Kniwwelino®
designed by LIST

PROJECTS

PROJECTS

Best friends Wristband

Rock paper Scissors

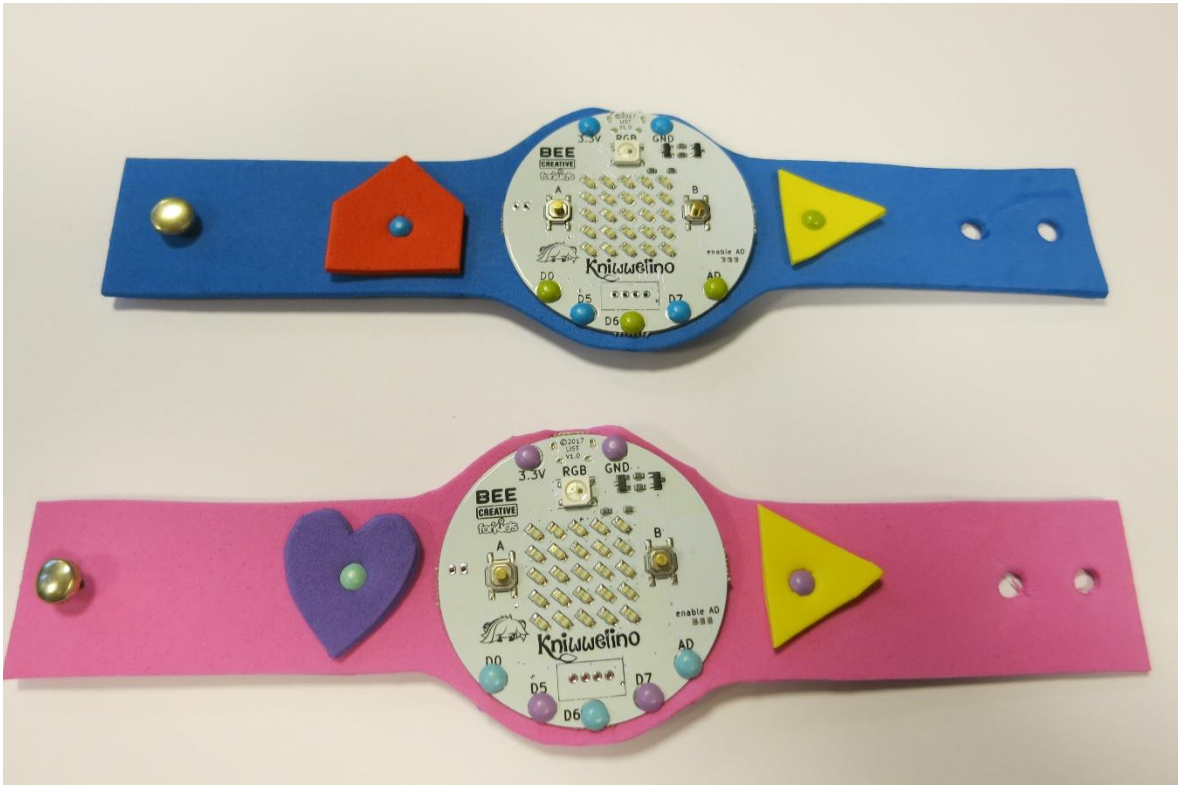
Hot wire

Interactive door sign

Weather station

Multicolour lamp

Best friends wristband



You will be able to exchange 3 icons or small predefined messages with your friends. It is up to you to define the code behind the messages.

Material :

- 2 Kniwwelino
- 2 USB cables + powerbanks
- 1 crafting sponge 20,5x6cm
- [Optional] 2 small pieces of crafting sponge of a different colour
- At least 4 small brass plated fasteners for paper (diameter 4mm) or a needle and thread
- 1 brass plated fasteners for pape (diameter 7mm) or a button
- Scissors
- Hole Punch Plier or cutter

Model:

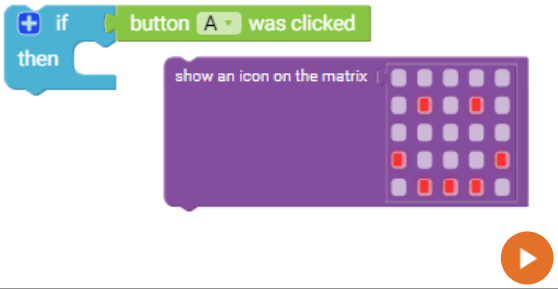
https://doku.kniwwelino.lu/_media/fr/instructions/wristband/modele_bracelet.docx

Best friends wristband
Programming

1

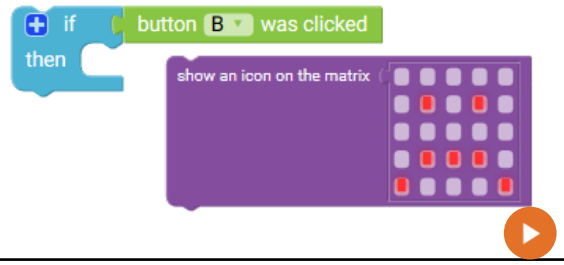
If I press button A then display my image.

Click on the matrix's points to switch them on and off.



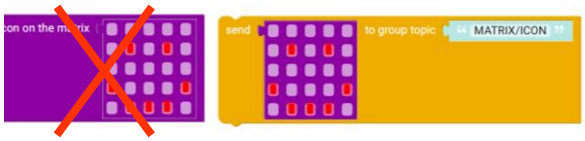
2

If I press button A then display the first image and if I press button B display the second image.



3

Instead of displaying my images on my matrix, send them to my friends' using the Internet.

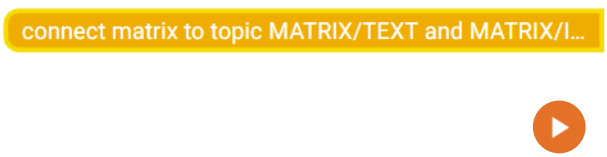


4

Send messages only to Kniwwelinos that are in the same group as me.

5

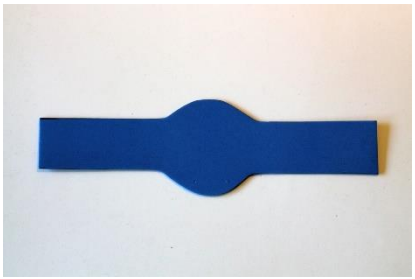
Display on the matrix the images I will receive via the Internet from other friends who are in the same group as me.



Best friends wristband DIY

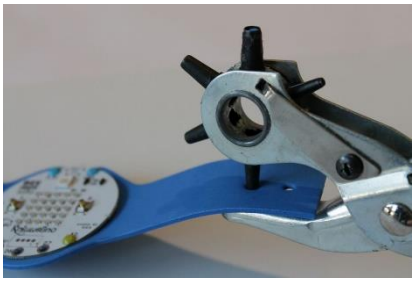
1

- Cut the model.
- Copy the model's shape onto foam paper using a pen.
- Cut the foam paper following the line.



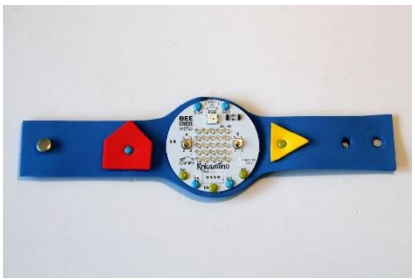
2

- Using Kniwwelino's holes, attach it to the foam paper using small split shank fasteners.
- Punch two holes on one side of the wristband.

