**Test Plan**

**Login**

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| Test no. | Test Desc. | Input | Expected Results | Actual Results | Pass/Fail |
| 1. | Log in – Wrong Password  1 - Enter ‘email’ in Email field  2 - Enter ‘password’ in Password field  3 - Click Login Button | first name=FIRST\_NAME,  second name=SECOND\_NAME,  email=EMAIL,  username=USERNAME,  password=INVALID\_  PASSWORD | * 1. Logout link is NOT found   2. Page refreshes   3. Warning message ‘Sorry your password was incorrect’ appears | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3 Warning message ‘Sorry your password was incorrect’ appears | PASS |
| 2. | Log in – No Account  1 - Enter ‘email’ in Email field  2 - Enter ‘password’ in Password field  3 - Click Login Button | first name=FIRST\_NAME,  second name=SECOND\_NAME,  email=EMAIL,  username=USERNAME,  password=INVALID\_  PASSWORD | * 1. Logout link is NOT found   2. Page refreshes   3. Warning message ‘The details entered do not match any existing accounts, please create a new account’ | 1.2 Logout link is NOT found  1.2 Page refreshes  1.3 Warning message ‘The details entered do not match any existing accounts, please create a new account’ | PASS |
| 3. | Log in – Valid Account  1 - Enter ‘email’ in Email field  2 - Enter ‘password’ in Password field  3 - Click Login Button | first name=FIRST\_NAME,  second name=SECOND\_NAME,  email=EMAIL,  username=USERNAME,  password=  PASSWORD | * 1. Logout link is found   2. Home page is loaded | 1.1 Logout link is found  1.2 Home page is loaded | PASS |

**Account Creation**

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| Test no. | Test Desc. | Input | Expected Results | Actual Results | Pass/Fail |
| 4. | No password  1– Enter First name  2– Enter Last name  3– Enter email address  4– Enter Username  5– Enter Password  6– Click ‘Create Account’ button | first name=FIRST\_NAME,  second name=SECOND\_NAME,  email=EMAIL,  username=USERNAME,  password= | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3Warning message ‘Please enter a valid password’ | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3Warning message ‘Too short’ | FAIL |
| 5. | Short Password  1– Enter First name  2– Enter Last name  3– Enter email address  4– Enter Username  5– Enter password  6– Enter password in Confirm Password field  7– Click ‘Create Account’ button | first name=FIRST\_NAME,  second name=SECOND\_NAME,  email=EMAIL,  username=USERNAME,  password=SHORT\_  PASSWORD | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3 Warning message ‘Too short’ | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3 Warning message ‘Too short’ | PASS |
| 6. | Unconfirmed Password  1– Enter First name  2– Enter Last name  3– Enter email address  4– Enter Username  5– Enter password  6 – Enter password in Confirm Password field  7– Click ‘Create Account’ button | email=EMAIL,  password=  PASSWORD,  Confirm password=INVALID\_  PASSWORD | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3 Warning message ‘Password fields don’t match’ | 1.1 Logout link is NOT found  1.2 Page refreshes  1.3 Warning message ‘Password fields don’t match’ | PASS |
| 7. | Valid User  1 – Enter First name  2 – Enter Last name  3 – Enter email address  4 – Enter Username  5 – Enter password  6 – Enter password in Confirm Password field  7 – Click ‘Create Account’ button | email=EMAIL,  password=  PASSWORD  Confirm password=  PASSWORD | 1.1 Logout link is found  1.2 Page redirects to Home Page  1.3 Successful message ’You are now registered as <USERNAME>’ | 1.1 User logs in  1.2 Page redirects to home page  1.3 S uccessful message ’You are now registered as <USERNAME>’ | PASS |

**CRUD operations on Device information**

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| Test no. | Test Desc. | Input | Expected Results | Actual Results | Pass/Fail |
| 1. | Add new device | 1. Device Name  1.1 User control input | 1. response.flash(success)  1.1 Device name recorded in device table  1.2 Device first\_online recorded in device table  1.3 Device status recorded in device table | 1. No response flash  1.1 Device name recorded in device table  1.2 Device first\_online recorded in device table | PASS |
| 2. | Delete device | 1. Select Manage\_products link | 1. choose product and press “delete” button  1.2 Product deleted in database  1.3 Product no longer shown to user in view\_devices page | 1.1 choose product and press “delete” button  1.2 Product deleted in database  1.3 Product no longer shown to user in view\_devices page | PASS |
| 3. | Change device name | 1.1 Device name | 1. Response flash(success)  1.2 Device name changed in database  1.3 Device name shown to user at view\_device page | 1. Response flash(success)  1.2 Device name changed in database  1.3 Device name shown to user at view\_device page | PASS |

