,0}, struct IngredientSensingData isd={3,3,1}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = 0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.003	struct ButtonDetectionData bdd = {100,0,3,24,60,-1,60,3,0}, struct IngredientSensingData	

Identifier	Input Specification	Output Specification
	isd={3,3,1}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.004	struct ButtonDetectionData bdd = {100,0,3,13,26,-1,60,3,0}, struct IngredientSensingData isd={3,3,1}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0};	
CMS.UTC.3321.005	struct ButtonDetectionData bdd = {100,0,3,24,60,24,-1,3,0}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.006	struct ButtonDetectionData bdd = {100,0,3,24,60,24,-1,3,0}, struct IngredientSensingData isd={3,3,0}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.007	struct ButtonDetectionData bdd = {100,0,3,24,60,12,13,3,0}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.008	struct ButtonDetectionData bdd = {100,0,3,12,13,25,-1,3,0}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	

Identifier	Input Specification	Output Specification
CMS.UTC.3321.009	struct ButtonDetectionData bdd = {100,0,3,-1,61,7,13,0,100}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.010	struct ButtonDetectionData bdd = {100,0,3,-1,61,7,13,1,300}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.011	struct ButtonDetectionData bdd = {100,0,3,24,60,24,-1,3,0}, struct IngredientSensingData isd={3,3,0}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.012	struct ButtonDetectionData bdd = {100,0,3,24,60,12,13,0,100}, struct IngredientSensingData isd={3,3,0}, struct BackUpdata bud={1,0,0,0,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.013	struct ButtonDetectionData bdd = {100,0,3,-1,61,7,13,0,400}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.014	struct ButtonDetectionData bdd = {100,0,3,-1,61,7,13,3,100}, struct IngredientSensingData	

Identifier	Input Specification	Output Specification
	isd={3,3,2}, struct BackUpdata bud={0,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.015	struct ButtonDetectionData bdd = {1,0,3,-1,61,25,-1,3,3}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={1,1,1,1,0,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.016	struct ButtonDetectionData bdd = {1,0,3,-1,61,25,-1,3,3}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={1,1,1,1,1,1,1}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.017	struct ButtonDetectionData bdd = {1,0,3,-1,61,25,-1,3,3}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={1,1,0,0,1,0,0}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3321.018	struct ButtonDetectionData bdd = {1,0,3,-1,61,25,-1,3,3}, struct IngredientSensingData isd={3,3,2}, struct BackUpdata bud={1,1,1,1,0,0,0}, struct index case1 = {0,0,0,0,0,0,0,0,0,0}	
CMS.UTC.3322.001	int warningsignal = 0, warningsignal = warning(1)	Call Sound1()
CMS.UTC.3322.002	int warningsignal = 0, warningsignal = warning(2)	Call Sound2()
CMS.UTC.3322.003	int warningsignal = 0, warningsignal = warning(3)	Call Sound3()

2.3 Input specifications

<Table 1 Test Design Identification> 참조

2.4 Output specifications

<Table 1 Test Design Identification> 참조

3 Environmental needs

T5-2016.CMS.UTP-1.0 Environmental needs 항목 참조

4 Unit test summary report

4.1 Test summary report identifier

<Result Identification of the Unit Test>

Unit Test Identifier	Passed/Failed
CMS.UTC.1100.001	Passed
CMS.UTC.1200.001	Passed
CMS.UTC.1200.002	Passed
CMS.UTC.1200.003	Passed
CMS.UTC.1300.001	Passed
CMS.UTC.1300.002	Passed
CMS.UTC.1400.001	Passed
CMS.UTC.1600.001	Passed
CMS.UTC.1600.002	Passed
CMS.UTC.1600.003	Passed
CMS.UTC.1600.004	Passed

Unit Test Identifier	Passed/Failed
CMS.UTC.2400.001	Passed
CMS.UTC.2400.002	Passed
CMS.UTC.3110.001	Passed
CMS.UTC.3110.002	Passed
CMS.UTC.3110.003	Passed
CMS.UTC.3110.004	Passed
CMS.UTC.3110.005	Passed
CMS.UTC.3110.006	Passed
CMS.UTC.3120.001	Passed
CMS.UTC.3120.002	Passed
CMS.UTC.3120.003	Passed
CMS.UTC.3120.004	Passed
CMS.UTC.3120.005	Passed
CMS.UTC.3120.006	Passed
CMS.UTC.3120.007	Passed
CMS.UTC.3120.008	Passed
CMS.UTC.3120.009	Passed
CMS.UTC.3120.010	Passed
CMS.UTC.3120.011	Passed
CMS.UTC.3120.012	Passed
CMS.UTC.3130.001	Passed

Unit Test Identifier	Passed/Failed
CMS.UTC.3130.002	Passed
CMS.UTC.3130.003	Passed
CMS.UTC.3130.004	Passed
CMS.UTC.3130.005	Passed
CMS.UTC.3130.006	Passed
CMS.UTC.3130.007	Passed
CMS.UTC.3130.008	Passed
CMS.UTC.3130.009	Passed
CMS.UTC.3130.010	Passed
CMS.UTC.3130.011	Passed
CMS.UTC.3130.012	Passed
CMS.UTC.3130.013	Passed
CMS.UTC.3130.014	Passed
CMS.UTC.3130.015	Passed
CMS.UTC.3130.016	Passed
CMS.UTC.3130.017	Passed
CMS.UTC.3130.018	Passed
CMS.UTC.3140.001	Passed
CMS.UTC.3140.002	Passed
CMS.UTC.3140.003	Passed
CMS.UTC.3140.004	Passed

Unit Test Identifier	Passed/Failed
CMS.UTC.3150.001	Passed
CMS.UTC.3150.002	Passed
CMS.UTC.3160.001	Passed
CMS.UTC.3160.002	Passed
CMS.UTC.3160.003	Passed
CMS.UTC.3160.004	Passed
CMS.UTC.3170.001	Passed
CMS.UTC.3170.002	Passed
CMS.UTC.3213.001	Passed
CMS.UTC.3213.002	Passed
CMS.UTC.3213.003	Passed
CMS.UTC.3213.004	Passed
CMS.UTC.3311.001	Passed
CMS.UTC.3311.002	Passed
CMS.UTC.3311.003	Passed
CMS.UTC.3311.004	Passed
CMS.UTC.3311.005	Passed
CMS.UTC.3311.006	Passed
CMS.UTC.3312.001	Passed
CMS.UTC.3312.002	Passed
CMS.UTC.3312.003	Passed

Unit Test Identifier	Passed/Failed
CMS.UTC.3321.001	Passed
CMS.UTC.3321.002	Passed
CMS.UTC.3321.003	Passed
CMS.UTC.3321.004	Passed
CMS.UTC.3321.005	Passed
CMS.UTC.3321.006	Passed
CMS.UTC.3321.007	Passed
CMS.UTC.3321.008	Passed
CMS.UTC.3321.009	Passed
CMS.UTC.3321.010	Passed
CMS.UTC.3321.011	Passed
CMS.UTC.3321.012	Passed
CMS.UTC.3321.013	Passed
CMS.UTC.3321.014	Passed
CMS.UTC.3321.015	Passed
CMS.UTC.3321.016	Passed
CMS.UTC.3321.017	Passed
CMS.UTC.3321.018	Passed
CMS.UTC.3322.001	Passed
CMS.UTC.3322.002	Passed
CMS.UTC.3322.003	Passed

4.2 Evaluation