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

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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.

## 2.2.1 Login

Test Case ID: TC-01

Feature ID: F001

Test Technique:

1. Equivalence partitioning (EP)
2. Boundary value analysis (BV)
3. State transition testing
4. Use case testing

Result Analysis Method:

### 2.2.1.1 Equivalence partitioning

|  |  |
| --- | --- |
| Equivalence Partitioning | Boundary Value Analysis |
| INPUT  Valid  Input  Invalid    OUTPUT  Valid  Output  Invalid | Password < 5  10  5  5  0  5 <= Password <= 5  Valid  5  5  5 < Password <= 10  Invalid  Invalid  Password > 5  Valid  Invalid  Invalid  Password < 5  Password =5 |

Figure 2.2.1.1a Password Equivalence Partition & Boundary Value analysis

10

5

0

5

|  |  |  |
| --- | --- | --- |
| Invalid  Password < 5 | Valid  5 <= Password <= 5 | Invalid  5 < Password <= 10 |

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

6

4

5

5

10

0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Invalid  Password < 5 |  | Valid  5 <= Password <= 5 |  | Invalid  5 < Password <= 10 |

Figure 2.2.1.2 Password boundary value

EP1: Password = Password < 5

EP2: Password = 5 <= Password <= 5

EP3: Password = 5 < Password <= 10

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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

### 2.2.1.4 State transition testing

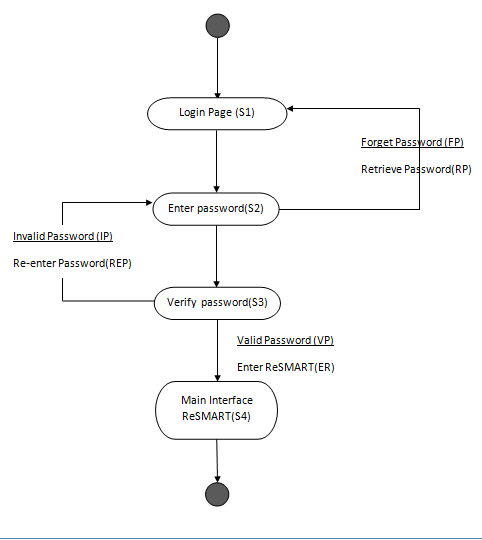
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Figure 2. 2.1.4 Verify Login State transition diagram

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 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

### 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

**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

## 2.2.2 Add user

Test Case ID: TC-02

Feature ID: F002

Test Technique:

1. Equivalence partitioning (EP)
2. Boundary value analysis (BV)
3. State transition testing
4. Use case testing

Result Analysis Method:

### 2.2.2.1 Equivalence partitioning

|  |  |
| --- | --- |
| Equivalence Partitioning | Boundary Value Analysis |
| INPUT  Valid  Input  Invalid    OUTPUT  Valid  Output  Invalid | Input = Integer  Input = Integer  Character > 35    Character < 35  Valid  Invalid  Invalid  Valid  Invalid  Invalid  Character > 35  Character < 35 |

Figure 2.2.2.1a Full name equivalence partition and Boundary Value Analysis

|  |  |
| --- | --- |
| Equivalence Partitioning | Boundary Value Analysis |
| INPUT  Valid  Input  Invalid    OUTPUT  Valid  Output  Invalid | Input = Integer  Input = Integer  Character > 16  Character < 16  Valid  Invalid  Invalid  Valid  Invalid  Invalid  Character > 16  Character < 16 |

Figure 2.2.2.1b Full name equivalence partition and Boundary Value Analysis

|  |  |
| --- | --- |
| Equivalence Partitioning | Boundary Value Analysis |
| INPUT  Valid  Input  Invalid    OUTPUT  Valid  Output  Invalid | Invalid  Phone num= String  Phone num= integer  Phone num= String  Phone num= integer  Valid  Phone num > 11  Invalid  Phone num > 11  Valid  Invalid  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

### 2.2.2.4 State transition testing

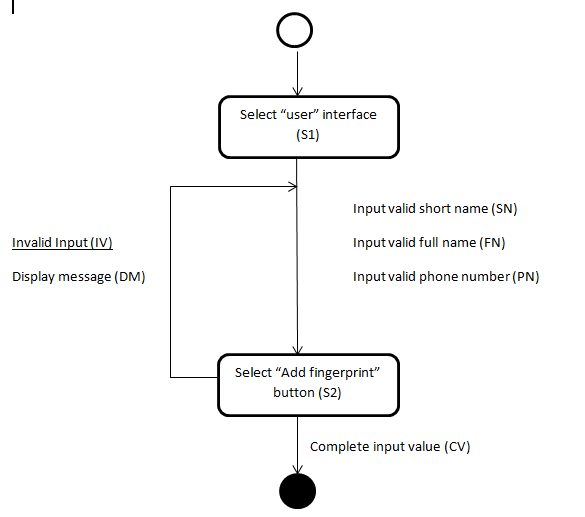


Figure 2. 2.2.4 Add user State transition diagram

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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

## 2.2.3 Search Existing user

Test Case ID: TC-03

Feature ID: F003

Test Technique:

1. Equivalence partitioning (EP)
2. Boundary value analysis (BV)
3. State transition testing
4. Use case testing

Result Analysis Method:

### 2.2.3.1 Equivalence partitioning

|  |  |
| --- | --- |
| Equivalence Partitioning | Boundary Value Analysis |
| INPUT  Valid  Input  Invalid    OUTPUT  Valid  Output  Invalid | 500  251  1 =< Staff ID <= 250  Staff ID > 250  Staff ID > 250  0  Staff ID = Null  Invalid  Staff ID = Null  0  Valid  250  1  Invalid  Valid  Invalid  Invalid  1 =< Staff ID <= 250 |

Figure 2.2.3.1a Staff ID Equivalence Partition & Boundary Value analysis

|  |  |  |
| --- | --- | --- |
| Invalid  Staff ID = Null | Valid  1 =< Staff ID <= 250 | Invalid  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

251

0

250

1

500

0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Invalid  Staff ID = Null |  | Valid  1 =< Staff ID <= 250 |  | Invalid  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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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

**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

## 2.2.4 Delete Existing user

Test Case ID: TC-04

Feature ID: F004

Test Technique:

1. Equivalence partitioning (EP)
2. Boundary value analysis (BV)
3. State transition testing
4. Use case testing

Result Analysis Method:

### 2.2.4.1 Equivalence partitioning

|  |  |
| --- | --- |
| Equivalence Partitioning | Boundary Value Analysis |
| INPUT  Valid  Input  Invalid    OUTPUT  Valid  Output  Invalid | 500  251  250  1 <= staffID <= 250  staffID > 250  staffID > 250  1 <= staffID <= 250  staffID = null  0  0  Valid  1  Invalid  Invalid  Valid  Invalid  Invalid  staffID = null |

Figure 2.2.4.1a Staff ID Equivalence Partition & Boundary Value analysis

|  |  |  |
| --- | --- | --- |
| Invalid  staffID = null | Valid  1 <= staffID <= 250 | Invalid  staffID > 250 |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Invalid  staffID = null |  | Valid  1 <= staffID <= 250 |  | Invalid  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

**2.2.4.4 State Transition Diagram**

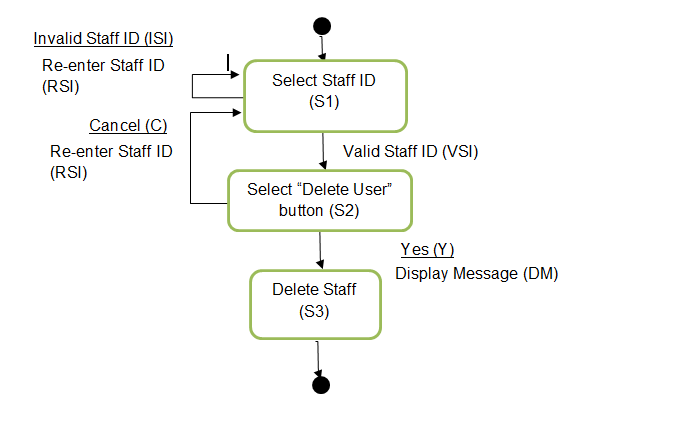
****

Figure 2. 2.4.4 Delete Existing User State transition diagram

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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

## 2.2.8 Change password

Test Case ID: TC-08

Feature ID: F008

Test Technique:

1. Equivalence partitioning (EP)
2. Boundary value analysis (BV)
3. State transition testing
4. Use case testing

**2.2.8.1 Equivalence Partition**

|  |  |
| --- | --- |
| INPUT  Valid  Input      Invalid    OUTPUT  Valid  Output  Invalid | New Password = Re-enter New Password  Invalid  Password < 5  Password > 5  Invalid  Valid  Valid  Password =5  New Password ≠ Re-enter New Password  Invalid  Invalid  5  5  Valid  5 <= Password <= 5  0  5  Password < 5  Invalid  New Password ≠ Re-enter New Password |

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

### 2.2.8.4 State transition testing

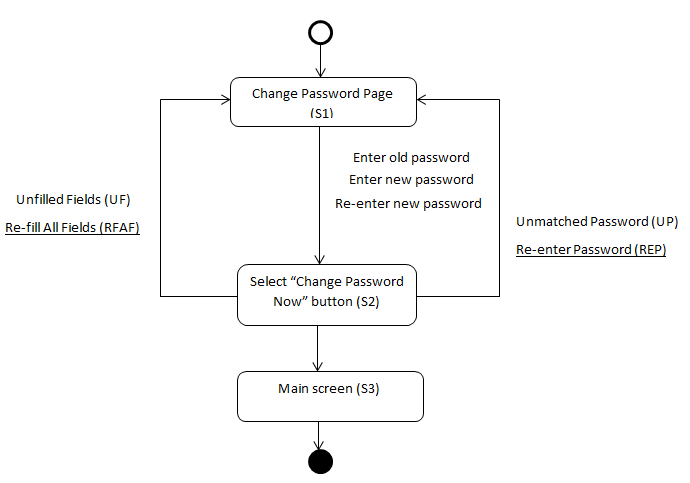
****

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 | Main flow | Valid password |
| TCOV-08-007 |
| 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 | TCON-08-006 | REQ-F08-008 |
| TCOV-08-007 |
| TC-08-009 | Change Password Alternate Flow – Unmatched Password | TCOV-08-008 | TCON-08-007 | REQ-F08-009 |
| TCOV-08-003 | TCON-08-003 |
| 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