SCRATCH Blocks

MOTION

- move `10` steps
- turn ↻ `15` degrees
- turn ↺ `15` degrees
- go to `random position ▼`
- go to x: `0` y: `0`
- glide `1` secs to `random position ▼`
- glide `1` secs to x: `0` y: `0`
- point in direction `90`
- point towards `mouse-pointer ▼`
- change x by `10`
- set x to `0`
- change y by `10`
- set y to `0`
- if on edge, bounce
- set rotation style `left-right ▼`
- x position
- y position
- direction

LOOKS

- say `Hello!` for `2` seconds
- say `Hello!`
- think `Hmm...` for `2` seconds
- think `Hmm...`
- switch costume to `costume2 ▼`
- next costume
- switch backdrop to `backdrop1 ▼`
- next backdrop
- change size by `10`
- set size to `100` %
- change `color ▼` effect by `25`
- set `color ▼` effect to `0`
- clear graphic effects
- show   hide
- go to `front ▼` layer
- go `forward ▼` `1` layers
- costume `number ▼`
- backdrop `number ▼`
- size

SOUND

- play sound `Meow ▼` until done
- start sound `Meow ▼`
- stop all sounds
- change `pitch ▼` effect by `10`
- set `pitch ▼` effect to `100`
- clear sound effects
- change volume by `-10`
- set volume to `100` %   volume

EVENTS

- when ⚑ clicked
- when `space ▼` key pressed
- when this sprite clicked
- when backdrop switches to `backdrop1 ▼`
- when `loudness ▼` > `10`
- when I receive `message1 ▼`
- broadcast `message1 ▼`
- broadcast `message1 ▼` and wait

CONTROL

- wait `1` seconds
- repeat `10` ↻
- forever ↻
- if ⬡ then
- if ⬡ then / else
- wait until ⬡
- repeat until ⬡ ↻
- stop `all ▼`
- when I start as a clone
- create clone of `myself ▼`
- delete this clone

SENSING

- touching `mouse-pointer ▼` ?
- touching color ● ?
- color ● is touching ● ?
- distance to `mouse-pointer ▼`
- ask `What's your name?` and wait
- answer
- key `space ▼` pressed?
- mouse down?
- mouse x
- mouse y
- set drag mode `draggable ▼`
- loudness
- timer
- reset timer
- `backdrop # ▼` of `Stage ▼`
- current `year ▼`
- days since 2000
- username

OPERATORS

- ( ) + ( )
- ( ) - ( )
- ( ) * ( )
- ( ) / ( )
- pick random `1` to `10`
- ( ) > `50`
- ( ) < `50`
- ( ) = `50`
- ⬡ and ⬡
- ⬡ or ⬡
- not ⬡
- join `apple` `banana`
- letter `1` of `apple`
- length of `apple`
- `apple` contains `a` ?
- ( ) mod ( )
- round ( )
- abs ▼ of ( )

VARIABLES

- my variable
- set `my variable ▼` to `0`
- change `my variable ▼` by `1`
- show variable `my variable ▼`
- hide variable `my variable ▼`
- list
- add `thing` to `list ▼`
- delete `1` of `list ▼`
- delete all of `list ▼`
- insert `thing` at `1` of `list ▼`
- replace item `1` of `list ▼` with `thing`
- item `1` of `list ▼`
- item # of `thing` in `list ▼`
- length of `list ▼`
- `list ▼` contains `thing` ?
- show list `list ▼`
- hide list `list ▼`

MY BLOCKS

- define `my block`
- `my block`
- define `my block` `boolean`
- `my block` ⬠   `boolean`
- define `my block` `number or text`
- `my block` ( )   `number or text`

