# Unit Test Report

# for Public Transportation System

- **Test Cases Specification**
- **Test Summary Report**

**Project Team**

**AT2 Team**

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# 1 Introduction

## 1.1 Objectives

Public Transportation System의 Unit test를 위해 필요한 활동과 기준에 대한 정의, 환경적인 요구사항, test 도구들에 관해 세부적으로 명시한다.

## 1.2 References

[2014SE_A][T2]SRA_2_1

[2014SE_A][T2]SDS

DS-2014SE-PTS-SRS-1.0

# 2 Unit test case specification

## 2.1 Test case specification identifier

### 1) Bus System

| Identifier | Input Specification | Output Specification |
|---|---|---|
| **BUS.UTC.120.000** | newCD.inout == "OUT" && newCD.transport == "Bus" && CurTime - newCD.time < 200 Input | TR = TRUE |
| **BUS.UTC.120.001** | newCD.inout == "OUT" && newCD.transport == "Bus" && CurTime - newCD.time > 200 Input | TR = FALSE |
| **BUS.UTC.120.002** | newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Bus" && oldCD.balance – newCD.balance == 1050 | PTR = TRUE<br>D1 = TRUE |
| **BUS.UTC.120.003** | newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Bus" && oldCD.balance – newCD.balance != 1050 | PTR = TRUE<br>D2 = TRUE |
| **BUS.UTC.120.004** | newCD.sensorInfo != oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Bus" | PTR = FALSE<br>D2 = TRUE |
| **BUS.UTC.120.005** | newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "OUT" && newCD.transport == "Bus" | PTR = TRUE<br>D1 = FALSE<br>D2 = FALSE |
| **BUS.UTC.120.006** | newCD.inout == "IN" && newCD.transport == "Metro" && oldCD.balance == newCD.balance | D3 = TRUE |
| **BUS.UTC.120.007** | newCD.inout == "IN" && newCD.transport == "Metro" && | D3 = FALSE |

| | | |
|---|---|---|
| | oldCD.balance != newCD.balance | |
| **BUS.UTC.131.000** | Tag == 1 && inout == "IN" && Tr == FALSE && d1 == FALSE && d2 == FALSE && d3 == FALSE Input | Fare = 1050 |
| **BUS.UTC.131.001** | Tag == 1 && inout == "IN" && Tr == TRUE Input | Fare = 0 |
| **BUS.UTC.131.002** | Tag == 1 && inout == "IN" && d1 = TRUE Input | Fare = 1250 |
| **BUS.UTC.131.003** | Tag == 1 && inout == "IN" && d2 = TRUE Input | Fare = 1650 |
| **BUS.UTC.131.004** | Tag == 1 && inout == "IN" && d3 = TRUE Input | Fare = 1750 |
| **BUS.UTC.131.005** | Tag == 1 && inout == "OUT" && pTr == FALSE Input | Fare = 0 |
| **BUS.UTC.131.006** | Tag == 1 && inout == "OUT" && pTr == TRUE Input && CurTime – pTagTime < 400 | Fare = 0 |
| **BUS.UTC.131.007** | Tag == 1 && inout == "OUT" && pTr == TRUE Input && CurTime – pTagTime = 400 | Fare = 100 |
| **BUS.UTC.211.000** | Tag == 1 && Balance < Fare Input | Balance_Lack(); |
| **BUS.UTC.211.001** | Tag == 1 && Balance > Fare Input | Tag(); |

2) Subway System

| Identifier | Input Specification | Output Specification |
|---|---|---|
| **SUB.UTC.120.000** | newCD.inout == "OUT" && newCD.transport == "Metro" && CurTime - newCD.time < 200 Input | TR = TRUE |
| **SUB.UTC.120.001** | newCD.inout == "OUT" && newCD.transport == "Metro" && CurTime - newCD.time > 200 Input | TR = FALSE |
| **SUB.UTC.120.002** | newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Metro" && oldCD.balance – newCD.balance == 1050 | PTR = TRUE<br>D1 = TRUE |
| **SUB.UTC.120.003** | newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Metro" && oldCD.balance – newCD.balance != 1050 | PTR = TRUE<br>D2 = TRUE |
| **SUB.UTC.120.004** | newCD.sensorInfo != oldCD.sensorInfo && newCD.inout == "IN" && newCD.transport == "Metro" | PTR = FALSE<br>D2 = TRUE |
| **SUB.UTC.120.005** | newCD.sensorInfo == oldCD.sensorInfo && newCD.inout == "OUT" && newCD.transport == "Metro" | PTR = TRUE<br>D1 = FALSE<br>D2 = FALSE |

