arm

Lessons 15-18

micro:pet Project
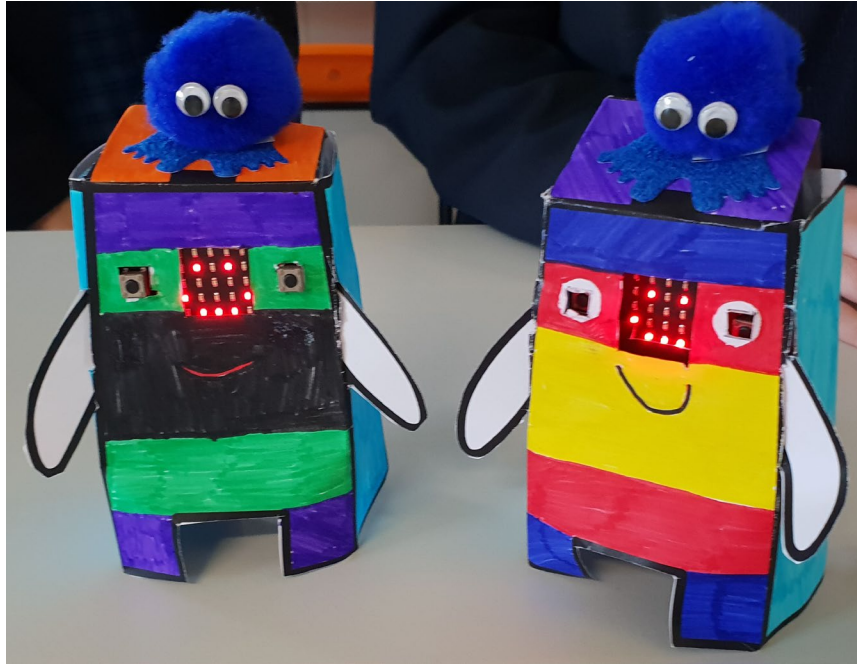
Lesson 1

Setting the Scene

- Loneliness is a real problem for children staying in hospitals for a long time

- You need to create a digital pet that they can play with and keep them company while they stay in hospital

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The Project

In groups you will need to:

- Design and build a micro:pet

- Design a program for a micro:bit to make the micro:pet **interactive**

- Create a logo for your pet

- Create an 'elevator pitch' to present to your teacher

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The Design Template

- Fill this in first!
- Add to it as you go along

| Pet name: | Materials needed: | What is your pets personality? |
Logo:		
		What does it like?
Draw the pet:	How is your pet better than a cuddly toy?	Who does this new design help?
	What will the pet respond to?	How could it be better?

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micro:pet Net

- The net

- Design the pet and its **features/functionality**

- Use cases

- Going beyond the net template

- Presenting you product – the elevator pitch

- Be creative!