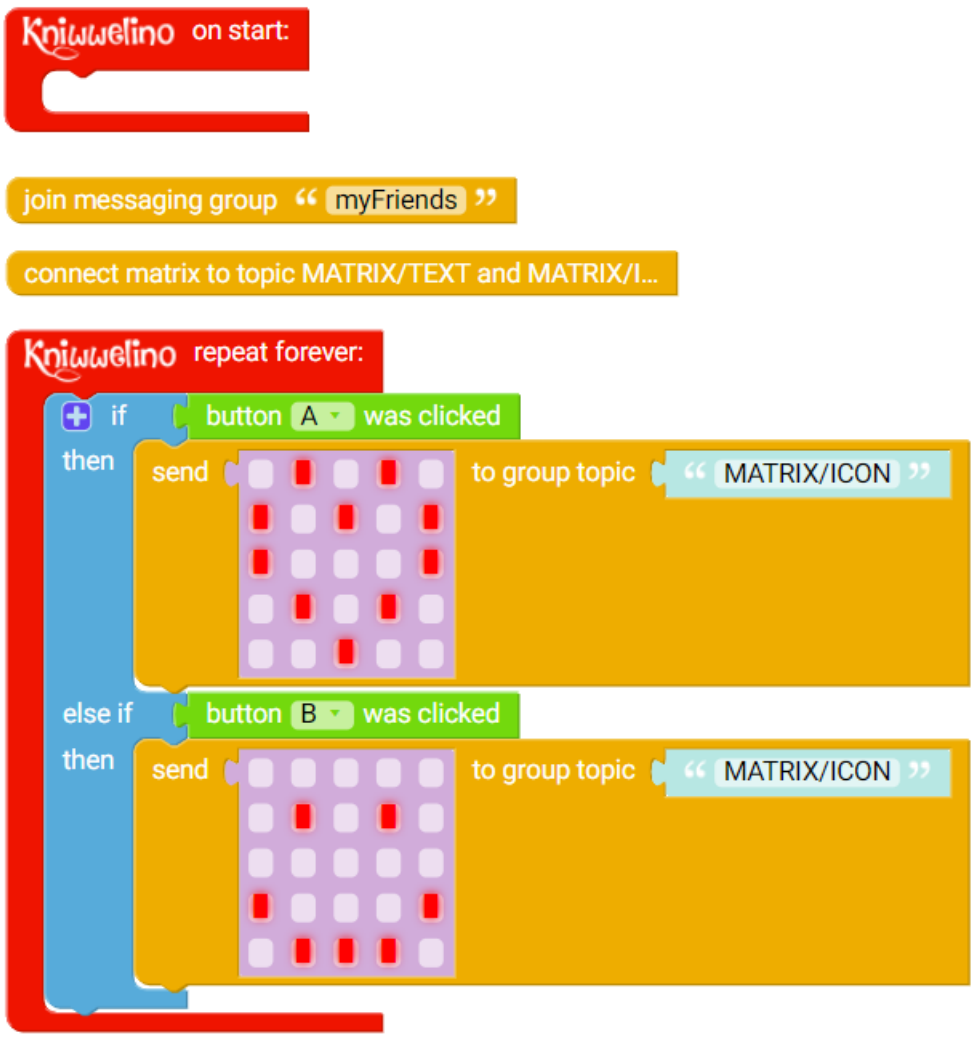


3

- Attach a bigger split shank fastener on the other side of the wristband.
- (Optional): Draw and cut pieces of foam paper to decorate your wristband.

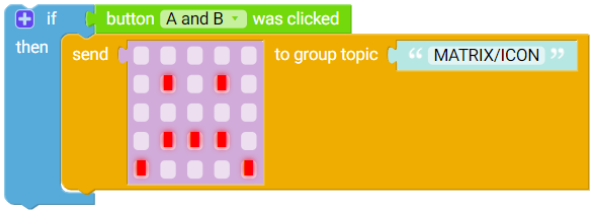


Best friends wristband
Solution

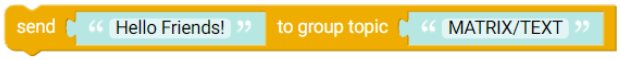


Best friends wristband
It’s your turn!

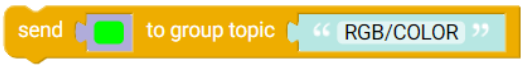
Send a third image by pressing both A and B buttons



Send a text message to your friends



Use the following blocks to change the LED RGB colour on your friends’ Kniwwelinos



Rock paper scissors

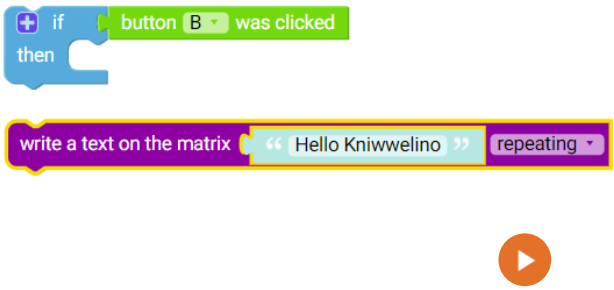
You'll be able to play the rock-paper-scissors game against the computer.

Material:

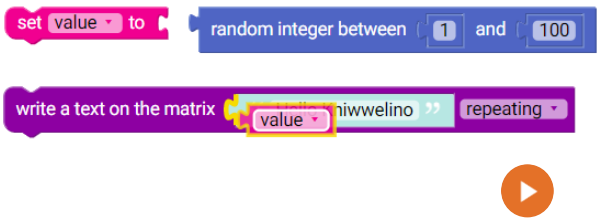
- 1 Kniwwelino
- 1 USB cable + Powerbank
- 1 corrugated or plain sheet of cardboard
- Scissors & craft knives
- Glue

Rock paper scissors
Programming

1 Write “1” on the matrix if I press the A button.

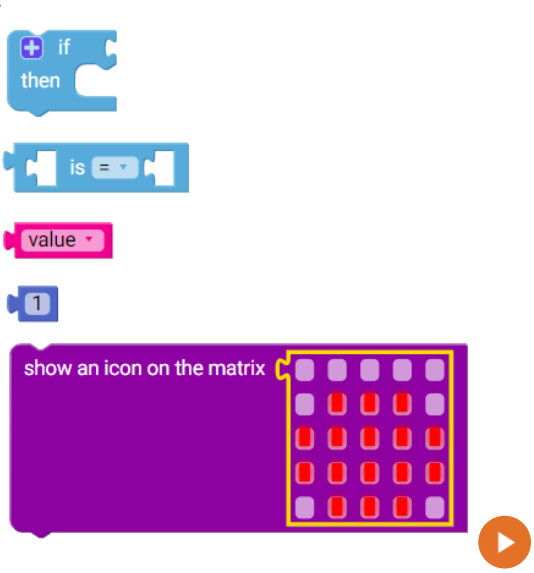


2 When I press on the A button, choose a random number between 1 and 3 and set it as the variable “value”.



3 If the value is equal to 1, then display an image on the matrix (such as a rock), if the value is equal to 2, then display another image (for example paper) and if the value is equal to 3, then display a third image (for example scissors).

