FACULTY OF COMPUTER SYSTEMS & SOFTWARE ENGINEERING

BCS3323 - SOFTWARE TESTING & MAINTENANCE

Test Design Specifications

DOOR ACCESS SYSTEM VIA FINGERPRINT WITH GSM
(RESMART)
Independence Verification and Validation

Version : 1.0.0
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Table of Content

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1.0 Introduction

1.1 Purpose
This test design specification support the following objectives:
i.   To identify the test items covered
ii. To further refine the test approach from Test Plan.
iii. To define the sources of the information used to prepare the plan.
iv. To identify the general cases of test to be executed

1.2 Scope
The test design specification covers all the features developed in RESMART.

1.3 References
The following IEEE standards have been referenced in preparation of this document:
i. IEEE 829-2008 Standard for Software and System Test Documentation

The following documents provide the test basis for this test design:
i. RESMART Software Requirement Specifications (ReSMART_SRS_1.0)
ii. RESMART System Design Specifications (ReSMART_SDS_1.0)

2.0 Test Design

2.1 Features To Be Tested

The following table contains the failures to be tested based on RESMART Software Requirement Specifications (SRS) for this iteration. Listed together are the function ID and its corresponding functions and estimated risk level.

It is better to put information above in table format.

Function ID	Description	Risk Level
F001	To allow manager to login into ReSMART.	High
F002	To allow manager to add the staff to ReSMART.	High
F003	To allow manager to search name of staff in ReSMART.	High
F004	To allow manager to amend any data of the staff ReSMART.	High
F005	To allow manager to delete the staff detail from database and in PIC.	High
F006	To allow manager to delete all staff from database and PIC.	High
F007	To allow manager to view the door access report.	High
F008	To allow manager to change password to a new one.	High

Note : All other functions will be tested in iteration 2.

2.2 Approach Refinements

As discussed in test Plan (ReSMART_TP_1.0.0), test cases for ReSMART will be designed using five techniques which are covered in this section. Techniques are applied based on suitable of techniques according to nature of features.

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2.2.1 Login

Test Case ID: TC-01
Feature ID: F001
Test Technique:

      i.   Equivalence partitioning (EP)
     ii.   Boundary value analysis (BV)
   iii.   State transition testing
   iv.   Use case testing

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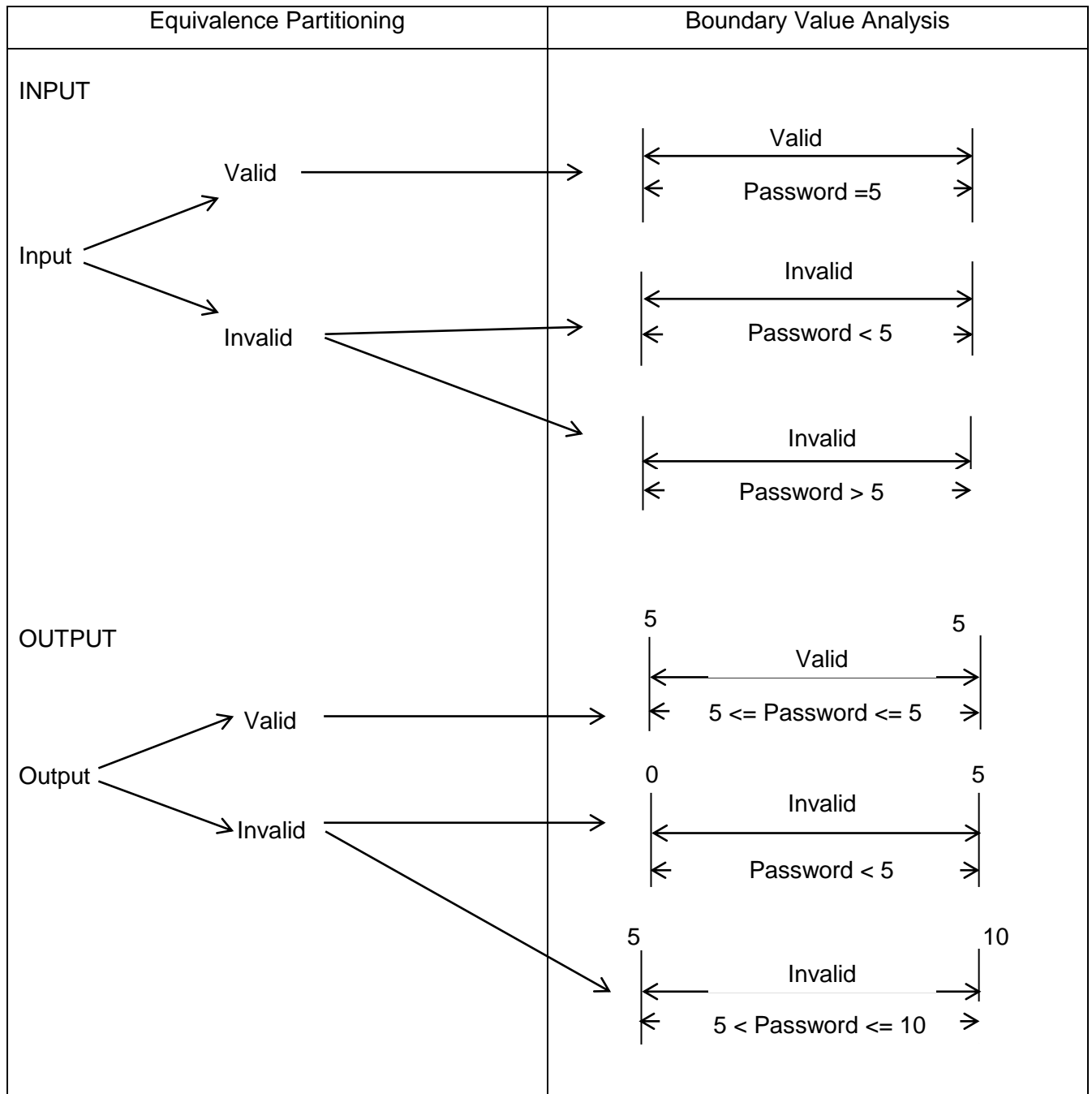
Result Analysis Method:

2.2.1.1 Equivalence partitioning

Equivalence Partitioning	Boundary Value Analysis
INPUT	

Figure 2.2.1.1a Password Equivalence Partition & Boundary Value analysis

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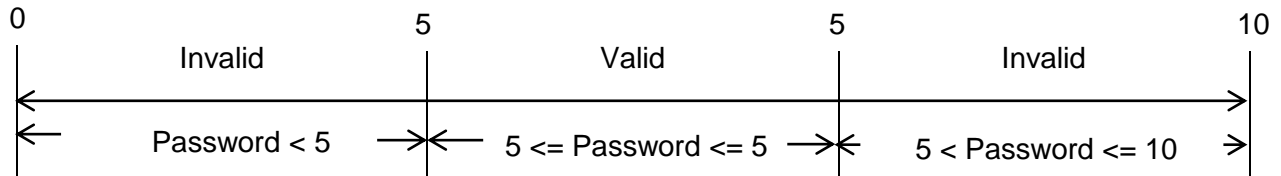| Project Title : ReSMART Independent Verification and Validation	
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Figure 2.2.1.1b Password Equivalence Partition

Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-01-001	Password < 5	TCOV-01-001	Password < 5 (Invalid)	0
TCON-01-002	5 < Password <= 5	TCOV-01-002	5 < Password <= 5 (valid)	12345
TCON-01-003	5 000 < Password <= 10	TCOV-01-003	5< Password <= 10 (Invalid)	765432
TCON-01-004	Valid password	TCOV-01-004	Valid password (Accept password)	15234
TCON-01-005	Invalid password	TCOV-01-005	Invalid password (Reject & return password)	6523488

Table 2.2.1.1 Password Equivalence Partitioning Test Conditions & Coverage
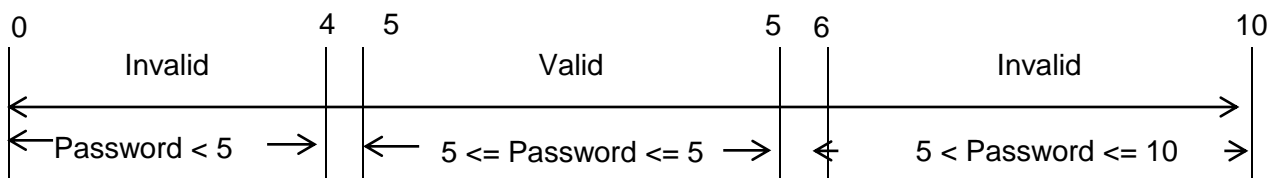
2.2.1.2 Boundary Value analysis

Figure 2.2.1.2 Password boundary value

EP1: Password = Password < 5
EP2: Password = 5 <= Password <= 5
EP3: Password = 5 < Password <= 10

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Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-01-006	Password = 0	TCOV-01-006	Password =0 (Invalid)	No input
TCON-01-007	Password = 4	TCOV-01-007	Password = 1 (Invalid)	1234
TCON-01-002	Password = 5	TCOV-01-002	Password = 5 (Valid)	12345
TCON-01-008	Password = 6	TCOV-01-008	Password = 6 (Invalid)	745pah
TCON-01-009	Password = 10	TCOV-01-009	Password = 10 (Invalid)	9512360478
TCON-01-004	Valid password	TCOV-01-004	Valid password (Valid output)	15234
TCON-01-005	Invalid password	TCOV-01-005	Invalid password (Invalid output)	6523488