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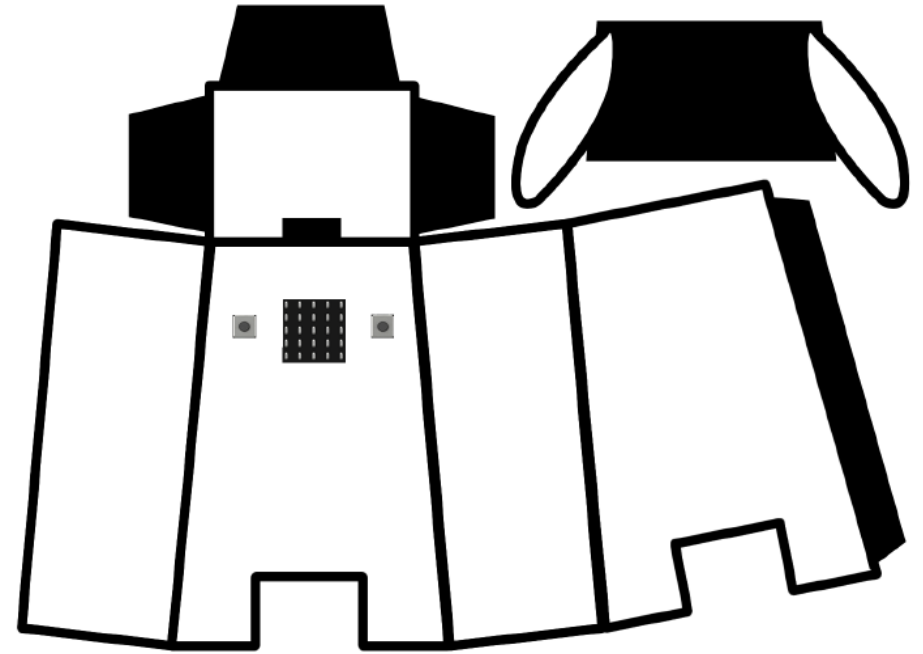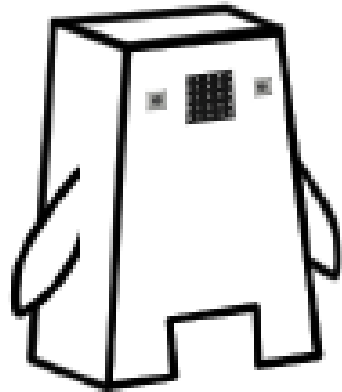
Building the Pet

- Make sure the micro:bit and battery fit inside

- Make sure the USB port is accessible
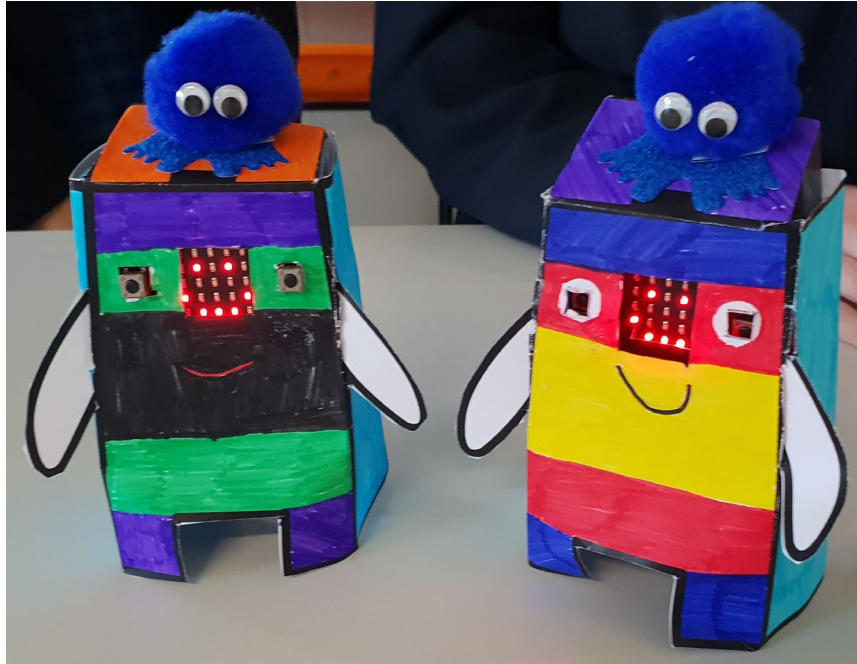
- Be creative!
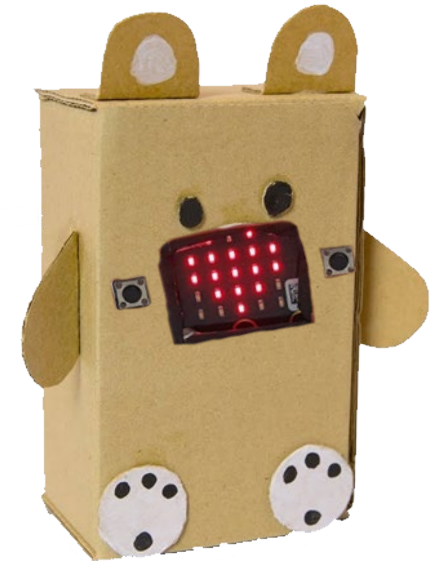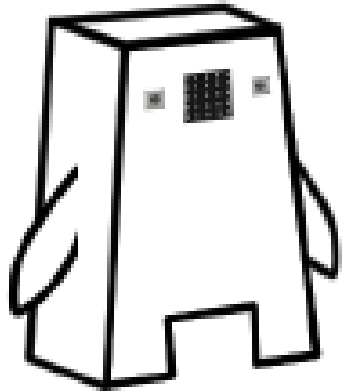
Lesson 2