Scratch Project Editor

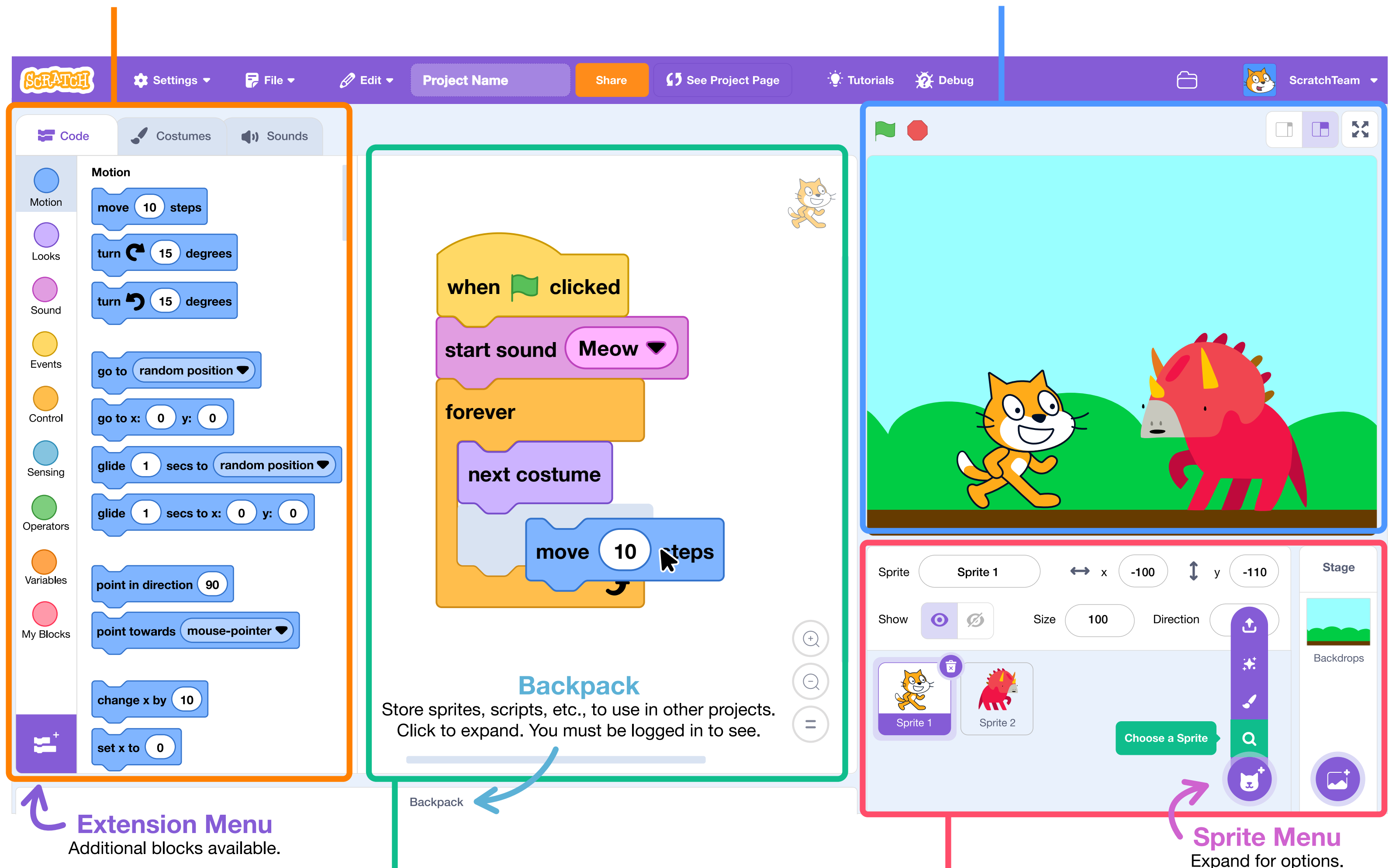**See Inside**

Block Palette
Blocks for coding your projects.
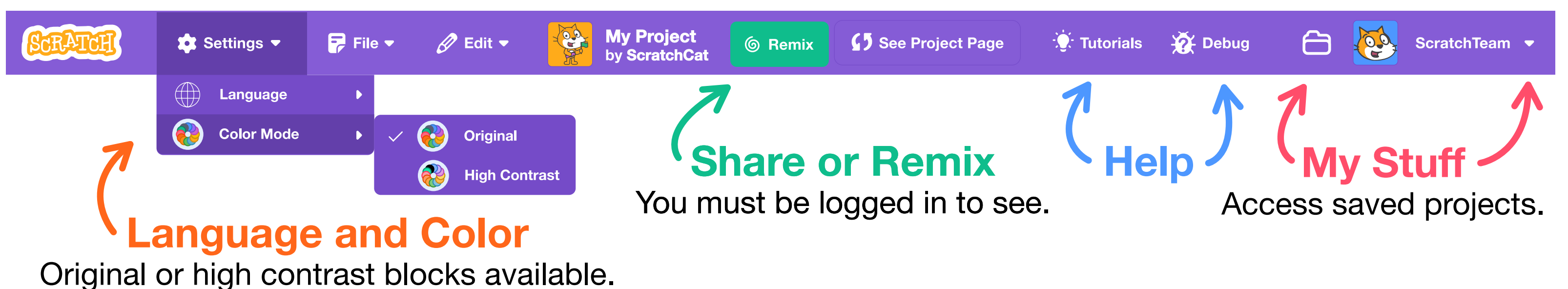
The Stage
Where your creations come to life.

Settings ▾ · File ▾ · Edit ▾ · Project Name · Share · See Project Page · Tutorials · Debug · ScratchTeam ▾

Code · Costumes · Sounds

Motion

move 10 steps

turn ↻ 15 degrees

turn ↺ 15 degrees

go to random position ▾

go to x: 0 y: 0

glide 1 secs to random position ▾

glide 1 secs to x: 0 y: 0

point in direction 90

point towards mouse-pointer ▾

change x by 10

set x to 0

Motion · Looks · Sound · Events · Control · Sensing · Operators · Variables · My Blocks

when 🚩 clicked

start sound Meow ▾

forever

next costume

move 10 steps

Backpack
Store sprites, scripts, etc., to use in other projects.
Click to expand. You must be logged in to see.

Backpack

Extension Menu
Additional blocks available.

Coding Area/Script Area
Drag in blocks and snap them together.