Table 2.2.1.2 Password boundary value analysis test condition & coverage

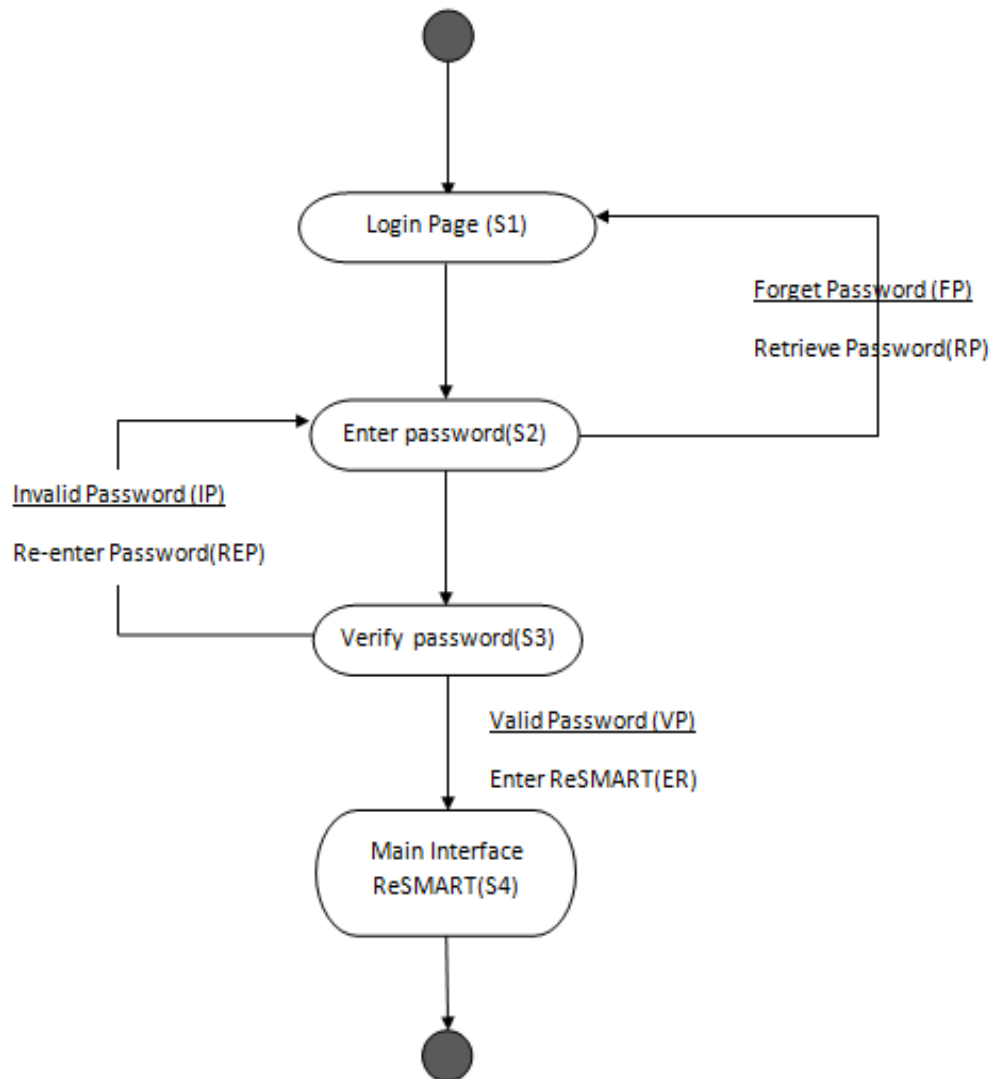| Project Title : ReSMART Independent Verification and Validation	
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2.2.1.4 State transition testing

Figure 2. 2.1.4 Verify Login State transition diagram

Input / State	Forget Password (FP)	Retrieve Password (RP)	Invalid Password (IP)	Re-enter Password (REP)	Valid Password (VP)	Enter ReSMART (ER)
Login Page (S1)	-	S1	S1	-	-	-
Enter password (S2)	S1	-	S1	-	S3	-
Verify password (S3)	-	-	S2	S2	S4	S4
Main Interface ReSMART (S4)	-	-	-	-	-	S4

Table 2.2.1.4a Verify Login State table

Test Coverage ID	Test Coverage
TCOV-01-010	S1 toS1 with input RP
TCOV-01-011	S1 to S1 with input IP
TCOV-01-012	S2 to S1 with input FP
TCOV-01-013	S2 to S1 with input IP
TCOV-01-014	S2 to S3 with input VP
TCOV-01-015	S3 to S2 with input IP
TCOV-01-016	S3 to S2 with input REP
TCOV-01-017	S3 to S4 with input VP
TCOV-01-018	S3 to S4 with input ER
TCOV-01-019	S4 to S4 with input ER

Table 2.2.1.4b Verify Login State coverage

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2.2.1.5 Use case testing

Use case ID	UC001	
Use case	F001 Login	
Purpose	To allow manager to login into RESMART.	
Actor	Manager	
Trigger	Manager click login screen.	
Precondition	RESMART is in "on" and passed Verify Login state.	
Scenario name	Step	Action
Main flow	1	Manager click login screen.
	2	System display login screen.
	3	System requests for input of password.
	4	Manager inserts correct password.
	5	System verifies the password.
	6	System allow manager to enter the system.
Alternate flow- Invalid password	4.1.1	Manager inserts an incorrect password.
	4.1.2	System displays a message box with message "Incorrect Password"
	4.1.3	Back to flow 4.
Alternate flow- Forget password	2.2.1	Manager forget password.
	2.2.2	Manager click forget password.
	2.2.3	Systems show the process to retrieve their password.
Rules	Manager must enter correct password.	
Note	The password entered is matching with the database, the system will lead the user to the next interface.	

Table 2.2.1.5a Verify Login use case.

Test condition ID	Test condition	Test coverage ID	Test coverage	Test data
TCON-01-010	Main flow	TCOV-01-020	Main flow	Valid password
TCON-01-011	Alternate flow- Invalid password	TCOV-01-021	Alternate flow- Invalid password	Invalid password
TCON-01-012	Alternate flow- Forgot password	TCOV-01-023	Alternate flow- Forgot password	Forget password

Table 2.2.1.5a Verify Login use case test condition & coverage

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2.3 Test Identification

2.3.1 Verify Login

Test Case ID	Description	Test Coverage ID	Test Condition ID	Requirement ID
TC-01-001	Login Page-mandatory symbol	TCOV-01-023	TCON-01-013	REQ_F01_001
TC-01-002	Password-encrypted format	TCOV-01-024	TCON-01-014	REQ_F01_002
TC-01-003	Password- enter invalid password	TCOV-01-007	TCON-01-007	REQ_F01_003
TC-01-004	Password- enter valid password	TCOV-01-002	TCON-01-002	REQ_F01_004
TC-01-005	Password- validate if password case is sensitive	TCOV-01-008	TCON-01-008	REQ_F01_005
TC-01-006	Login button-lead to the respect page	TCOV-01-019	TCON-01-013	REQ_F01_006
TC-01-007	Forgot password- recover the password	TCOV-01-010	TCON-01-010	REQ_F01_007
TC-01-008	Password- enter 3 times invalid password	TCOV-01-007	TCON-01-007	REQ_F01_008
TC-01-009	Password- enter 2 times invalid password	TCOV-01-007	TCON-01-007	REQ_F01_009
TC-01-010	Password field is blank	TCOV-01-007	TCON-01-007	REQ_F01_010

Table 2.3.1 Verify Login test identification

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2.2.2 Add user

Test Case ID: TC-02

Feature ID: F002

Test Technique:

      v.   Equivalence partitioning (EP)

     vi.   Boundary value analysis (BV)

    vii.   State transition testing

   viii.   Use case testing

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Result Analysis Method:

2.2.2.1 Equivalence partitioning

Equivalence Partitioning	Boundary Value Analysis
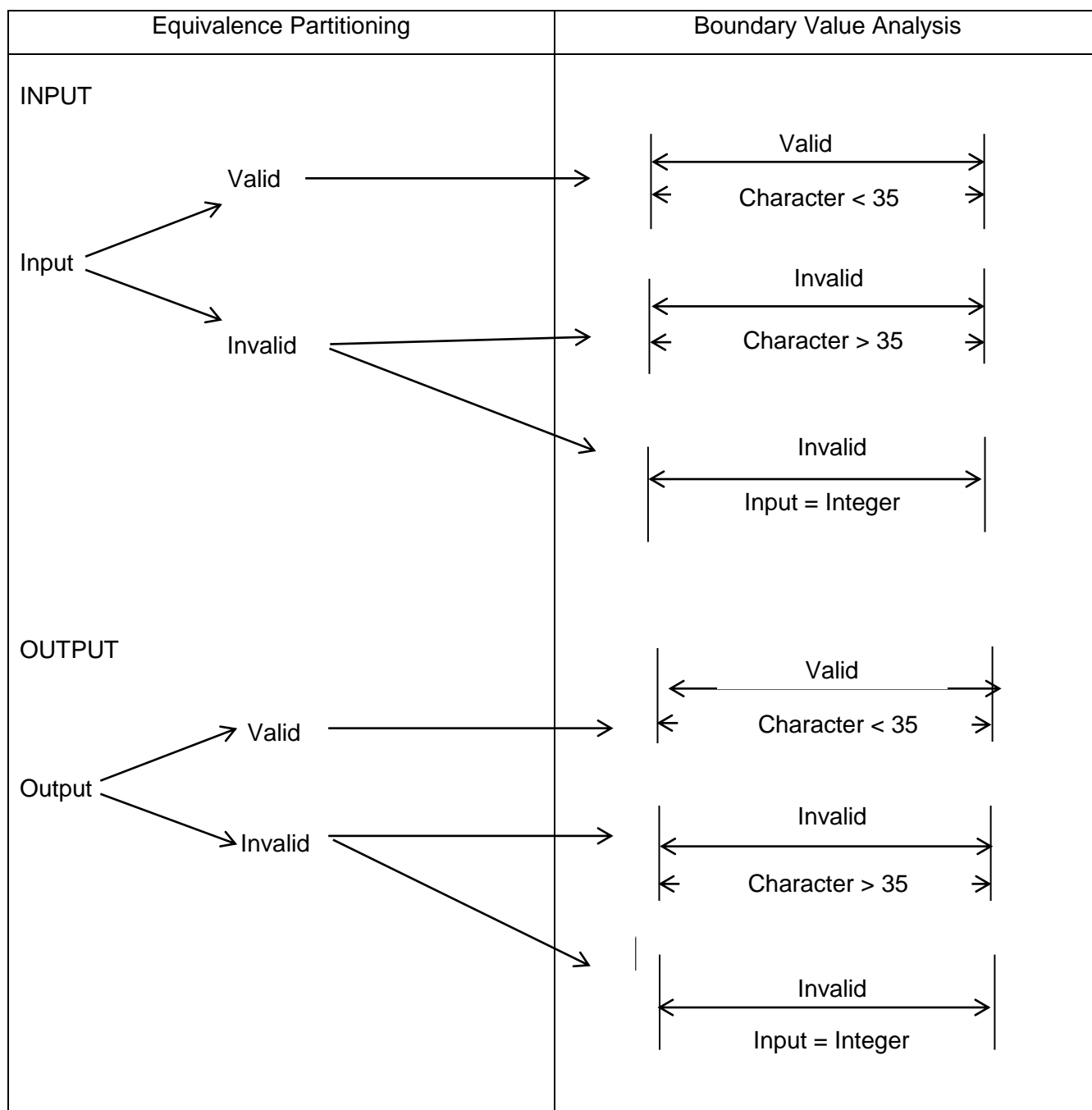
Figure 2.2.2.1a Full name equivalence partition and Boundary Value Analysis

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Equivalence Partitioning	Boundary Value Analysis

INPUT

Input

Valid

Invalid

Valid
Character < 16

Invalid
Character > 16

Invalid
Input = Integer

OUTPUT

Output

Valid

Invalid

Valid
Character < 16

Invalid
Character > 16

Invalid
Input = Integer
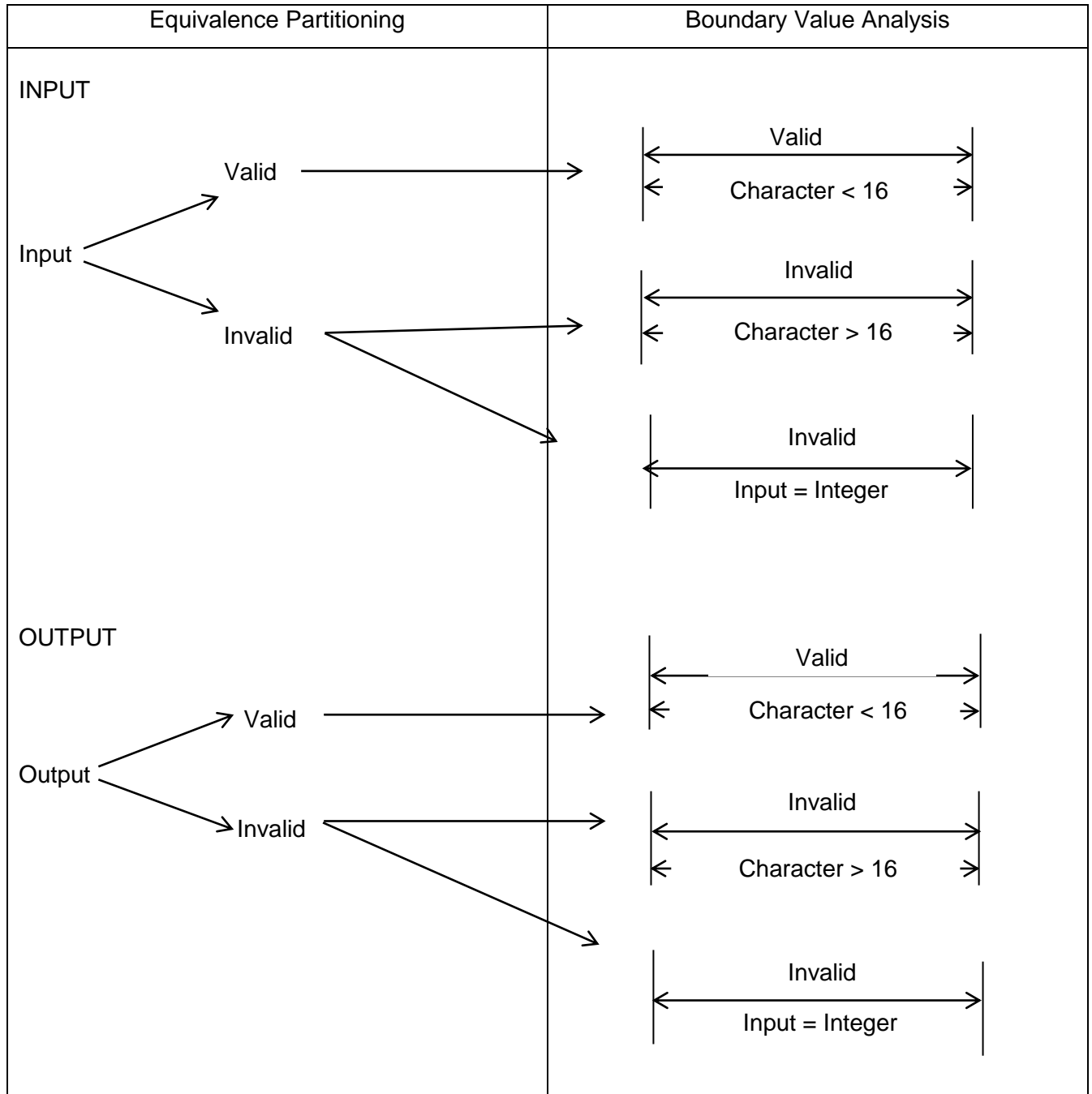
Figure 2.2.2.1b Full name equivalence partition and Boundary Value Analysis

TEST DESIGN SPECIFICATION

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Equivalence Partitioning	Boundary Value Analysis

INPUT

Valid
Phone num= integer

Invalid
Phone num= String

Invalid
Phone num > 11

Input → Valid → Valid
Input → Invalid

OUTPUT

Valid
Phone num= integer

Invalid
Phone num= String

Invalid
Phone num > 11

Output → Valid
Output → Invalid

Figure 2.2.2.1c Phone number Equivalence Partition and Boundary Value Analysis

Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-02-001	Null value	TCOV-02-001	Input null value(Invalid)	-
TCON-02-002	Input char < 35	TCOV-02-002	Character < 35 (Valid)	Normaliana
TCON-02-003	Input char > 35	TCOV-02-003	Character > 35 (Invalid)	Muhammad Mustafa Zulfaka Muslimin Asyraf AimanHazim An
TCON-02-004	Input = Integer	TCOV-02-004	Input = Integer (Invalid)	Nazihah77
TCON-02-005	Input char < 16	TCOV-02-005	Character < 16 (Valid)	Tengku Nazihah
TCON-02-006	Input char > 16	TCOV-02-006	Character > 16 (Invalid)	Tengku Nazihah Nad
TCON-02-007	Input = Integer	TCOV-02-007	Input = Integer (Invalid)	Lia89
TCON-02-008	Phone num = Integer	TCOV-02-008	Phone num= Integer (Valid)	0139137233
TCON-02-009	Phone num = String	TCOV-02-009	Phone num= String (Invalid)	nana
TCON-02-010	Phone num > 11	TCOV-02-010	Phone num > 11(Invalid)	013913723333