Setting the Scene

- Loneliness is a real problem for children staying in hospitals for a long time

- You need to create a digital pet that they can play with and keep them company while they stay in hospital

Success Criteria

The pet must:

- Look like a friendly pet (be creative)

- Be robust enough to be played with

- Contain a micro:bit that users can interact with

- Have a face to express emotions when interacted with

- Have two or more **interactions programmed** so it behaves like a pet to keep the user entertained

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BBC micro:bit

Bluetooth ®Smart antenna

32-bit ARM ®Cortex™M0 CPU 16K RAM 16MHz with Bluetooth Low Energy

Micro USB connector

5 cm

4 cm

battery connector

2 programmable buttons

USB
BLE ANTENNA
RESET
BATTERY

PROCESSOR
COMPASS
ACCELEROMETER
PINS

3 digital/analogue input/output rings

25 individually programmable LEDs

power port

ground back port

accelerometer and compass

20 pin edge connector

FRONT

BACK

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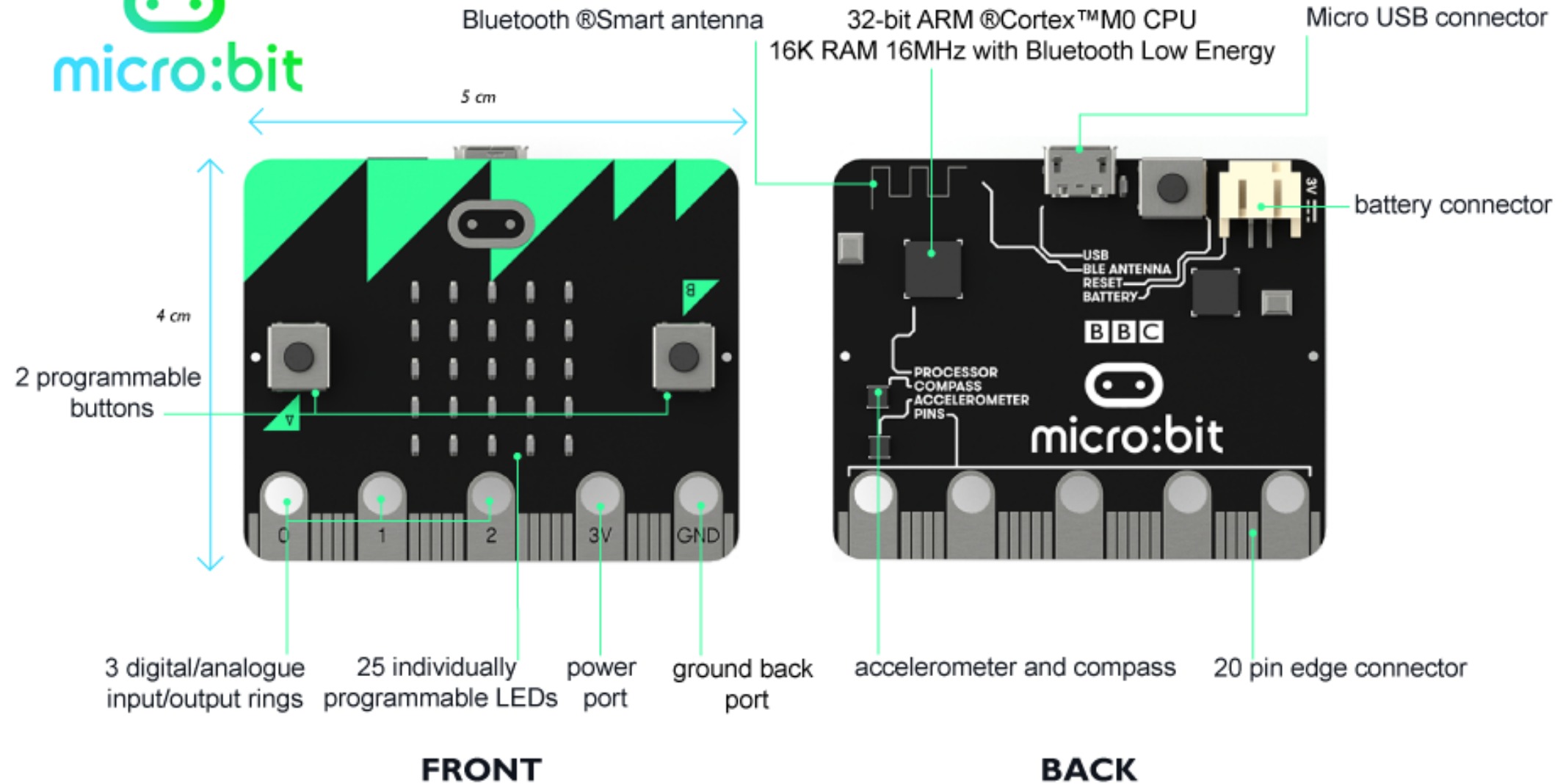
Input, Process, Output (IPO)

