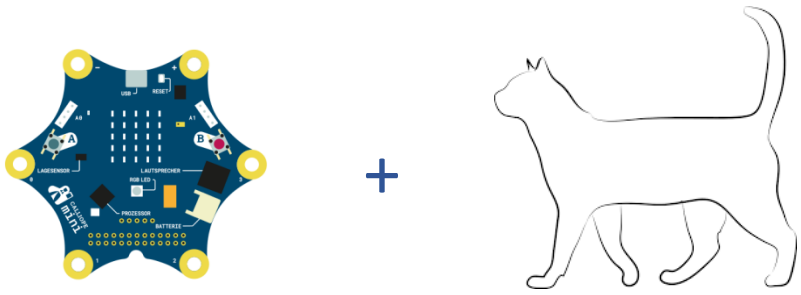
CoALA – Code A Little Animal Workshop



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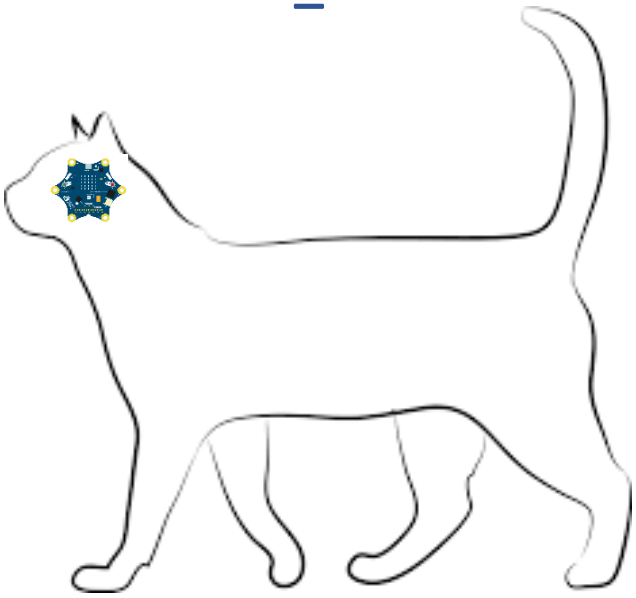

Mirek Hančl and Julia Winckler

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List of materials for workshop a

Information:

The list of materials refers to using a Calliope mini.

It can be used either by a single student, by a team or by a small group of students.

- **Calliope mini**
- **laptop** or pc
- seven **crocodile clips**
- **USB cable** for the Calliope mini
- **battery** for the Calliope mini
- **self-adhesive** copper tape (width 5 mm)
- **cardboard**
- red **craft plastic**
- small **water glass**
- **poster**

List of materials for workshop b

Information:

The list of materials refers to using a Calliope mini.

It can be used either by a single student, by a team or by a small group of students.

- **Calliope mini**
- **laptop** or pc
- **crocodile clips**
- **USB cable** for the Calliope mini
- **battery** for the Calliope mini
- **touch sensor with four feelers (Grove I2C Touch Sensor)**
- **humidity sensor (Grove Moisture Sensor)**
- **NFC reader (Grove NFC)**
- three **NFC-Cards** (ISO/IEC 14443-3A, e.g. „Mifare Ultralight“)
- **I2C hub (Grove I2C hub)**
- Four **Grove cable**
- **cardboard**
- red **craft plastic**
- small **water glass**
- **poster**

Workshop a

learning area	number	worksheet	done
Get to know the Calliope mini			
	1	Calliope mini	☐
	2	code	☐
	3	statements	☐
	4	sequences	☐
	5	loops	☐
	6	save on the computer	☐
	7	save on the Calliope mini	☐
	8	branches	☐
CoALA: Code A Little Animal			
	9	a pet	☐
	10	your pet	☐
	11	What does your pet need?	☐
	12	How does your pet feel?	☐
	13	greeting	☐
	14	temperature	☐
	15	touch	☐
	16	motion	☐
	17	food	☐
	18	drink	☐
	19	body of your pet	☐