3x



Rock paper scissors DIY

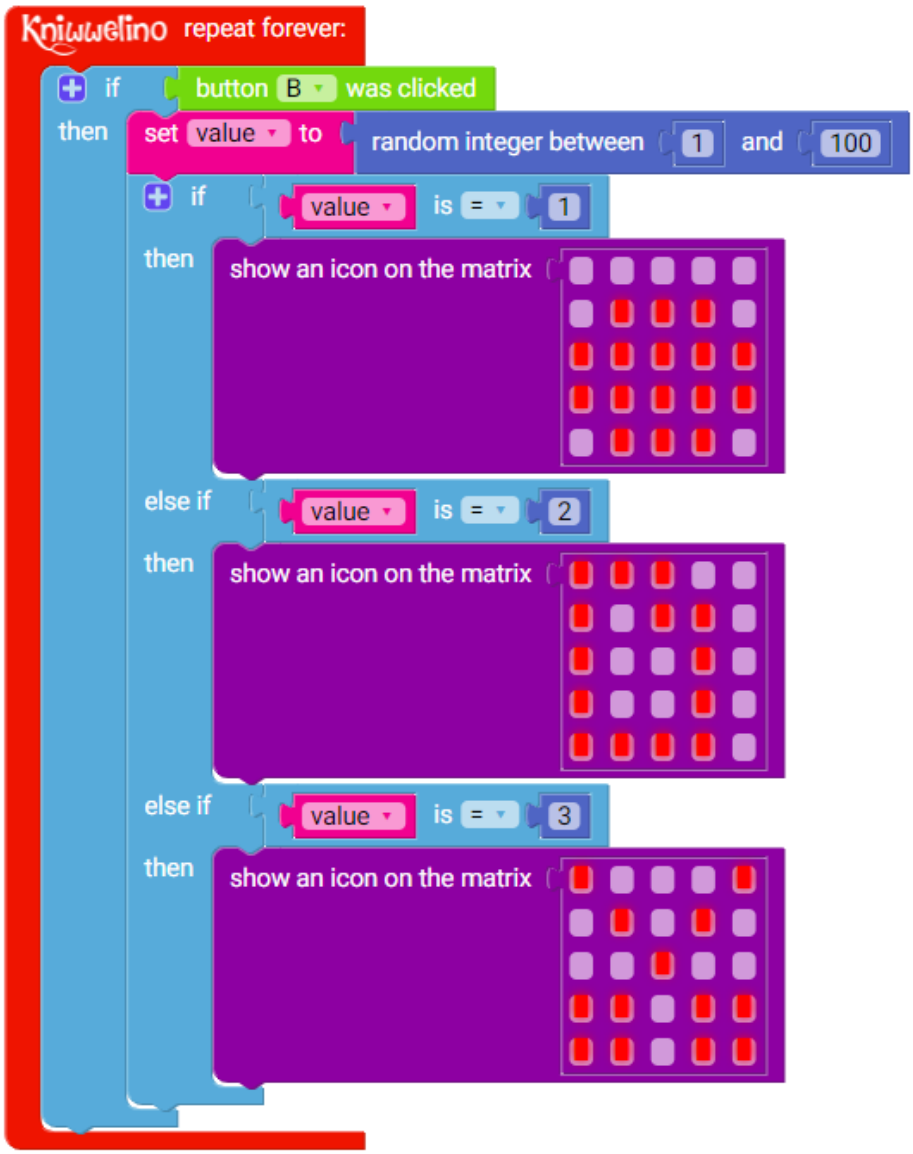
1

- Draw your hand on the card stock: put your hand on the paper and draw the outline with a pencil.
- Cut the outline two times.
- Cut a circle with a diameter of 4 cm in the middle of one of the hands.

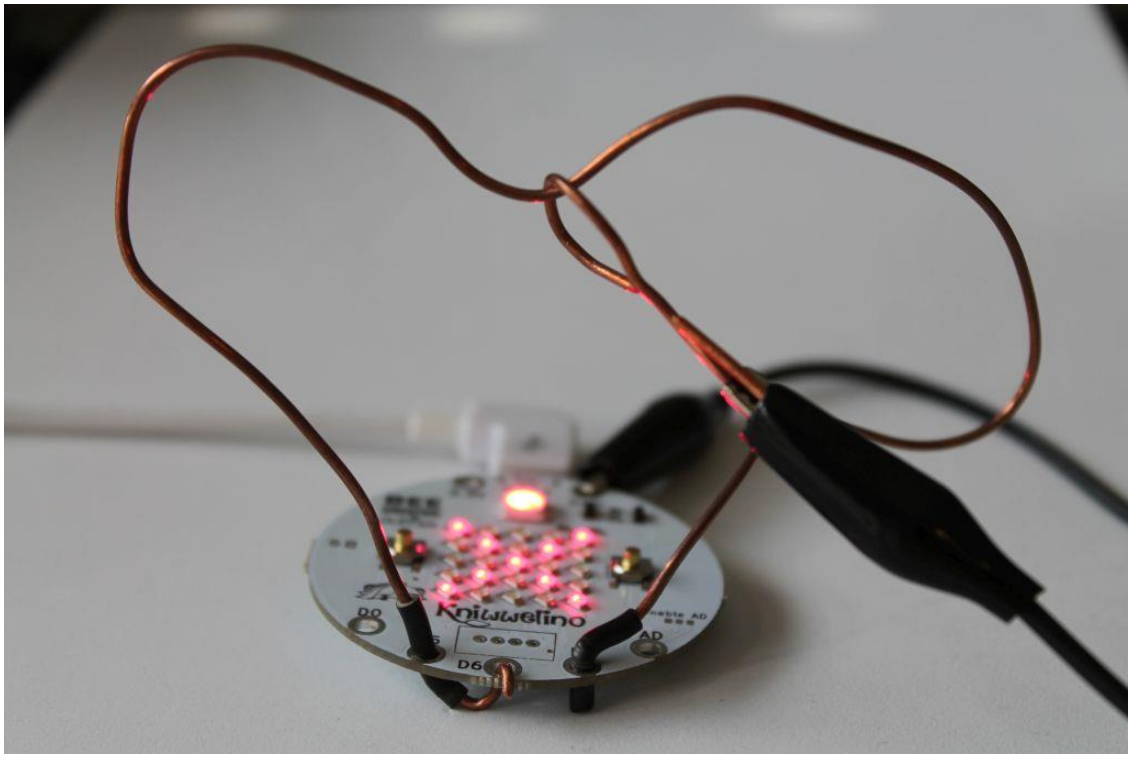
2

- Put your Kniwwelino in between the two hands. You must be able to see the matrix and the buttons through the hole.
- Glue the hands together. Make sure that you leave a non-glued space, around 2 cm, to let through the USB cable.

Rock paper scissors
DIY



Hot wire



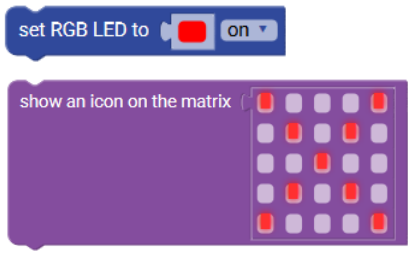
Guide the metal wand along the wire circuit without touching it

Material :

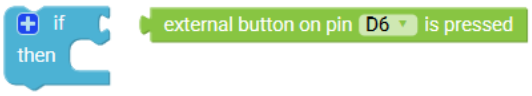
- 1 Kniwwelino
- 1 USB cable
- 1 powerbank
- Insulated copper wire
- 1 cutting pliers
- 1 pliers
- 1 alligator clip

Hot wire
Programming

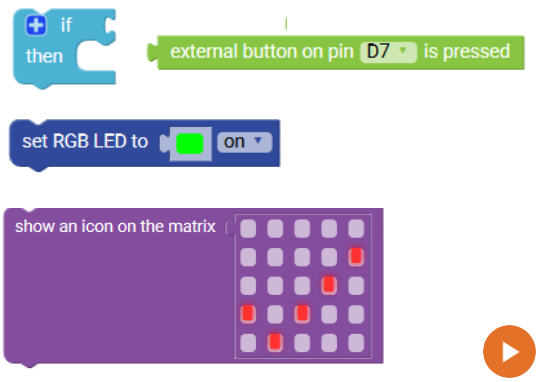
1 Show an X on the matrix and switch on the LED in red.



