

Hi!

A STARTER GUIDE

Mind+ and Calliope mini

Special features and fast transmission of the code

Similar to known Scratch environment

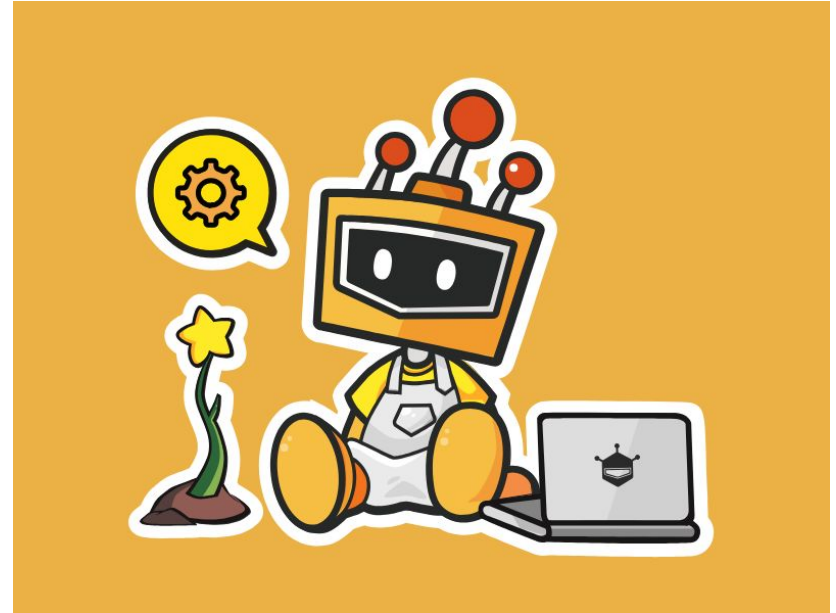
Offline mode (burn codes into board and run without a PC)

Online mode (run codes with board always connected to PC)

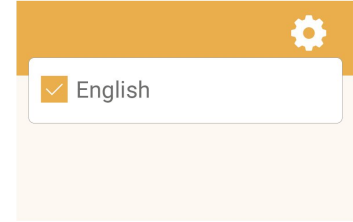
Interaction application on the screen and the Calliope mini

Such as (1) control games on the screen with the Calliope mini, (2) use Calliope mini as a sensor for the application on the screen, (3) Calliope mini as a machine on the screen control takes place.

Intuitive programming of the Calliope mini



Download and Install



1 Download

Select your operating system and download the Mind+ Editor [BETA].

MACOS

WINDOWS

2 Install

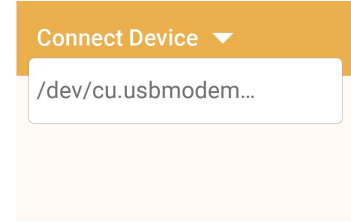
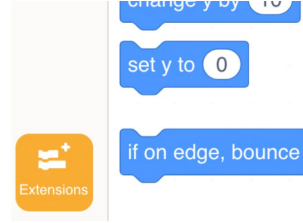
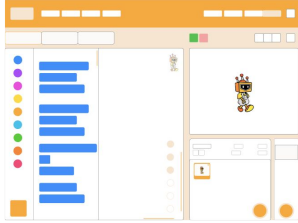
Now follow the instructions and install the Mind+ software.

3 Language

Open the Mind+ Editor and select a language.



Download and Install



1 You need:

Calliope mini
USB cable
Computer
Mind+ software

2 Calliope mini Extensions

- Click on "Extensions" in the lower left corner of the preview
- Click on "Board"
- Then select "Calliope mini"

