**Research sensors and actuators**

**Instructions**

This lesson covered sensors and actuators. Research and describe one sensor and one actuator that can be used with an IoT dev kit, including:

* What it does
* The electronics/hardware used inside
* Is it analog or digital
* What the units and range of inputs or measurements is

**Soil Moisture Sensor**

**Usage:** Records the moisture content of something.

**Components:** Features a probe and a module

* The probe is fork-shaped with two exposed conductors that is inserted into the soil or whatever the moisture content is to be measured. The probe’s resistance varies according to moisture.
* The module enerates an output voltage based on the resistance of the probe, which is available at an Analog Output (AO) pin. The same signal is fed to an LM393 High Precision Comparator, which digitizes it and makes it available at a Digital Output (DO) pin.

**Analog/Digital:** Supports both AO and DO.

**Range of inputs and measurements:**

* AO: 0-1023
* DO: 0 & 1

**Relay module**

**Usage:** Acts as an electrical switch to turn high-power devices on/off, such as lights, fans, or appliances in IoT applications.

**Components:** Contains an electromagnet, a mechanical switch, and a driver circuit.  
**Analog or Digital:** Digital (triggered by HIGH/LOW signals from a microcontroller).

**Units & Range:** Operates at different voltages (e.g., 5V or 12V control signals, switching up to 250V AC or 30V DC).