

# **The virtual side of IoT**

## **2/4 Logic and computing**

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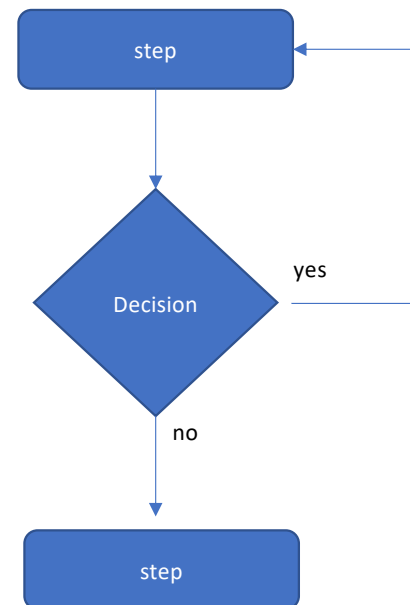
8.11.2021

# Learning Goals

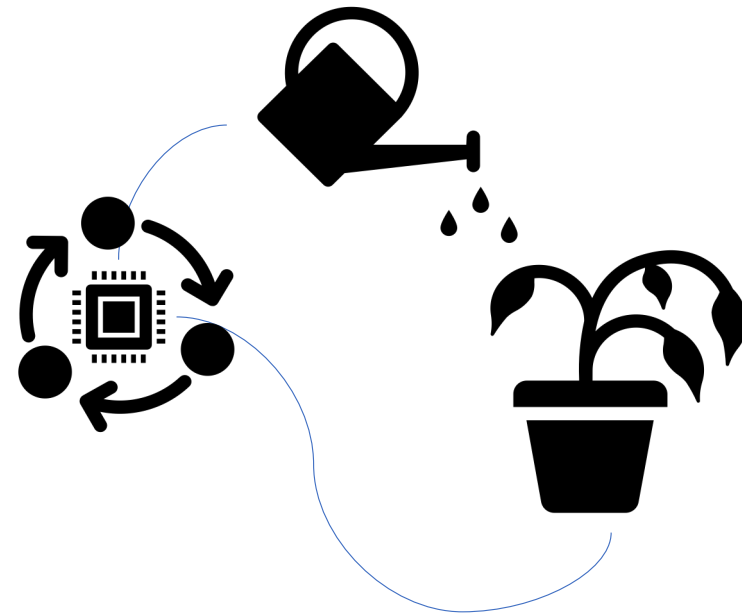
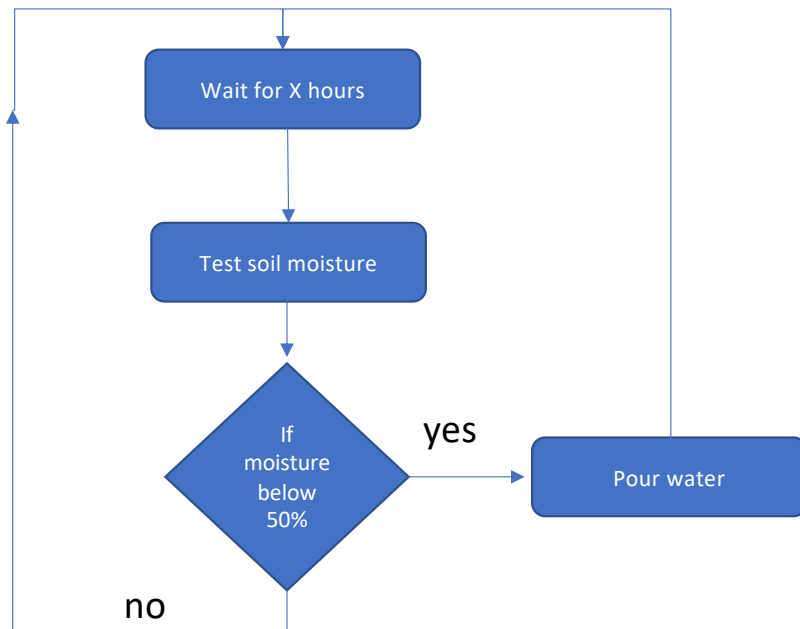
- How computers know what to do?
  - Algorithm – someone writes the recipe
  - Machine learning – adaptive complex behaviour

# Algorithm

- A recipe for the computer
- Steps, decisions, and loops



# Let's create a plant watering algorithm



# Machine learning

- Some computational problems are too difficult to code by hand
  - For example, image recognition.
- There are simply too many steps, decisions, and loops that a human cannot make practically sense of it.
  - The training of even a simple neural network can require millions of little adjustments.

# Recognising hand-writing

- We need to train the computer to read



# Recognising hand-writing

## Steps

1. The numbers need to be in specific format
2. A machine learning architecture (typically a form of neural network) is specified
3. Model is trained and tested
4. New numbers can be recognised (e.g. send an image and back comes an answer)