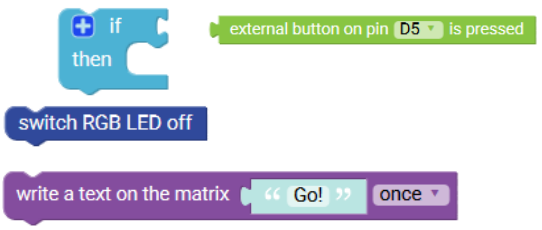
2 Only if I touch the wire (and by this connecting D6 with GND), then show an X on the matrix and switch on the LED in red.



3 In case I reach the end (and by this connecting D7 with GND), show a tick on the matrix and switch on the LED in green.



4 In case I am at the start (and by this connecting D5 with GND), then switch off the LED and write “Go!” on the matrix.

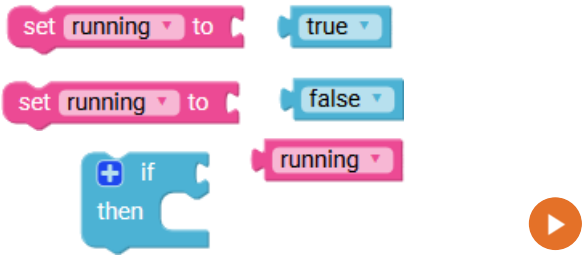


Hot wire
Programming

5

(Optional):

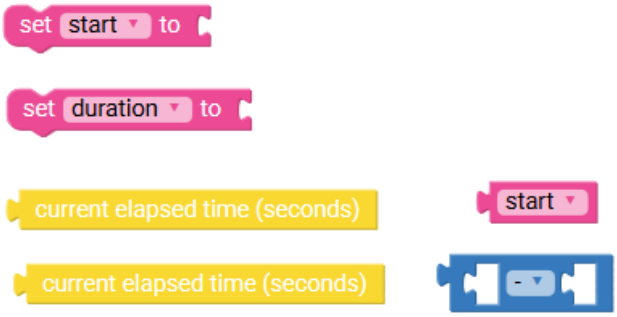
Show the green light only in case I do not touch the wire during the whole path.



6

(Optional):

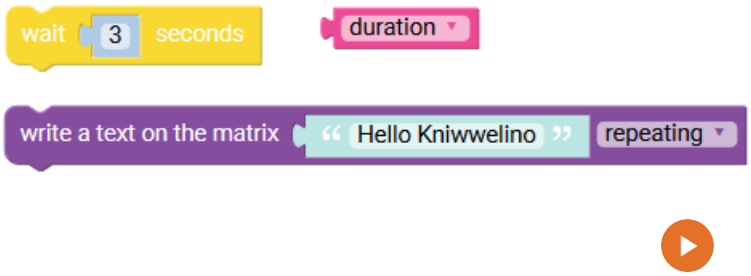
Measure the time I need to do the path.



7

(Optional):

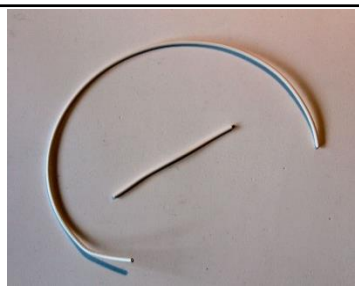
Show the time at the end of the game.



Hot wire
DIY

1

- I cut a small piece (about 8 cm), and a larger piece (about 20 cm) of the insulated copper wire.



2

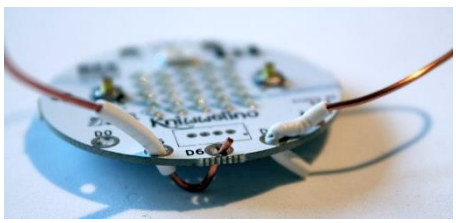
- I remove the insulation from the small piece and bend the wire to create a little wand with a hook.

3

- I remove the insulation from the longer piece.
- I cut two small (2 cm) pieces of the insulation and shift it on both ends of the longer piece of the wire.

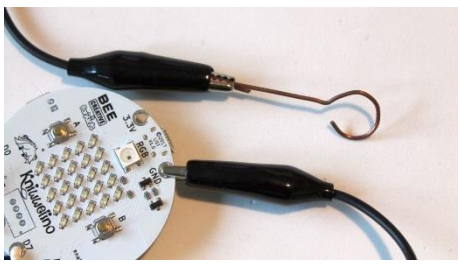
4

- I bend the copper wire and lead it through the pins D5, D6 and D7 as shown on the image.
- Be careful to put the sheathed parts in D5 and D7 and the unsheathed part in D6.



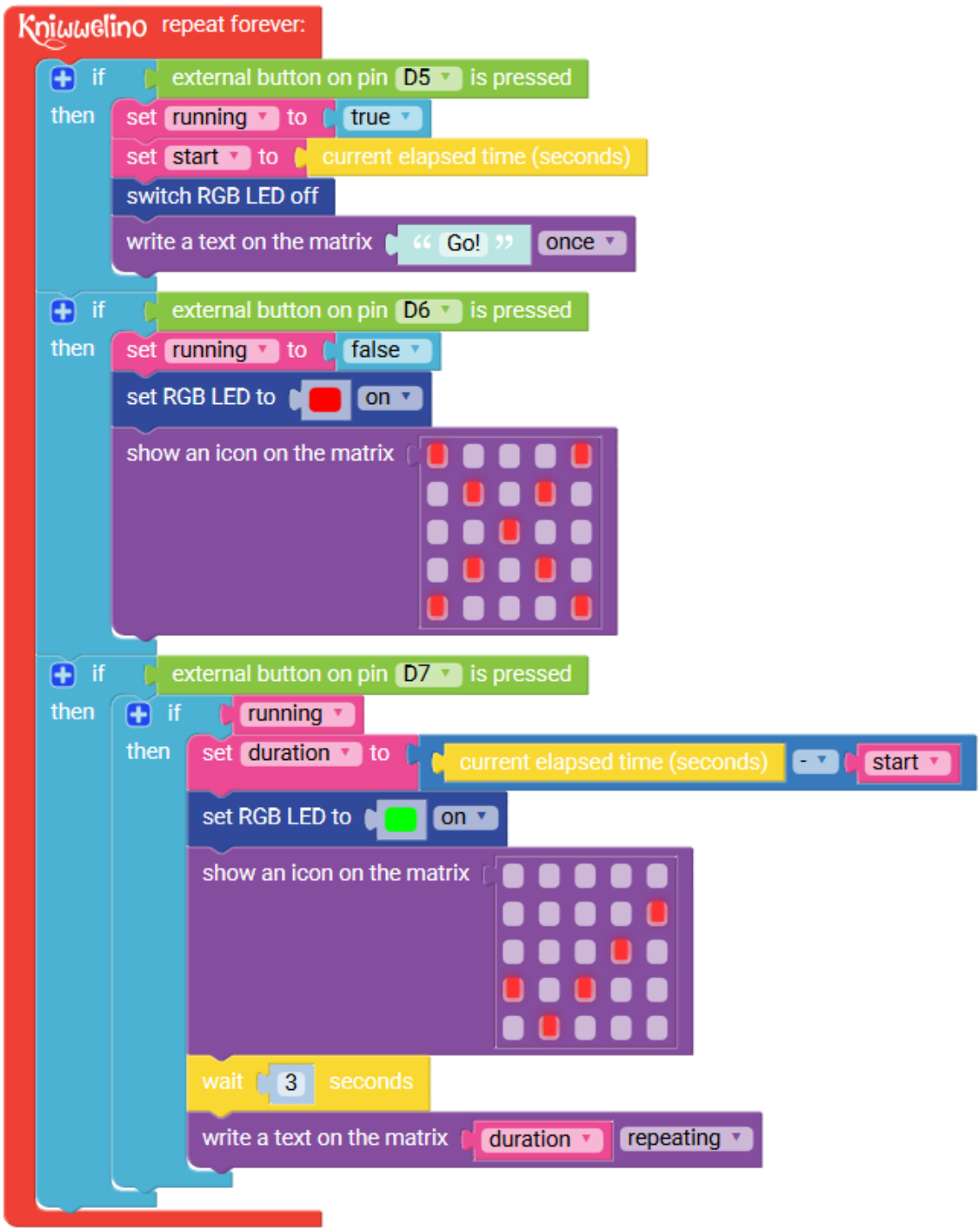
5

- I add the wand to one end of the alligator clip.
- The other end is connected to pin GND.

