

# Unit Test Report

## for Public Transportation System

- Test Cases Specification
- Test Summary Report

**Project Team**

**Team4**

Latest update on:

**2014-11-17**

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## 1 Introduction

### 1.1 Objectives

본 문서는 Public Transportation System의 unit test를 수행한 결과에 대한 report 문서이다. Test 요소들에 대한 test case와 test 수행결과에 대한 내용을 담고 있다.

### 1.2 References

SDS\_Team4\_ver2

SRA\_Team4\_ver3

DS-2014SE-PTS-SRS-1.0

## 2 Unit test case specification

### 2.1 Test case specification identifier

### 3 Table 3 PTS Test Design Identification

Identifier	Feature(Process ID in DFD)	Valid / Invalid value
PTS.UTC_210_000	2.1.0 Checking Last In Out	Checking Last In/Out 상태에서 InOutFlag == 'T' 입력이 들어온다
PTS.UTC_210_001	2.1.0 Checking Last In Out	Checking Last In/Out 상태에서 InOutFlag == 'O' 입력이 들어온다.
PTS.UTC_221_000	2.2.1 Interface Controller	Waiting 상태에서 PTSFlag == 'B' 입력이 들어온다.
PTS.UTC_221_001	2.2.1 Interface Controller	Waiting 상태에서 PTSFlag == 'S' 입력이 들어온다.
PTS.UTC_231_000	2.3.1 Transfer Controller	Waiting 상태에서 curPTS == 'S' 일 때, TagTerminal == 'B', timeGap <= 15 입력이 들어온다
PTS.UTC_231_001	2.3.1 Transfer Controller	Waiting 상태에서 curPTS == 'S' 일 때, TagTerminal == 'S', timeGap <= 15 입력이 들어온다
PTS.UTC_231_002	2.3.1 Transfer Controller	Waiting 상태에서 curPTS == 'B' 일 때, TagTerminal == 'S', timeGap <= 15 입력이 들어온다
PTS.UTC_231_003	2.3.1 Transfer Controller	Waiting 상태에서 curPTS == 'B' 일 때, TagTerminal == 'B', timeGap <= 15 입력이 들어온다
PTS.UTC_310_000	3.1.0 InputDistributor	InputDistributor 상태에서 flag == B_ININ_Data 입력이 들어온다.
PTS.UTC_310_001	3.1.0 InputDistributor	InputDistributor 상태에서 flag == S_ININ_Data 일 때, TransferFlag == 'T' 입력이 들어온다.
PTS.UTC_310_002	3.1.0 InputDistributor	InputDistributor 상태에서 flag == S_ININ_Data 일 때,

		TransferFlag == 'F' 입력이 들어온다.
PTS.UTC_310_003	3.1.0 InputDistributor	InputDistributor 상태에서 flag == NOTMEAN 입력이 들어온다
PTS.UTC_310_004	3.1.0 InputDistributor	InputDistributor 상태에서 flag == TRANSFER 입력이 들어온다
PTS.UTC_310_005	3.1.0 InputDistributor	InputDistributor 상태에서 flag == GetOffData 입력이 들어온다
PTS.UTC_310_006	3.1.2 B IN-IN	Trigger입력이 들어오면 B IN-IN을 작동한다.
PTS.UTC_310_007	3.1.2 B IN-IN	Trigger입력이 들어오면 B IN-IN을 작동한다. (006에 대한 표본값 추가테스트)
PTS.UTC_310_008	3.1.3 Trans S IN-IN	Trigger입력이 들어오면 Trans S IN-IN을 작동한다.
PTS.UTC_310_009	3.1.3 Trans S IN-IN	Trigger입력이 들어오면 Trans S IN-IN을 작동한다. (008에 대한 표본값 추가테스트)
PTS.UTC_310_010	3.1.4 notT S IN-IN	Trigger입력이 들어오면 notT S IN-IN을 작동한다.
PTS.UTC_310_011	3.1.4 notT S IN-IN	Trigger입력이 들어오면 notT S IN-IN을 작동한다. (010에 대한 표본값 추가테스트)
PTS.UTC_315_000	3.1.5 Additional Fee	Flag == TRANSFER 입력이 들어온다.
PTS.UTC_315_001	3.1.5 Additional Fee	Flag == NOTMEAN 입력이 들어온다.
PTS.UTC_315_002	3.1.5 Additional Fee	TransferFlag == 'T' 일때, flag == GetOffData 입력이 들어온다.
PTS.UTC_315_003	3.1.5 Additional Fee	TransferFlag == 'T' 일때, flag == GetOffData 입력이 들어온다. (002에 대한 표본값 추가테스트)
PTS.UTC_315_004	3.1.5 Additional Fee	TransferFlag == 'F' 일때, flag == GetOffData 입력이 들어온다.
PTS.UTC_315_005	3.1.5 Additional Fee	TransferFlag == 'F' 일때, flag == GetOffData 입력이 들어온다. (005에 대한 표본값 추가테스트)
PTS.UTC_320_000	3.2.0 Balance check	Balance check 상태에서 Sm(subtract money) = -1이 들어온다.
PTS.UTC_320_001	3.2.0 Balance check	Balance check 상태에서 Sm(subtract money) >= 0 이 들어온다.