Input

- Sensors (produce data)
  - Temperature sensor
  - Light sensor
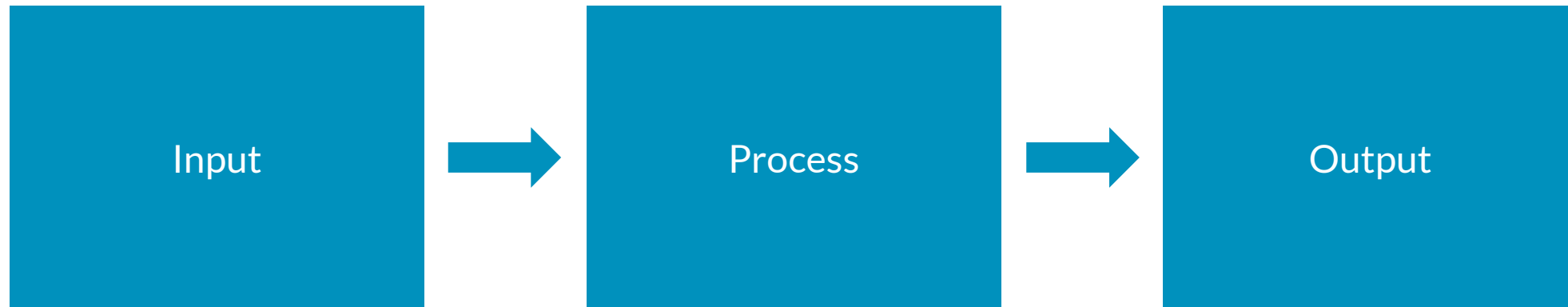 - Accelerometer
  - Compass
  - Bluetooth
- Buttons

Process

- Takes input data
- Does *something* with the data
- Stores the data

Output

- LEDs
- Radio

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Design Some Interactions

- Using the IPO worksheet, design some micro:pet interactions

| Input	→	Process	→	Output

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Lesson 3

Success Criteria

The pet must:

- Look like a friendly pet (be creative)

