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Team 2

SVVI - Software Verification and Validation Instruction

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Version History

Version	Date	Responsible	Description
0.0	150916	UH	Document created
0.1	150918	HA	All instructions written
0.2	150921	UH	Document ready for informal review

Contents

1 Reference Documents

1. PUSS154212 - System Requirements Specification v1.1
2. Programvaruutveckling för Stora System - Projekthandledning v2.2 (*Institutionen för dataveten-skap*, Lunds Univeritet 2015)
3. PUSS154213 - Software Verification and Validation Specification v1.0
4. PUSS154253 - Test Matrices for SVVS v1.0

2 Introduction

This document contains the test instructions for the tests specified in PUSS154213 (ref. 3). The test instructions are in appendices A and B. The numbering corresponds to that in the SVVS (ref. 3).

2.1 Terminology

Device available is used when a device is connected to the MVD.

Swiping or **to drag** is a meant to be a relatively smooth motion with a finger (or similar device) on the screen of the telephone.

A Function Test Instructions

This is appendix A where we list all function test instructions.

A.1 MyDevices View Test Instructions

Instruction A.1.1

Precondition

- The application is installed

Instructions:

1. Start the application

Postcondition:

- The application is running
- The MyDevices View is open

Instruction A.1.2

Precondition

- Application is not running

Instructions:

1. Start the application

Postcondition:

- The list of available devices is empty

Instruction A.1.3

Precondition

- MyDevices View is open
- At least one device is available

Instructions:

1. Drag the list downward
2. Drag the list upward

Postcondition:

- The list responds to the input

Instruction A.1.4

Precondition

- The MyDevices View is open
- At least one device is available

Instructions:

1. Select one device

Postcondition:

- The device is highlighted and "Control Device"-button is enabled

Instruction A.1.5

Precondition

- The MyDevices View is open
- At least two devices are available
- One device is selected

Instructions:

1. Select another device

Postcondition:

- Only the last selected device is still selected

Instruction A.1.6

Precondition

- The MyDevices View is open
- No device is selected

Instructions:

1. Press the "Control Device"-button

Postcondition:

- A pop-up message "Please select a device" is displayed

Instruction A.1.7

Precondition

- The MyDevices View is open
- There is at least one sensor in the list of available devices

Postcondition:

- The name of each sensor device is "Sensor"
- The address of each sensor is their MAC address
- The id of each sensor is their identifier

Instruction A.1.8

Precondition

- The MyDevices View is open
- There is at least one light bulb in the list of available devices

Postcondition:

- The name of each light bulb is "Light Bulb"
- The address of each light bulb is their MAC address
- The id of each light bulb is their identifier

Instruction A.1.9

Precondition

- The MyDevices View is open

Instructions:

1. Press the "Get Devices"-button

Postcondition:

- A scan for available devices has been performed
- The list of available devices is updated

Instruction A.1.10

Precondition

- The MyDevices View is open

Instructions:

1. Press the back button

Postcondition:

- The application is closed

Instruction A.1.11

Precondition

- The MyDevices View is open

Postcondition:

- The layout of the screen resembles Fig. 1 in the appendix of Ref. 1

A.2 Sensor View Test Instructions

Instruction A.2.1

Precondition

- The MyDevices View is open
- A sensor device is available in the list

Instructions:

1. Select a sensor device
2. Press the "Control Device"-button

Postcondition:

- The Sensor View is open

Instruction A.2.2

Precondition

- The Sensor View is open

Postcondition:

- The sensor name and MAC address is shown in the top of the view

Instruction A.2.3

Precondition

- The Sensor View is open
- The on/off-status switch is set to off

Instructions:

1. Set the on/off-status switch to on

Postcondition:

- The on/off-status switch of the selected sensor is on
- The status lamp on the sensor device is lit

Instruction A.2.4

Precondition

- The Sensor View is open

Postcondition:

- There are text fields preceded by ”T”, ”P”, ”H”, ”M”, ”G”, ”A”

Instruction A.2.5 This test should be run 1 time for each of the text fields

Precondition

- The Sensor View is open
- The on/off-status switch is set to on

Instructions:

1. Press the corresponding ”Get”-button to the text field

Postcondition:

- The values of the corresponding sensors are retrieved if available and displayed