Table 2.2.2.1 Add user Equivalence Partitioning Test Conditions & Coverage

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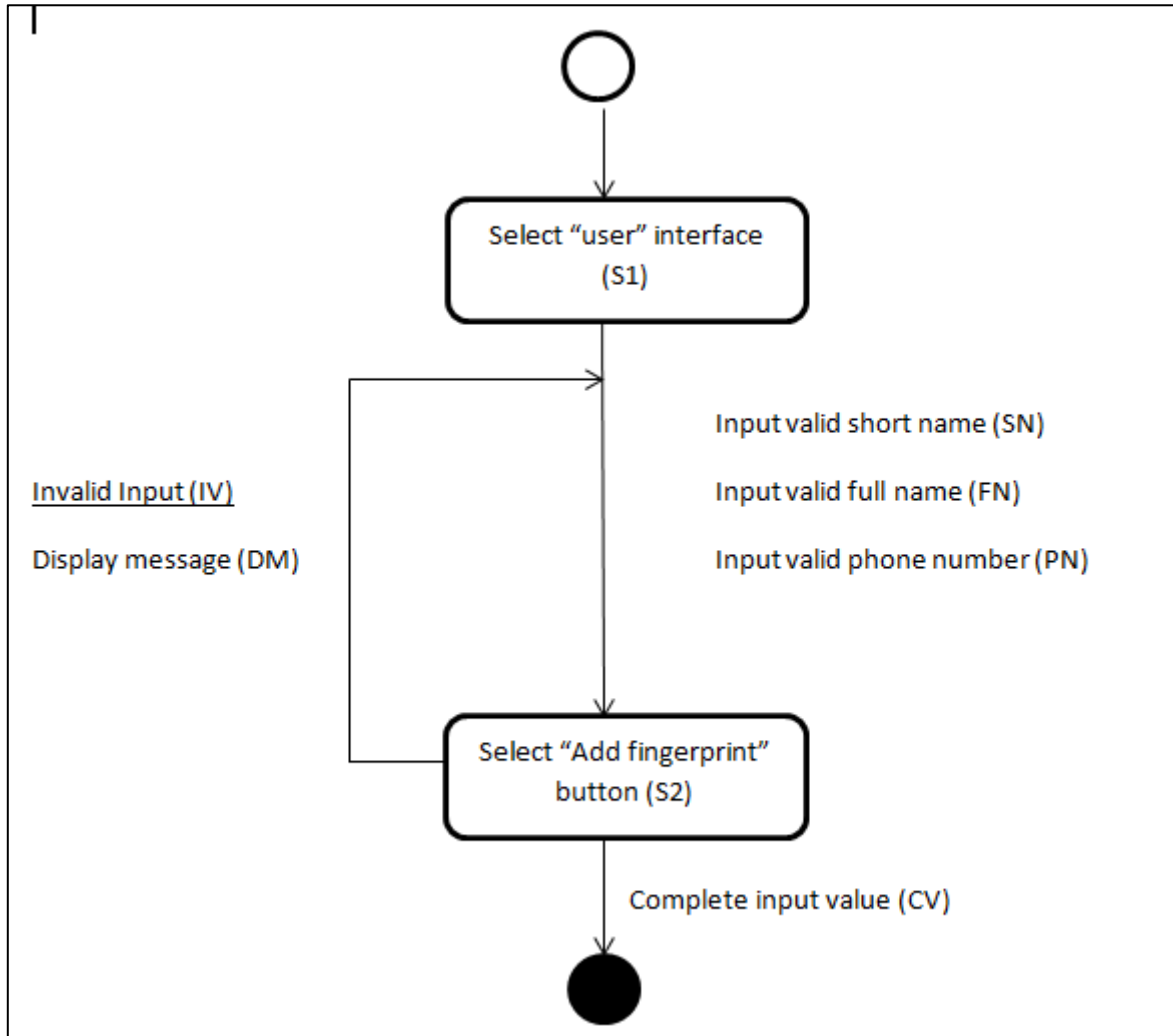
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2.2.2.4 State transition testing

Figure 2. 2.2.4 Add user State transition diagram

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Input ╲ State	Invalid full name (IFN)	Valid full name(FN)	Invalid short name (ISN)	Valid short name (SN)	Invalid phone num (IPN)	Valid phone num (PN)
Select user interface(S1)	S1-	S2/CV TCOV-02-011	S1-	S2/ CV TCOV-02-011	S1-	S2/ CV TCOV-02-011
Select "Add fingerprint" button (S2)	S2/ DM TCOV-02-003	S2-	S2/ DM TCOV-02-006	S2-	S2/ DM TCOV-02-009	S2-

Table 2.2.2.4a Add user State table

Test Coverage ID	Test Coverage
TCOV-02-002	S1 to S2 with input FN
TCOV-02-005	S1 to S2 with input SN
TCOV-02-008	S1 to S2 with input PN
TCOV-06-003	S2 to S2 with input IFN
TCOV-06-006	S2 to S2 with input ISN
TCOV-06-009	S2 to S2 with input IPN

Table 2.2.2.4b Add user State coverage

2.2.2.5 Use case testing

Use case ID		UC002	
Use case		F002	
Purpose		To allow manager to add user	
Actor		manager	
Trigger		Manager select " user " to add user into the system	
Precondition		Manager is logged in and the ReSMART is on mode.	
Scenario name	Step	Action	
Main flow	1	Manager select "user" to add user into the system.	
	2	Manager input the staff ID.	
	3	Manager input the staff's full name.	
	4	Manager input the staff's short name.	
	5	Manager input the staff's phone number.	
	6	Manager input the staff's access door.	
	7	Manager click on "Add fingerprint" button to ask the staff to input fingerprint.	
	8	The data is recorded.	
Alternate flow- Invalid input full name	3.1.1	Manager input full name > 35 character.	
	3.1.2	Manager input integer in the textbox full name.	
	3.1.3	System will display "Invalid Data!" message.	
Alternate flow- Invalid input short name	4.1.1	Manager input short name > 16 character.	
	4.1.2	Manager input integer in the textbox short name.	
	4.1.3	System will display "Invalid Data!" message.	
Alternate flow – Invalid input phone number	5.1.1	Manager input phone number > 11	
	5.1.2	Manager input string in textbox phone number	
	5.1.3	System will display "Invalid Data!" message.	
Alternate flow- Verify the particular textbox	7.1.1	Manager enters null value.	
	7.1.2	System will display "Please Fill up All Data"	
Rules		-	
Note			

Table 2.2.2.5a Add user use case

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Test condition ID	Test condition	Test coverage ID	Test coverage	Test data
TCON-02-012	Main flow	TCOV-02-012	Main flow	Valid staff ID, valid full name: Normaliana, valid short name: Maliana, valid phone number: 0139137233
TCON-02-013	Alternate flow-Invalid input full name	TCOV-02-013	Alternate flow-Invalid input full name	Invalid input full name
TCON-02-014	Alternate flow-Invalid input short name	TCOV-02-014	Alternate flow-Invalid input short name	Invalid input short name
TCON-02-015	Alternate flow – Invalid input phone number	TCOV-02-015	Alternate flow – Invalid input phone number	Invalid phone number
TCON-02-016	Alternate flow-null value	TCOV-02-016	Alternate flow-null value	Null value

Table 2.2.2.5b Add user use case test condition & coverage

2.3 Test Identification

2.3.2 Add user

Test Case ID	Description	Test Coverage ID	Test Condition ID	Requirement ID
TC-02-001	Enter null value (Invalid)	TCOV-02-001	TCON-02-001	REQ_F02-001
TC-02-002	Character name < 35 (Valid)	TCOV-02-002	TCON-02-002	REQ_F02-002
TC-02-003	Character name > 35 (Invalid)	TCOV-02-003	TCON-02-003	REQ_F02-003
TC-02-004	Input full name = Integer (Invalid)	TCOV-02-004	TCON-02-004	REQ_F02-004
TC-02-005	Character name < 16 (Valid)	TCOV-02-005	TCON-02-005	REQ_F02-005
TC-02-006	Character name > 16 (Invalid)	TCOV-02-006	TCON-02-006	REQ_F02-006
TC-02-007	Input short name = Integer (Invalid)	TCOV-02-007	TCON-02-007	REQ_F02-007
TC-02-008	Input phone num = integer (Valid)	TCOV-02-008	TCON-02-008	REQ_F02-008
TC-02-009	Input phone num < 11 (Valid)	TCOV-02-009	TCON-02-009	REQ_F02-009
TC-02-010	Input phone num = string (Invalid)	TCOV-02-010	TCON-02-010	REQ_F02-010
TC-02-011	Complete input value (Valid)	TCOV-02-011	TCON-02-011	REQ_F02-011

Table 2.3.2 Add user Test Identification

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2.2.3 Search Existing user

Test Case ID: TC-03

Feature ID: F003

Test Technique:

  ix.   Equivalence partitioning (EP)
   x.   Boundary value analysis (BV)
  xi.   State transition testing
 xii.   Use case testing