Sprite · Sprite 1 · ↔ x -100 · ↕ y -110 · Stage

Show 👁 ⊘ · Size 100 · Direction

Sprite 1 · Sprite 2 · Choose a Sprite · Backdrops

Sprite Menu
Expand for options.

Sprite Area
Click the thumbnail of a sprite to select it.

Settings ▾ · File ▾ · Edit ▾ · My Project by ScratchCat · Remix · See Project Page · Tutorials · Debug · ScratchTeam ▾

🌐 Language ▸

🎨 Color Mode ▸ · ✓ Original · High Contrast

Language and Color
Original or high contrast blocks available.

Share or Remix
You must be logged in to see.

Help

My Stuff
Access saved projects.

SCRATCH Extension Blocks

Music
Play instruments and drums.

play drum (1) Snare Drum ▼ for 0.25 beats

rest for 0.25 beats

play note 60 for 0.25 beats

set instrument to (1) Piano ▼

set tempo to 60

change tempo by 20

tempo

Pen
Draw with your sprites.

erase all

stamp

pen down

pen up

set pen color to ⬤

change pen color ▼ by 10

set pen color ▼ to 50

change pen size by 1

set pen size to 1

Code

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Extension Menu ↪

Text to Speech
Make your projects talk.

speak hello

set voice to alto ▼

set language to English ▼

Requires 📶

Collaboration with
Amazon Web Services

Translate
Translate text into many languages.