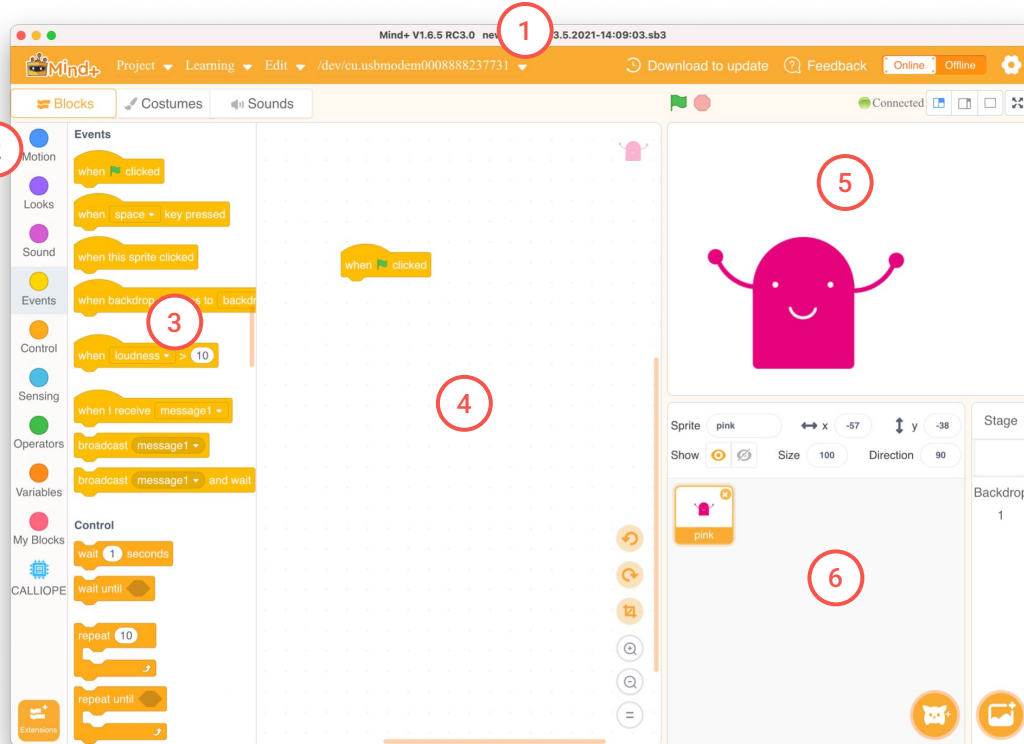
3 Connect

Now the Calliope mini can be connected to Mind+.
To do this, select "Connect Device".



The user interface

- 1 Menu bar
- 2 Categories
- 3 Programming blocks
- 4 Programming area
- 5 Stage
- 6 Characters library



Categories

A program code consists of commands that are executed in sequence. You put these commands together in the form of program blocks like a puzzle.

The program blocks are grouped into different categories/groups in the block library. They have an individual color depending on the category.

Blocks that control the Calliope mini can be found at the bottom after you selected the Calliope mini board in Extensions ▶ Board.



Position, motion...

Display, scaling, color...

Sounds and music

Events: Start, key...

Control: waits, branches, loops...

System functions: Time, cursor position...

Logic, comparison, mathematical functions, chance...

Variables

Own functions

Blocks for the Calliope mini

🕒 30 MIN

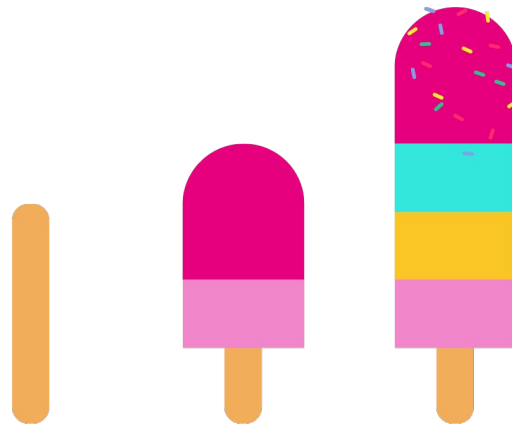
LEVEL
ADVANCED

Popsicle thermometer



In this project, the temperature sensor on the Calliope mini is used. The state of the popsicle changes depending on the temperature. For each state, another costume is used.