Instruction A.2.6

Precondition

- The Sensor View is open
- The on/off-status switch is set to on

Instructions:

1. Press the "Get All"-button

Postcondition:

- The value for all six sensor's data are displayed in their corresponding text fields

Instruction A.2.7

Precondition

- The Sensor View is open
- Sensors data are displayed in the text fields

Instructions:

1. Press the "Clear All"-button

Postcondition:

- All the sensor text fields are empty

Instruction A.2.8 This test should be run 1 time for each of the text fields

Precondition

- The Sensor View is open
- The on/off-status switch is set to on
- Some sensor data is unavailable

Instructions:

1. Press the corresponding "Get"-button to the text field

Postcondition:

- The text field displays "No data available" if no sensor data is available

Instruction A.2.9

Precondition

- The Sensor View is open

Instructions:

1. Change the status of the on/off-status switch

Postcondition:

- The on/off-status switch corresponds to the status light on the sensor device

Instruction A.2.10

Precondition

- The Sensor View is open

Instructions:

1. Press the back button

Postcondition:

- The MyDevices View is open

Instruction A.2.11

Precondition

- The MyDevices View is open

Instructions:

1. Select a sensor device
2. Press the "Control Device" -button

Postcondition:

- The temperature, pressure, humidity, magnetic field strength, gyroscopic data and acceleration text fields are all empty

Instruction A.2.12

Precondition

- The Sensor View is open

Postcondition:

- The layout of the screen resembles Fig. 2 in appendix A in Ref. 1

A.3 Light Bulb View Test Instructions

Instruction A.3.1

Precondition

- The MyDevices View is open
- At least one light bulb is in the list of available devices

Instructions:

1. Choose a light bulb in the list of available devices
2. Press the "Control Device"-button

Postcondition:

- The Light Bulb View is open

Instruction A.3.2

Precondition

- The Light Bulb View is open

Postcondition:

- The name and MAC address of the light bulb is shown at the top of the view

Instruction A.3.3

Precondition

- The Light Bulb View is open
- The on/off-status switch is set to on
- The state of the light bulb corresponds to the state of the switch

Instructions:

1. Change the on/off-status switch to off

Postcondition:

- The light bulb is off

Instruction A.3.4

Precondition

- The Light Bulb View is open

Instructions:

1. For each of the four fields, enter "A"

Postcondition:

- The four fields are preceded by "R:", "G:", "B:" and "W:" respectively
- It is possible to enter a character into the fields

Instruction A.3.5

Precondition

- The MyDevices View is open
- There is a light bulb available

Instructions:

1. Select a light bulb
2. Press the "Control Device"-button

Postcondition:

- The Light Bulb View is open
- The fields specified in Req. 5.4.4-5.4.7 (ref. 1) are empty

Instruction A.3.6

Precondition

- The Light Bulb View is open
- The light bulb is on

Instructions:

1. Press the "Get"-button

Postcondition:

- The R-, G-, B-, W-values are displayed in the fields specified in Req. 5.4.4-5.4.7 in ref 1

Instruction A.3.7 This test should be run five times with the following configurations:

1. A=FF, B=00, C=00, D=00 (color: Red)
2. A=00, B=FF, C=00, D=00 (color: Green)
3. A=00, B=00, C=FF, D=00 (color: Blue)
4. A=00, B=00, C=00, D=FF (color: White)
5. A=10, B=10, C=10, D=10 (color: White)

Precondition

- The Light Bulb View is open
- The light bulb is on

Instructions:

1. Set the "R:"-field to A
2. Set the "G:"-field to B
3. Set the "B:"-field to C
4. Set the "W:"-field to D
5. Press the "Set"-button

Postcondition:

- The light bulb has the specified color

Instruction A.3.8 This test should be run four times with the following configurations:

1. A blank, B=FF, C=00, D=00 (color: Green)
2. A=00, B blank, C=FF, D=00 (color: Blue)
3. A=00, B=00, C blank, D=FF (color: White)
4. A=FF, B=00, C=00, D blank (color: Red)

Precondition

- The Light Bulb View is open
- The light bulb is on
- The R-, G-, B-, W-, fields show FF, FF, FF and FF respectively
- The light bulb glows white

Instructions:

1. Set the "R:"-field to A
2. Set the "G:"-field to B

3. Set the "B:"-field to C
4. Set the "W:"-field to D
5. Press the "Set"-button
6. Press the "Get"-button

Postcondition:

- The light bulb has the specified color
- The fields that were left blank show "00"

Instruction A.3.9 This test should be run three times with the following configurations:

1. A = '111'
2. A = 'GG'
3. A = -1

Precondition

- The Light Bulb View is open
- The light bulb is on

Instructions:

1. Enter A into the "R:"-field
2. Enter A into the "G:"-field
3. Enter A into the "B:"-field
4. Enter A into the "W:"-field

Postcondition:

- The value A is not accepted

Instruction A.3.10

Precondition

- The Light Bulb View is open
- The light bulb is on
- The light bulb glows white

Instructions:

1. Set the "R:"-field to FF
2. Set the "G:"-field to 00
3. Set the "B:"-field to 00
4. Set the "W:"-field to 00
5. Press the "Set"-button

Postcondition:

- A pop-up message saying "Color successfully changed" is displayed
- The light bulb is red

Instruction A.3.11

Precondition

- The Light Bulb View is open
- The light bulb is on
- The color of the light bulb can not be changed

Instructions:

1. Set the "R:"-field to 00
2. Set the "G:"-field to 00
3. Set the "B:"-field to FF
4. Set the "W:"-field to 00
5. Press the "Set"-button

Postcondition:

- A pop-up message saying "Error: Could not change color." is displayed

Instruction A.3.12

Precondition

- The Light Bulb View is open
- The light bulb is off

Postcondition:

- The "Set"-button is unavailable

Instruction A.3.13

Precondition

- The Light Bulb View is open

Instructions:

1. Press the back button

Postcondition:

- The MyDevices View is open

Instruction A.3.14

Precondition

- The Light Bulb View is open

Postcondition:

- The layout of the screen resembles Fig. 3 in the appendix of Ref. 1

B System Test Instruction

This is appendix B where we list all system test specifications.

B.1 Use Cases

Instruction B.1.1

Precondition

- The MyDevices View is open
- There is a light bulb and a sensor device within scan range of the MVD
- No other devices are within range of the MVD

Instructions:

1. Press the "Get Devices"-button

Postcondition:

- The light bulb is displayed in the MyDevices View
- The sensor device is displayed in the MyDevices View

Instruction B.1.2

Precondition

- The MyDevices View is open
- No devices are within range of the MVD

Instructions:

1. Press the "Get Devices"-button

Postcondition:

- A pop-up message with the text "No devices found" is found
- The list of avilable devices is empty

Instruction B.1.3

Precondition

- The MyDevices View is open
- A light bulb is available

Instructions:

1. Select the light bulb
2. Press the "Control Device"-button

Postcondition:

- The Light Bulb View is open

Instruction B.1.4

Precondition

- The MyDevices View is open
- A light bulb is available

Instructions:

1. Press the "Control Device"-button

Postcondition:

- A pop-up message with the text "Please select a device" is shown

Instruction B.1.5

Precondition

- The Sensor View is open
- A sensor device is available

Instructions:

1. Select the sensor
2. Press the "Control Device"-button

Postcondition:

- The Sensor View is open

Instruction B.1.6

Precondition

- The Sensor View is open
- A sensor device is available

Instructions:

1. Press the "Control Device"-button

Postcondition:

- A pop-up message with the text "Please select a device" is shown

Instruction B.1.7

Precondition

- The Light Bulb View is open
- The light bulb is on

Instructions:

1. Set the on/off-status switch to off

Postcondition:

- The light bulb is off

Instruction B.1.8

Precondition

- The Light Bulb View is open
- The light bulb is off

Instructions:

1. Set the on/off-status switch to on

Postcondition:

- The light bulb is on

Instruction B.1.9

Precondition

- The Sensor View is open
- The sensor device is on

Instructions:

1. Set the on/off-status switch to off

Postcondition:

- The sensor device is off

Instruction B.1.10

Precondition

- The Sensor View is open
- The sensor device is off

Instructions:

1. Set the on/off-status switch to on

Postcondition:

- The sensor device is on

Instruction B.1.11

Precondition

- The Light Bulb View is open
- The light bulb is on
- The "R:"-field of the light bulb is set to FF
- The "G:"-field of the light bulb is set to FF
- The "B:"-field of the light bulb is set to 00
- The "W:"-field of the light bulb is set to 00

