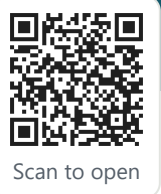
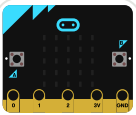


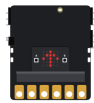
Sorting machine: teach it to see · START A BIT



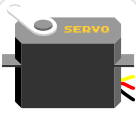
Parts you need



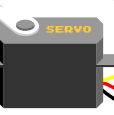
Micro:bit V2



Simple Servo board (Kitronik), 3 AA batteries



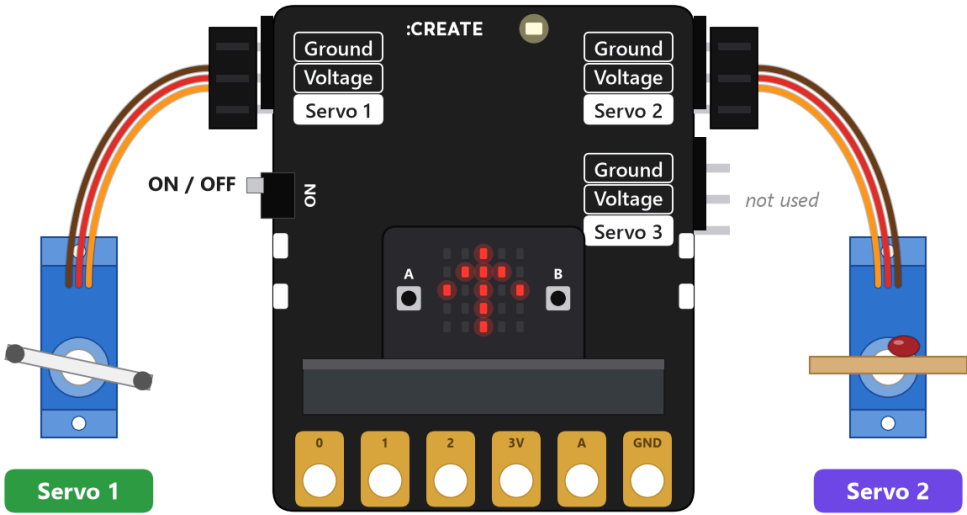
FS90 servo (180°): the tray



A second FS90 servo: the gate

Wire it

- brown or black → Ground
- red → Voltage
- orange, yellow or white → Servo pin (signal)



Batteries (3 × AA) go in the holder on the back.

Switch OFF while you plug in wires!

Story 1: Tip the tray

```
on button A pressed
  servo write pin P15 to left
  pause (ms) 600
  servo write pin P15 to level

on button B pressed
  servo write pin P15 to right
  pause (ms) 600
  servo write pin P15 to level

on start
  set level to 90
  set left to 45
  set right to 135
  servo write pin P15 to level
```

Story 2: Show what the AI sees

```
Story 2: Show what the AI sees. The AI link sends a word by Bluetooth: red, yellow or empty.

on bluetooth connected
  show icon [AI icon]

on bluetooth disconnected
  show icon [AI icon]

bluetooth on data received new line ()
  set word to bluetooth uart read until new line ()
  if word = "red" then
    show string "R"
  else if word = "yellow" then
    show string "Y"
  else
    clear screen

on start
  bluetooth uart service
```

Then teach it your beans

1. Open [Teachable Machine](#), make three classes: **red**, **yellow**, **empty**.
2. Point the camera at the tray. For each class, record about 40 pictures: beans in different places and turned, and the empty tray.
3. **Train Model**, then test it with new beans. Then **Export Model**, **Upload my model**, copy the link.
4. In the AI link paste the link at **1 The model** and press **Open**. Test again: now your model decides.

Story 3: Let it decide

```
Story 3: Let it decide. Red tips the tray left, yellow tips it right.

function tip angle
  servo write pin P15 to angle
  pause (ms) 600
  servo write pin P15 to level

on bluetooth connected
  show icon [AI icon]

bluetooth on data received new line ()
  set word to bluetooth uart read until new line ()
  if word = "red" then
    call tip left
  else if word = "yellow" then
    call tip right

on start
  set level to 90
  set left to 45
  set right to 135
  bluetooth uart service
  servo write pin P15 to level
```

Story 4: One at a time

```
Story 4: One at a time. The gate (Servo 3, P15) only opens when the tray is empty. The beans only tip the tray when the gate is open.

on bluetooth connected
  show icon [AI icon]

bluetooth on data received new line ()
  set word to bluetooth uart read until new line ()
  if word = "empty" then
    set gate to 0
  else
    set gate to 180
  servo write pin P15 to gate

on button A pressed
  servo write pin P15 to 0
  call tip left
  call tip right
  servo write pin P15 to 180

on start
  set level to 90
  set left to 45
  set right to 135
  bluetooth uart service
  servo write pin P15 to level
```