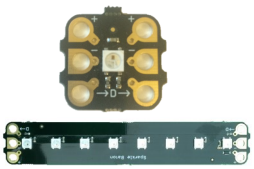
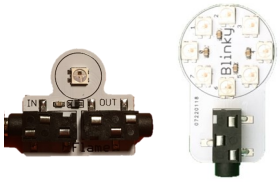
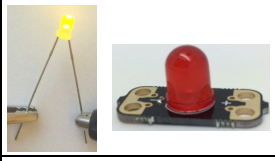
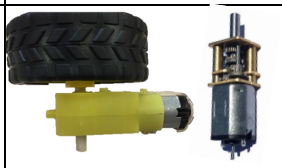
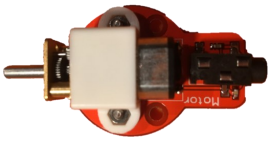
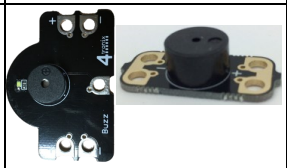
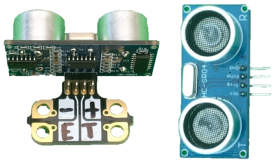
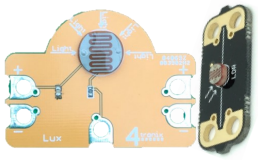
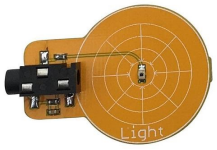
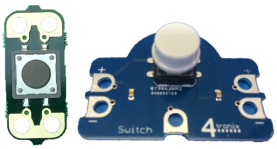
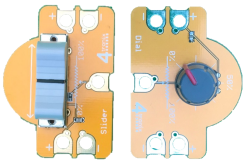
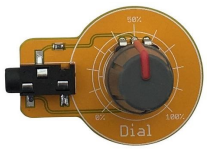
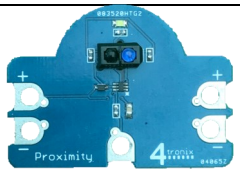
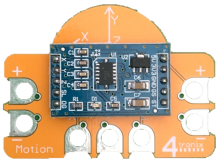
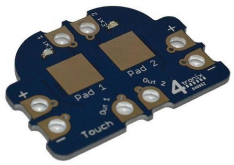
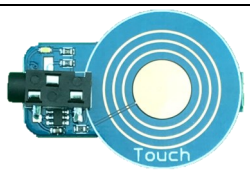
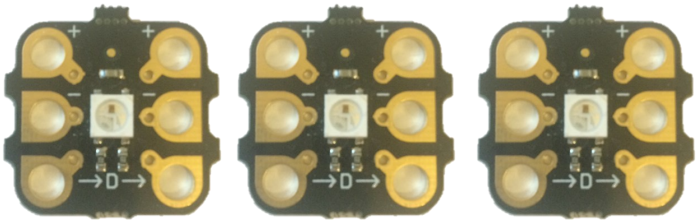
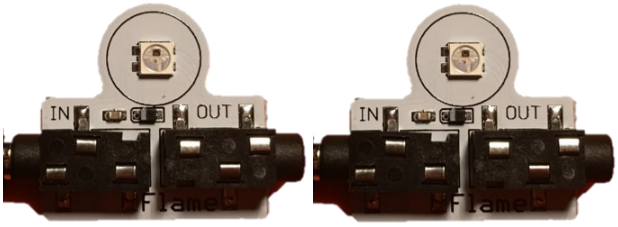
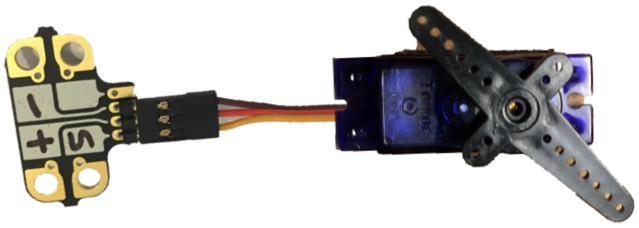
Output Name	Crumble Classic (Crocodile Clip)	Playground (Headphone)	Connections	Notes
Programmable Light			OUTPUT D	OUTPUTS A FULL RANGE OF COLOURS CAN CONNECT 32 LIGHTS TO ONE OUTPUT (D)
LED Light			OUTPUT A, B, C or D	OUTPUTS A COLOURED LIGHT ON HI OFF LO
Motor			MOTOR 1 OR 2	OUTPUTS FORWARD OR REVERSE POWER 0-100%
Stepper (Servo) Motor			MOTOR 1 OR 2	OUTPUTS MOVEMENT BACK AND FORWARDS -90-0-90 DEGREES
Geared Motors			MOTOR 1 OR 2	OUTPUTS FORWARD OR REVERSE SPIN POWER 0-100%
Traffic Lights			OUTPUT A, B, C or D	RED GREEN AMBER ON HI OFF LO
Buzzer			OUTPUT A, B, C or D	OUTPUTS ONE TONE SOUND ON HI OFF LO
Piezo Buzzer			MOTOR 1 OR 2	OUTPUTS DIFFERENT TONE WHEN POWER 0-100% PASSED THROUGH
Number Counter			MOTOR 1 OR 2	OUTPUTS 0-99 VIA MOTOR POWER PERCENTAGE

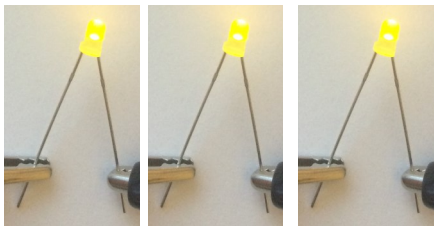
Input Name	Crumble Classic (Crocodile Clip)	Playground (Headphone)	Connections	Notes
Distance Sensor			INPUT A, B, C OR D	INPUTS 0-400 These are cm
PIR Movement Sensor			INPUT A, B, C OR D	INPUTS HI (Motion detected) or LO (Motion not detected)
LDR Light Dependent Resistor			INPUT A, B, C OR D	INPUTS 0-255
Push Button			INPUT A, B, C OR D	INPUTS HI (Pressed) or LO (Not Pressed)
Toggle Switch			INPUT A, B, C OR D	INPUTS HI (Connection made or LO Connection not made)
Dial or Slider			INPUT A, B, C OR D	INPUTS 0-100
Close Proximity Sensor			INPUT A, B, C OR D	INPUTS HI OR LO
Accelerometer X, Y, Z			INPUT A, B, C OR D	INPUTS 0-255 ON EACH AXIS X Y & Z
Touch Sensor			INPUT A, B, C OR D	INPUTS HI OR LO