| | | |
|---|---|---|
| **SUB.UTC.120.006** | newCD.inout == "IN" && newCD.transport == "BUS" && oldCD.balance == newCD.balance | D3 = TRUE |
| **SUB.UTC.120.007** | newCD.inout == "IN" && newCD.transport == "BUS" && oldCD.balance != newCD.balance | D3 = FALSE |
| **SUB.UTC.131.000** | Tag == 1 && inout == "IN" && Tr == FALSE && d1 == FALSE && d2 == FALSE && d3 == FALSE Input | Fare = 1050 |
| **SUB.UTC.131.001** | Tag == 1 && inout == "IN" && Tr == TRUE Input | Fare = 0 |
| **SUB.UTC.131.002** | Tag == 1 && inout == "IN" && d1 = TRUE Input | Fare = 1250 |
| **SUB.UTC.131.003** | Tag == 1 && inout == "IN" && d2 = TRUE Input | Fare = 1650 |
| **SUB.UTC.131.004** | Tag == 1 && inout == "IN" && d3 = TRUE Input | Fare = 1750 |
| **SUB.UTC.131.005** | Tag == 1 && inout == "OUT" && pTr == FALSE Input | Fare = 0 |
| **SUB.UTC.131.006** | Tag == 1 && inout == "OUT" && pTr == TRUE Input && CurTime – pTagTime < 400 | Fare = 0 |
| **SUB.UTC.131.007** | Tag == 1 && inout == "OUT" && pTr == TRUE Input && CurTime – pTagTime = 400 | Fare = 100 |
| **SUB.UTC.211.000** | Tag == 1 && Balance < Fare Input | Balance_Lack(); |
| **SUB.UTC.211.001** | Tag == 1 && Balance > Fare Input | Tag(); |

3) Adjust System

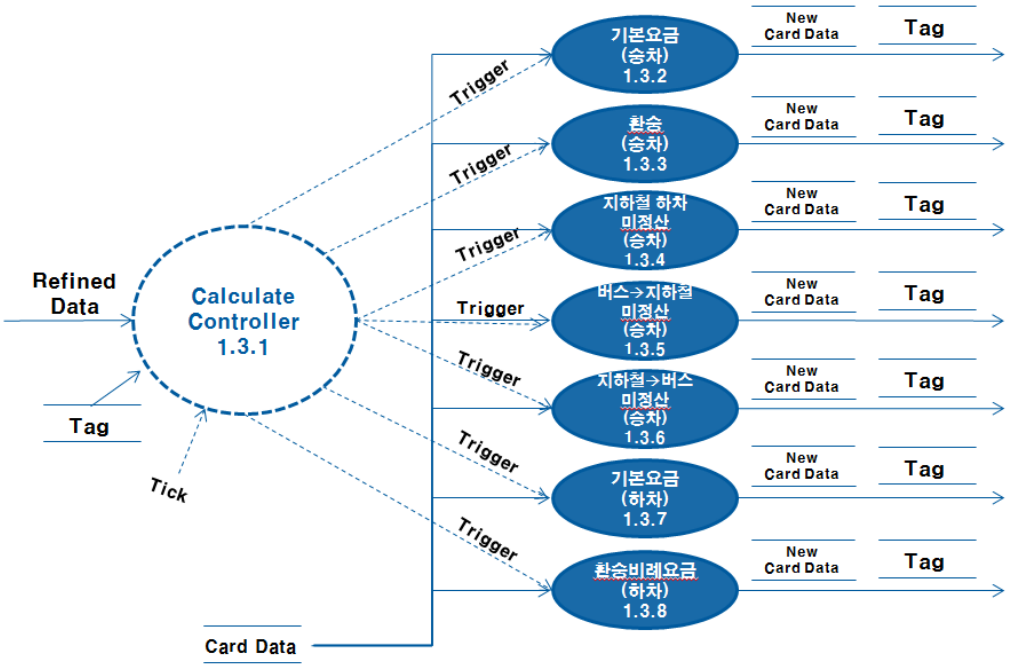
| **Identifier** | **Input Specification** | **Output Specification** |
|---|---|---|
| **ADJ.UTC.120.000** | Buffer != NULL | TF != NULL |
| **ADJ.UTC.212.000** | TF !=NULL | Total_BusFare<br>Total_SubwayFare |