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Workshop b

learning area	number	worksheet	done
Get to know the Calliope mini			
	1	Calliope mini	☐
	2	code	☐
	3	statements	☐
	4	sequences	☐
	5	loops	☐
	6	save on the computer	☐
	7	save on the Calliope mini	☐
	8	branches	☐
	9	variables	☐
CoALA: Code A Little Animal			
	10	your pet	☐
	11	What does your pet need?	☐
	12	How does your pet feel?	☐
	13	greeting	☐
	14	temperature	☐
	15	touch	☐
	16	motion	☐
	17	food	☐
	18	drink	☐
	19	body of your pet	☐

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1. Calliope mini

Information:

The Calliope mini is smaller than a computer. You can tell it what it should do. If you get well informed in the workshop you will be able to write small programs in the end. This is called coding.

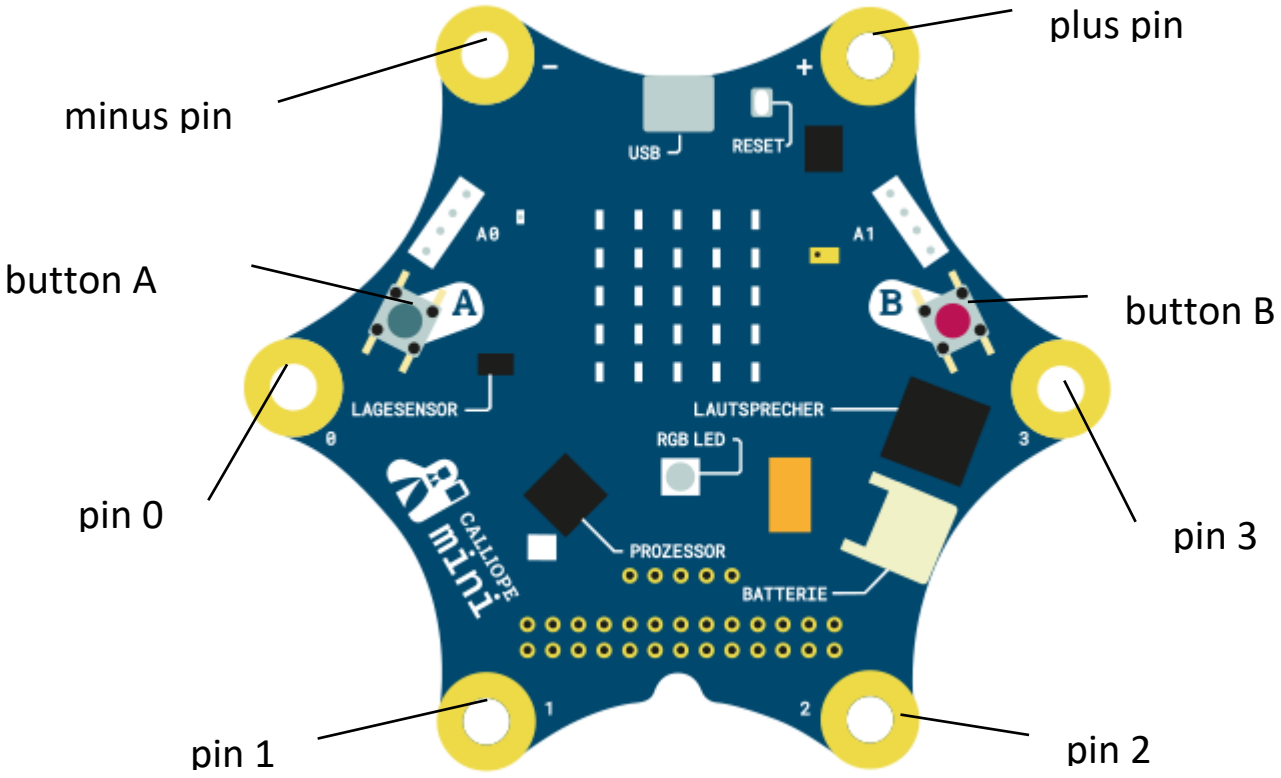
The Calliope mini does exactly what you write in the program.

Task 1:

Look closely at your Calliope mini.