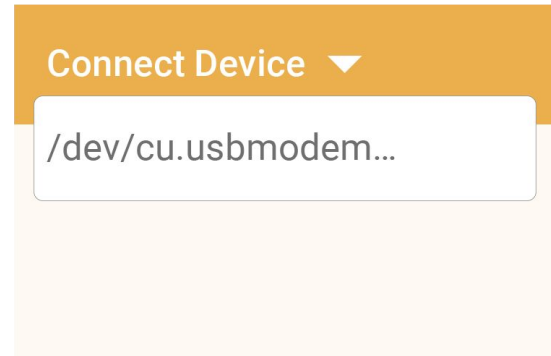
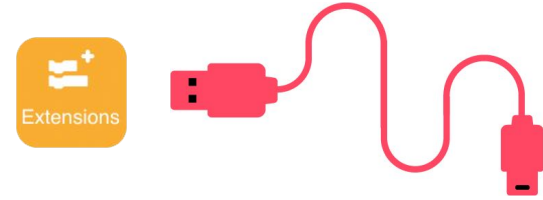
The warmer it gets, the bigger and tastier your ice cream looks 🍦.



Popsicle thermometer

Program your own popsicle thermometer that tells you when to expect ice cream weather..

- 1 Select **Calliope mini** in **Extensions** ▶ **Boards**
- 2 Connect the Calliope mini to your computer via a **USB cable**
- 3 **Select** the Calliope mini in the “Connect Devices” menu



Preparation

Add the prepared costumes:

- 1 Choose a character or upload your own character
- 2 Open costume view
- 3 Click on "Upload"
- 4 Upload the prepared costumes from the pictures folder to the costume library.

You can download the costumes here.

DOWNLOAD



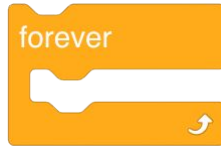
*ice.png, ice_a.png, ice_b.png, ice_b.png, ice_d.png

Code blocks

You can find the blocks you need in the following categories:

Events

Control



To start the script, the flag has to be clicked.

With “forever” you create a loop, that will never end unless the stop sign is pressed.

This is a function to check a condition. That means, “if” the condition is true, the blocks inside it will be activated.



Code blocks

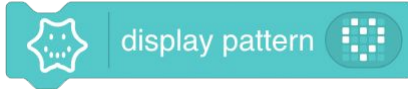
You can find the blocks you need in the following categories:

Calliope

Looks



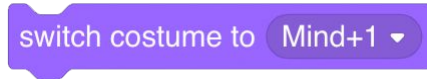
Turns on the Calliope mini RGB LED in a specific color.



A symbol appears on the Calliope mini LED matrix.



Reads the Calliope mini temperature sensor.



The way to change the sprite's costume into a specified one.



Code blocks

You can find the blocks you need in the following categories:

Make a Variable

Variables

temperature

Operators

set my variable ▾ to 0

< 50

Defines a new variable.

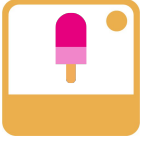
The variable's value.

Defines the amount of the specified variable.

The function to control if the measured value is smaller than the other one.





Popsicle thermometer

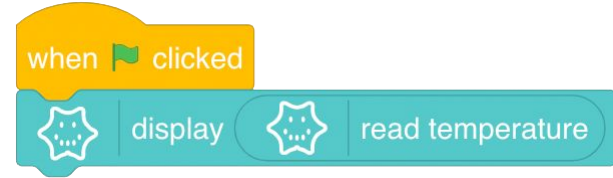


Read out the temperature and display it on the Calliope mini:

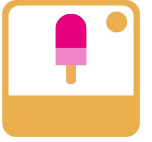
Display the current ambient temperature.

- 1 Start with the block “when  clicked”
- 2 Add a “display” block and replace the text with the “read temperature” block

Click  to start your program.



Popsicle thermometer



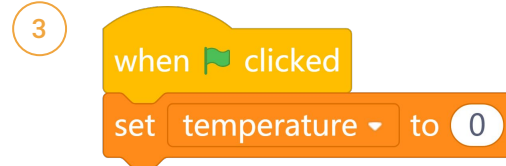
Create variable - temperature

Create a variable named "temperature" where you can store the measured temperature. There you can query it at any time.