translate hello to Indonesian ▼

language

Requires 📶

Collaboration with
Google

Video Sensing
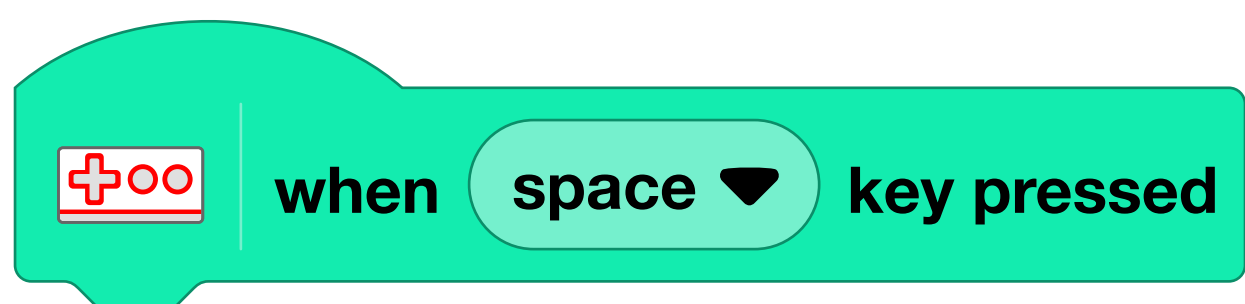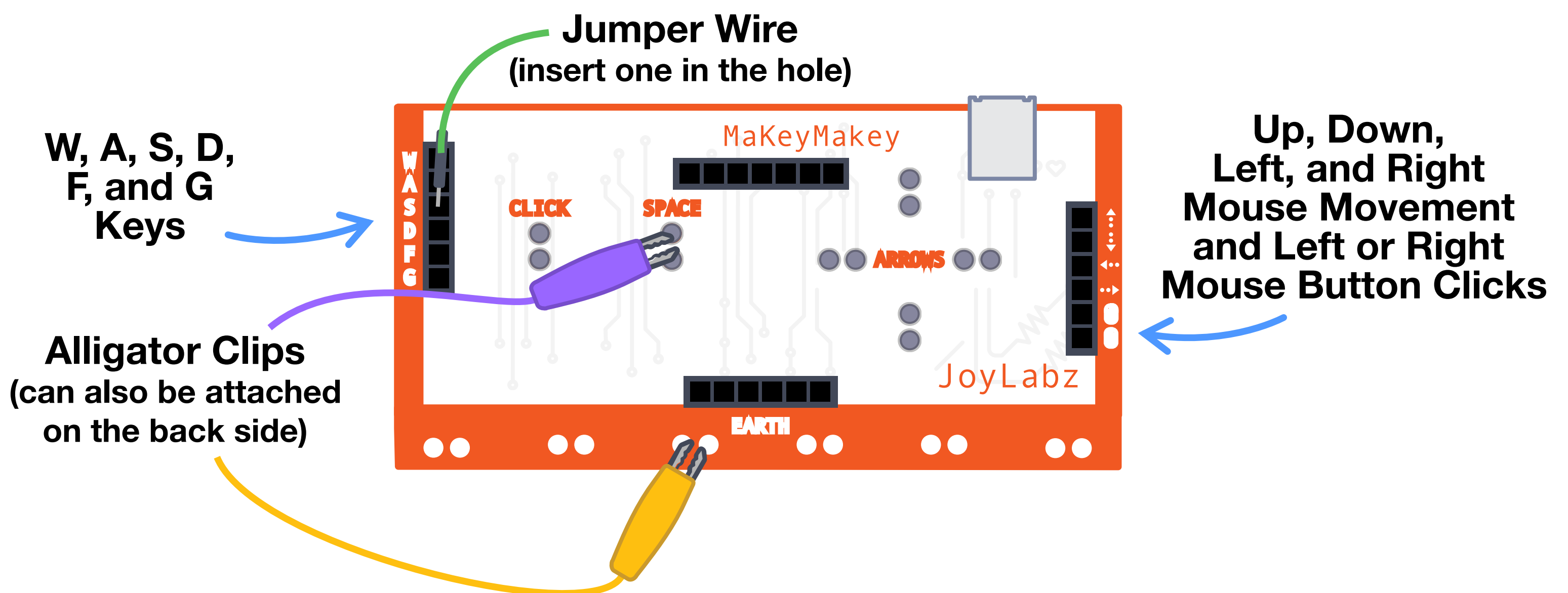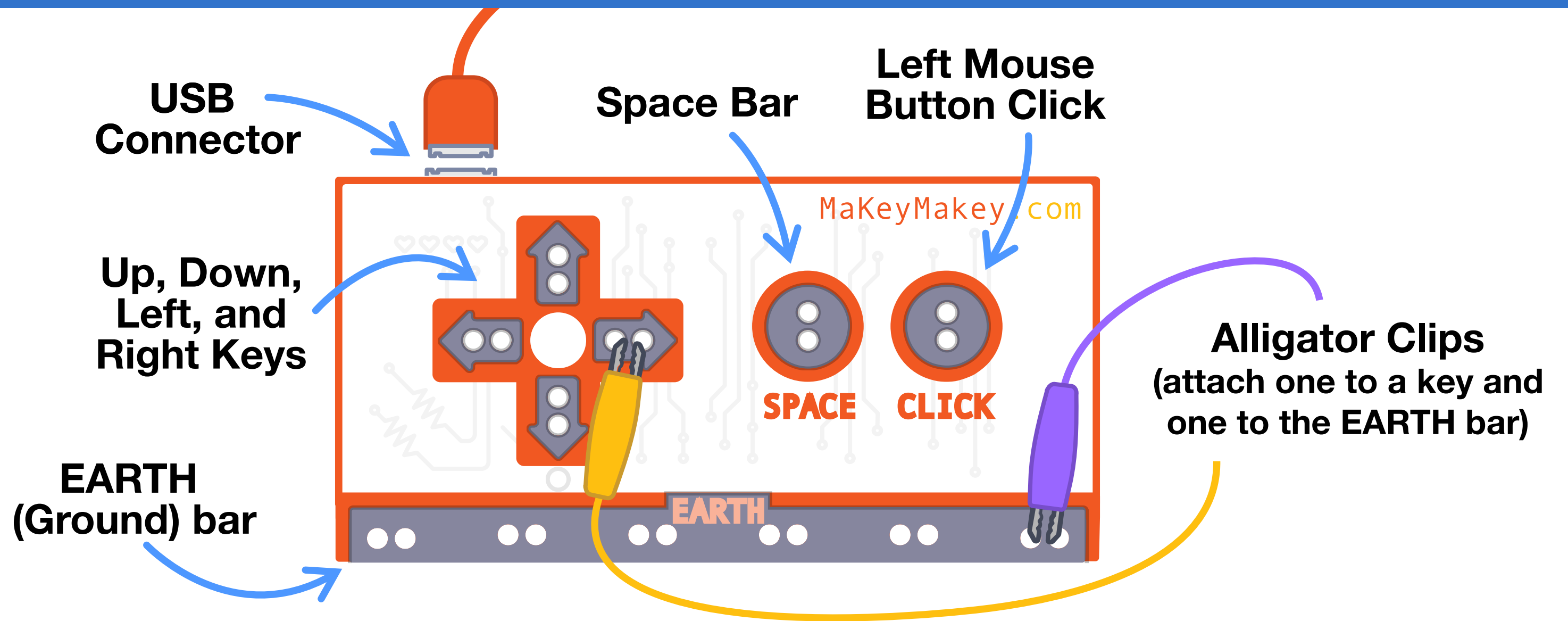Sense motion with the camera.

when video motion > 10

video motion ▼ on sprite ▼

turn video on ▼

set video transparency to 50

SCRATCH FOUNDATION

scratch.mit.edu

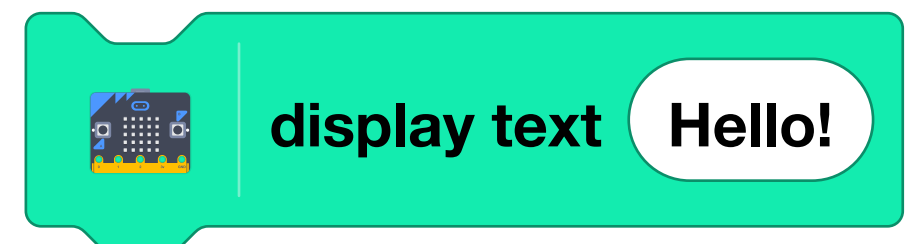# SCRATCH and Makey Makey

USB Connector

Up, Down, Left, and Right Keys

EARTH (Ground) bar

Space Bar

Left Mouse Button Click

MaKeyMakey.com

SPACE   CLICK

EARTH

Alligator Clips (attach one to a key and one to the EARTH bar)

