

# Unit 4: I/O hardware

## 1-6. Research & presentation task

You will be allocated an input device and an output device for you to become an expert in, so you can teach your classmates about it.

You should be aiming to produce three artifacts per device:

- A 3 minute presentation to be followed by a brief question & answer
- A summary cheat sheet to distribute (1 double sided page)
- Kahoot quiz to test your classmates with

Input devices list

- 2D scanner
- 3D scanner
- Barcode reader
- QR code reader
- Digital camera
- Keyboard
- Mouse
- Touch screen (resistive)
- Touch screen (capacitive)
- Interactive whiteboard
- Microphone

You are required to teach your classmates on:

- The principles of operation (how each device works)
- For example: How does a camera (a) capture an image, (b) convert it into a digital file
- For example: How does a touch screen (a) detect a finger press, (b) determine where the finger press occurred
- For example: How does a microphone (a) detect sound waves, (b) convert it into a digital signal
- Include discussion of what sensors are used, and how they function
- Real life scenarios where the devices are used in industry (eg: scanning passports at airport, barcode reader at supermarkets, touch screen information kiosks)
- Compare and contrast the advantages and disadvantages of your device to an alternative (at least 3).

Output devices list

- Inkjet printer
- Laser printer
- 3D printer
- 2D laser cutter
- 3D cutter
- Speakers and headphones
- Actuators
- LCD display

- LED display
- LCD projector
- DLP projector

You are required to teach your classmates on:

- The principles of operation (how the device works)
- including what are the key components of each device and the role they play in creating the output?
- including how is the digital signal from the computer converted into the physical output?
- Describe how these are used in real-life scenarios such as industry.
- Compare and contrast the advantages and disadvantages of your device to an alternative.

Time allocated:

- 3 lessons for research and preparation
- 2 lessons for delivering of presentations

Submit by Google Classroom assignment

## 7-11. Sensors practical

We are going to spend a few lessons having a hands on experience of wiring up sensors in electronic circuits, and programming Python to work with them.

More detail to come.

## 12. Quiz