## 4

## 5 Table 3 ADJ Test Design Identification

Identifier	Feature(Process ID in DFD)	Valid / Invalid value
ADJ.UTC_210_000	2.1.0 Non_Ad_Calculator	Non_Ad_Calculator 상태에서 tData[Index].nonAdFee == 600 입력이 들어온다

ADJ.UTC_210_001	2.1.0 Non_Ad_Calculator	Non_Ad_Calculator 상태에서 tData[Index].nonAdFee == 700 입력이 들어온다
ADJ.UTC_210_002	2.1.0 Non_Ad_Calculator	Non_Ad_Calculator 상태에서 tData[Index].nonAdFee == 200 입력이 들어온다
ADJ.UTC_210_003	2.1.0 Non_Ad_Calculator	Non_Ad_Calculator 상태에서 tData[Index].nonAdFee == 0 입력이 들어온다
ADJ.UTC_220_000	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID ==6666 입력이 들어온다
ADJ.UTC_220_001	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID !=6666 입력이 들어온다
ADJ.UTC_220_002	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID ==6666 입력이 들어온다
ADJ.UTC_220_003	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID !=6666 입력이 들어온다
ADJ.UTC_220_004	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID ==6666 입력이 들어온다
ADJ.UTC_220_005	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID !=6666 입력이 들어온다
ADJ.UTC_220_006	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID ==6666 입력이 들어온다
ADJ.UTC_220_007	2.2.0 TransferCalculator	TransferCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID !=6666 입력이 들어온다
ADJ.UTC_230_000	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID ==6666 입력이 들어온다
ADJ.UTC_230_001	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID !=6666 입력이 들어온다
ADJ.UTC_230_002	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID ==6666 입력이 들어온다
ADJ.UTC_230_003	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'O'이고 Data[Index].TerminalID !=6666 입력이 들어온다

ADJ.UTC_230_004	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID == 6666 입력이 들어온다
ADJ.UTC_230_005	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'T' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID != 6666 입력이 들어온다
ADJ.UTC_230_006	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID == 6666 입력이 들어온다
ADJ.UTC_230_007	2.3.0 GeneralCalculator	GeneralCalculator 상태에서 TransferFlag == 'F' 일 때, InOutFlag == 'I'이고 Data[Index].TerminalID != 6666 입력이 들어온다

## 5.1 Test items

### 6 Table 4 PTS Test Case Identification

Test case Identifier	Input specification	Output specification
PTS.UTC_210_000	State == Checking Last In Out/ InOutFlag == 'I'	State == Interface Controller /Trigger "Interface Controller"
PTS.UTC_210_001	State == Checking Last In Out/ InOutFlag == 'O'	State == Transfer Controller /Trigger "Transfer Controller."
PTS.UTC_221_000	State == Waiting /PTSFlag == 'B'	State == Bus IN-IN Interface /Trigger "Bus IN-IN Interface"
PTS.UTC_221_001	State == Waiting /PTSFlag == 'S'	State == Subway IN-IN Interface /Trigger "Subway IN-IN Interface"
PTS.UTC_231_000	State == Waiting /curPTS == 'S'/ TagTerminal == 'B' / timeGap <= 15	State == Transfer Get On Interface /Trigger "Transfer True"
PTS.UTC_231_001	State == Waiting /curPTS == 'S'/ TagTerminal == 'S' / timeGap <= 15	State == General Get on Interface /Trigger "Transfer False"
PTS.UTC_231_002	State == Waiting /curPTS == 'B'/ TagTerminal == 'S' / timeGap <= 15	State == Transfer Get on Interface /Trigger "Transfer True"
PTS.UTC_231_003	State == Waiting /curPTS == 'B'/ TagTerminal == 'B' / timeGap <= 15	State == General Get on Interface /Trigger "Transfer False"
PTS.UTC_231_004	State == Waiting /curPTS == 'B'/ TagTerminal == 'S' / timeGap > 15	State == General Get on Interface /Trigger "Transfer False"
PTS.UTC_231_005	State == Waiting /curPTS == 'S'/ TagTerminal == 'B' / timeGap > 15	State == General Get on Interface /Trigger "Transfer False"
PTS.UTC_310_000	State == InputDistributor / Flag == B_ININ_Data	Trigger 3.1.2 B IN-IN