Take your real Calliope mini and look for:

micro USB port, button A, button B, pin 0, pin 1, pin 2, pin 3, minus pin, plus pin, connector A0, connector A1, position sensor (“Lagesensor”), speaker (Lautsprecher), RGB LED, reset button, processor (“Prozessor”), battery connector (“Batterie”) and LED display



You can find more information here: https://calliope.cc/ueber-mini

2. Code

Information:

You can write small programs for the Calliope mini. This is called coding or programming.

The Calliope mini understands only certain programming languages.

In our case the programming language consists of coloured blocks.

Example for a coloured block : 

Task 1:

Open the website: http://makecode.calliope.cc/?lang=en

1. Highlight the categories in the right colour.

Basic	Loops	Radio
Input	Logic	Motors
Music	Variable	Advanced
Led	Math	

Task 2:

Click on the categories and investigate what they mean.

You can drag the hidden blocks to the right using the mouse.

If you want to delete them, you can drag them back to the left on the categories.

3. Statements

Information:

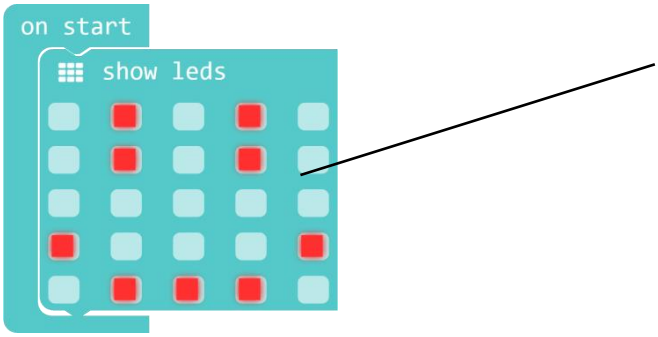
Using the blocks hidden behind Basic and Input, you can give statements to the Calliope mini. You can tell it, what it should do on start or when you press the different buttons.

Task 1:

Write a program which makes the Calliope mini smile on start. For this you only need Basic.

1. Drag the block "on start" to the right.

2. Drag the block „show leds“ to the right and click on the leds to create a smiley.
3. Drag the block „show leds“ into the block „on start“.
4. The program should look like this:



5. Use the Calliope mini simulator (on the left side of the screen) to check your program by pressing the start button. The simulator should smile now.

Task 2:

Write a program which makes the Calliope mini show a heart when you press button A.

You need Basic and Input.

Check your result using the Calliope simulator on the screen.

Task 3:

Can you write two more programs?

4. Sequences

Information:

A sequence is a series of statements, one below the other. The Calliope mini performs all statements one after the other.

Task 1:

Write the following sequence:

On start the Calliope mini should

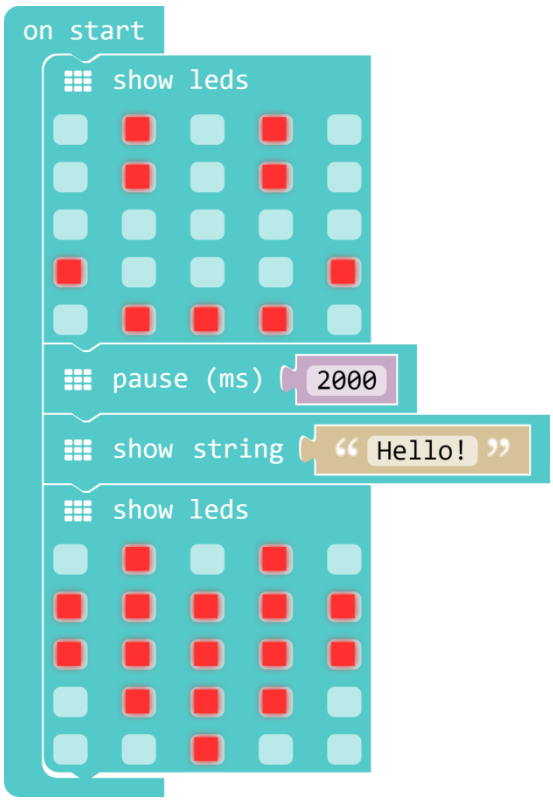
1. smile,

2. hold the smile for
 2000 ms (2 seconds),

3. display the string „Hello!“

and

4. display a heart.