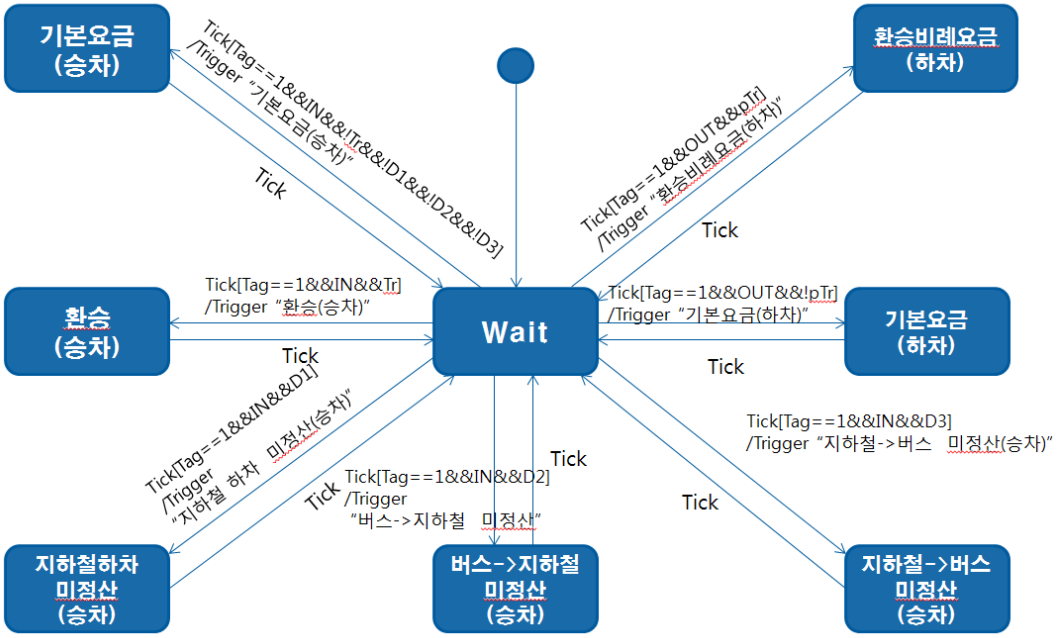
## 2.2 Test items

EDLS를 구성하는 최소 단위의 모듈들이 unit test의 대상이 된다. 각 모듈의 요구사항을 만족하는지를 test하며, test item은 다음 자료들로부터 작성되었다.

(1) Functionality of modules – [2014SE_A][T2]SRA_2_1 : Process specification

아래 그림은 일부를 참조한 것이다.




## 2.3 Input specifications

### 1) Bus System

| Input | Input Specification |
|---|---|
| CardData.time | String |
| CardData.transport | String |
| CardData.inout | String |

| | |
|---|---|
| CardData.balance | int |
| CardData.sensorInfo | String |
| RefinedData.inout | String |
| RefinedData.tr | char |
| RefinedData.ptr | char |
| RefinedData.d1 | char |
| RefinedData.d2 | char |
| RefinedData.d3 | char |
| RefinedData.balance | Int |
| RefinedData.pTagTime | Int |
| RefinedData.pSensorInfo | int |
| Tag | int |
| inout | String |

2) Subway System

| **Input** | **Input Specification** |
|---|---|
| CardData.time | String |
| CardData.transport | String |
| CardData.inout | String |
| CardData.balance | int |
| CardData.sensorInfo | String |
| RefinedData.inout | String |
| RefinedData.tr | char |
| RefinedData.ptr | char |
| RefinedData.d1 | char |
| RefinedData.d2 | char |
| RefinedData.d3 | char |
| RefinedData.balance | Int |
| RefinedData.pTagTime | Int |
| RefinedData.pSensorInfo | int |
| Tag | int |
| inout | String |

3) Adjust System

| Input | Input Specification |
|---|---|
| Buffer | String |
| TF | Struct record{String, String, String,int, String,} |