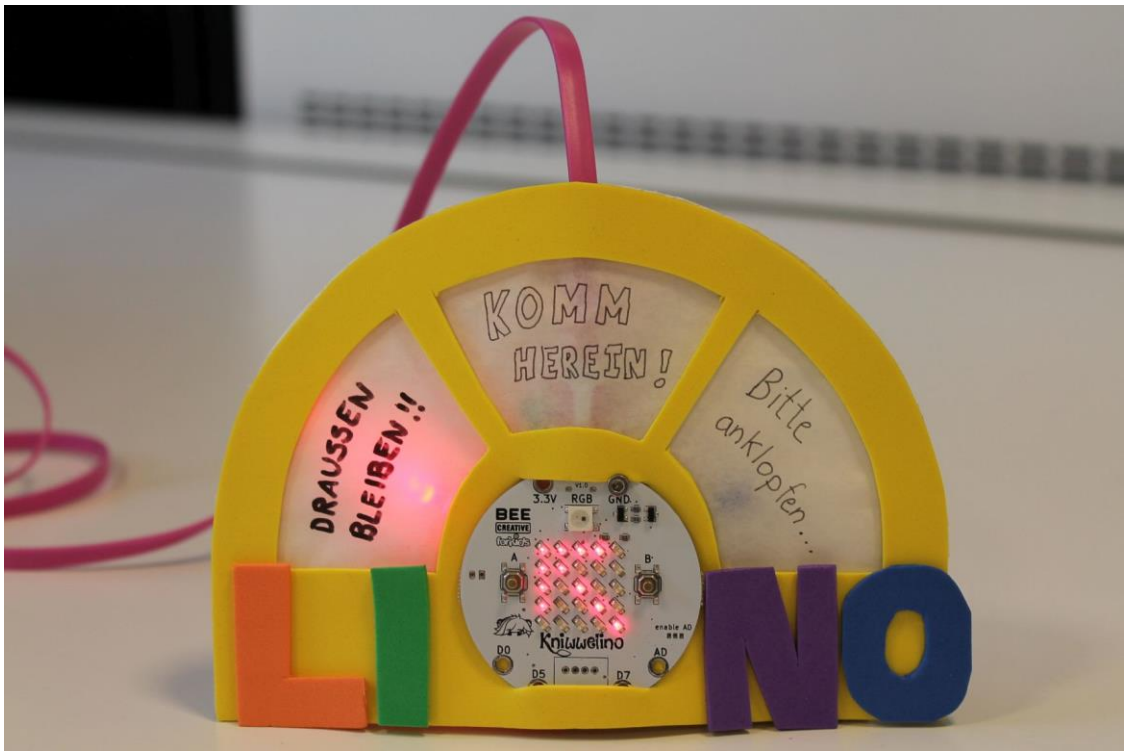


Hot wire

DIY


Kniwwelino repeat forever:
if external button on pin D5 is pressed
then set running to true
set start to current elapsed time (seconds)
switch RGB LED off
write a text on the matrix " Go! " once
if external button on pin D6 is pressed
then set running to false
set RGB LED to on
show an icon on the matrix
if external button on pin D7 is pressed
then if running
then set duration to current elapsed time (seconds) - start
set RGB LED to on
show an icon on the matrix
wait 3 seconds
write a text on the matrix duration repeating

Interactive doorsign



You can hang this sign on your door to let your parents and siblings know if they can enter your room or not.

Material:

- 1 Kniwwelino
- 1 Micro USB cable
- 1 powerbank or USB plug
- 3 LEDs in red, green and blue
- Silicone wire in black and red
- Small screws M2 or M2.5
- Adhesive tape
- 1 piece of yellow cellular rubber 16x12cm
- 1 piece of white cardboard 16x12cm
- Small pieces of cellular rubber of different colours (to cut the letters of your name)
- 1 piece of tracing paper
- Scissors
- Cutter
- Duct tape
- Pens

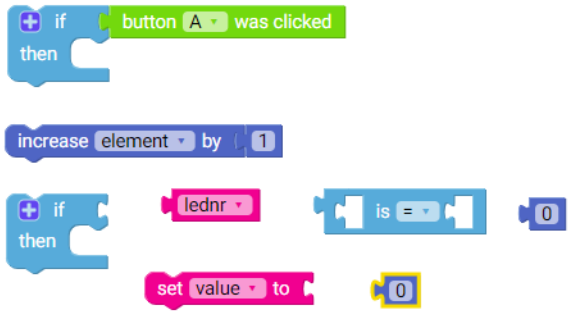
Model:

https://doku.kniwwelino.lu/_media/en/instructions/model_doorsign.pdf

Interactive doorsign
Programming

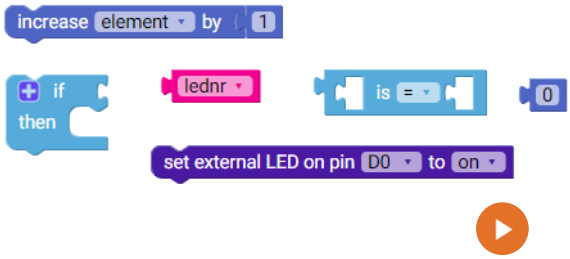
1 I set a lednr variable to 0.

2 Then, when I press the A button, add 1 to the lednr variable. If lednr equals to 4, reset it to 1.



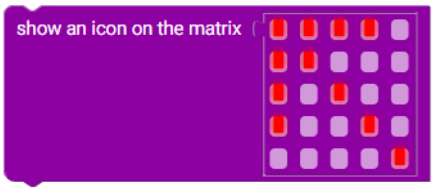
3 I then use the lednr variable to tell which LED to switch on and to switch off the others.

4x

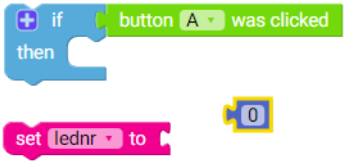


4 I display an arrow on the matrix that shows which LED is lit.

3x



5 Finally, I set the lednr variable to 0 so that when I press the B button, everything switches off.



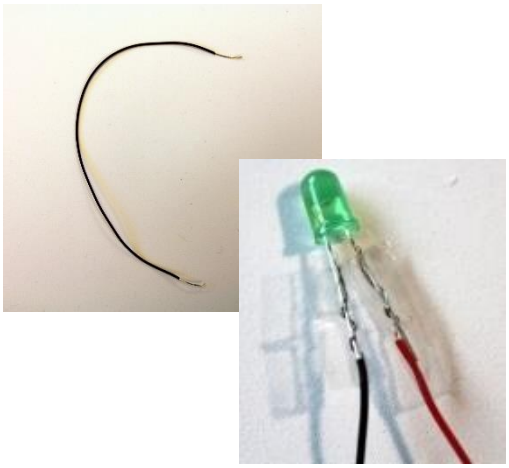
Interactive doorsign DIY

1

- Use the downloaded stensils to cut the yellow foam paper and the tracing paper. Then glue them together.
- Write your messages onto the tracing paper.
- Using a cutter, make two slits for inserting the Kniwwelino.