PTS.UTC_310_001	State == InputDistributor /Flag == S_ININ_Data/TransferFlag == 'T'	Trigger 3.1.3 Trans_S IN-IN
PTS.UTC_310_002	State == InputDistributor /Flag == S_ININ_Data/TransferFlag == 'F'	Trigger 3.1.4 notT S IN-IN
PTS.UTC_310_003	State == InputDistributor / Flag == NOTMEAN	Trigger 3.1.5 Additional Fee
PTS.UTC_310_004	State == InputDistributor / Flag == TRANSFER	Trigger 3.1.5 Additional Fee
PTS.UTC_310_005	State == InputDistributor / Flag == GetOffData	Trigger 3.1.5 Additional Fee
PTS.UTC_312_006	Trigger in /State == B IN-IN/ Balance >= 1750	Trigger "Balance OK" CardData.balance = CardData.balance - 1750
PTS.UTC_313_007	Trigger in /State == B IN-IN/ Balance < 1750	Trigger "Balance Not OK" -1 return
PTS.UTC_313_008	Trigger in /State == Trans_S IN-IN Balance >= 1650	Trigger "Balance OK" CardData.balance = CardData.balance - 1650
PTS.UTC_313_009	Trigger in /State == Trans_S IN-IN Balance < 1650	Trigger "Balance Not OK" -1 return
PTS.UTC_313_010	Trigger in /State == NOT_Trans S IN-IN Balance >=1250	Trigger "Balance OK" CardData.balance = CardData.balance - 1250
PTS.UTC_313_011	Trigger in /State == NOT_Trans S IN-IN Balance < 1250	Trigger "Balance Not OK" -1 return
PTS.UTC_315_000	State == Additional Fee/ Flag == TRANSFER	Trigger "TRANSFER" FeeData.basicFee = 0
PTS.UTC_315_001	State == Additional Fee/ Flag == NOTMEAN	Trigger "NOTMEAN" FeeData.basicFee = 1050
PTS.UTC_315_002	State == Additional Fee/ Flag == GetOffData/TransferFlag == 'T' /whatTerm == 6666 / timeGap < 30	Trigger "TRANSFERBUSGETOFF" FeeData.addFee = 0;
PTS.UTC_315_003	State == Additional Fee/ Flag == GetOffData/ TransferFlag == 'T' / whatTerm == 1111 / CardData.TerminalID == 1111	Trigger "TRANSFERSUBGETOFF" FeeData.addFee = 600;
PTS.UTC_315_004	State == Additional Fee/Flag == GetOffData/ TransferFlag == 'F'/ whatTerm == 6666	Trigger "GENBUSGETOFF" FeeData.addFee = 0;
PTS.UTC_315_005	State == Additional Fee/ Flag ==	Trigger "GENSUBGETOFF"

	GetOffData/TransferFlag == 'F' whatTerm == 1111 /CardData.TerminalID == 1111	FeeData.addFee = 200;
PTS.UTC_320_000	State == Balance check/ CardData.Balace == 1500 totalFee == 1050	Trigger "BALANCE OK" Return 0
PTS.UTC_320_001	State == Balance check/ CardData.Balace == 1500 totalFee == 1650	Trigger "BALANCE NOT OK" Return -1