- be robust enough to be played with

- contain a micro:bit that users can interact with

- have a face to express emotions when interacted with

- have two or more interactions programmed so it behaves like a pet to keep the user entertained

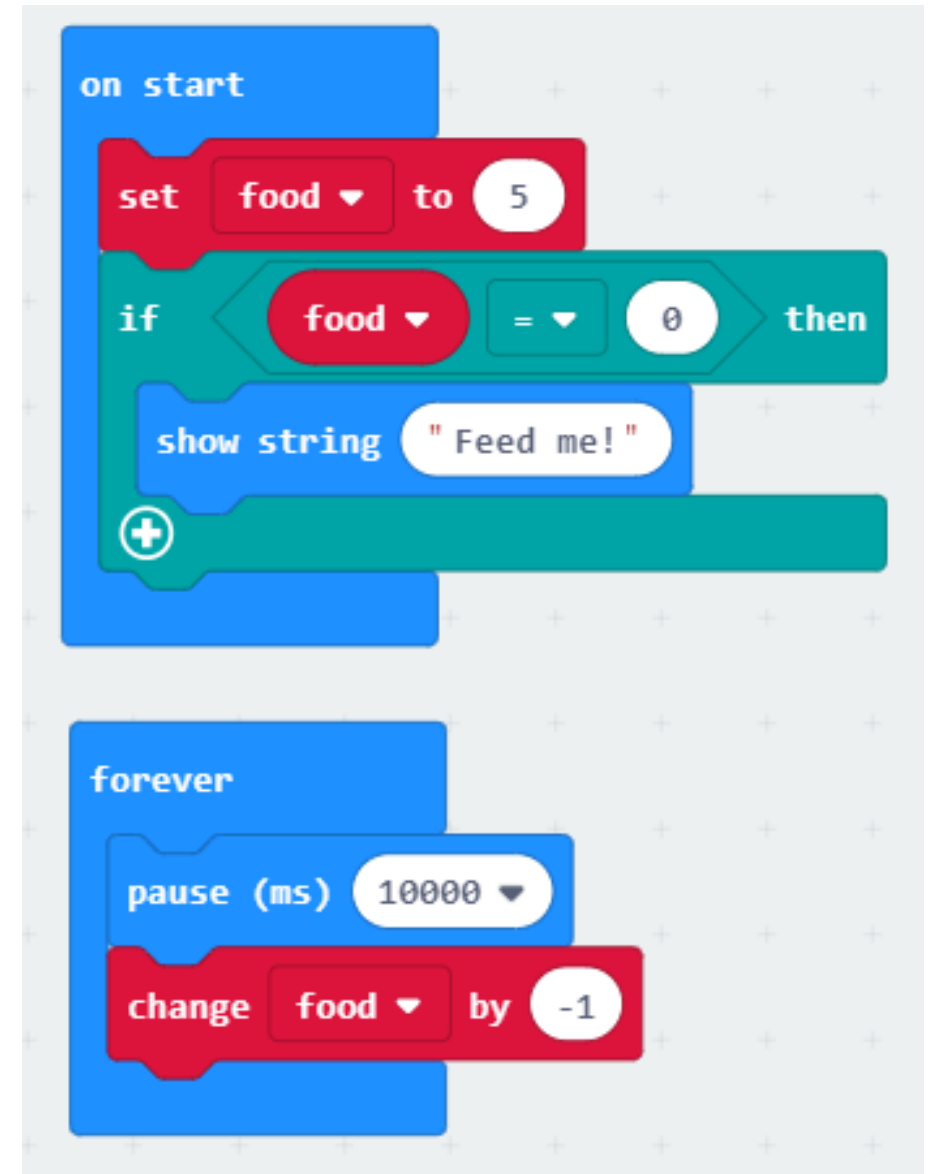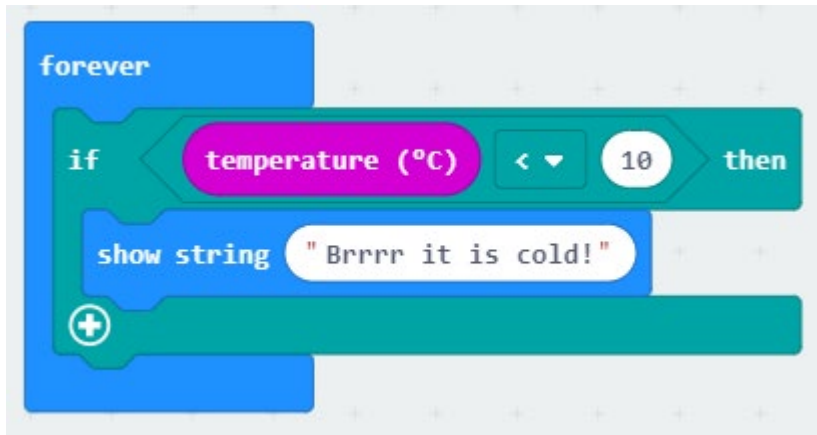