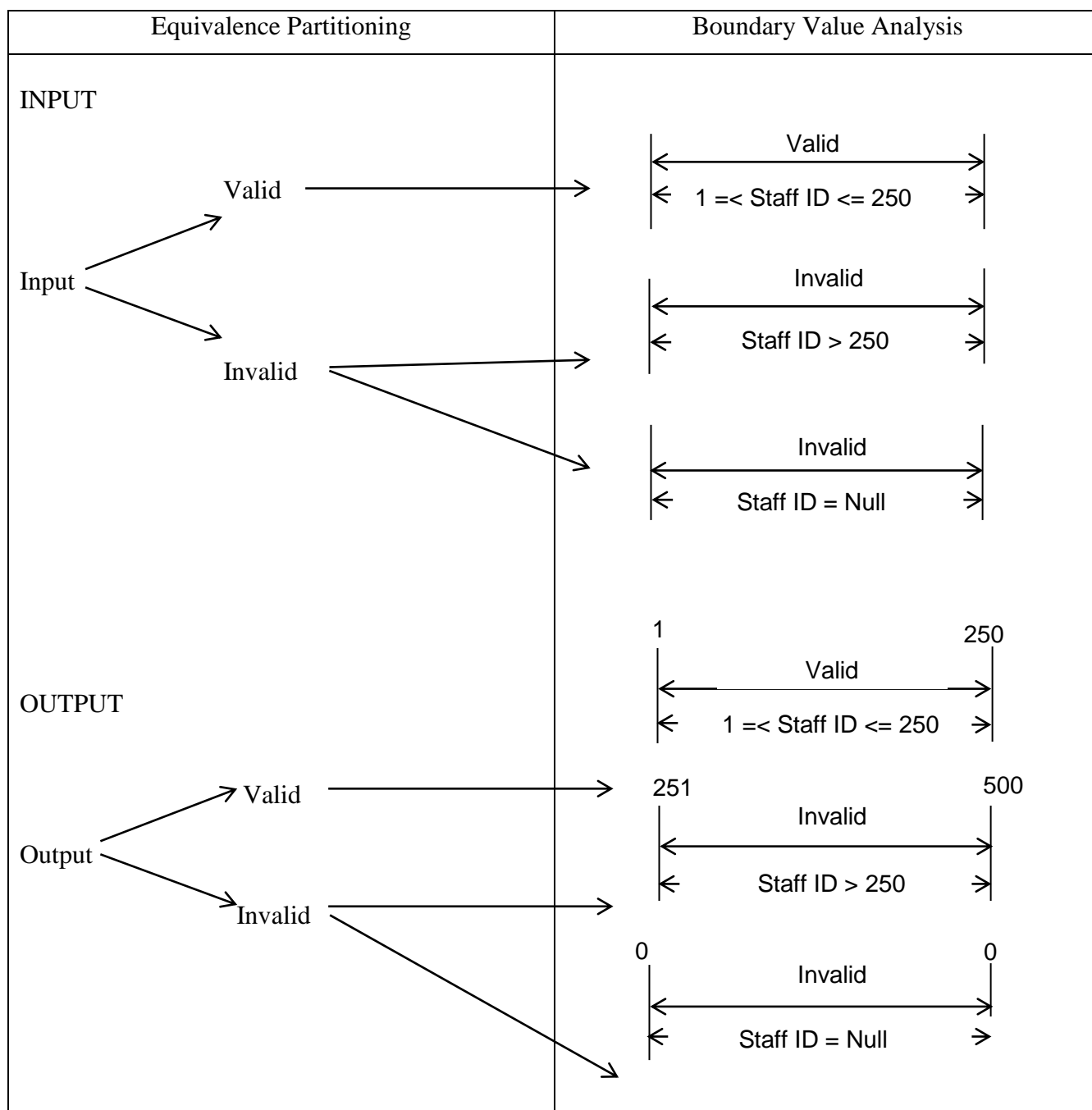Result Analysis Method:

2.2.3.1 Equivalence partitioning

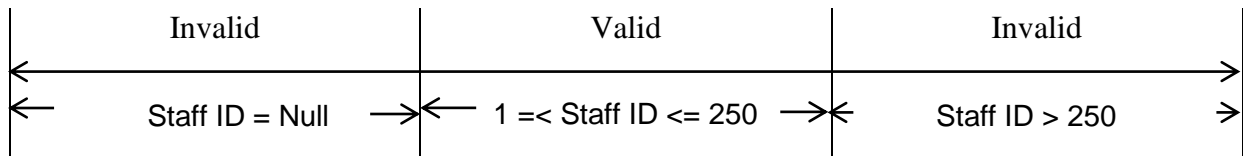Figure 2.2.3.1a Staff ID Equivalence Partition & Boundary Value analysis

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Invalid	Valid	Invalid

Staff ID = Null → ← 1 =< Staff ID <= 250 → ← Staff ID > 250

Figure 2.2.3.1b Staff ID Equivalence Partition

Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-03-001	Staff ID = Null	TCOV-03-001	Staff ID = Null (Invalid)	0
TCON-03-002	1 =< Staff ID <= 250	TCOV-03-002	1 =< Staff ID <= 250 (valid)	123
TCON-03-003	Staff ID > 250	TCOV-03-003	Staff ID > 250 (Invalid)	251
TCON-03-004	Valid Staff ID	TCOV-03-004	Valid ID (Accept ID)	234
TCON-03-005	Invalid Staff ID	TCOV-03-005	Invalid ID (Reject ID)	499

Table 2.2.3.1c Staff ID Equivalence Partitioning Test Conditions & Coverage
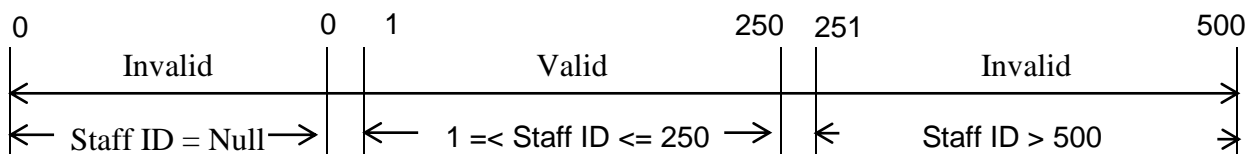
2.2.3.2 Boundary Value analysis

0   0 1   250 251   500

Invalid	Valid	Invalid

← Staff ID = Null → ← 1 =< Staff ID <= 250 → ← Staff ID > 500 →

Figure 2.2.3.2 Staff ID boundary value

EP1: Staff ID = 0
EP2: 1=< Staff ID <= 250
EP3: 251 =< Staff ID <= 500

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Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-03-006	Staff ID = 0	TCOV-03-006	Staff ID = 0 (Invalid)	0
TCON-03-007	Staff ID = 1	TCOV-03-007	Staff ID = 1 (Valid)	1
TCON-03-008	Staff ID = 250	TCOV-03-008	Staff ID = 250 (Valid)	250
TCON-03-009	Staff ID = 251	TCOV-03-009	Staff ID = 251 (Invalid)	251
TCON-03-010	Staff ID = 500	TCOV-03-010	Staff ID = 500 (Invalid)	500
TCON-03-004	Valid Staff ID	TCOV-03-004	Valid ID (Accept ID)	234
TCON-03-005	Invalid Staff ID	TCOV-03-005	Invalid ID (Reject ID)	555

Table 2.2.3.2 Staff ID boundary value analysis test condition & coverage
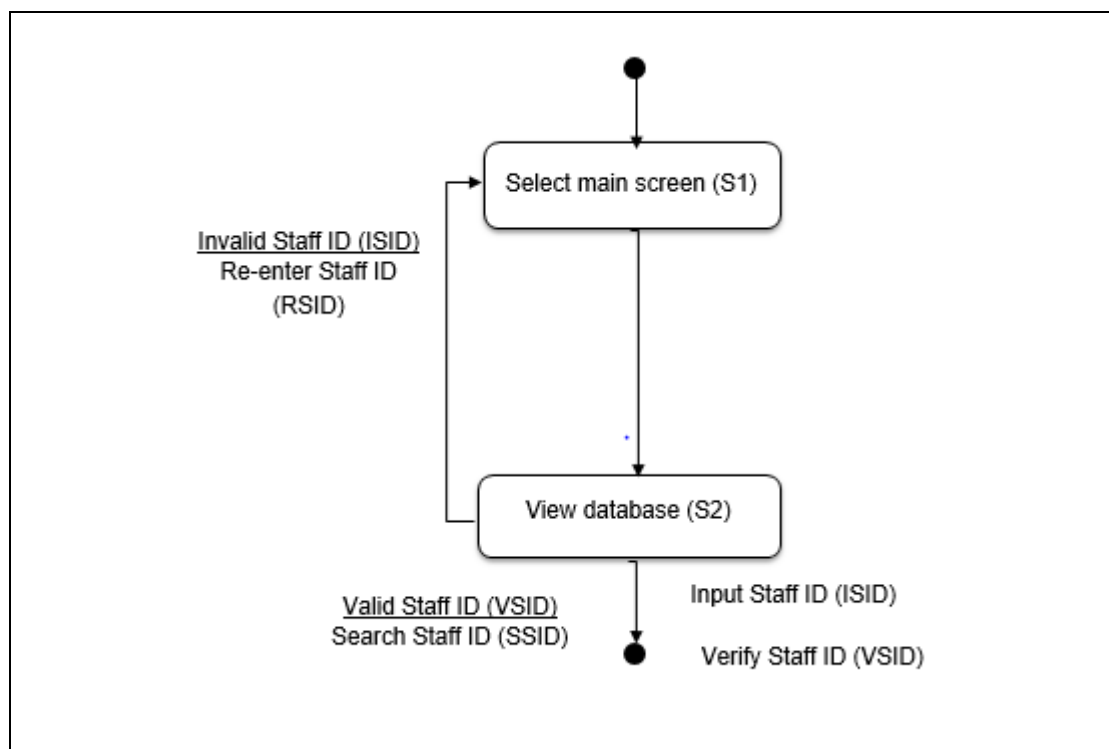
2.2.3.4 State transition testing