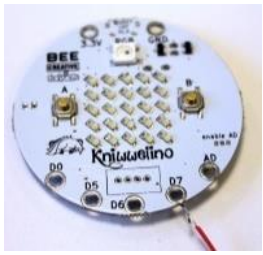
2

- Cut a piece of black wire and a piece of red wire.
- Remove the silicon protective layer on both ends of the wire on a length of around 1 cm.
- Wrap one end of the black wire around the short leg of the LED.
- Wrap one end of the red wire around the long leg of the LED.
- Secure both connections using duct tape.



3

- Wrap the other end of the black wire around a washer.
- Wrap the other end of the red wire around the D7 pin, on the bottom of the Kniwwelino board.



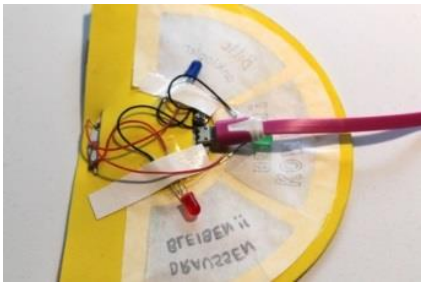
4

- Do the same thing for the two other LEDs with pins D6 and D7.
- Secure all the LED washers with a screw and nut in the GND pin.

Interactive doorsign DIY

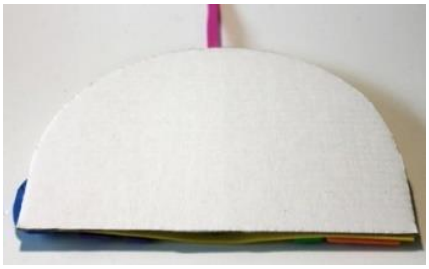
5

- Arrange the LEDs.
- Insert the Kniwwelino board between the two slits.
- Connect the micro USB cable.



6

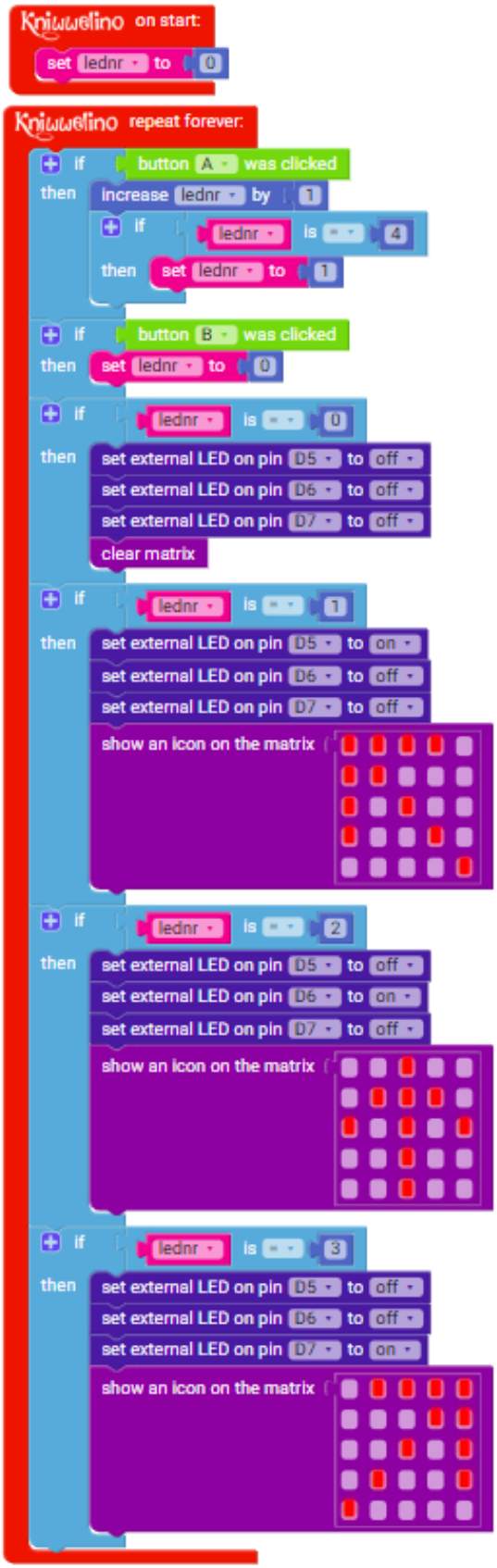
- Cut white cardboard following the door sign outline and glue it on the back of the sign.



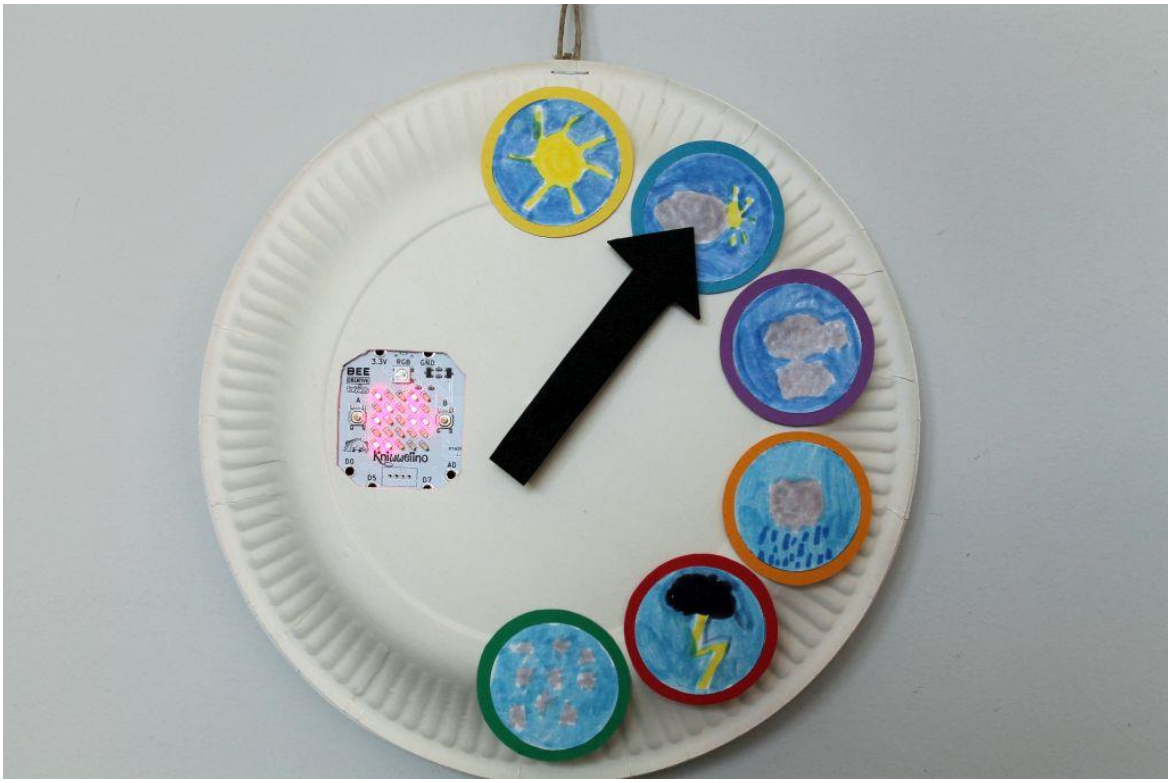
7

- Cut your name's letters in foam paper and glue them on the front of the sign.

Interactive doorsign Solution



Weather station



This weather station shows the weather conditions and the temperature in real time.