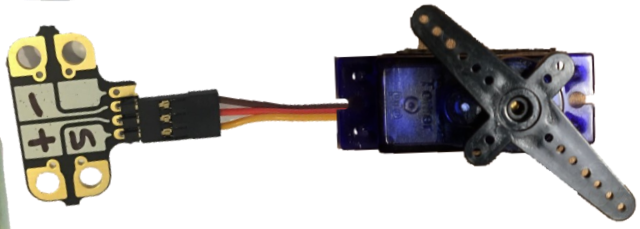

D
D
D

Servo
Servo


IN
OUT
IN
OUT

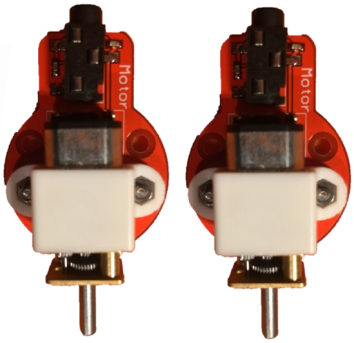

S



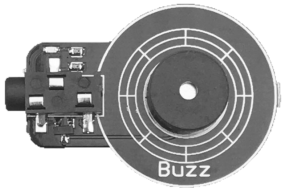

S

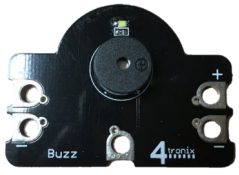
4tronix
Gnd
Green
Amber
Red
Lights

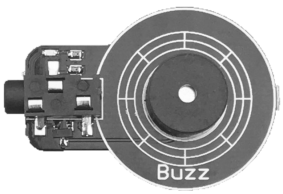
Traffic
R
A
G

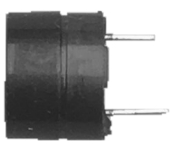

Motor
Motor

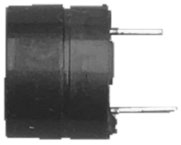
Buzz
4tronix


Buzz

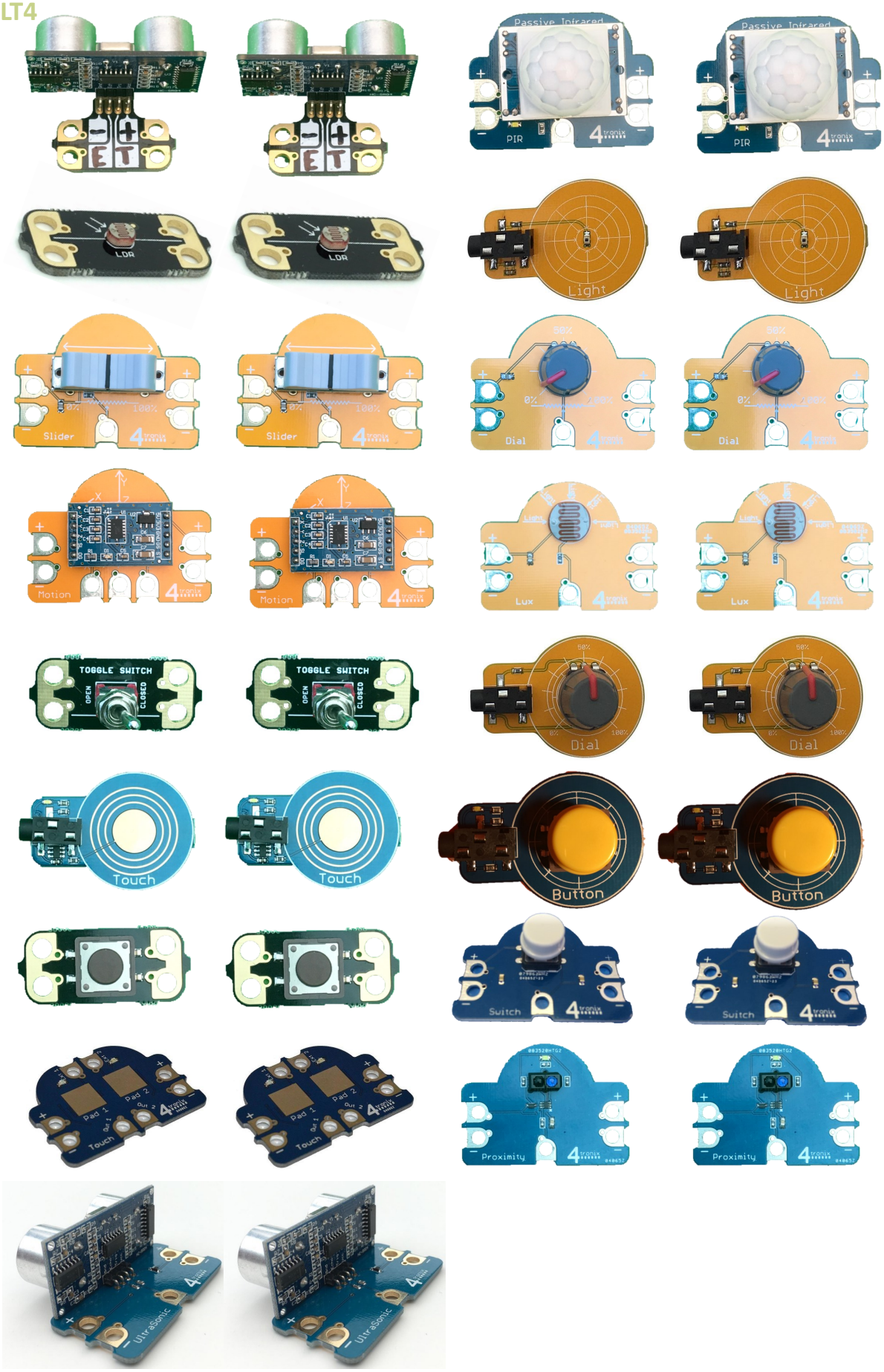

Buzz
4tronix


Buzz





MLT4


ET
LDR
Passive Infrared
PIR
Light
Slider
Dial
Motion
Lux
TOGGLE SWITCH
OPEN
CLOSED
Touch
Button
Switch
Proximity
UltraSonic

Name _____ Class _____ Maker Lab 2 MLT5

Planning my Maker Lab Two project.

Big idea 1	Big idea 2	Big idea 3

What input(s) will trigger what output(s)?
What will the input(s) input? (number range/HI or LO) If it inputs a number, what is the range for that number?
At which point(s) (number/HI/LO/>/</all the time) will an output be triggered?
What will the outputs do when they are triggered? How long will the outputs stay on for?
What will you call your variable, to pass information from the input to the output, if you have one?

PORTS	DEVICE	IN/OUTPUT	TYPE INPUT (HI/LO/NUM)
A			
B			
C			
D			
MOTOR 1			
MOTOR 2			

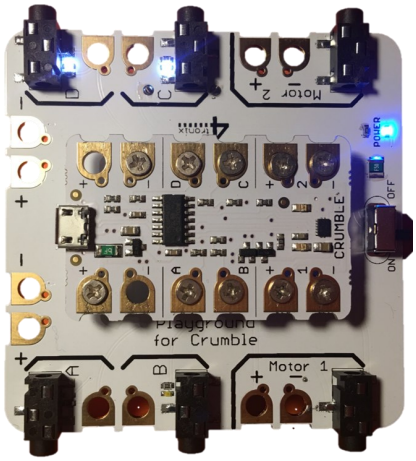
Which parts of your project can be tested separately?

(eg I can test my motor runs before linking it to a sensor.)

Name _____ Class _____

MLT6

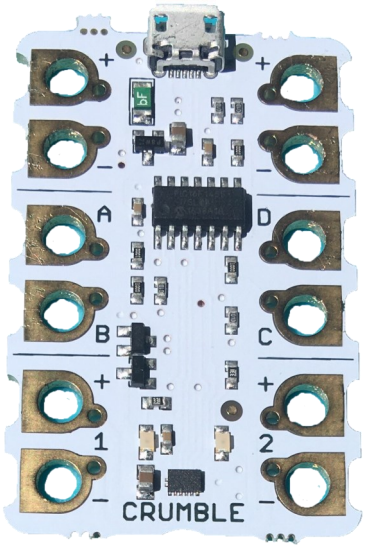
Maker Lab Two Wiring Diagram



Draw your devices and the wires that connect them.