**Web2py show device past data**

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| Test no. | Test Desc. | Input | Expected Results | Actual Results | Pass/Fail |
| 1. | Test Selected Device Internal Temp Graph | 1. SQL Data  1.1 Python selected\_device variable | 1. Internal Temp graph draws to <div> correctly  1.1 All data points display correct value in graph | 1. Internal temp graph DO NOT draws to <div> correctly  1.1 All data points DO NO display correct values in graph | PASS |
| 2. | Test Selected Device Device Temp Graph | 2. SQL Data  2.1 Python selected\_device variable | 2. Device Temp graph draws to <div> correctly  2.1 All data points display correct value in graph | 2. Device Temp graph DO NOT draws to <div> incorrectly  2.1 All data points DO NOT display correct values in graph | PASS |
| 3. | Test Selected Device Ambient Temp Graph | 3. SQL Data  3.1 Python selected\_device variable | 3. Ambient Temp graph draws to <div> correctly  3.1 All data points display correct value in graph | 3. Ambient Temp graph DOES NOT draws to <div> correctly  3.1 Add data points DO NOT display correct values in graph | PASS |
| 4. | Test Selected Device Battery Temp Graph | 4. SQL Data  4.1 Python selected\_device variable | 4. Battery graph draws to <div> correctly  4.1 All data points display correct value in graph | 4. Battery graph draws to DOES NOT <div> correctly  4.1 All data points DO NOT display correct values in graph | PASS |
| 5. | Test Selected Device Current Statistics correctness | 5. SQL Data  5.1 Python selected\_device variable | 5. Device status displays correct device status  5.1 Device “first\_online” datetime displays correct value  5.2 Device “Current Temp” displays correct value | 5. Device status displays correct device status  5.1 Device “first\_online” datetime displays correct value  5.2 Device “Current Temp” displays correct value | PASS |
| 6. | Test page elements align/resize/display correctly on Mobile Screen | 6. User input (page resizing) | 6. All page elements align/resize/display correctly on Mobile Screen Widths | 6. All page elements DO align/resize/display correctly on Mobile Screen Widths | PASS |
| 7. | Test page elements align/resize/display correctly on Tablet Screen Widths | 7. User input (page resizing) | 7. All page elements align/resize/display correctly on Tablet Screen Widths | 7. All page elements DO align/resize/display correctly on Mobile Screen Widths | PASS |
| 8. | Test page elements align/resize/display correctly on Laptop (1366 x 768) Screen Widths | 8. User input (page resizing) | 8. All page elements align/resize/display correctly on Laptop Screen Widths | 8. All page elements DO align/resize/display correctly on Mobile Screen Widths | PASS |
| 9. | Test page elements align/resize/display correctly on Extra-Large (FHD 1080p) Screen Widths | 9. User input (page resizing) | 9. All page elements align/resize/display correctly on Extra-Large Screen Widths | 9. All page elements DO align/resize/display correctly on Mobile Screen Widths | PASS |
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**Client machine java program**

*Eclipse along with java 1.8 was used as the environment in which the following tests were run*

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| Test no. | Test Desc. | Input | Expected Results | Actual Results | Pass/Fail |
| 1. | Program runs every 1 second | 1. milliseconds as parameter to timer.schedule() method | 1. Success printed to console every 1 second | 1. Success printed to console every 1 second | PASS |
| 2. | JDBC connection made | 2. Connection object “con”  2.1. URI of database  2.2. Username  2.3 Password | 2. Connection object using JDBC MySQL driver is successfully instantiated | 2. Connection object using JDBC MySQL driver is successfully instantiated | PASS |
| 3. | Insert statements recorded successfully in remote database | 3.1 Query String “insert into …”  3.2 Connection object | 3. Successful connection to remote database  3.1 Data is successfully recorded in MySQL table | 3. Successful connection to remote database  3.1 Data is successfully recorded in MySQL table | PASS |
| 4. | Add data to device with real i.d (added by user in web2py) | 4. Device id | 4. Successful connection to remote database  4.1 Data is successfully recorded in MySQL table | 4. Successful connection to remote database  4.1 Data is successfully recorded in MySQL table | PASS |
| 5. | Increment output of some values in data to simulate real operation of device | 5. Device\_temp variable | 5. Add +4 to devices temperature upon every 3 writes  5.1 Successfully record these changes in the database  5.2 Ensure these changes are reflected in the web2py app | 5. Add +4 to devices temperature upon every 3 writes  5.1 Successfully record these changes in the database  5.2 Ensure these changes are reflected in the web2py app | PASS |
| 6. | Devices status show as “on” or “off” | 6. Timestamp of sent data | 6.1 Program starts to write data to remote database every second with simulated reading of device  6.2 Last\_online field of table records last time data was modified for a device  6.3 If this timestamp was more than 5 seconds ago then device shows as “off”  6.3.1 If timestamp was less than 5 seconds ago device status shows as “on” | 6.1 Last\_online field of table records last time data was modified for a device  6.2 If this timestamp was more than 5 seconds ago then device shows as “off”  6.2.1 If timestamp was less than 5 seconds ago device status shows as “on” | PASS |
| 7. | Program closes successfully and doesn’t corrupt any data | 7. System.exit(0) | 7. Program should halt operation  7.1 Database should drop connection  7.2 Any new changes should have been committed to database using MySqls’s auto-commit feature | 7. Program should halt operation  7.1 Database should drop connection  7.2 Any new changes should have been committed to database using MySqls’s auto-commit feature | PASS |
| 8. | Program can be exported as a .jar file and run from any platform | 8. .jar file  8.1 command from terminal with javavm “java –jar prog.jar” | 8. Program should connect to the database and issue no errors  8.1 Terminal should output “wrote 1, wrote 2, wrote n” for each line of data wrote to the system from the client | 8. Program should connect to the database and issue no errors  8.1 Terminal should output “wrote 1, wrote 2, wrote n” for each line of data wrote to the system from the client | PASS |