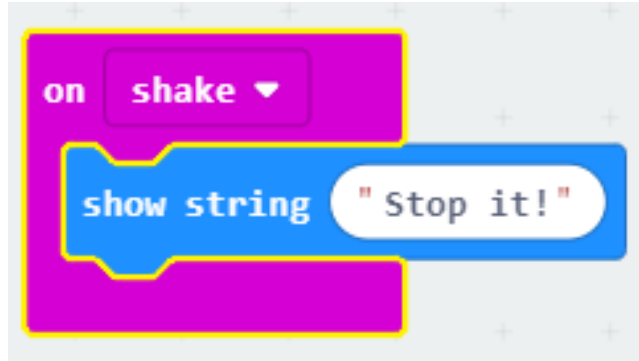# Programming the micro:bit
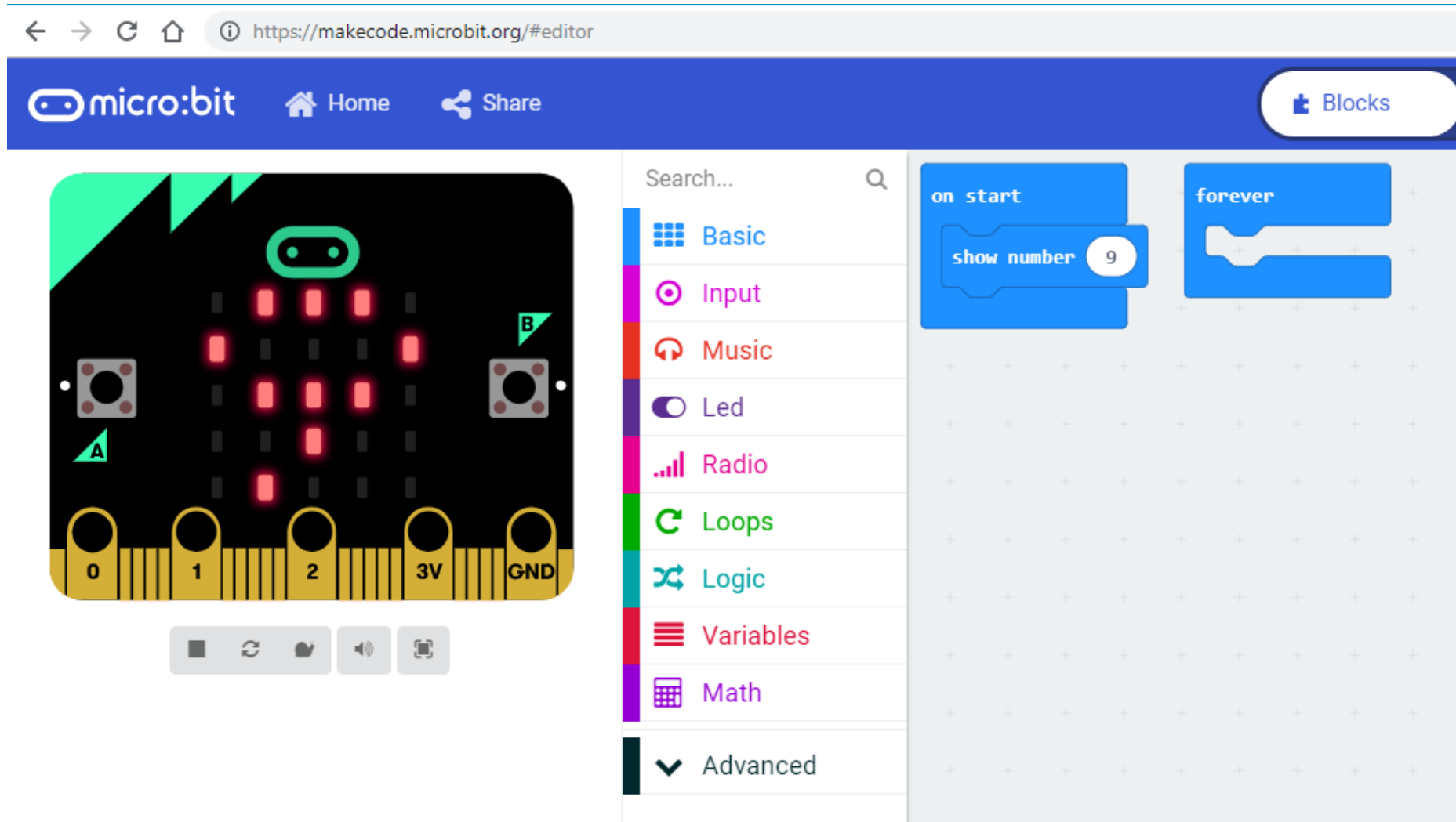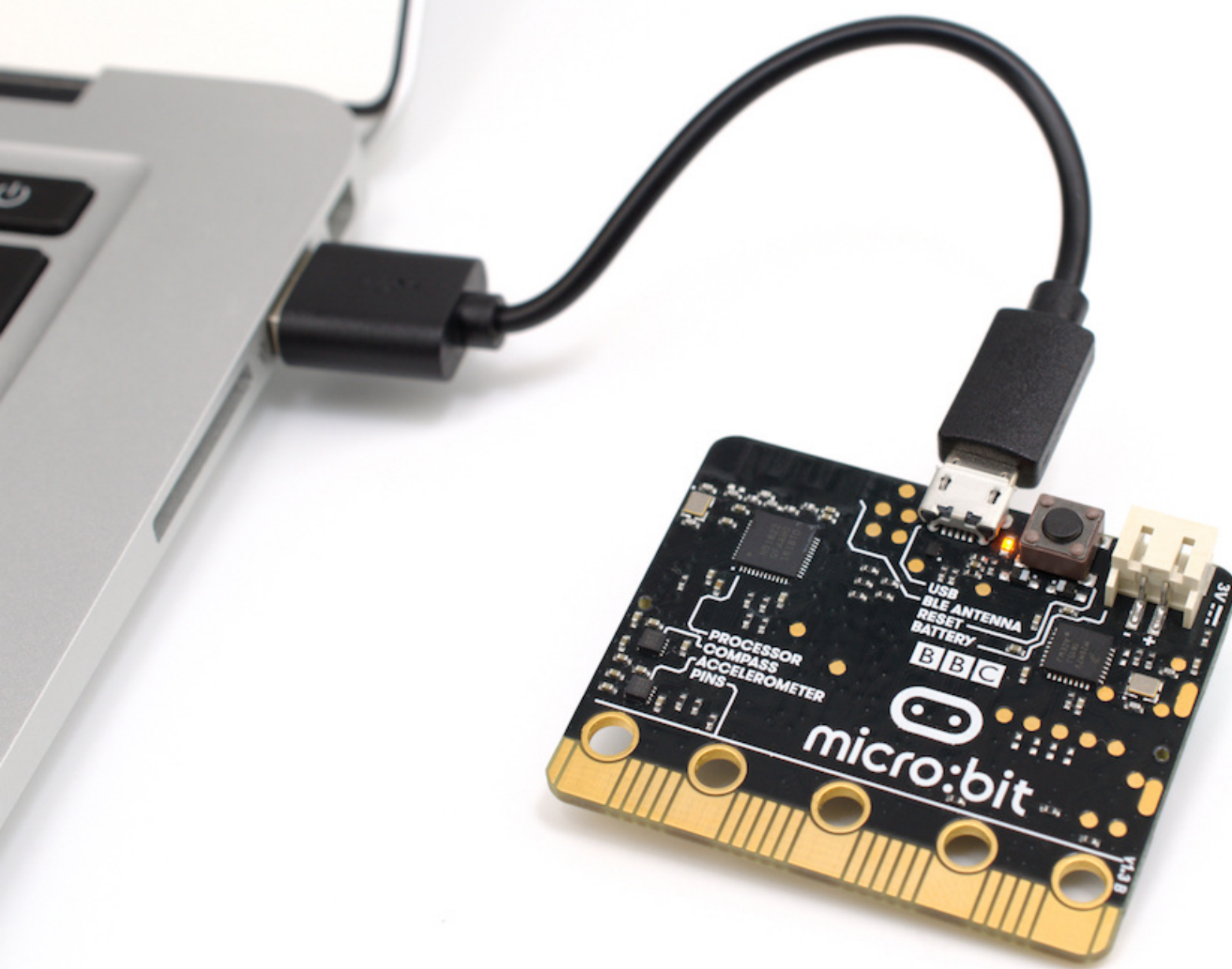
Make a program on MakeCode