Name _____ Class _____ MLT7

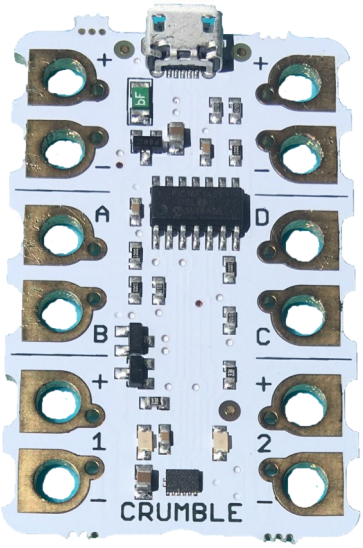
Maker Lab Two Wiring Diagram



Draw your devices and the wires that connect them.

Name _____ Class _____ MLT7

Maker Lab Two Wiring Diagram



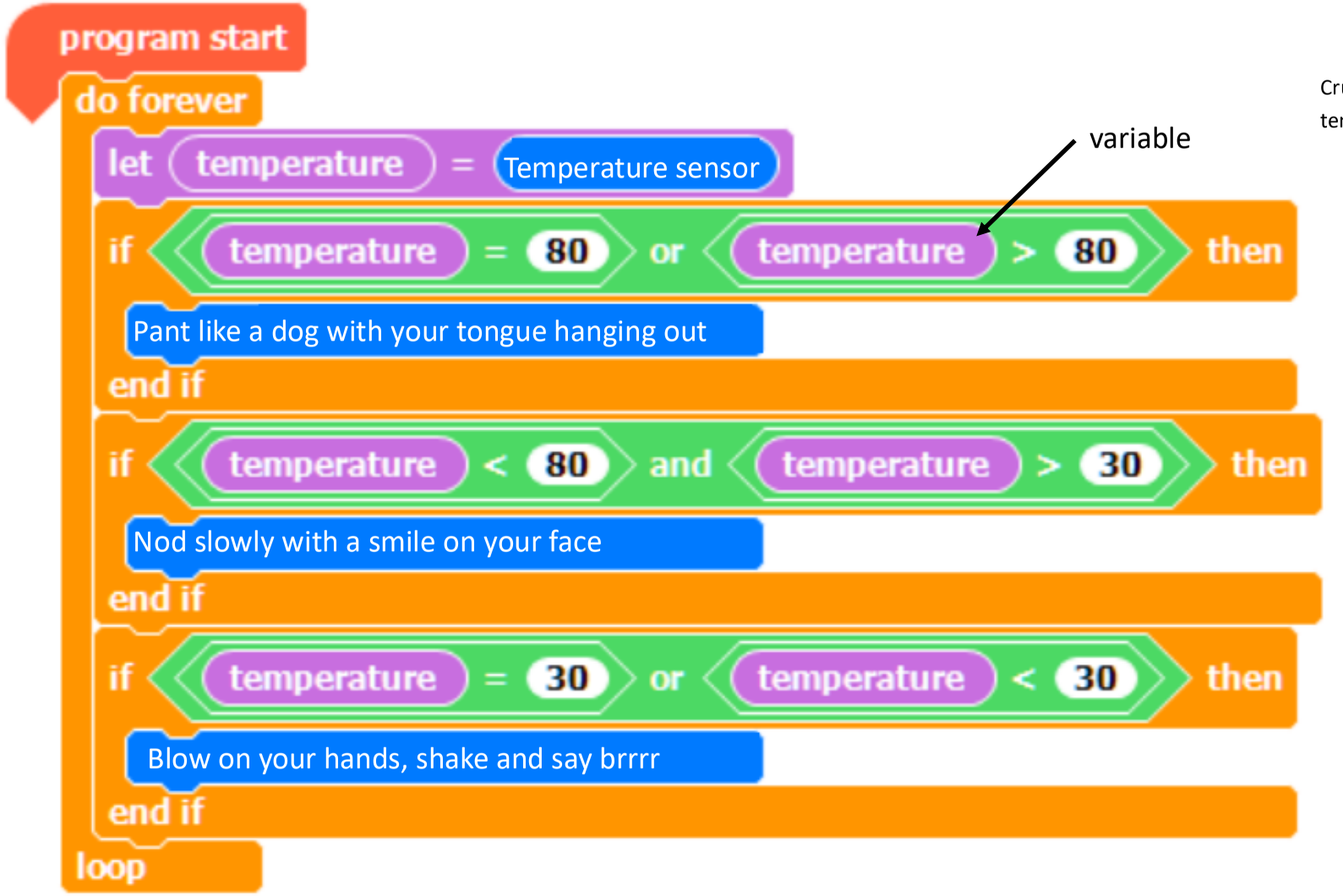
Draw your devices and the wires that connect them.

Temperature Work in groups of three

One person is the temperature sensor **Input** who gives information (temp cards) that goes into the variable.

One person is the **variable** who holds the temperature information given to it by the sensor and says the number.

One person is the **Program** and does what is in the program (holds this code sheet).



Crumble doesn't have a temperature sensor yet.

Don't forget to swap roles.