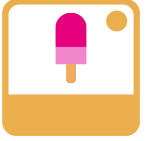
- 1 Create a new variable by clicking on "make a variable" and give it the name "temperature"
- 2 Tick the box next to your variable to display it on the stage
- 3 To start your program, set the temperature variable to 0 by adding the block "set my variable to"



temperature



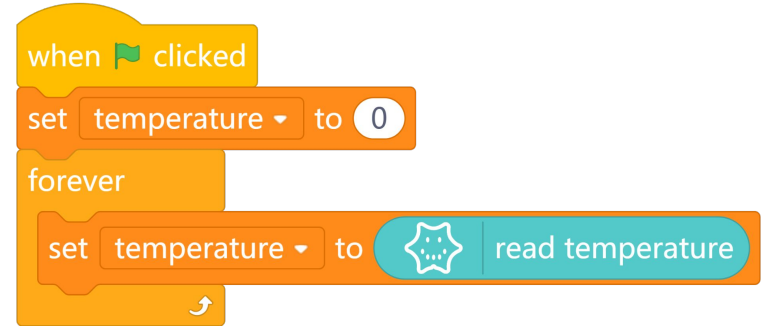
Popsicle thermometer



Measure and store temperature:

Create an **infinite loop** so that the temperature is measured continuously.

- 1 Add a “**forever**” block
- 2 Add a “**set variable to**” block and select **temperature**
- 3 Replace the text with the block “**read temperature**”

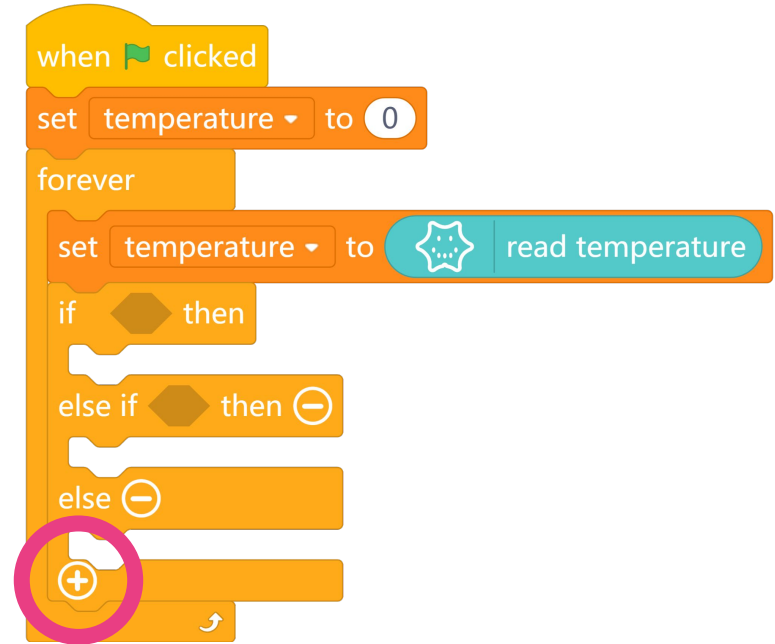


Popsicle thermometer

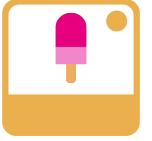


Query temperature and define branches:

- 1 Add a "if... then" block
- 2 Define a total of three branches so that your display can react to three different temperatures
 - To do this, click on the "+" and expand your query.



Popsicle thermometer



For three different **states** you need at least two **conditions** to be queried.

Warm: temperature is below 20°

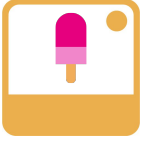
Very warm: temperature is below 25°

Hot: temperature is neither below 20° nor below 25°



```
when clicked
  set temperature to 0
  forever
    set temperature to read temperature
    if then warm
    else if then very warm
    else hot
    +
```

Popsicle thermometer



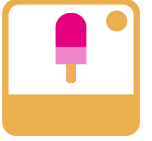
With the help of a comparison, the conditions are defined.

- 1 Use the operator “ $0 < 50$ ” and put it into the first query
- 2 Replace the 0 with the variable block “temperature” and change the 50 to **20**
- 3 Repeat the two steps and define the second query
Watch out! Here change the 50 to **25**.



```
when clicked
  set temperature to 0
  forever
    set temperature to read temperature
    if temperature < 20 then
    else if temperature < 25 then -
    else -
    +
```

Popsicle thermometer



What should be displayed at which temperature?

Now define what should happen on the Calliope mini when the temperature falls below a certain level. Define the different **states**.