Material:

- 1 Kniwwelino
- 1 standard servo
- 1 USB cable
- 1 USB charger
- 2 paper plates (+- 23cm)
- coloured paper
- double-sided tape
- glue
- scissors
- cutter

Model:

https://doku.kniwwelino.lu/_media/en/instructions/model_weatherstation.pdf

Weather station DIY

1

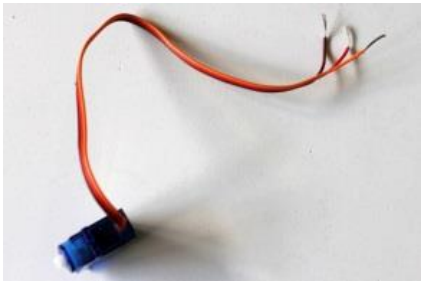
- Use the model in part A to draw and cut the hole for the Kniwwelino. Make a small hole in the middle to put the servomotor.
- Glue small pieces of double-sided duct tape on the inside of the plate, near the Kniwwelino.

2

- Draw and cut forecast images on the circles in part C. Copy the bigger circle in part B on different colored paper. Glue the images on the colored paper.

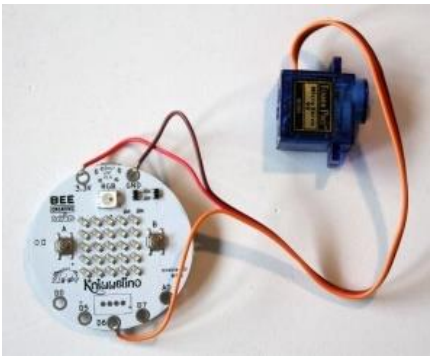
3

- Cut the servomotor's connector and remove the protective layer in a length of around 1 cm (you can use scissors).



4

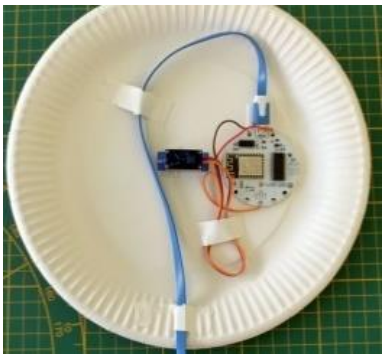
- Wrap the end of the red wire on the 3.3V pin, the end of the black wire on the GND pin and the end of the orange wire of the D6 pin.



Weather station DIY

5

- Secure the Kniwwelino, the servomotor, the micro USB cable and all wires with duct tape.

