Greenhouse monitoring system

Similarly to the previous exercise, let’s implement a system to handle a small greenhouse with a plant inside. This time in TDD fashion.

The following components are present:

- Soil moisture sensor.
- Photoresistor.
- LED.
- Sprinkler.

User stories

1. **Soil moisture sensor**
   A soil moisture sensor is connected to the main board via the GPIO14 pin (pin 8 on the board). The sensor is planted into the soil of the plant and provides the system with the measurement of the plant’s moisture level, as a percentage.

   Requirement: Implement the logic to communicate with the soil moisture sensor. Verify that the values read are in the range 0% - 100%.

2. **Photoresistor**
   A photoresistor is connected to the main board via the GPIO15 pin (pin 10 on the board). The sensor is located on the ceiling of the greenhouse and measures the light level inside.

   Requirement: Implement the logic to communicate with the photoresistor. Verify that the values read are in the range 0 - 2000 lumen.

3. **Watering the plant**
   A sprinkler is connected to the main board via the GPIO18 pin (pin 12 on the board). When triggered, it starts releasing water to the plant, increasing its soil moisture level.
   The sprinkler is triggered whenever the measured moisture level is below 50%.

   Requirement: Implement the logic to handle the sprinkler.

4. **Excessive light notification**
   An LED is connected to the main board via the GPIO23 pin (pin 16 on the board). The LED turns on when the photoresistor detects too much light inside the greenhouse; otherwise, it stays off.
   The LED is triggered whenever the measured light level is above 1500 lumen.

   Requirement: Implement the logic to handle the LED light.

5. **Expanding the greenhouse**
   Let's consider a larger greenhouse with four plants instead of one; as a result, we also have four soil moisture sensors in total.

   For the sake of simplicity let's imagine that the sprinkler system is still one; simply we decide which plant to activate it on.

   Requirement: Modify the logic of the system to handle the new greenhouse.

For error handling let's raise a GreenhouseMonitorError.