Jumper Wire (insert one in the hole)

W, A, S, D, F, and G Keys

WASDFG

MaKeyMakey

CLICK   SPACE

ARROWS

JoyLabz

Up, Down, Left, and Right Mouse Movement and Left or Right Mouse Button Clicks

Alligator Clips (can also be attached on the back side)

EARTH

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when [space ▼] key pressed

when [left up right ▼] pressed in order

Makey Makey
Make anything into a key.
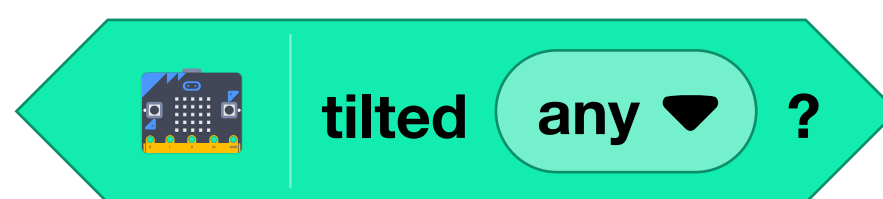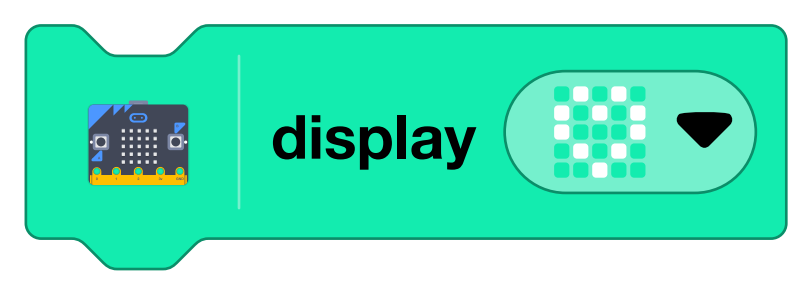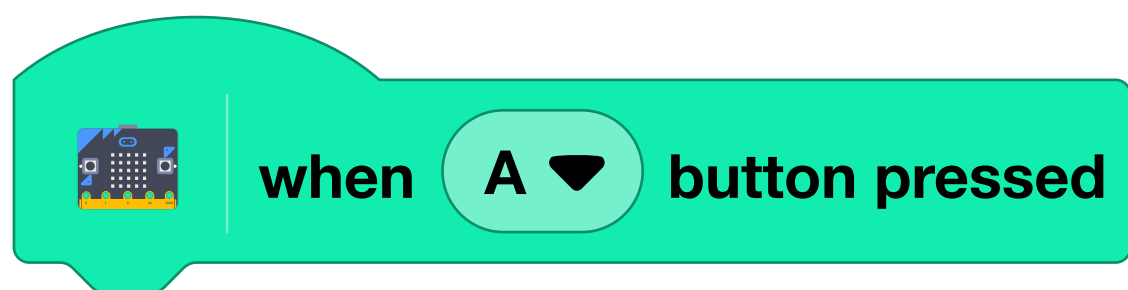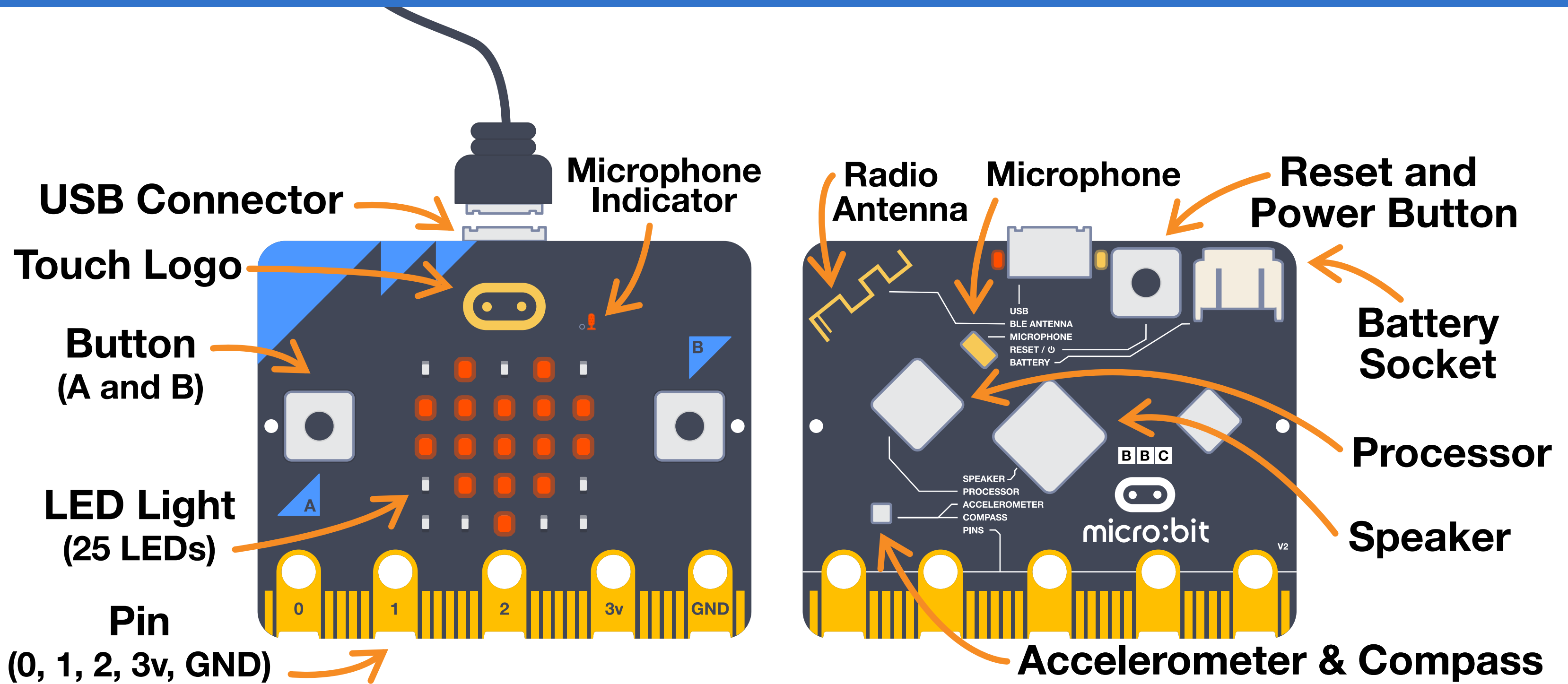
Collaboration with
JoyLabz