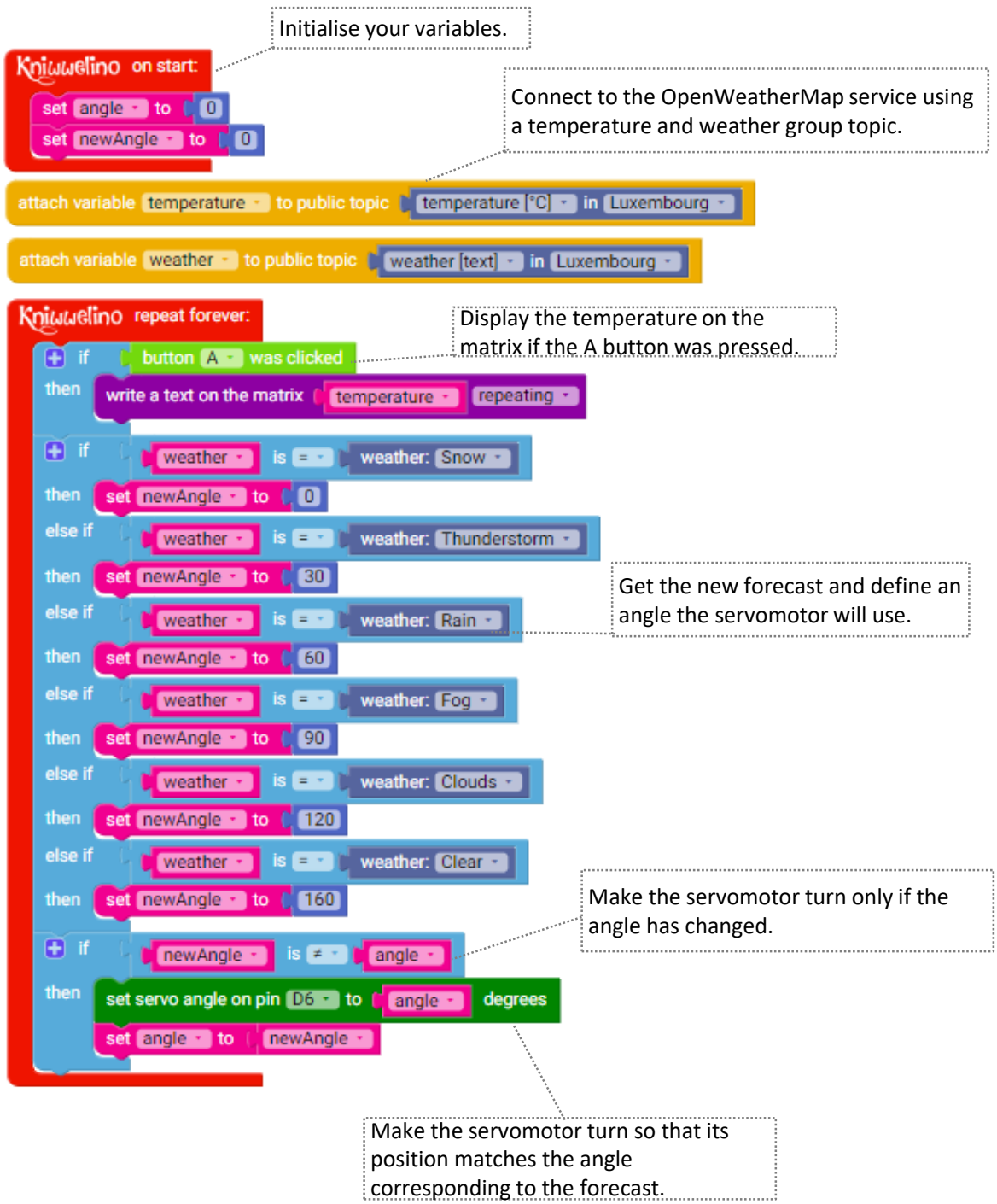


6

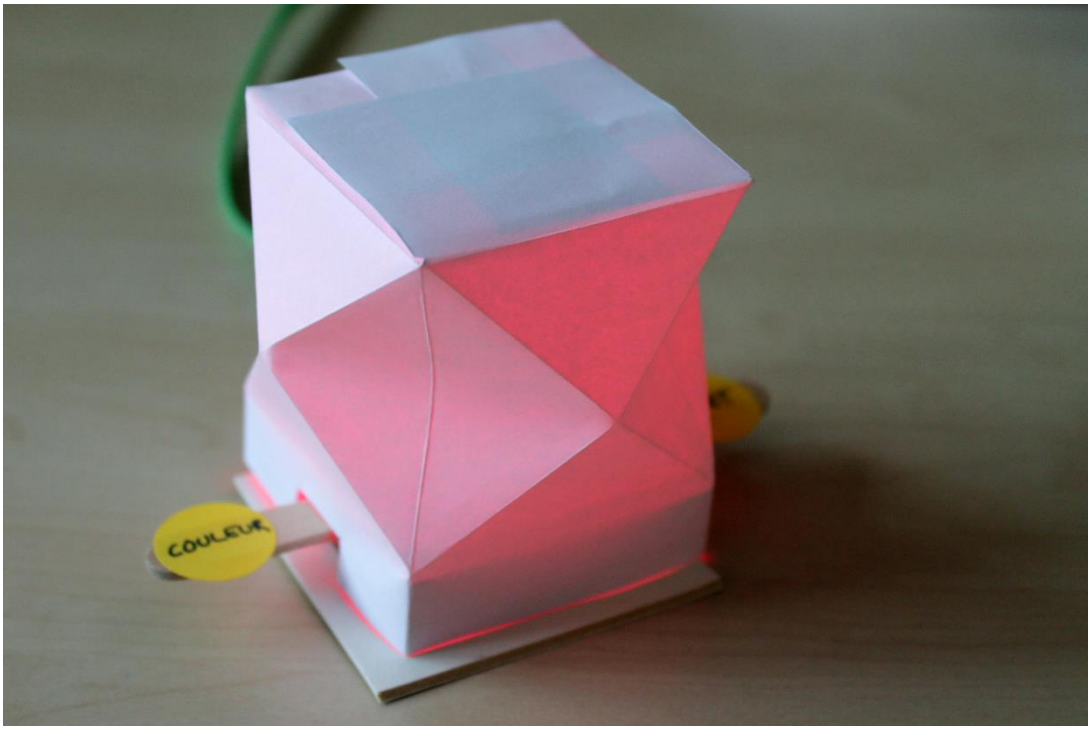
- Use the second plate to cover the mechanism of the weather station. Turn the station around and glue all the images on the right half of the plate. Draw and cut an arrow using the model in part D and glue it on the servomotor.
- Plug the USB cable to a USB charger.
- You can now hang your weather station on the wall.

Weather station

Programming and solution



Multicolour lamp



This lamp, in Origami, is illuminated by the coloured LED. With the two buttons on the Kniwwelino, you can change the colour of the lamp and its blinking.

Material:

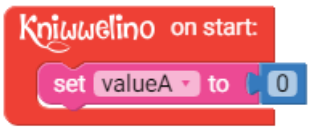
- 1 Kniwwelino
- 1 USB cable
- 1 powerbank
- 1 A4 sheet of white paper
- scissors and glue
- 1 rubber band
- 1 ice cream stick
- Double-sided tape
- Cardboard

Model:

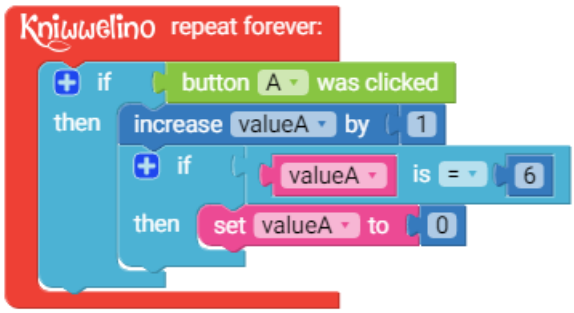
- https://doku.kniwwelino.lu/_media/en/instructions/lamp/model_lamp.pdf

Multicolour lamp
Programming

1 Initialise a variable valueA to 0 to count the number of times I have clicked on button A.



2 Increase this variable each time I click button A. However, count only to 5, after that restart at 0:



3 For each of the values of valueA, define a different colour, and, afterwards, set this colour to the RGB LED.

As I need this code later to handle the effect, I define a new function called Set color and effect.

4 Call the function Set color and effect as part of the blocks executed when button A is clicked.

Multicolour lamp
Programming

5

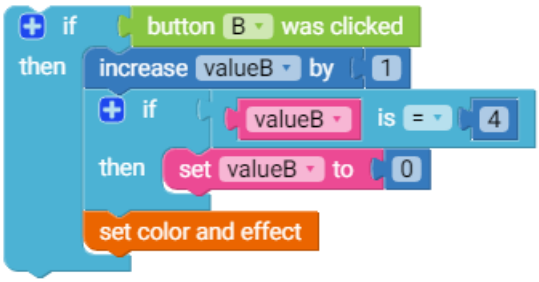
Define a second variable valueB to count how often I clicked on button B.

6

Increase valueB each time I click on button B.

I want to have 4 different effects, so set valueB to 0 as soon as it reaches 4.

Then call again the function Set color and effect.



7

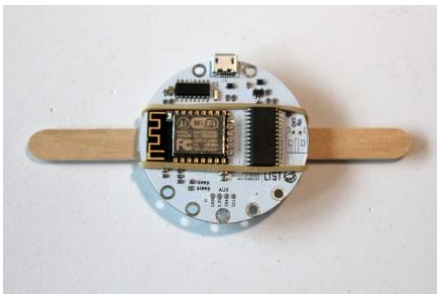
Inside the function Set color and effect I need to check the value of valueB and switch on the RGB LED with another effect.

This code replaces the individual block Set RGB LED to color … on.

Multicolour lamp
DIY

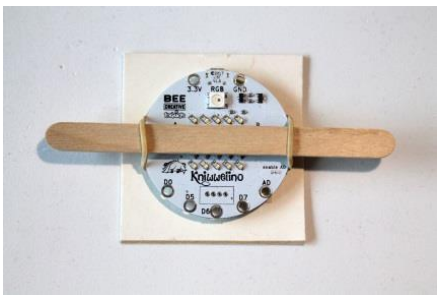
1

- Use an elastic band to secure the Kniwwelino on the popsicle stick.



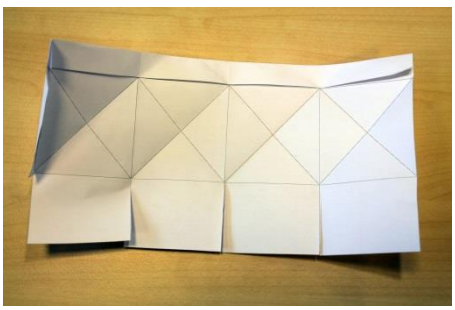
2

- Use double-sided duct tape to secure the Kniwwelino on a piece of cardboard.



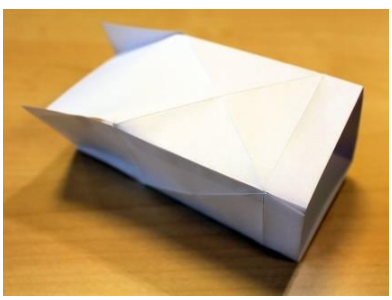
3

- Fold the paper on the two small horizontal lines and re-open the second fold.
- Fold the vertical lines.
- Fold the diagonal lines.
- Cut the vertical lines on top to create a lid.



4

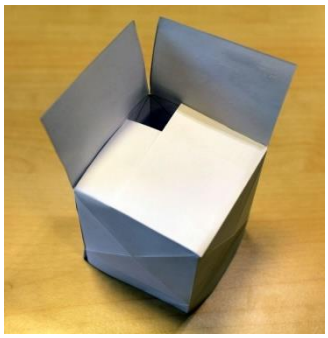
- Glue together the two vertical edges.



Multicolour lamp
DIY

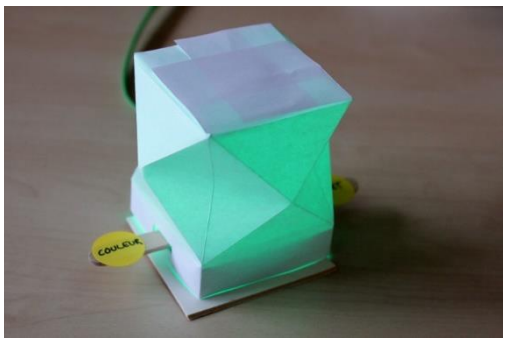
5

- Close the lid and glue the flaps.



6

- Cut three holes for the popsicle stick and the USB cable.



Multicolour lamp
Solution