Figure 2. 2.3.4 Search Existing User State transition diagram

Input State	Input staff ID (ISID)	Verify staff ID (VSID)	Invalid staff ID (INSID)	Valid staff ID (VSID)
Select main screen (S1)	S2/VDTCOV-03-016	S2/-	S1/RSIDCOV-03-017	S2/- SSIDCOV-03-018
View database (S2)	S1/-	S2/-	S1/ RSIDCOV-03-019	S2/SSIDCOV-03-020

Table 2.2.3.4a Search Existing User State table

Test Coverage ID	Test Coverage
TCOV-03-016	S1 to S2 with input ISID
TCOV-03-017	S2 to S1 with input INSID
TCOV-03-018	S1 to S2 with input VSID
TCOV-03-019	S2 to S1 with input INSID
TCOV-03-020	S2 to S2 with input VSID

Table 2.2.3.4b Search Existing User State coverage

2.2.3.5 Use case testing

Use case ID	UC003	
Use case	F003 Search Existing User	
Purpose	To allow manager to search name of the staff in ReSMART.	
Actor	Manager	
Trigger	Manager clicks "Search" in database.	
Precondition	ReSMART is in "on" and manager is logged in.	
Scenario name	Step	Action
Main flow	1	Manager key in staff ID in the text box provided.
	2	Manager clicks on 'Search' button.
	3	System will check the staff ID in the database (tblStaff).
	4	System displays the Staff information.
Alternate flow- Invalid staff ID	1.1.1	Manager either search staff ID less than 1 or search more than 500
	1.1.2	System displays a message and allow user to re insert.
	1.1.3	Back to flow 1.
Alternate flow – Wrong staff ID	1.2.1	Manager search wrong staff ID.
	1.2.2	Systems display message box "No match found".
	1.2.3	System allows user to re insert.
	1.2.4	Back to flow 1.
Rules	The Staff ID not less than 1 and not more than 250.	
Note	Search activity with be end or go back to the main menu depends on selection of manager.	

Table 2.2.3.5a Search Existing User use case.

Test condition ID	Test condition	Test coverage ID	Test coverage	Test data
TCON-03-11	Main flow	TCOV-03-011	Main flow	Valid staff ID = 1
TCON-03-12	Alternate flow- Invalid Staff ID	TCOV-03-012	Alternate flow- Invalid Staff ID	Invalid Staff ID = 0 or Invalid Staff ID = 251
TCON-03-13	Alternate flow – Wrong Staff ID	TCOV-03-013	Alternate flow- Invalid Staff ID	Wrong Staff ID = 123

Table 2.2.3.5b Search Existing User use case test condition & coverage

TEST DESIGN SPECIFICATION

Project Title : ReSMART Independent Verification and Validation	
Date : 04/12/2016	Test Incident Report ID: ReSMART_TDS_1_1.0.0

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2.3 Test Identification

2.3.3 Search Existing User

Test Case ID	Description	Test Coverage ID	Test Condition ID	Requirement ID
TC-03-001	Staff ID (0) Invalid	TCOV-03-006	TCON-03-006	REQ-FF03-001
TC-03-002	Staff ID (1) Valid	TCOV-03-007	TCON-03-007	REQ-FF03-002
TC-03-003	Staff ID (250) Valid	TCOV-03-008	TCON-03-008	REQ-FF03-003
TC-03-004	Staff ID (251) Invalid	TCOV-03-009	TCON-03-009	REQ-FF03-004
TC-03-005	Staff ID (500) Invalid	TCOV-03-010	TCON-03-010	REQ-FF03-005
TC-03-006	Staff ID (211) Valid	TCOV-03-014	TCON-03-014	REQ-FF03-006
TC-03-007	Staff ID (49) Valid	TCOV-03-015	TCON-03-015	REQ-FF03-007
TC-03-008	Session verification Staff ID Main flow	TCOV-03-011	TCON-03-011	REQ-FF03-008
TC-03-009	Session verification Alternate flow- Search Invalid Staff ID	TCOV-03-012	TCON-03-012	REQ-FF03-009
TC-03-010	Session verification Alternate flow- Search Wrong Staff ID	TCOV-03-013	TCON-03-013	REQ-FF03-010

Table 2.3.3 Search Existing User test identification

TEST DESIGN SPECIFICATION

Project Title : ReSMART Independent Verification and Validation	
Date : 04/12/2016	Test Incident Report ID: ReSMART_TDS_1_1.0.0

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2.2.4 Delete Existing user

Test Case ID: TC-04

Feature ID: F004

Test Technique:

      xiii.   Equivalence partitioning (EP)

      xiv.   Boundary value analysis (BV)

      xv.   State transition testing

      xvi.   Use case testing
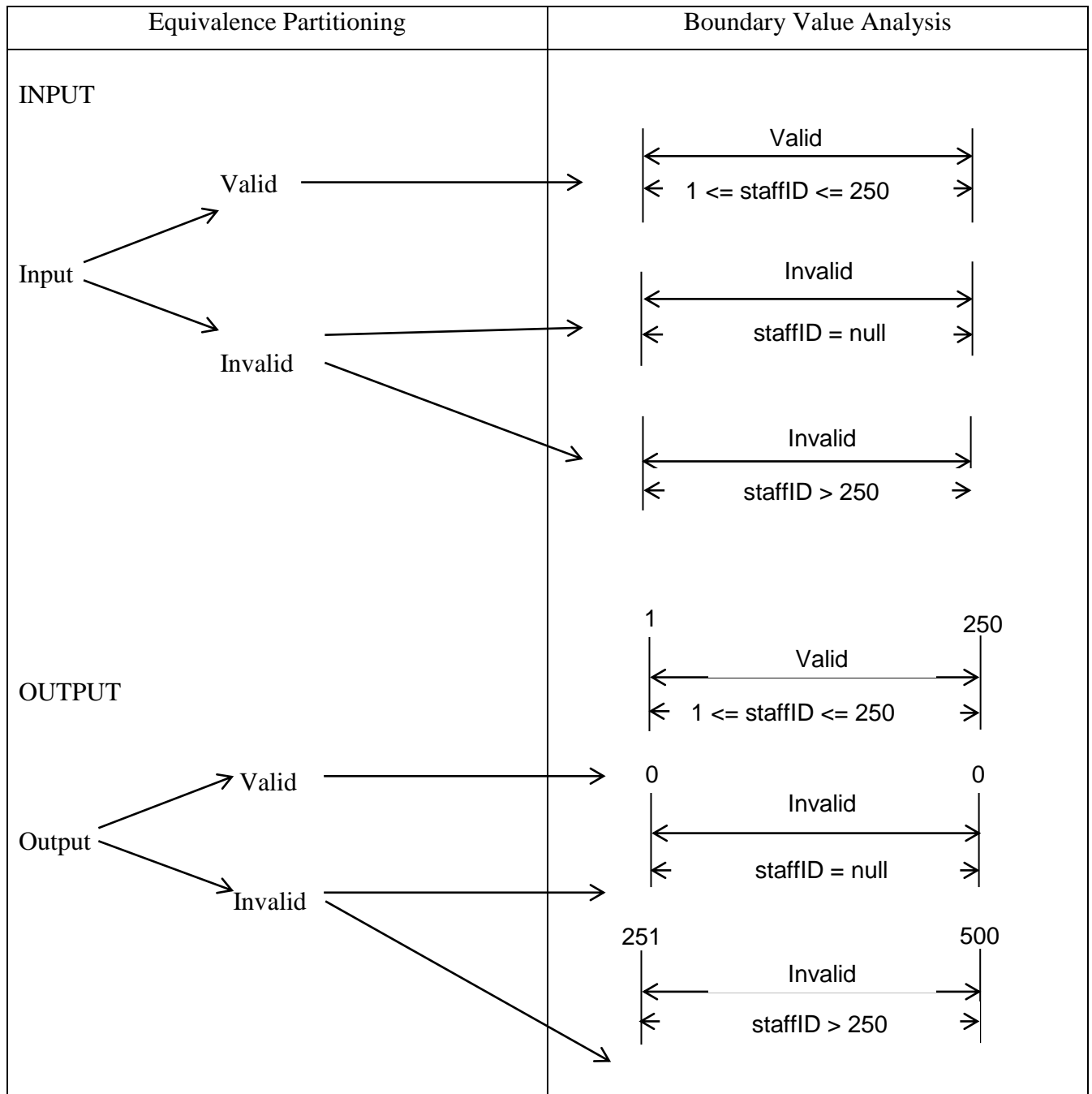
Project Title : ReSMART Independent Verification and Validation	
Date : 04/12/2016	Test Incident Report ID: ReSMART_TDS_1_1.0.0

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Result Analysis Method:

2.2.4.1 Equivalence partitioning

Equivalence Partitioning	Boundary Value Analysis

INPUT

Valid → Valid
1 <= staffID <= 250

Input → Valid
Input → Invalid

Invalid → Invalid
staffID = null

Invalid → Invalid
staffID > 250

OUTPUT

1   250
Valid
1 <= staffID <= 250

0   0
Invalid
staffID = null

Output → Valid
Output → Invalid

Valid →

Invalid →

251   500
Invalid
staffID > 250

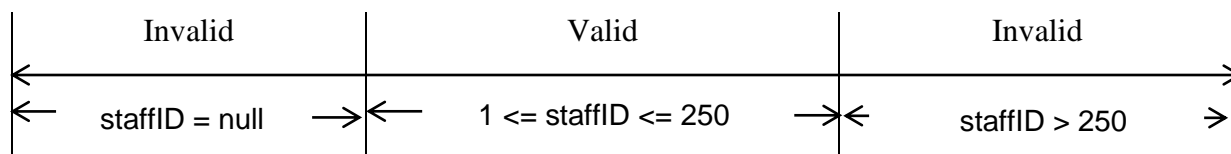Figure 2.2.4.1a Staff ID Equivalence Partition & Boundary Value analysis

Figure 2.2.4.1b staffID Equivalence Partition

Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-05-001	staffID = null	TCOV-05-001	staffID = null (Invalid)	0
TCON-05-002	1 <= staffID <= 250 (valid)	TCOV-05-002	1 <= staffID <= 250 (valid)	1
TCON-05-003	staffID > 250	TCOV-05-003	staffID > 250 (Invalid)	390
TCON-05-004	Valid ID	TCOV-05-004	Valid staffID (Accept staffID)	250
TCON-05-005	Invalid ID	TCOV-05-005	Invalid staffID (Reject staffID)	390

Table 2.2.4.1c Staff ID Equivalence Partitioning Test Conditions & Coverage

TEST DESIGN SPECIFICATION

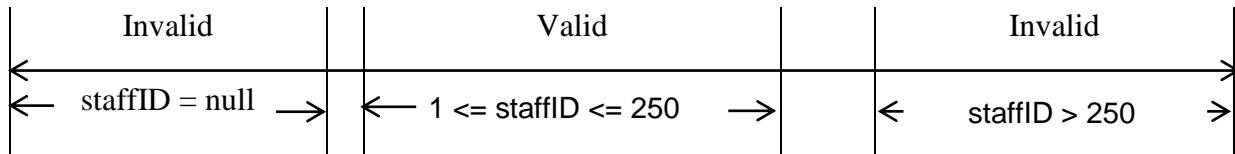| Invalid	Valid	Invalid
← staffID = null →	← 1 <= staffID <= 250 →	← staffID > 250 →

Figure 2.2.4.2 staffID boundary value

EP1: staffID = 0 digit
EP2: 1 <= staffID <= 250
EP3: 250 < staffID <= 50

Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-05-006	Staff ID = 0	TCOV-05-006	Staff ID =0 (Invalid)	0
TCON-05-007	Staff ID = 1	TCOV-05-007	Staff ID = 1 (Valid)	1
TCON-05-008	Staff ID = 250	TCOV-05-008	Staff ID = 250 (Valid)	250
TCON-05-009	Staff ID = 251	TCOV-05-009	Staff ID = 251 (Invalid)	251
TCON-05-010	Staff ID = 500	TCOV-05-010	Staff ID = 500 (Invalid)	500
TCON-05-004	Valid Staff ID	TCOV-05-004	Valid Staff ID (Accept Staff ID)	250
TCON-05-005	Invalid Staff ID	TCOV-05-005	Invalid amount (Reject Staff ID)	251

Table 2.2.4.2 Staff ID Boundary Value Analysis Test Condition & Coverage

TEST DESIGN SPECIFICATION
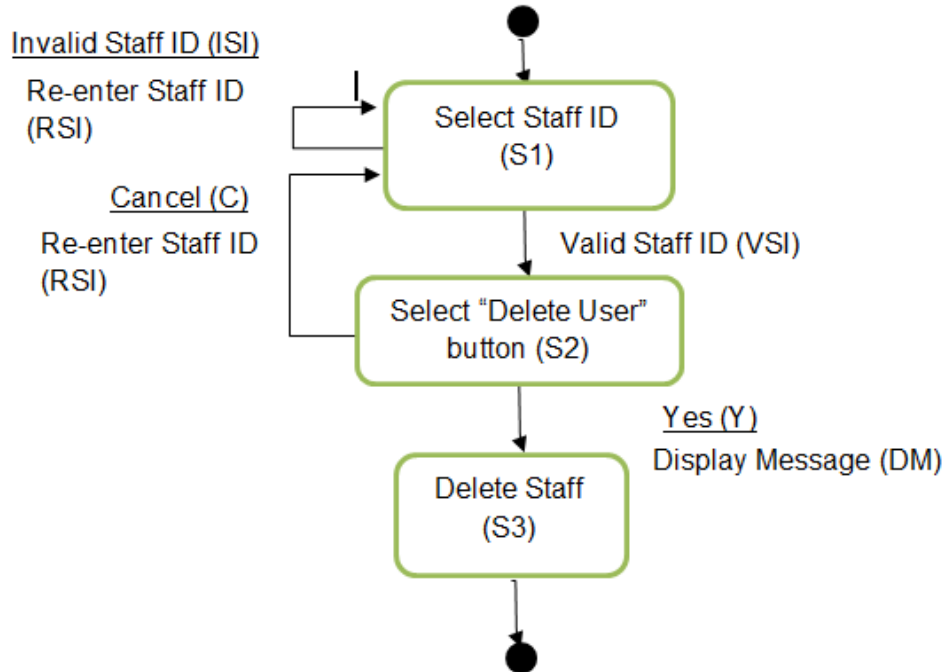
Project Title : ReSMART Independent Verification and Validation	
Date : 04/12/2016	Test Incident Report ID: ReSMART_TDS_1_1.0.0

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2.2.4.4 State Transition Diagram

Figure 2. 2.4.4 Delete Existing User State transition diagram

TEST DESIGN SPECIFICATION

Input \ State	Valid Staff ID (VSI)	Invalid Staff ID (ISI)	Yes (Y)	Cancel (C)
Select Staff ID (S1)	S2-VSITCOV-05-016	S1/ -	S1/ -	S1/ -
Select "Delete User" button (S2)	S2/ -	S2/ -	S3-DMTCOV-05-017	S1/ RSITCOV-05-018

Table 2.2.4.4a Delete Existing User State table

Test Coverage ID	Test Coverage
TCOV-05-016	S1 to S2 with input VSI
TCOV-05-017	S3 to S1 with input Y
TCOV-05-018	S2 to S1 with input C

Table 2.2.4.4b Delete Existing User State coverage

2.2.4.5 Use case testing

Use case ID		UC005
Use case		F005 Deleting Existing User
Purpose		To allow manager to delete the staff detail from database and in PIC
Actor		Manager
Trigger		Manager clicks on "Delete User" button.
Precondition		ReSMART is in "on" and manager is logged in.
Scenario name	Step	Action
Main flow	1	System displays main screen
	2	Manager choose staff from staff list view that is retrieved from tblStaff
	3	Manager clicks on "Delete User" button
	4	System will display message box with message "You are about to delete one record. Are you sure?" with the choice of "Yes" and "Cancel"
Alternate flow- Valid Staff ID	4.1	Manager clicks on "Yes" button
	4.1.1	System will delete one record from database (tblStaff)
	4.1.2	System will delete one record in PIC
Alternate flow- Invalid Staff ID	4.2	Manager clicks on "Cancel" button
	4.2.1	Back to Main Flow Step 1
Rules		Staff ID must be between 1 to 250

Table 2.2.4.5a Delete existing user use case

Test condition ID	Test condition	Test coverage ID	Test coverage	Test data
TCON-05-011	Main flow	TCOV-05-011	Main flow	Valid staffID = 1 or Valid staffID = 250
TCON-05-012	Alternate flow- Valid staffID	TCOV-05-012	Alternate flow- Valid staffID	Valid staffID = 1 or Valid staffID = 250
TCON-05-013	Alternate flow- Invalid staffID	TCOV-05-013	Alternate flow- Invalid staffID	Invalid staffID = 390

Table 2.2.4.5b Delete Existing User use case test condition & coverage

2.3 Test Identification

2.3.4 Delete Existing User

Test Case ID	Description	Test Coverage ID	Test Condition ID	Requirement ID
TC-05-001	Staff ID (0) Invalid	TCOV-05-006	TCON-05-006	REQ-05-001
TC-05-002	Staff ID (1) Valid	TCOV-05-007	TCON-05-007	REQ-05-002
TC-05-003	Staff ID (250) Valid	TCOV-05-008	TCON-05-008	REQ-05-003
TC-05-004	Staff ID (251) Invalid	TCOV-05-009	TCON-05-009	REQ-05-004
TC-05-005	Staff ID (500) Invalid	TCOV-05-010	TCON-05-010	REQ-05-005
TC-05-006	Staff ID (175) Valid	TCOV-05-014	TCON-05-014	REQ-05-006
TC-05-007	Staff ID (499) Invalid	TCOV-05-015	TCON-05-015	REQ-05-007
TC-05-008	Delete Existing User Main flow	TCOV-05-011	TCON-05-011	REQ-05-008
TC-05-009	Delete Existing User Alternate flow- Valid Staff ID	TCOV-05-012	TCON-05-012	REQ-05-009
TC-05-010	Delete Existing User Alternate flow- Invalid Staff ID	TCOV-05-013	TCON-05-013	REQ-05-010