Temperature Cards to go with MLT8

14	83	31	52	72
05	99	29	43	11

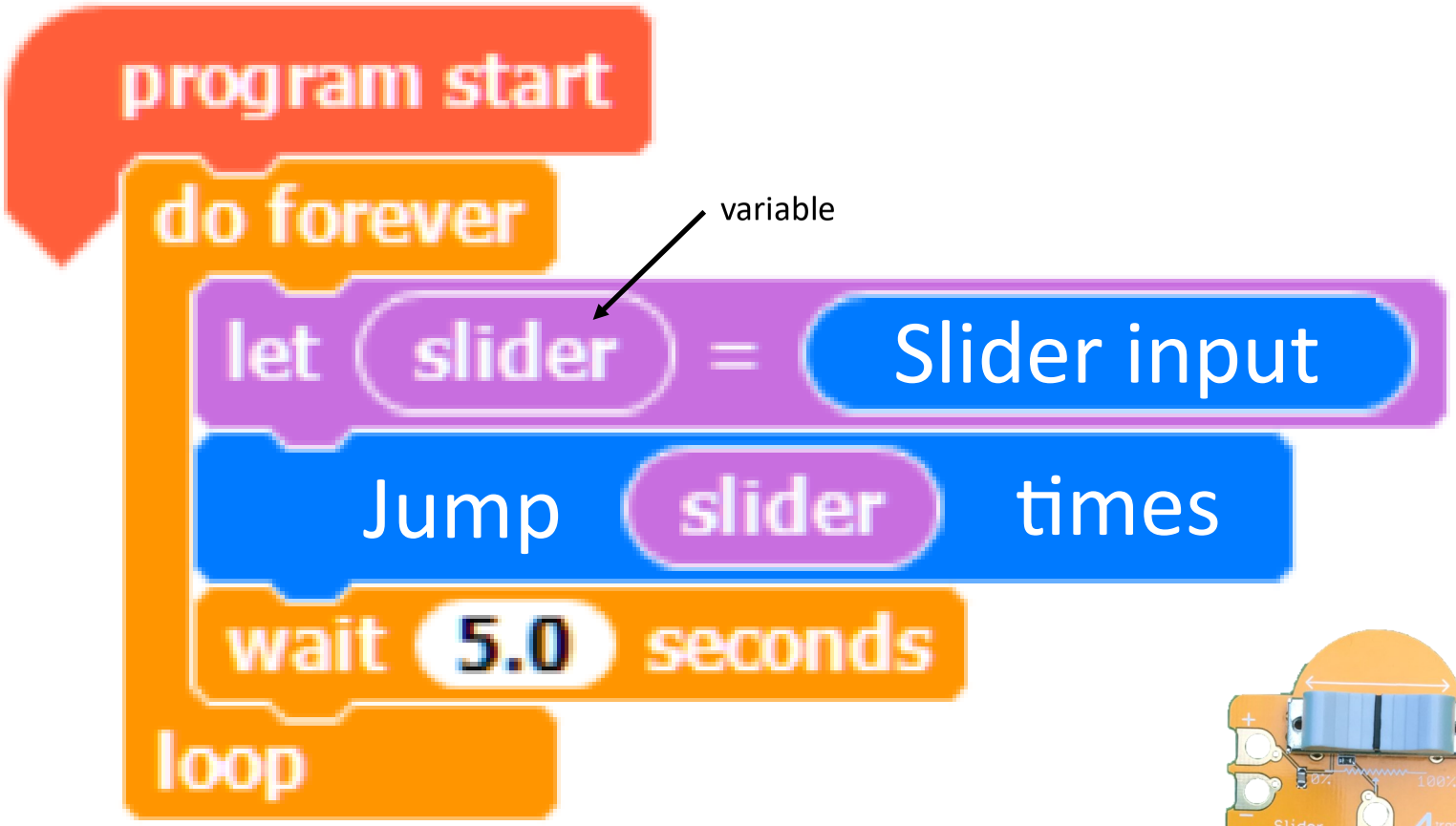
Slider Work in groups of three

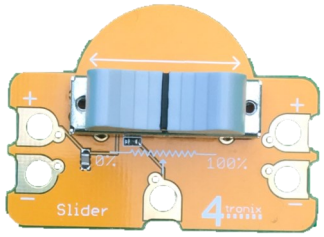
One person is the slider **Input.**

Place 0-1-2-3-4 cards on the floor in a row. Stand next to a number to be the slider stick.

One person is the **variable** who says the slider number information.

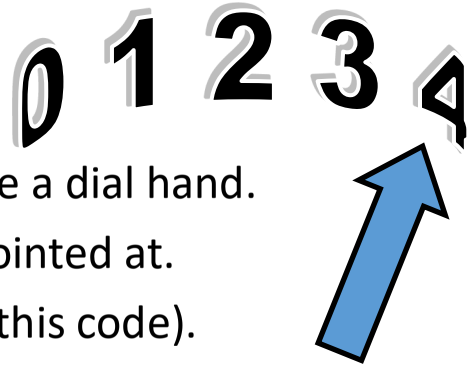
One person is the **Program** and does what is in the program (Holds this code card).





Don't forget to swap roles.

Dial Work in groups of three

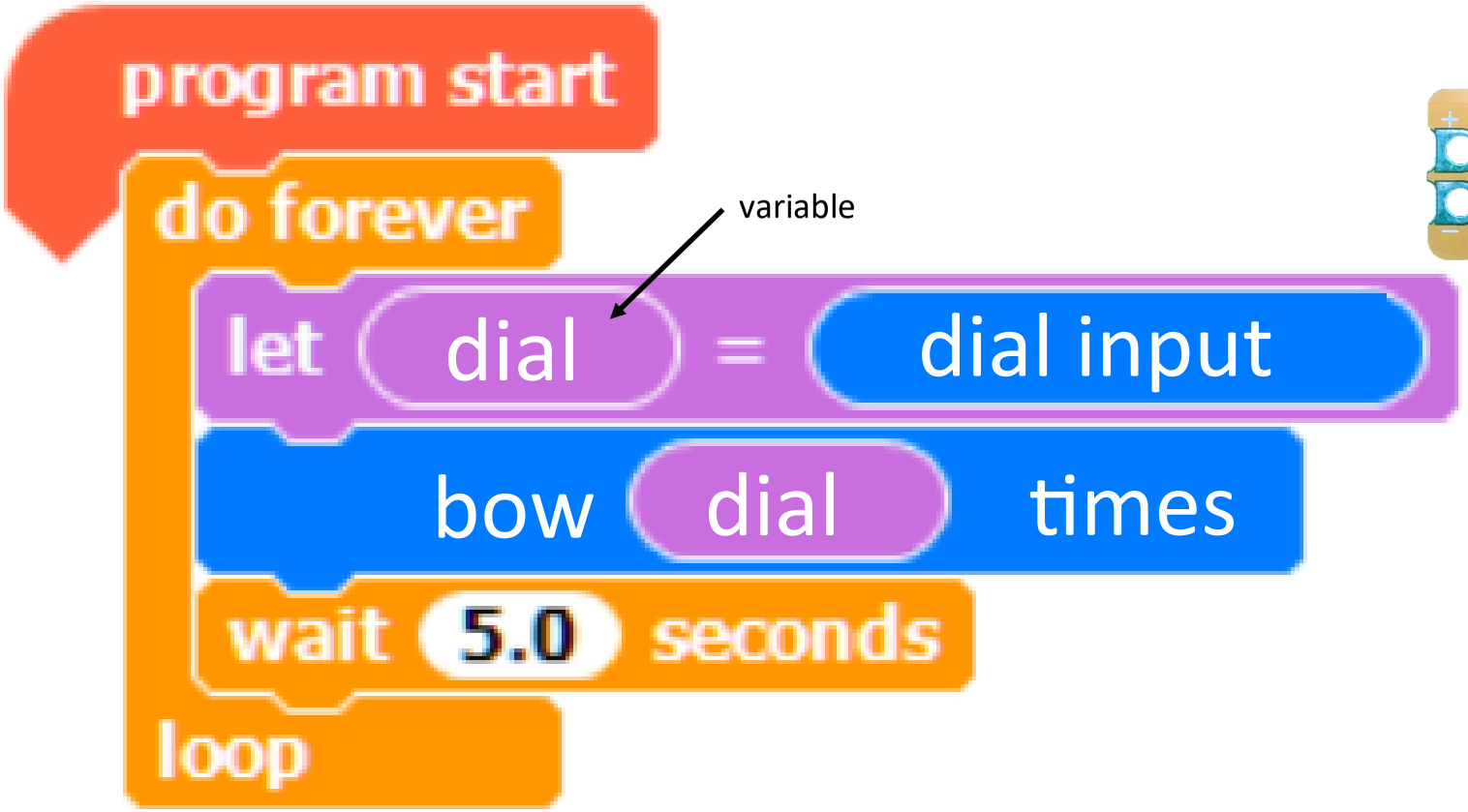


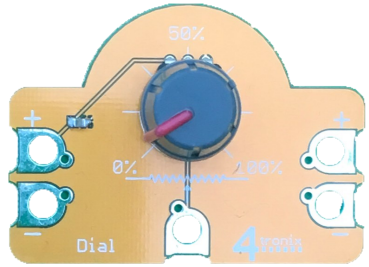
One person is the dial **Input.**

Place the 0-1-2-3-4 cards on floor in an arc. Point to one number like a dial hand.

One person is the **variable** *(called dial)* who says the dial number pointed at.

One person is the **Program** and does what is in the program (holds this code).

