Test Design Example

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Method under test
public boolean addDevice()

Condition	Return value
Add a valid device with ID "aaaa" to an empty list	'addDevice()' should return 'true'
The list of controlled devices should contain ID "aaaa"	'isDeviceInList("aaaa")' should return 'true'
The list of controlled devices should contain 1 device	'getNumDevices()' should return '1'
"aaa" ID-тай төхөөрөмж нэмэх	'addDevice()' should return 'false'
"aaaaa" ID-тай төхөөрөмж нэмэх	'addDevice()' should return 'false'
"aaaa" ID-тай төхөөрөмж дахин нэмэх	'addDevice()' should return 'false'
ID утга хоосон илгээх	'addDevice()' should return 'false'
"1111" ID утга илгээх	'addDevice()' should return 'false'
operatingMin = -2	'addDevice()' should return 'false'
operatingMin = 2.5	'addDevice()' should return 'false'
operatingMax = -4	'addDevice()' should return 'false'
operatingMax = 4.5	'addDevice()' should return 'false'
"bbbb" ID-тай төхөөрөмж хайх	'isDeviceInList("bbbb")' should return 'false'

```java
@Test
public void testAddFistValidDeviceSucceeds() {
    assertTrue("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "aaaa", 0, 100, 20, 50));
    assertTrue("Device id=1111 should be in list", myApp.isDeviceInList("aaaa"));
    assertEquals("There should be 1 device in list of controlled devices", myApp.getNumDevices(), 1);
    assertFalse("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaaa", 0, 100, 20, 50));

    assertFalse("id=aaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaa", 0, 100, 20, 60));
    assertFalse("id=aaaaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaaaa", 0, 100, 20, 60));
    assertFalse("id=aaaa Төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaaa", 0, 100, 20, 60));
    assertFalse("id='' төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "", 0, 100, 20, 60));
    assertFalse("id=aaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "1111", 0, 100, 20, 60));
    assertFalse("id=aaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaae", -2, 100, 20, 60));
    assertFalse("id=aaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaae", 2.5, 100, 20, 60));
    assertFalse("id=aaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaa", 0, -4, 20, 60));
    assertFalse("id=aaa төхөөрөмж нэмэх", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "aaa", 0, 4.5, 20, 60));
    assertFalse("Device id=bbbb should be in list", myApp.isDeviceInList("bbbb"));
    assertTrue("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "bbbb", 0, 100, 20, 50));
    assertEquals("There should be 2 device in list of controlled devices", myApp.getNumDevices(), 2);
}

@Test
public void testRemoveDevice() {
    assertFalse("id='' илгээх", myApp.removeDevice(""));
    assertEquals("There should be 2 device in list of controlled devices", myApp.getNumDevices(), 0);
    assertFalse("id=bbbb төхөөрөмж хасах", myApp.removeDevice("bbbb"));
    assertFalse("", myApp.isDeviceInList("bbbb"));
}
```

public boolean removeDevice()

Condition	Return value
ID утга хоосон илгээх	'removeDevice()' should return 'false'
Бүртгэгдээгүй ID (zzzz) илгээх	'removeDevice()' should return 'false'
"aaaa" ID-тай төхөөрөмж хайх	'isDeviceInList("1111")' should return 'false'
Төхөөрөмжийн тоо = 0	'getNumDevices()' should return '0''

```java
@Test
public void testAddInvalidDeviceIDFails() {
    assertFalse("Add device should fail", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "", 0, 100, 20, 50));
}

@Test
public void testAddDeviceWithDuplicateIDFails() {
    assertTrue("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "ssss", 0, 100, 20, 50));
    assertFalse("Add device should fail", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "ssss", 0, 100, 20, 50));
}

@Test
public void testAddDeviceWithInvalidOperatingRangeFails() {
    assertFalse("Add device should fail", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "qqqq", 100, 0, 20, 50));
}

@Test
public void testAddDeviceWithInvalidSafeRangeFails() {
    assertFalse("Add device should fail", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_PRESSURE_PUMP, "qqqq", 0, 100, 50, 20));
}


@Test
public void testRemoveExistingDeviceSucceeds() {
    assertTrue("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "wwww", 0, 100, 20, 50));
    assertTrue("Remove device should succeed", myApp.removeDevice("wwww"));
    assertFalse("Device id=4444 should not be in the list", myApp.isDeviceInList("wwww"));
    assertEquals("There should be 0 devices in list of controlled devices", myApp.getNumDevices(), 0);
}
```

```java
@Test
public void testRemoveNonExistingDeviceFails() {
    assertFalse("Remove device should fail", myApp.removeDevice("zzzz"));
}

@Test
public void testRemoveDeviceWithNullIDFails() {
    assertFalse("Remove device should fail", myApp.removeDevice(""));
}

@Test
public void testControlExistingDeviceSucceeds() {
    assertTrue("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "eeee", 0, 100, 20, 50));
    assertTrue("Control device should succeed", myApp.doControl("eeee", 30));
}

@Test
public void testControlNonExistingDeviceFails() {
    assertFalse("Control device should fail", myApp.doControl("ffff", 30));
}

@Test
public void testControlDeviceWithNullIDFails() {
    assertFalse("Control device should fail", myApp.doControl("", 30));
}

@Test
public void testControlDeviceWithOutOfRangeInputFails() {
    assertTrue("Add device should succeed", myApp.addDevice(ControlDeviceType.CONTROLDEVICE_FAN_DRIVER, "tttt", 0, 100, 20, 50));
    assertFalse("Control device should fail", myApp.doControl("tttt", 120));
}
```