Table 2.3.4 Delete Existing User test identification

TEST DESIGN SPECIFICATION

Project Title : ReSMART Independent Verification and Validation	
Date : 04/12/2016	Test Incident Report ID: ReSMART_TDS_1_1.0.0

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2.2.8 Change password

Test Case ID: TC-08
Feature ID: F008
Test Technique:

xvii.	Equivalence partitioning (EP)
xviii.	Boundary value analysis (BV)
xix.	State transition testing
xx.	Use case testing

Project Title : ReSMART Independent Verification and Validation	
Date : 04/12/2016	Test Incident Report ID: ReSMART_TDS_1_1.0.0

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2.2.8.1 Equivalence Partition

Figure 2.2.8.1a Password Equivalence Partition & Boundary Value analysis

Test condition ID	Test condition	Test coverage ID	Test coverage	Example of test data
TCON-08-001	Password < 5	TCOV-08-001	Password < 5 (Invalid)	0
TCON-08-002	5 < Password <= 5	TCOV-08-002	5 < Password <= 5 (valid)	12345
TCON-08-003	New Password = Re-enter New Password	TCOV-08-003	New Password = Re-enter New Password (Valid)	76543
TCON-08-004	New Password ≠ Re-enter New Password	TCOV-08-004	New Password ≠ Re-enter New Password (Invalid)	12345 & 12346
TCON-08-005	5 < Password <= 10	TCOV-08-005	5< Password <= 10 (Invalid)	765432

Table 2.2.8.1b Change Password Equivalence Partitioning Test Conditions & Coverage

TEST DESIGN SPECIFICATION

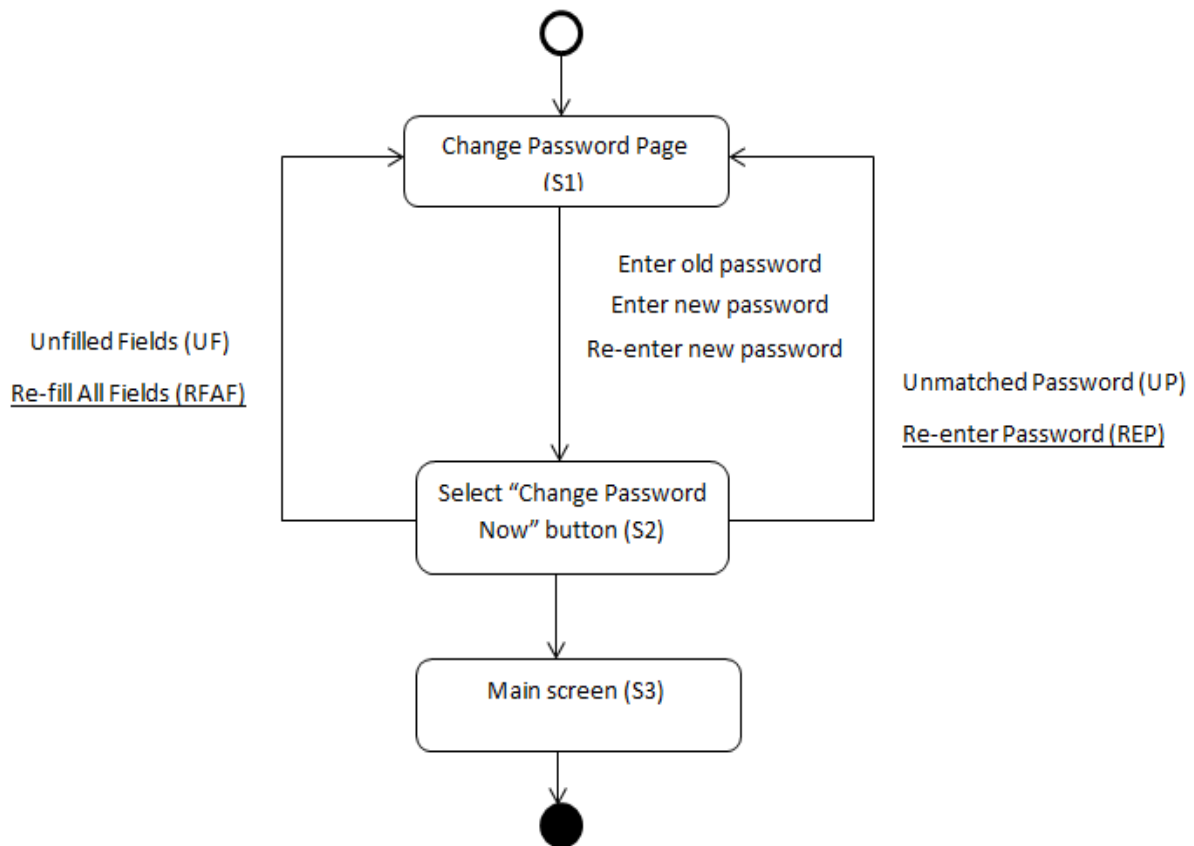## 2.2.8.4 State transition testing

Figure 2.2.8.4 Change Password State transition diagram

Input State	Valid Password (VP)	Unmatched Password (UP)	Unfilled Fields (UF)
Change Password Page (S1)	S2/VPTCOV-08-006	S1/-	S1/-
Select "Change Password Now" button (S2)	S3/VRTCOV-08-007	S1/REPTCOV-08-008	S1/RFAFTCOV-08-009

Table 2.2.8.4a Change Password State table

Test Coverage ID	Test Coverage
TCOV-08-006	S1 to S2 with input VP
TCOV-08-007	S2 to S3 with input VP
TCOV-08-008	S2 to S1 with input UP
TCOV-08-009	S2 to S1 with input UF

Table 2.2.8.4b Change Password State coverage

2.2.8.5 Use case testing

Use case ID		UC008	
Use case		F008 Change Password	
Purpose		To allow manager to change password.	
Actor		Manager	
Trigger		Manager clicks "Change Password" button.	
Precondition		RESMART is in "on" and passed Login state.	
Scenario name	Step	Action	
Main flow	1	Manager clicks change password button.	
	2	System displays change password screen.	
	3	System requests for input of old password.	
	4	Manager inserts old password.	
	5	System requests for input of new password.	
	6	Manager inserts new password.	
	7	System requests to re-enter new password.	
	8	Manager re-enters new password.	
	9	System verifies the changes request.	
	10	System displays a message box with message "Password Updated" and allows manager to enter the system.	
Alternate flow – Unmatched password	7.1.1	Manager inserts an unmatched new password.	
	7.1.2	System displays a message box with message "Password Not Matched"	
	7.1.3	Back to flow 5.	
Alternate flow – Unfilled Field	7.2.1	Manager forgets to re-enter new password.	
	7.2.2	System displays a message box with message "Fill Up All Fields"	
	7.2.3	Back to flow 5.	
Rules		Manager must enter correct old password and fill all the fields.	
Note		The password entered is matching with the database, the system will lead the user to the next interface.	

Table 2.2.8.5a Change Password use case

Test condition ID	Test condition	Test coverage ID	Test coverage	Test data
TCON-08-006	Main flow	TCOV-08-006 TCOV-08-007	Main flow	Valid password
TCON-08-007	Alternate flow - Unmatched password	TCOV-08-008	Alternate flow - Unmatched password	Invalid password types
TCON-08-008	Alternate flow – Unfilled field	TCOV-08-009	Alternate flow – Unfilled field	Invalid password count: 0 Invalid password count: 4

Table 2.2.8.5b Change Password use case test condition & coverage

2.3.8 Change Password

Test Case ID	Description	Test Coverage ID	Test Condition ID	Requirement ID
TC-08-001	Verify password (0 digits)	TCOV-08-001	TCON-08-001	REQ-F08-001
TC-08-002	Verify password (2 digits)	TCOV-08-001	TCON-08-001	REQ-F08-002
TC-08-003	Verify password (3 digits)	TCOV-08-001	TCON-08-001	REQ-F08-003
TC-08-004	Verify password (5 digits)	TCOV-08-002	TCON-08-002	REQ-F08-004
TC-08-005	Verify password (6 digits)	TCOV-08-005	TCON-08-005	REQ-F08-005
TC-08-006	Verify password (9 digits)	TCOV-08-005	TCON-08-005	REQ-F08-006
TC-08-007	Verify password (10 digits)	TCOV-08-005	TCON-08-005	REQ-F08-007
TC-08-008	Change Password Main Flow	TCOV-08-006 TCOV-08-007	TCON-08-006	REQ-F08-008
TC-08-009	Change Password Alternate Flow – Unmatched Password	TCOV-08-008 TCOV-08-003	TCON-08-007 TCON-08-003	REQ-F08-009
TC-08-010	Change Password Alternate Flow – Unfilled field	TCOV-08-009	TCON-08-008	REQ-F08-010

Table 2.3.8 Change Password Test Identification

TEST DESIGN SPECIFICATION