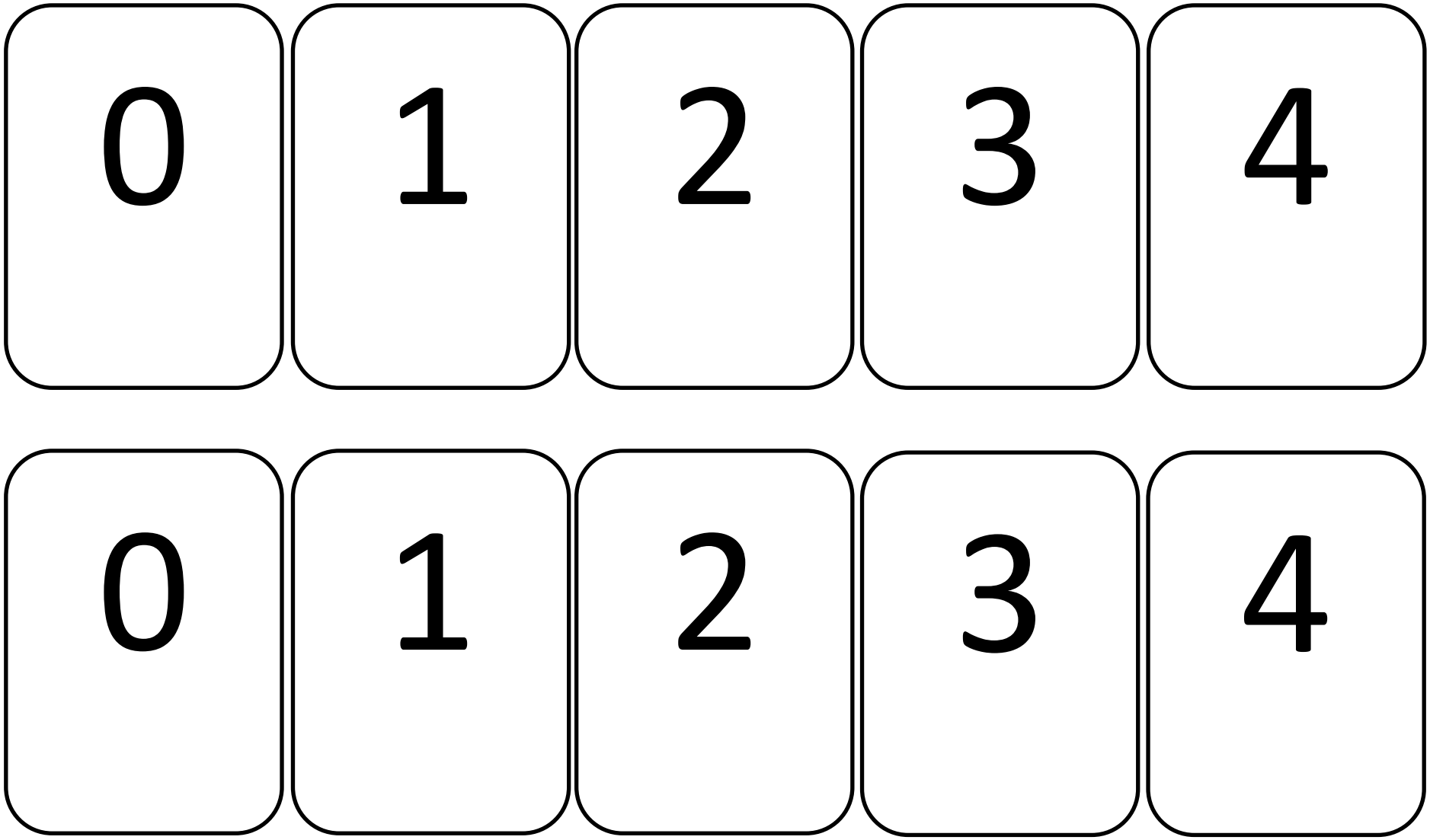




Don't forget to swap roles

MLT10

Slider & Dial Cards to go with MLT9 & MLT10



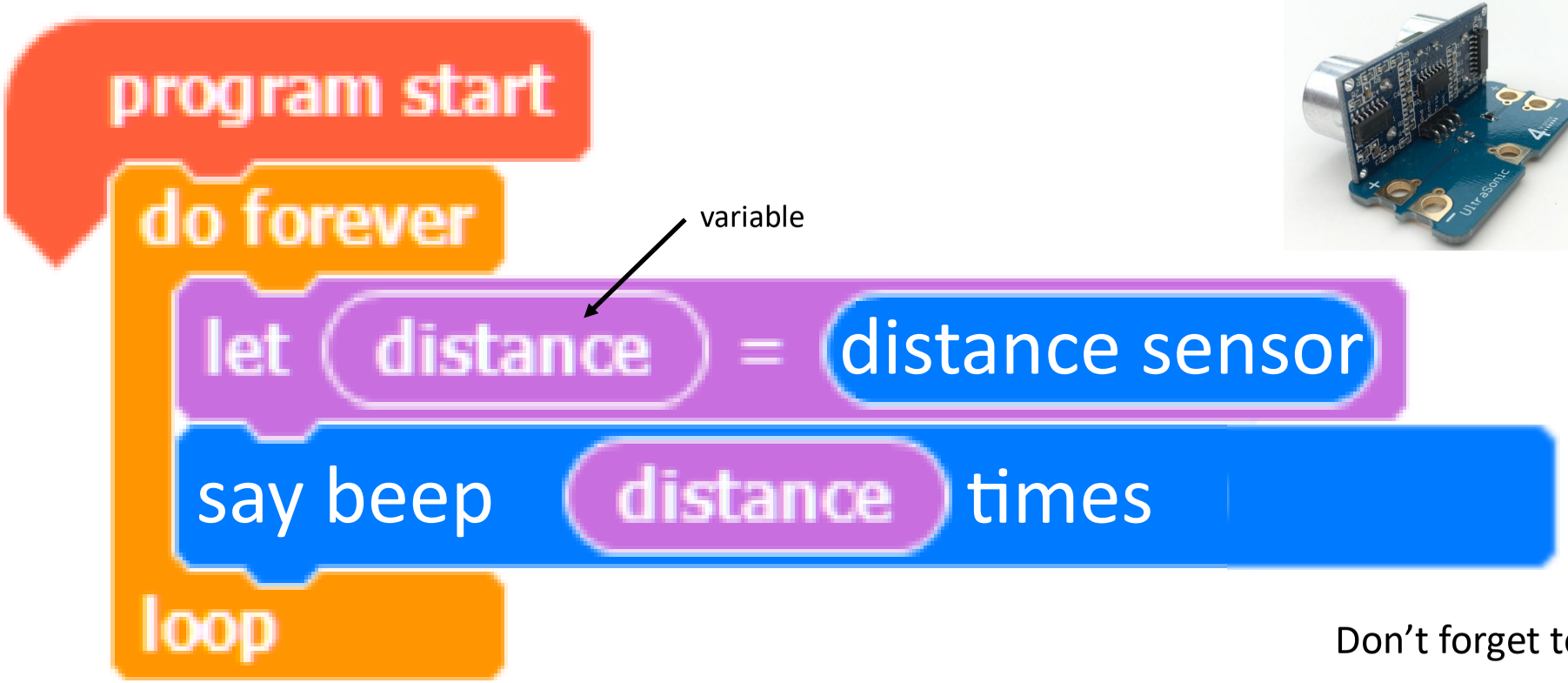
Distance Work in groups of three

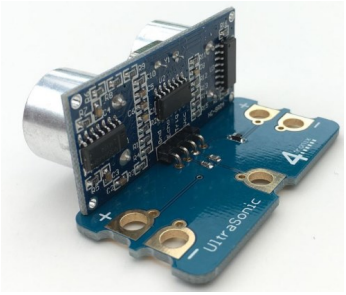
One person is the distance sensor **Input.**

Place the 0-1-2-3-4 cards on floor in a line. Move up and down cards slowly detecting distance.

