Acceptance testing

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| Requirement | Test Case | Description | Objective |
| Selecting a sensor type | 1.1 | Selecting a sensor type on the report displays only the sensors with that type. | Verify that only the correct sensors are displayed on the report table |
| Interval time is converted to seconds | 2.1 | When adding a sensor the interval time is set to varying time amounts | Verify the time amounts are converted to seconds correctly |
| Sensor collects data on interval | 2.2 | When the time reaches the sensor interval data is collected | Verify data was collected when the time reaches the sensor interval |
| Sensor reading above threshold | 3.1 | When a sensor data reading is above the threshold the Actuator turns on. | Verify that the Actuator turns on when above |
| Returns users FieldStations | 4.1 | When logged in only the users FieldStations are displayed | Verify that only the users FieldStations are displayed |

**Test Case ID:** 1.1 (Selecting a sensor type)

**Testing Conditions:** There are several different sensors each with different types

**Expected Result:** Only the sensor with the correct sensor type will be displayed

**Evaluation Strategy:** Check the displayed sensors only consist of that type.

**Completeness Criteria:** When this check has been done for all sensor types.

**Test Case ID:** 1.1

**Test Setup:** Have 5 sensors each with different sensor types, each with recorded data.

**Test Data:**

Test 1: Operand 1: Sensor 1 “Soil Moisture”;

Test 2: Operand 1: Sensor 2 “Light intensity”;

Test 3: Operand 1: Sensor 3 “Soil Temperature”;

Test 4: Operand 1: Sensor 4 “Air Temperature”;

Test 5: Operand 1: Sensor 5 “Soil Acidity”;

**Expected Output:**

Test 1: Only Sensor 1 is displayed

Test 2: Only Sensor 2 is displayed

Test 3: Only Sensor 3 is displayed

Test 4: Only Sensor 4 is displayed

Test 5: Only Sensor 5 is displayed

**Test Case ID:** 2.1 (Interval time is converted to seconds)

**Testing Conditions:** A FieldStation is set up ready for a sensor.

**Expected Result:** The Days, Hours, Minutes and Second are converted into seconds

**Evaluation Strategy:** Check the interval value is correct in seconds.

**Completeness Criteria:** Test a range of different times, e.g. a mixture of days, hours and minutes.

**Test Case ID:** 2.1

**Test Setup:** Delete the sensor between each test

**Test Data:**

Test 1: Operand 1: 1 day, 0 hours, 0 minutes, 0 seconds ;

Test 2: Operand 1: 25 day, 21 hours, 30 minutes, 30 seconds ;

Test 3: Operand 1: 13 day, 13 hours, 13 minutes, 13 seconds ;

Test 4: Operand 1: 0 day, 0 hours, 0 minutes, 0 seconds ;

**Expected Output:**

Test 1: 86400 seconds is displayed

Test 2: 2237430 seconds is displayed

Test 3: 1170013 seconds is displayed

Test 4: Sensor cannot be created with 0 second interval.

**Test Case ID:** 2.1 (Interval time is converted to seconds)

**Testing Conditions:** A FieldStation is set up ready for a sensor.

**Expected Result:** The Days, Hours, Minutes and Second are converted into seconds

**Evaluation Strategy:** Check the interval value is correct in seconds.

**Completeness Criteria:** Test a range of different times, e.g. a mixture of days, hours and minutes.

**Test Case ID:** 2.2 (Sensor collects data on interval)

**Testing Conditions:** A sensor is set up with adequate interval.

**Expected Result:** When the current time reaches the interval time data is collected.

**Evaluation Strategy:** Check the data is collected at the correct time.

**Completeness Criteria:** Test a range of intervals with varying lengths.

**Test Case ID:** 2.2

**Test Setup:** Create a new sensor with differing interval times.

**Test Data:**

Test 1: Operand 1: 1 day, 0 hours, 0 minutes, 0 seconds ;

Test 2: Operand 1: 0 day, 21 hours, 30 minutes, 30 seconds ;

Test 3: Operand 1: 13 day, 13 hours, 13 minutes, 13 seconds ;

Test 4: Operand 1: 0 day, 0 hours, 0 minutes, 1 seconds ;

**Expected Output:**

Test 1: Sensor generates a SensorData on the correct second.

Test 2: Sensor generates a SensorData on the correct second.

Test 3: Sensor generates a SensorData on the correct second.

Test 4: Sensor generates a SensorData on the correct second.

**Test Case ID:** 3.1 (Sensor reading above threshold)

**Testing Conditions:** A sensor is set up collecting data each interval, the sensor has a low threshold

**Expected Result:** When the collected SensorData reading is above the threshold the actuator is turned on.

**Evaluation Strategy:** Collect sensor data above the threshold and check whether the actuator has been turned on

**Completeness Criteria:** Test a range of sensor data readings both above and below the threshold

**Test Case ID:** 3.1

**Test Setup:** Create a new sensor with differing interval times and a low threshold.

**Test Data:**

Test 1: Operand 1: 20; Operand 2: 100;

Test 2: Operand 1: 20; Operand 2: 20;

Test 3: Operand 1: 20; Operand 2: -20;

Test 4: Operand 1: 20; Operand 2:99999;

Test 5: Operand 1: -1; Operand 2: 100;

**Expected Output:**

Test 1: Actuator is turned on.

Test 2: Actuator is turned off.

Test 3: Actuator is turned on.

Test 4: Actuator is turned on.

Test 5: Actuator is turned on;

**Test Case ID:** 4.1 (Returns users FieldStations)

**Testing Conditions:** Two users are set up with two FieldStations each

**Expected Result:** Only the user’s specific fieldstations are displayed

**Evaluation Strategy:** Check whether the returned fieldstations belong to the specific user.

**Completeness Criteria:** Test a range of different fieldstations

**Test Case ID:** 4.1

**Test Setup:** Create two users (A and B) both as Farmer User Role.

**Test Data:**

Test 1: Operand 1: FieldStation(Id: “test”), Operand 2: FieldStation(id: “test2”)

Test 2: Operand 1: FieldStation(Id: “test”) & FieldStation(Id: “test3”) & FieldStation(Id: “test4”), Operand 2: null

**Expected Output:**

Test 1: User A fieldstations reads FieldStation(Id: “test”), User B fieldstations FieldStation(id: “test2”)

Test 2: User A fieldstations reads FieldStation(Id: “test”) & FieldStation(Id: “test3”) & FieldStation(Id: “test4”), User B fieldstations read null