Add the extension. Or you can use the keyboard key and mouse click blocks, like the "when _ key pressed" Event block, as an alternative.
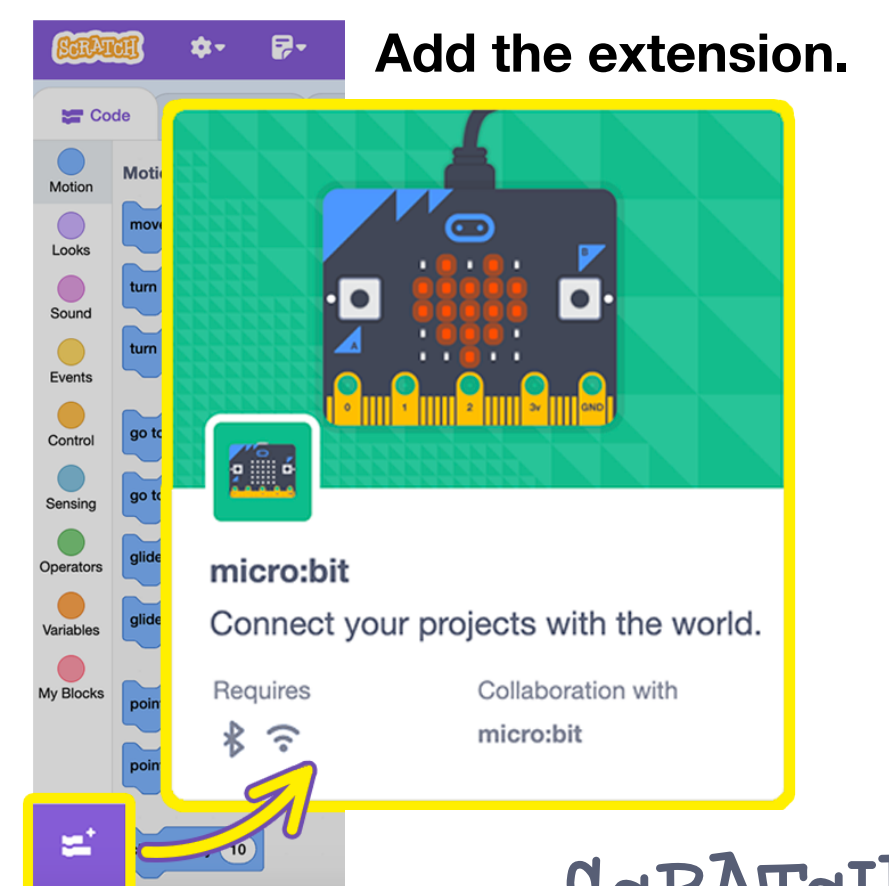
Connect one alligator clip to "EARTH" and another to a keyboard key. Close the circuit (to make the program register that keyboard key was pressed) by touching both the key and EARTH clips.
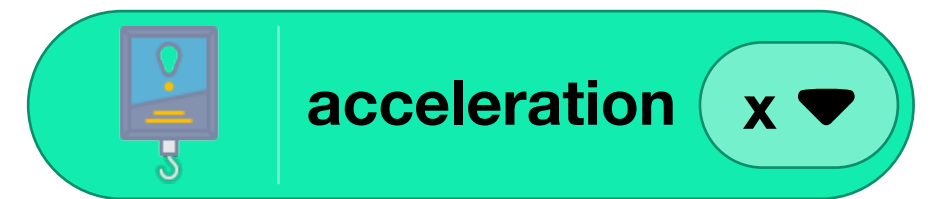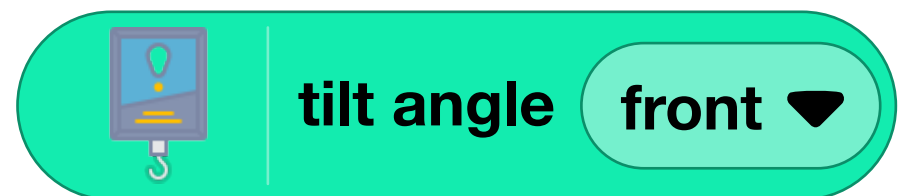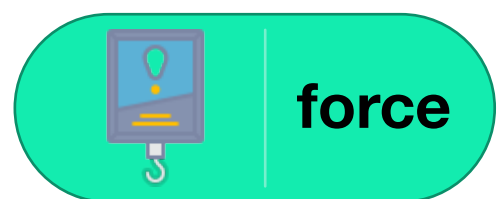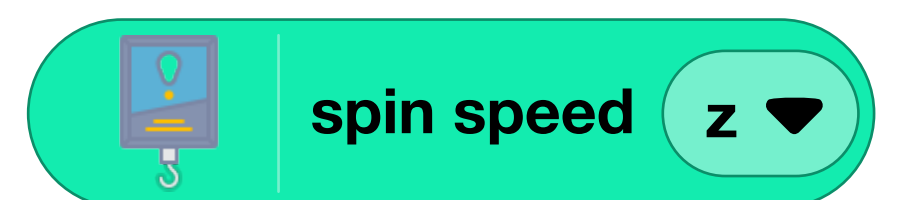
SCRATCH and micro:bit