One person is the **variable** *(called distance)* who says the distance sensor information.

One person is the **Program** and does what is in the program (holds this code).





Don't forget to swap roles.

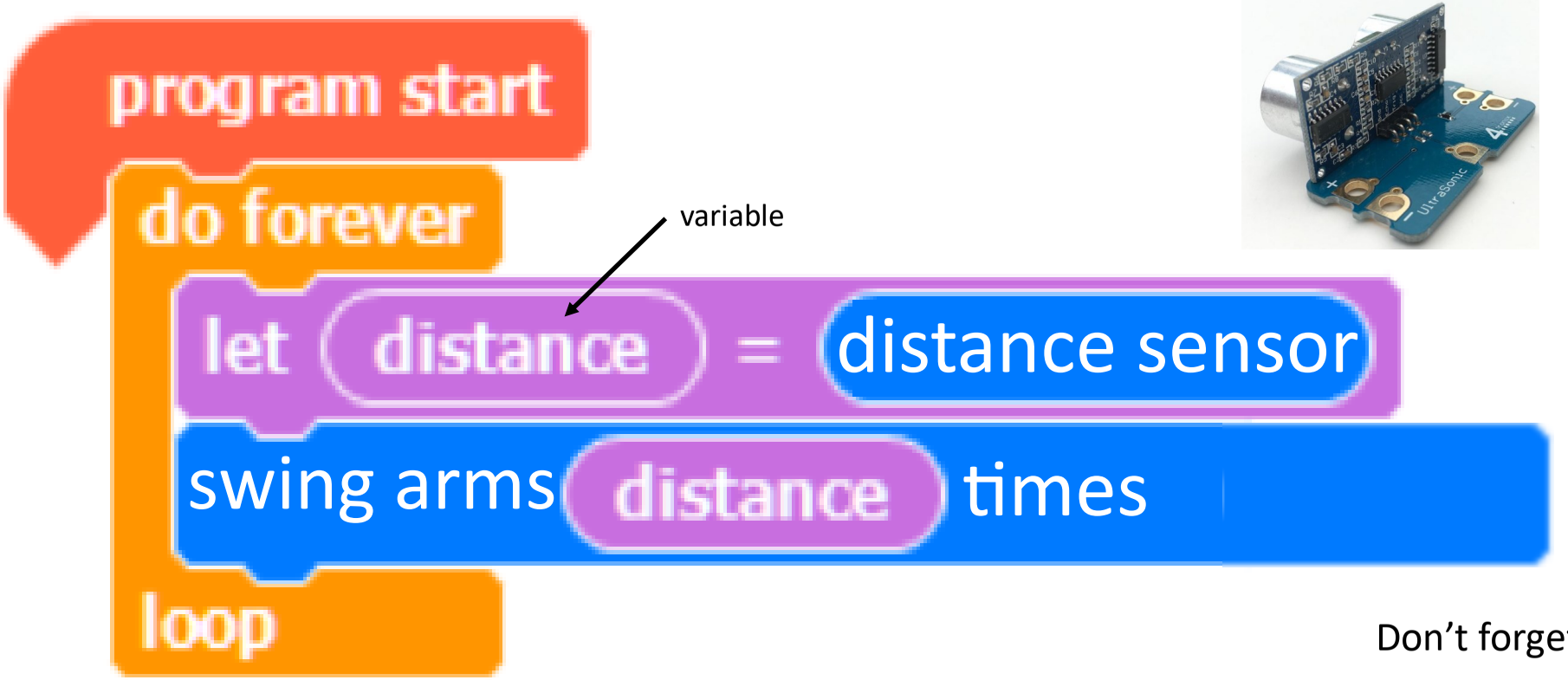
Distance 2 Work in groups of three

One person is the distance sensor **Input.**

Place the 0-1-2-3-4 cards on floor in a line. Move up and down cards slowly detecting distance.

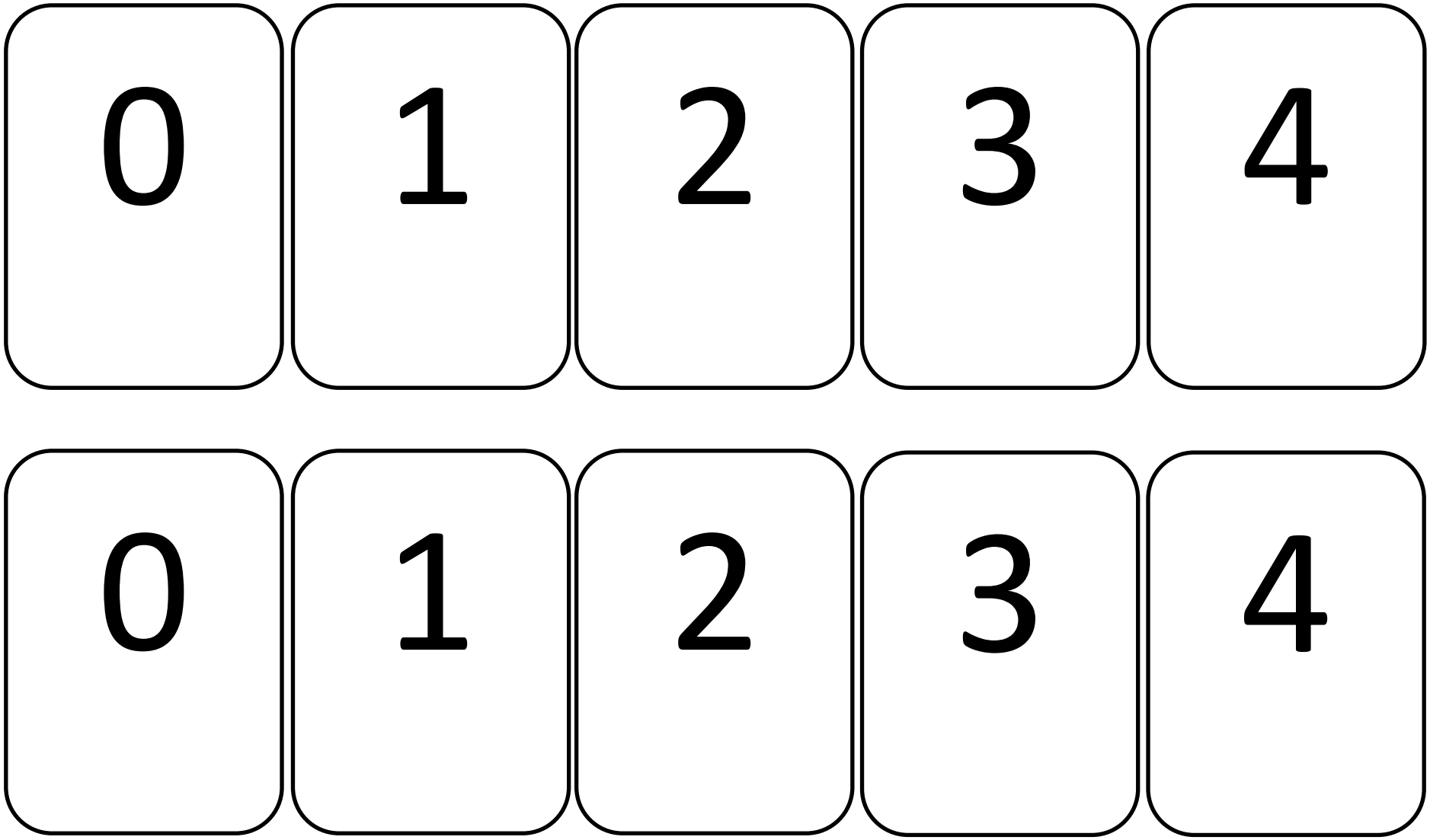
One person is the **variable** *(called distance)* who says the distance sensor information.