## 2.4 Output specifications

4) Bus System

| Output | Output Specification |
|---|---|
| CardData.time | String |
| CardData.transport | String |
| CardData.inout | String |
| CardData.balance | int |
| CardData.sensorInfo | String |
| RefinedData.inout | String |
| RefinedData.tr | char |
| RefinedData.ptr | char |
| RefinedData.d1 | char |
| RefinedData.d2 | char |
| RefinedData.d3 | char |
| RefinedData.balance | Int |
| RefinedData.pTagTime | Int |
| RefinedData.pSensorInfo | int |
| Tag | int |
| inout | String |

5) Subway System

| Output | Output Specification |
|---|---|
| CardData.time | String |
| CardData.transport | String |
| CardData.inout | String |
| CardData.balance | int |
| CardData.sensorInfo | String |

| | |
|---|---|
| RefinedData.inout | String |
| RefinedData.tr | char |
| RefinedData.ptr | char |
| RefinedData.d1 | char |
| RefinedData.d2 | char |
| RefinedData.d3 | char |
| RefinedData.balance | Int |
| RefinedData.pTagTime | Int |
| RefinedData.pSensorInfo | int |
| Tag | int |
| inout | String |

6) Adjust System

| **Output** | **Output Specification** |
|---|---|
| TF | Struct record{String, String, String,int, String,} |
| Total_BusFare | Int |
| Total_SubwayFare | int |

3 Environmental needs

PTS의 unit test를 위한 환경적 요구사항은 다음과 같다.

(1) Hardware & Platform, gcc compiler/linker

(2) CTIP(Continuous Testing & Integration Platform) Environment

Test tools

CUnit unit test framework for C

4 Unit test summary report

4.1 Test summary report identifier

4.2 Evaluation

1) Bus System

| **Running Refine Process** | |
|---|---|
| **Running test BUS.UTC.120.000** | PASSED |
| **Running test BUS.UTC.120.001** | PASSED |
| **Running test BUS.UTC.120.002** | PASSED |
| **Running test BUS.UTC.120.003** | PASSED |
| **Running test BUS.UTC.120.004** | PASSED |
| **Running test BUS.UTC.120.005** | PASSED |
| **Running test BUS.UTC.120.006** | PASSED |
| **Running test BUS.UTC.120.007** | PASSED |
| **Running Calculate Controller** | |
| **Running test BUS.UTC.131.000** | PASSED |
| **Running test BUS.UTC.131.001** | PASSED |
| **Running test BUS.UTC.131.002** | PASSED |
| **Running test BUS.UTC.131.003** | PASSED |
| **Running test BUS.UTC.131.004** | PASSED |
| **Running test BUS.UTC.131.005** | PASSED |
| **Running test BUS.UTC.131.006** | PASSED |
| **Running test BUS.UTC.131.007** | PASSED |
| **Running Output Controller** | |
| **BUS.UTC.211.000** | PASSED |
| **BUS.UTC.211.001** | PASSED |

2) Subway System

| **Running Refine Process** | |
|---|---|
| **Running test SUB.UTC.160.000** | PASSED |
| **Running test SUB.UTC.160.001** | PASSED |
| **Running test SUB.UTC.160.002** | PASSED |
| **Running test SUB.UTC.160.003** | PASSED |
| **Running test SUB.UTC.160.004** | PASSED |
| **Running test SUB.UTC.160.005** | PASSED |
| **Running test SUB.UTC.160.006** | PASSED |
| **Running test SUB.UTC.160.007** | PASSED |
| **Running Calculate Controller** | |

| | |
|---|---|
| **Running test SUB.UTC.171.000** | PASSED |
| **Running test SUB.UTC.171.001** | PASSED |
| **Running test SUB.UTC.171.002** | PASSED |
| **Running test SUB.UTC.171.003** | PASSED |
| **Running test SUB.UTC.171.004** | PASSED |
| **Running test SUB.UTC.171.005** | PASSED |
| **Running test SUB.UTC.171.006** | PASSED |
| **Running test SUB.UTC.171.007** | PASSED |
| **Running Output Controller** | |
| **SUB.UTC.211.000** | PASSED |
| **SUB.UTC.211.001** | PASSED |

3) Adjust System

| | |
|---|---|
| **Running Refine Process** | |
| **Running test ADJ.UTC.120.000** | PASSED |
| **Running test ADJ.UTC.211.000** | PASSED |