USB Connector

Microphone Indicator

Touch Logo

Button (A and B)

LED Light (25 LEDs)

Pin (0, 1, 2, 3v, GND)

Radio Antenna

Microphone

Reset and Power Button

Battery Socket

Processor

Speaker

Accelerometer & Compass

USB
BLE ANTENNA
MICROPHONE
RESET / ⏻
BATTERY

SPEAKER
PROCESSOR
ACCELEROMETER
COMPASS
PINS

BBC
micro:bit V2

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when A ▼ button pressed

A ▼ button pressed?

when moved ▼

when tilted any ▼

tilted any ▼ ?

tilt angle front ▼

when pin 0 ▼ connected

display ▼

display text Hello!

clear display

Drag and drop the Scratch micro:bit HEX file.

Start Scratch Link and enable Bluetooth.

Add the extension.

micro:bit
Connect your projects with the world.

Requires   Collaboration with
                  micro:bit

Scratch works with v1 and v2 (shown) micro:bit versions.

SCRATCH and Vernier Go Force

Nylon Screw

USB Connection

Power On/Off

Bumper (alternative)

Hook

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when **shaken ▼**

when **tilted any ▼**

falling?

when force sensor **pushed ▼**

tilted any ▼ ?

spin speed z ▼

force

tilt angle front ▼

acceleration x ▼
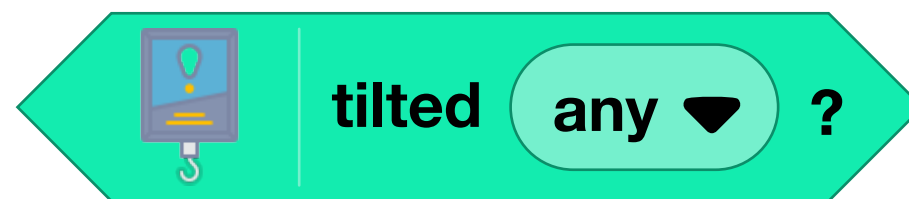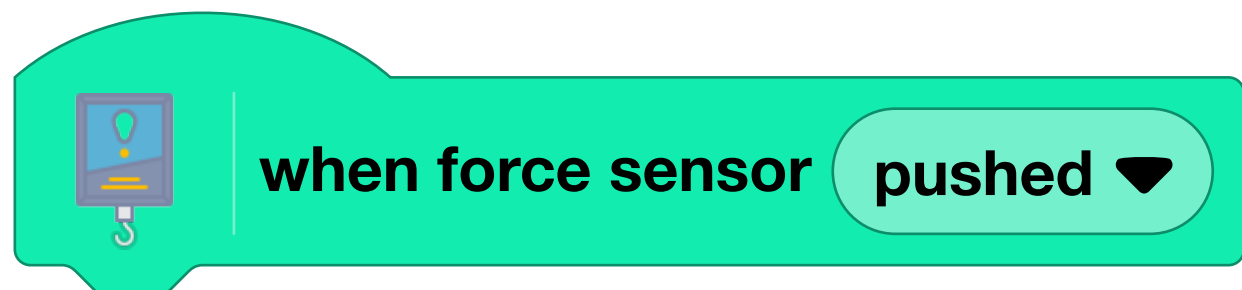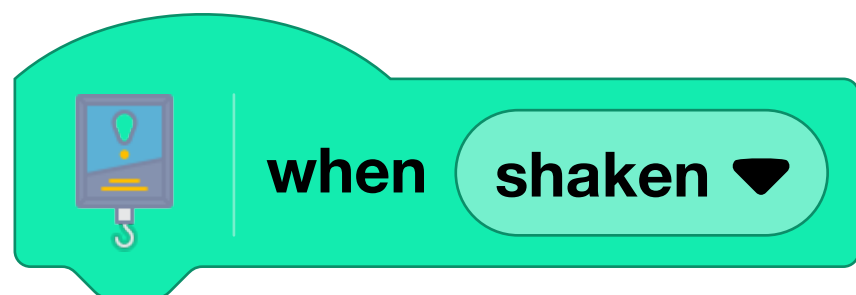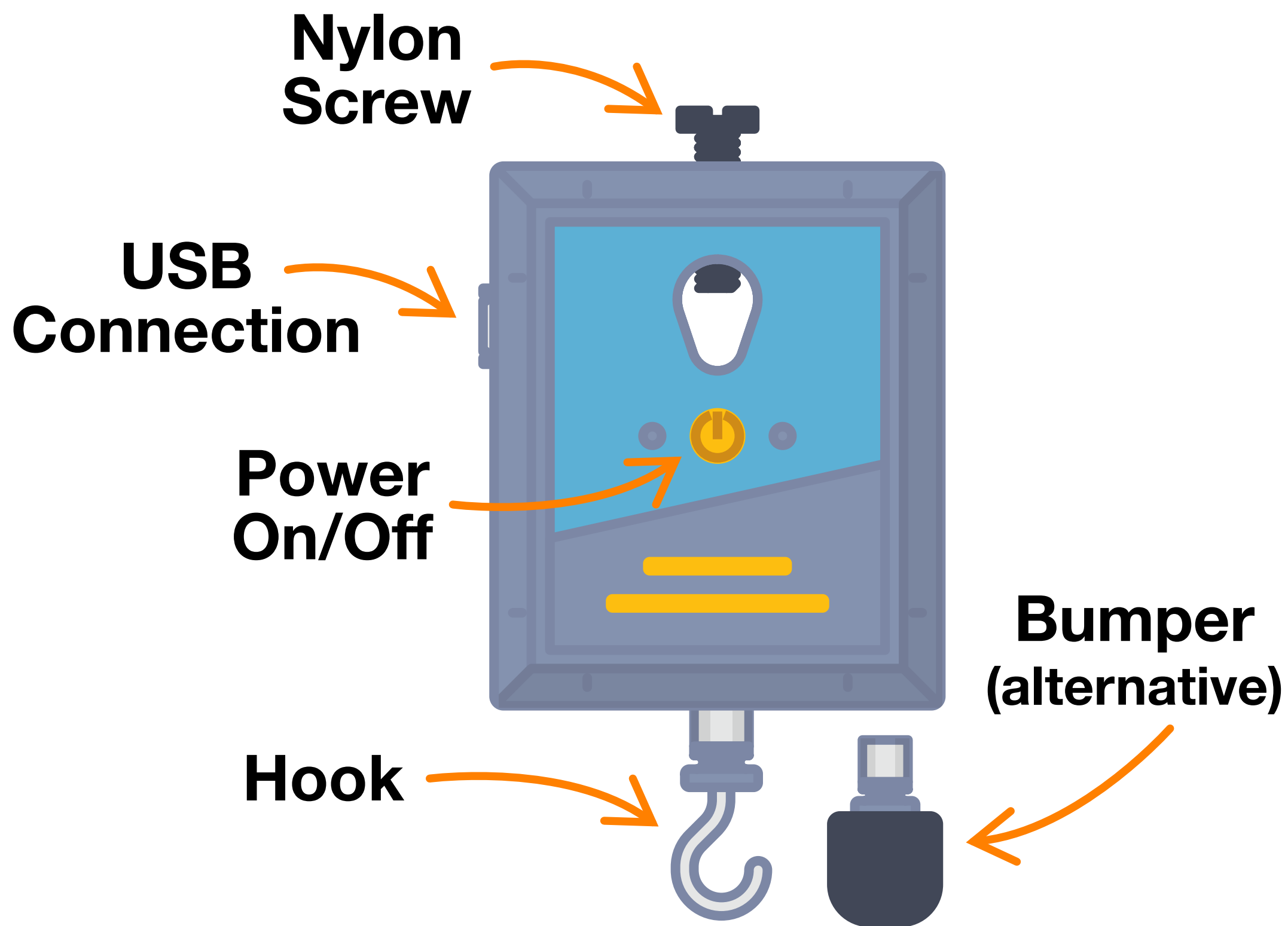
Power on the Vernier sensor.

Start Scratch Link and enable Bluetooth.

Add the extension.

Go Direct Force & Acceleration
Sense push, pull, motion, and spin.

Requires   Collaboration with
                   Vernier

SCRATCH FOUNDATION

scratch.mit.edu