One person is the **Program** and does what is in the program (holds this code).



Don't forget to swap roles

Distance Sensor Cards to go with MLT11 & MLT12



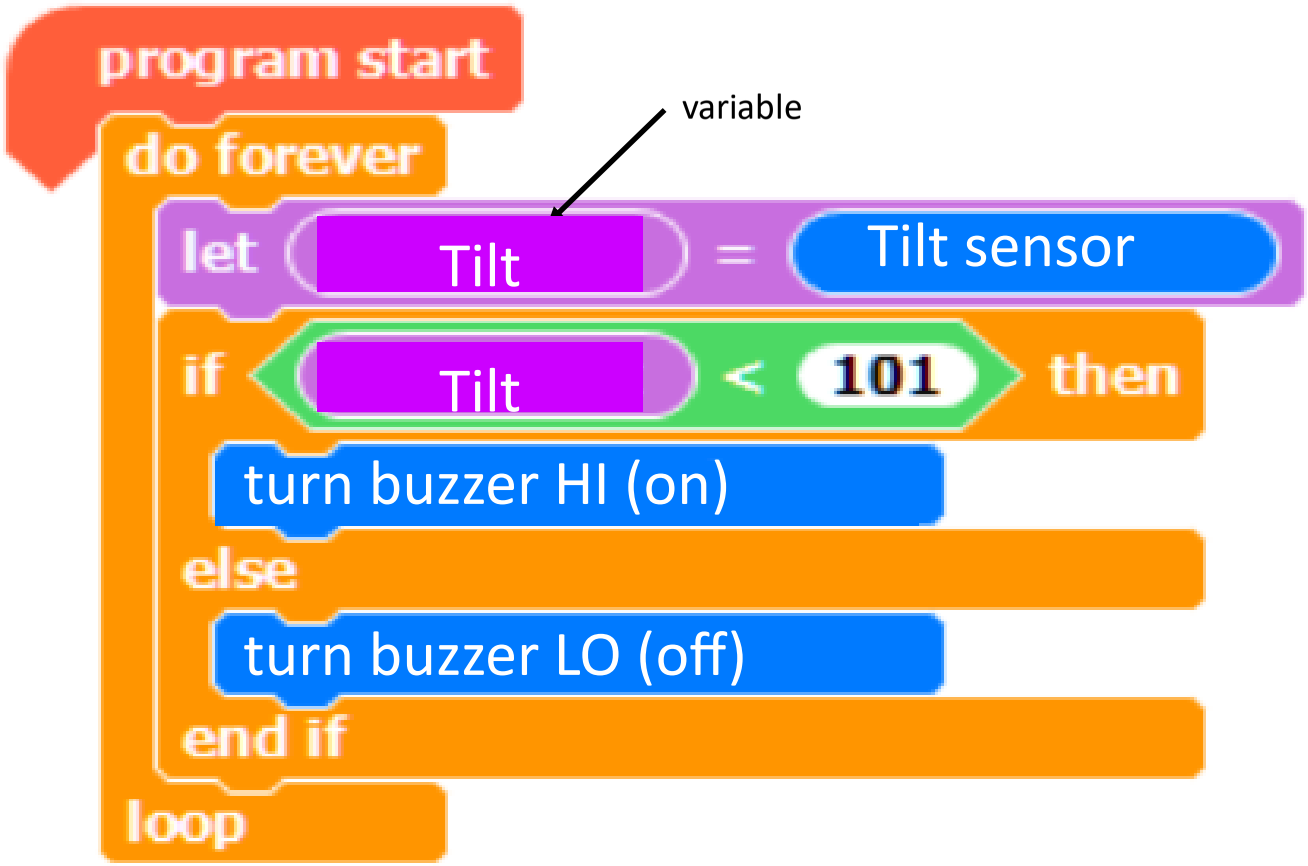
Tilt Sensor Work in groups of three

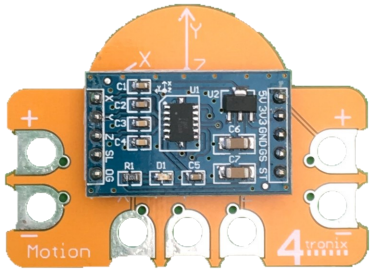
One person is the tilt sensor **Input** (attached to X axis)

Place the 98-99-100-101-102 cards on floor in order, move along and stop at a number.

One person is the **variable** *(called tilt)* who says the tilt sensor information from X axis.

One person is the **Program** and does what is in the program (holds code and does actions).





Don't forget to swap roles.