Instructions:

1. Set the "R:"-field to FF
2. Set the "G:"-field to 00

3. Set the "B:"-field to 00
4. Set the "W:"-field to 00
5. Press the "Set"-button

Postcondition:

- The light bulb glows red

Instruction B.1.12

Precondition

- The Light Bulb View is open
- The light bulb is on
- The light bulb glows yellow

Instructions:

1. Press the "Get"-button

Postcondition:

- The "R:"-field displays a value greater than F0
- The "G:"-field displays a value greater than F0
- The "B:"-field displays a value less than 10
- The "W:"-field displays a value less than 10

Instruction B.1.13

Precondition

- The Light Bulb View is open
- The light bulb is on
- The light bulb glows yellow
- One or more fields are unavailable

Instructions:

1. Press the "Get"-button

Postcondition:

- One or more fields are updated to "No data available"

Instruction B.1.14

Precondition

- The Sensor Device View is open
- The sensor device is on

Instructions:

1. Press the "Get"-button next to the "T:"-field

Postcondition:

- The temperature is displayed in the "T:"-field

Instruction B.1.15

Precondition

- The Sensor Device View is open
- The sensor device is on
- The temperature data for the sensor device is unavailable

Instructions:

1. Press the "Get"-button next to the "T:"-field

Postcondition:

- The text in the "T:"-field is set to "No data available"

Instruction B.1.16

Precondition

- The Sensor Device View is open
- The sensor device is on

Instructions:

1. Press the "Get All"-button at the bottom of the view

Postcondition:

- All the sensor values are displayed in their respective field

Instruction B.1.17

Precondition

- The Sensor Device View is open
- The sensor device is on
- Some sensor data for the sensor device is unavailable

Instructions:

1. Press the "Get All"-button

Postcondition:

- The field corresponding to the data that were unavailable is set to "No data available"

Instruction B.1.18

Precondition

- The Sensor Device View is open
- At least one of the sensor data fields has data

Instructions:

1. Press the "Clear All"-button

Postcondition:

- All the sensor data fields are empty

B.2 Quality Test Instructions

Instruction B.2.1 Measure the time it takes to perform this test

Precondition

- 5 persons is chosen without prior knowledge of the project or the application

Instructions:

1. Give the test persons a minor introduction of what the application is able to do
2. Tell the test persons to turn the lamp green
3. Tell the test persons to collect all data from the sensor

Postcondition:

- All test persons completed the tasks without any major problems
- The full test requires less than 10 minutes to perform

Instruction B.2.2 For each step in the instruction below, measure the interaction time

Precondition

- The application is not running

Instructions:

1. Start the application
2. Press "Get Device"-button
3. Select a sensor
4. Press "Control Device"-button
5. Turn the sensor on by flicking the switch
6. Press "Get"-button. Do this for all data
7. Press "Get All"-button
8. Press "Clear All"-button
9. Turn the sensor off by flicking the switch
10. Press "Back"-button
11. Select a light bulb
12. Turn the ligt bulb on by flicking the switch
13. Press "Get"-button
14. Enter any value in the color fields

15. Press "Set"-button
16. Turn the light bulb off by flicking the switch
17. Press "Back"-button until the application is closed

Postcondition:

- All of the interactions had a response time below two seconds

Instruction B.2.3 For each step in the instruction below, measure the time until an error message is displayed

Precondition

- In each step, the corresponding device should be out of range of the MVD
- In each step, first navigate to the appropriate view (some devices may need to be connected for this. In that case, remove them from range before the test instruction is performed)

Instructions:

1. Press the "Get Devices"-button
2. Change the on/off-status switch of the sensor device to on
3. Press the "Get All"-button in the Sensor Device View
4. Change the on/off-status switch of the sensor device to off
5. Change the on/off-status switch of the light bulb to on
6. Change the color of the light bulb:
   - Set the "R:"-field to 00
   - Set the "G:"-field to 00
   - Set the "B:"-field to FF
   - Set the "W:"-field to 00
   - Press the "Set"-button
7. Change the on/off-status switch of the light bulb to off

Postcondition:

- The error message is displayed after 15 seconds