↓

Download the .hex to the PC

↓

Transfer the .hex to the micro:bit

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Some Example Interactions:

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Some Ideas

Here are some possible ideas that could be programmed for your pet:

- Reacting to playing/shaking (accelerometer)

- Feeding (every few hours)

- Needing attention (gets lonely if not interacted with frequently)

- Sleeping and waking (light **sensor**)

- Reacting to temperature (temperature sensor)

- Mini games

Working in Parallel

Designing/Making the Pet

- Complete the design sheet
- Gather the materials
- Make the pet
- Add the micro:bit
- Test the pet
- Evaluate
- Improve

Programming the Pet

- Plan the interactions
- **Program** the micro:bit
- Test the functionality
- Add the micro:bit to the pet
- Test the pet
- Evaluate
- Improve

Elevator Pitch (Marketing)

- Write the elevator pitch based on the designs
- Create a logo

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Elevator Pitch and Logo

- A short (1 minute) sales pitch

- Can include a presentation (include the logo)

- Should include:

  - What the micro:pet is called

  - What its interactions are

  - How it helps the user

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Lesson 4

Success Criteria

The pet must:

- Look like a friendly pet (be creative)

- be robust enough to be played with

- contain a micro:bit that users can interact with

- have a face to express emotions when interacted with

- have two or more interactions programmed so it behaves like a pet to keep the user entertained

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The Design Template

- Fill in all sections

Pet name:	Materials needed:	What is your pets personality?
Logo:		
		What does it like?
Draw the pet:	How is your pet better than a cuddly toy?	Who does this new design help?
	What will the pet respond to?	How could it be better?

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Elevator Pitch and Logo

- A short (1 minute) sales pitch

- Can include a presentation (include the logo)

- Should include:

  - What the micro:pet is called

  - What its interactions are

  - How it helps the user

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Project Evaluation and Reflection

- How did you find the project?

- How did your group work together?

- Did you get everything done?

- What would you do differently next time?

Thank You
Danke
Merci
谢谢
ありがとう
Gracias
Kiitos
감사합니다
धन्यवाद
תודה

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