Tilt Sensor 2

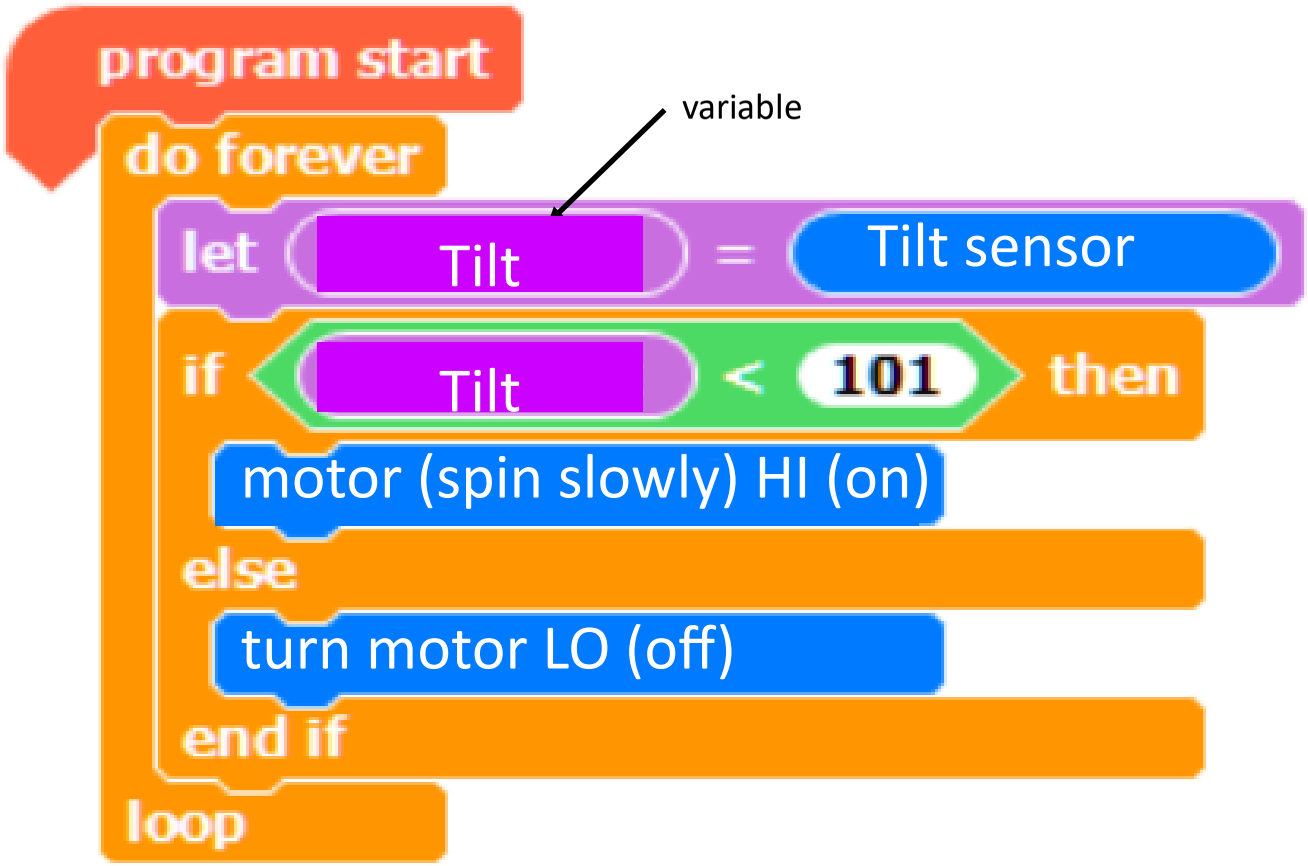
Work in groups of three

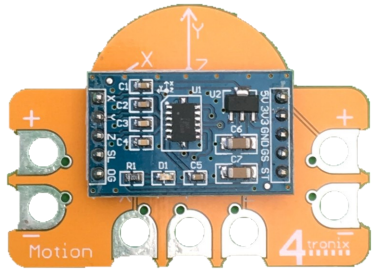
One person is the tilt sensor **Input** (attached to X axis)

Place the 98-99-100-101-102 cards on floor in order, move along and stop at a number.

One person is the **variable** *(called tilt)* who says the tilt sensor information from X axis.

One person is the **Program** and does what is in the program (holds code and does actions).





Don't forget to swap roles

Tilt Sensor Cards to go with MLT13 & MLT14

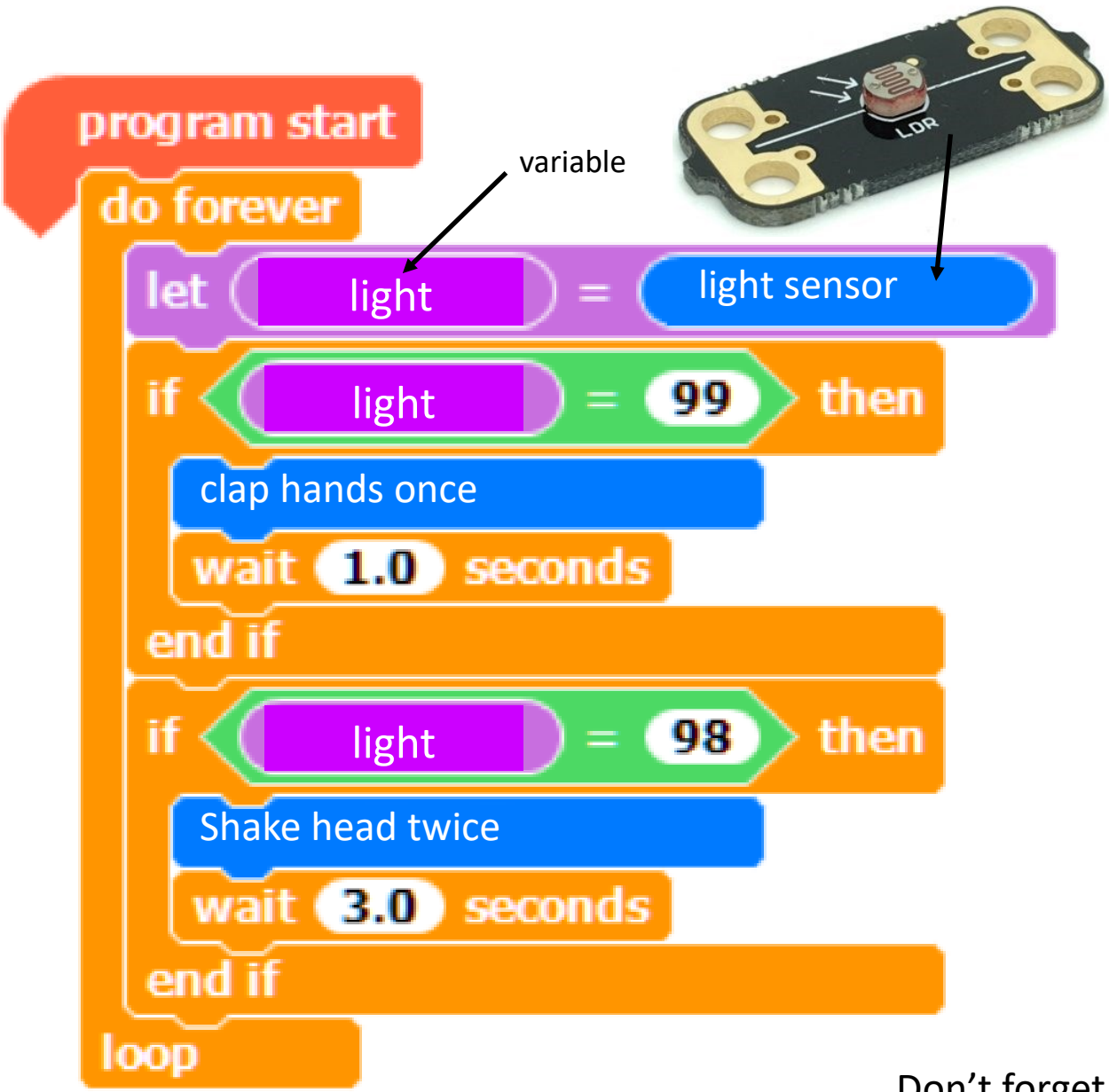
102	102
101	101
100	100
99	99
98	98

Light Dependant Resistor Work in groups of three MLT15

One person is the LDR **Input.** Place the 98-99-100-101-102 cards on floor in order. Move along range stop at a number.

One person is the **variable** *(called light)* who says the light sensor information

One person is the **Program** and does what is in the program (holds this code and does the actions).



Don't forget to swap roles.

LDR Cards to go with MLT15

102

101

100

99

98

Maker Lab Two Assessment Sheet Name _____ Group _____

MLT16

I did this well

I did this ok or I did this a little

I tried this but it didn't work or I didn't do this at all

I thought of some big ideas.	
I planned my idea in detail.	
I drew an accurate wiring diagram.	
I wired up my Crumble and accessories.	
I fixed any part of the wiring that wasn't working.	
I programmed my idea independently.	
I tested my idea to see if it worked.	
I added something new after I had got my initial idea working.	
I debugged a part of my program.	

Sticker	I got this sticker for
Sticker	I got this sticker for
Sticker	I got this sticker for

Maker Lab One Assessment Sheet Name _____ Group _____

MLT17 B = Where you are **before** the project A = Where you are **after** the project		I don't understand what it is yet.	I know what it is but don't do it yet.	I do it a little.	I do it a lot.	I do it a lot and can explain how.
1	I can evaluate my solutions against set criteria.					
2	I can design criteria to evaluate my creations.					
3	I can contribute useful ideas to a partner or group.					
4	I can encourage others to share their ideas.					
5	I lead using all the people talent in my group.					
6	I learn from setbacks and don't let them put me off.					
7	I can persevere even if the solution is not obvious.					
8	I look for a range of solutions to the same problem.					
9	I look for how a project can be extended.					
10	I can break complex problems into parts.					
11	I can concentrate on the most important part of a problem.					
12	I can identify patterns in problems & solutions.					
13	I can adapt existing ideas to solve new problems.					
14	I make predictions about what will happen.					
15	I experiment through predicting, making, testing & debugging.					
16	I can develop, test and debug until a product is refined.					