## 7 Table 4 ADJ Test Case Identification

Identifier	Input specification	Output specification
ADJ.UTC_210_000	State == Non_Ad_Calculator/ tData[Index].nonAdFee == 600	State == Non_Ad_Calculator / Tmp.total_bus_fee = -408 Tmp.total_subway_fee = 1008
ADJ.UTC_210_001	State == Non_Ad_Calculator/ tData[Index].nonAdFee == 700	State == Non_Ad_Calculator / Tmp.total_bus_fee = 1429 Tmp.total_subway_fee = -729
ADJ.UTC_210_002	State == Non_Ad_Calculator/ tData[Index].nonAdFee == 200	State == Non_Ad_Calculator / Tmp.total_subway_fee = 1008 Tmp.total_bus_fee = -408
ADJ.UTC_210_003	State == Non_Ad_Calculator/ tData[Index].nonAdFee == 0	State == Non_Ad_Calculator / Trigger 2.2.0 TransferCalculator
ADJ.UTC_220_000	State == TransferCalculator / TransferFlag == 'T' / InOutFlag == 'O' / Data[Index].TerminalID == 6666 / basic fee = 1050 / Add = 550	State == TransferCalculator / FeeData.total_bus_fee + FeeData.total_subway_fee = 550
ADJ.UTC_220_001	State == TransferCalculator / TransferFlag == 'T' / InOutFlag == 'O' / Data[Index].TerminalID != 6666 / basic fee = 1050 / Add = 550	State == TransferCalculator / FeeData.total_bus_fee + FeeData.total_subway_fee = 550
ADJ.UTC_220_002	State == TransferCalculator / TransferFlag == 'T' / InOutFlag == 'T' / Data[Index].TerminalID == 6666	State == TransferCalculator / Trigger 2.3.0 GeneralCalculator
ADJ.UTC_220_003	State == TransferCalculator / TransferFlag == 'T' / InOutFlag == 'T' / Data[Index].TerminalID != 6666	State == TransferCalculator / Trigger 2.3.0 GeneralCalculator
ADJ.UTC_220_004	State == TransferCalculator / TransferFlag == 'F' / InOutFlag ==	State == TransferCalculator / Trigger 2.3.0 GeneralCalculator



	'O'/ Data[Index].TerminalID ==6666	
ADJ.UTC_220_005	State == TransferCalculator / TransferFlag == 'F'/ InOutFlag == 'O'/ Data[Index].TerminalID !=6666	State == TransferCalculator / Trigger 2.3.0 GeneralCalculator
ADJ.UTC_220_006	State == TransferCalculator / TransferFlag == 'F'/ InOutFlag == 'I'/ Data[Index].TerminalID ==6666	State == TransferCalculator / Trigger 2.3.0 GeneralCalculator
ADJ.UTC_220_007	State == TransferCalculator / TransferFlag == 'F'/ InOutFlag == 'I'/ Data[Index].TerminalID !=6666	State == TransferCalculator / Trigger 2.3.0 GeneralCalculator
ADJ.UTC_230_000	State == GeneralCalculator / TransferFlag == 'F'/ InOutFlag == 'O'/ Data[Index].TerminalID ==6666/ basicfee = 1050	State == GeneralCalculator / FeeData.total_bus_fee = 1050 FeeData.total_subway_fee = 0
ADJ.UTC_230_001	State == GeneralCalculator / TransferFlag == 'F'/ InOutFlag == 'O'/ Data[Index].TerminalID !=6666 / basicfee = 1050	State == GeneralCalculator / FeeData.total_bus_fee = 0 FeeData.total_subway_fee = 1050
ADJ.UTC_230_002	State == GeneralCalculator / TransferFlag == 'T'/ InOutFlag == 'O'/ Data[Index].TerminalID ==6666	State == GeneralCalculator / Trigger 2.3.0 OutputHandler
ADJ.UTC_230_003	State == GeneralCalculator / TransferFlag == 'T'/ InOutFlag == 'O'/ Data[Index].TerminalID !=6666	State == GeneralCalculator Trigger 2.3.0 OutputHandler /
ADJ.UTC_230_004	State == GeneralCalculator / TransferFlag == 'T'/ InOutFlag == 'I'/ Data[Index].TerminalID ==6666	State == GeneralCalculator / Trigger 2.3.0 OutputHandler
ADJ.UTC_230_005	State == GeneralCalculator / TransferFlag == 'T'/ InOutFlag == 'I'/ Data[Index].TerminalID !=6666	State == GeneralCalculator Trigger 2.3.0 OutputHandler /
ADJ.UTC_230_006	State == GeneralCalculator / TransferFlag == 'F'/ InOutFlag == 'I'/ Data[Index].TerminalID ==6666	State == GeneralCalculator / Trigger 2.3.0 OutputHandler
ADJ.UTC_230_007	State == GeneralCalculator / TransferFlag == 'F'/ InOutFlag == 'I'/ Data[Index].TerminalID !=6666	State == GeneralCalculator Trigger 2.3.0 OutputHandler /