Warm: RGB LED purple / Matrix level low

Very warm: RGB LED yellow / Matrix level mid

Hot: RGB LED red / Matrix level top



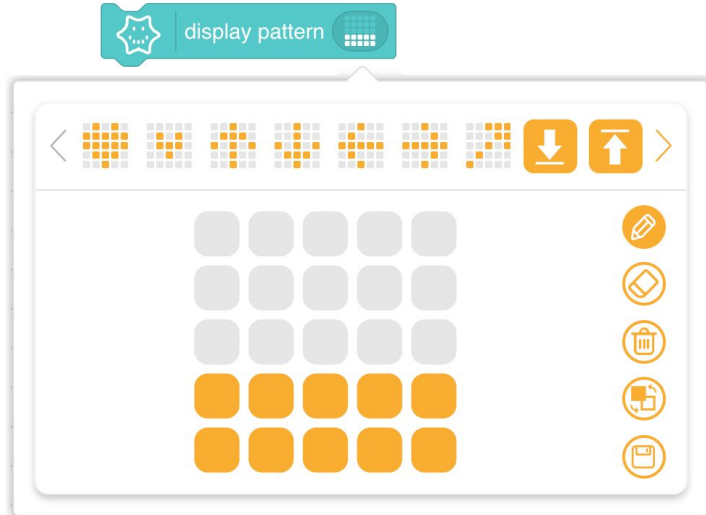
```
when clicked
  set temperature to 0
  forever
    set temperature to read temperature
    if temperature < 20 then warm
    else if temperature < 25 then very warm
    else hot
```

Popsicle thermometer



Now you can see if it is warm, very warm or even hot.

Add a block “display pattern” for each state and adjust the display.

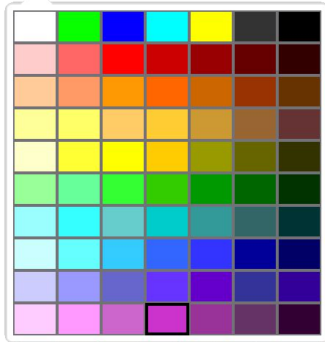


```
when clicked
  set temperature to 0
  forever
    set temperature to read temperature
    if temperature < 20 then warm
      display pattern
    else if temperature < 25 then very warm
      display pattern
    else hot
      display pattern
```

Popsicle thermometer



Also add a block “set rgb-led” for each state and change the color. Repeat these steps for the other states as well.



```
when clicked
  set temperature to 0
  forever
    set temperature to read temperature
    if temperature < 20 then
      warm
      display pattern
      set rgb-led purple
    else if temperature < 25 then
      very warm
      display pattern
      set rgb-led yellow
    else
      hot
      display pattern
      set rgb-led red
```

Popsicle thermometer



Now let the popsicle get bigger and bigger and bigger.

In the last step you define what should be displayed on the stage of your computer.

Warm: Popsicle is small - ice_a.png

Very warm: Popsicle is bigger - ice_b.png

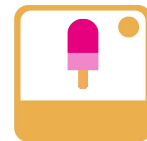
Hot: Popsicle is huge - ice_c.png OR - ice_d.png

To do this, display the different costumes of your popsicle character by adding a “switch costume to” block to each state.




```
when clicked
set temperature to 0
forever
  set temperature to read temperature
  if temperature < 20 then
    switch costume to ice_a
    display pattern
    set rgb-led purple
  else if temperature < 25 then
    switch costume to ice_b
    display pattern
    set rgb-led yellow
  else
    switch costume to ice_c
    display pattern
    set rgb-led red
```

Popsicle thermometer



At the very beginning, the popsicle is reset to the default costume.

To do this, add another “switch costume to” block **above** the infinity loop.

Click  to start your program.

You can find all program codes here:

CALLIOPE.CC



```
when clicked
  set temperature to 0
  switch costume to ice
  forever
    set temperature to read temperature
    if temperature < 20 then
      switch costume to ice_a
      display pattern
      set rgb-led purple
    else if temperature < 25 then
      switch costume to ice_b
      display pattern
      set rgb-led yellow
```



CALLIOPE

If you have any questions, please do not hesitate to contact us.

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or by e-mail: info@calliope.cc

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