7.1 Input specifications

<Table 2 Test Case Identification> 참조

7.2 Output specifications

<Table 2 Test Case Identification> 참조

8 Environmental needs

UTP\_Team4\_ver1 Environmental needs 항목 참조

9 Unit test summary report

9.1 Test summary report identifier

<Figure 1 Result Identification of the Unit Test(1)>

<Figure 2 Result Identification of the Unit Test(2)> 참조

CUnit - A Unit testing framework for C.  
<http://cunit.sourceforge.net/>

### Automated Test Run Results

Running Suite testing a suite

Running test PTS_UTC_210_000 ...	Passed
Running test PTS_UTC_210_001 ...	Passed
Running test PTS_UTC_221_000 ...	Passed
Running test PTS_UTC_221_001 ...	Passed
Running test PTS_UTC_231_000 ...	Passed
Running test PTS_UTC_231_001 ...	Passed
Running test PTS_UTC_231_002 ...	Passed
Running test PTS_UTC_231_003 ...	Passed
Running test PTS_UTC_231_004 ...	Passed
Running test PTS_UTC_231_005 ...	Passed
Running test PTS_UTC_310_000 ...	Passed
Running test PTS_UTC_310_001 ...	Passed
Running test PTS_UTC_310_002 ...	Passed
Running test PTS_UTC_310_003 ...	Passed
Running test PTS_UTC_310_004 ...	Passed
Running test PTS_UTC_310_005 ...	Passed
Running test PTS_UTC_310_006 ...	Passed
Running test PTS_UTC_310_007 ...	Passed
Running test PTS_UTC_310_008 ...	Passed
Running test PTS_UTC_310_009 ...	Passed
Running test PTS_UTC_310_010 ...	Passed
Running test PTS_UTC_310_011 ...	Passed
Running test PTS_UTC_315_000 ...	Passed
Running test PTS_UTC_315_001 ...	Passed
Running test PTS_UTC_315_002 ...	Passed
Running test PTS_UTC_315_003 ...	Passed
Running test PTS_UTC_315_004 ...	Passed
Running test PTS_UTC_315_005 ...	Passed
Running test PTS_UTC_320_000 ...	Passed
Running test PTS_UTC_320_001 ...	Passed

Cumulative Summary for Run						
Type	Total	Run	Succeeded	Failed	Inactive	
Suites	1	1	- N/A -	0	0	
Test Cases	30	30	30	0	0	
Assertions	30	30	30	0	n/a	

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<Figure 1 Result Identification of the Unit Test(1)>

Automated Test Run Results					
Running Suite testing a suite					
	Running test ADJ.UTC_210_000 ...			Passed	
	Running test ADJ.UTC_210_001 ...			Passed	
	Running test ADJ.UTC_210_002 ...			Passed	
	Running test ADJ.UTC_210_003 ...			Passed	
	Running test ADJ.UTC_230_000 ...			Passed	
	Running test ADJ.UTC_230_001 ...			Passed	
	Running test ADJ.UTC_230_002 ...			Passed	
	Running test ADJ.UTC_230_003 ...			Passed	
	Running test ADJ.UTC_230_004 ...			Passed	
	Running test ADJ.UTC_230_005 ...			Passed	
	Running test ADJ.UTC_230_006 ...			Passed	
	Running test ADJ.UTC_230_007 ...			Passed	
	Running test ADJ.UTC_230_000 ...			Passed	
	Running test ADJ.UTC_230_001 ...			Passed	
	Running test ADJ.UTC_230_002 ...			Passed	
	Running test ADJ.UTC_230_003 ...			Passed	
	Running test ADJ.UTC_230_004 ...			Passed	
	Running test ADJ.UTC_230_005 ...			Passed	
	Running test ADJ.UTC_230_006 ...			Passed	
	Running test ADJ.UTC_230_007 ...			Passed	
Cumulative Summary for Run					
Type	Total	Run	Succeeded	Failed	Inactive
Suites	1	1	- NA -	0	0
Test Cases	20	20	20	0	0
Assertions	20	20	20	0	n/a

<Figure 2 Result Identification of the Unit Test(2)>