Check your result using the Calliope simulator on the screen.

Task 2:

Can you write another sequence?

You may use the category Music.

The Calliope mini can play great tones.

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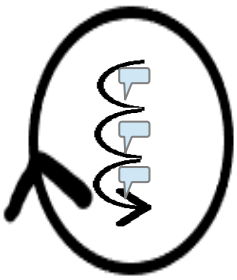
4. Loops



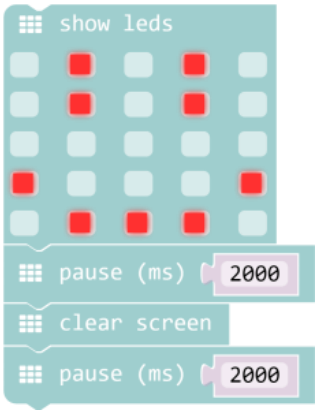
Information:

In a loop the Calliope mini repeats a sequence over and over. You can set how many times a sequence is repeated. Loops for the Calliope mini are green.

Task 1:

a) Program a sequence.

The Calliope mini should display a heart for 2 seconds. Then the led screen should clear and pause for 2 seconds.



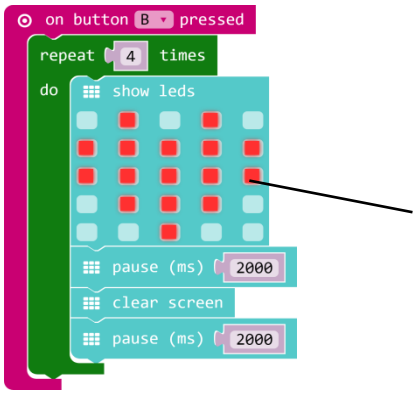
Information:

The sequence is shaded and faint. We are missing a purple block from the category Input. The Calliope mini does not know yet when to start the sequence.

b) Program a loop.

The sequence from a) should be repeated 4 times.

After pressing button B the loop should start.



a loop

Task 2:

Program another loop. Check your result using the Calliope simulator on the screen.

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6. Save on the computer

Information:

You can save the programs you wrote on your computer and continue working on them another time.

Task 1: Save on the computer

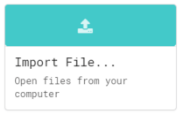
1. Name your project.

2. Click on the symbol for save using the mouse.
3. Choose the location for your file and save it.
4. Locate the saved file on your computer. It is a hex file.

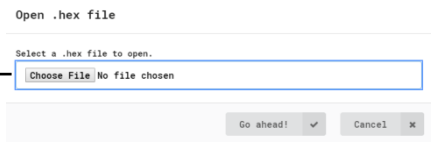
Task 2: Edit saved programs

1. Open the Calliope mini editor: http://makecode.calliope.cc/?lang=en
2. Click „Projects“

3. Choose „Import File“



4. Click „Choose File“



and find your saved hex file.

5. Open the file and click „Go ahead!“.
6. The file is now again open in the Calliope mini editor and can be changed by you.

7. Save on the Calliope mini

Information:

You can save your program on the Calliope mini. The Calliope mini then executes your written program.

Task 1: Save on the Calliope mini

1. Save your program on the computer.
(Aid: Worksheet 6)

2. Connect your Calliope mini to the computer.
You need a USB cable. The computer needs a USB connector; the Calliope mini has a micro USB connector.
(Aid: Worksheet 1)

3. Drag or copy your saved hex file to the USB drive "Mini (:)".

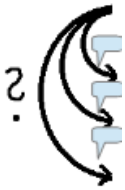
4. The file is now saved on the Calliope mini and it should be executed directly.

5. The Calliope mini can execute the program without being connected via USB. For this you need a battery which you connect to the Calliope mini.
(Aid: Worksheet 1)

Task 2:

Create a small program. Save the program on the Calliope mini. Disconnect the Calliope mini from the computer and connect it to the battery. Turn the switch on the battery casing and test your program.

8. Branches



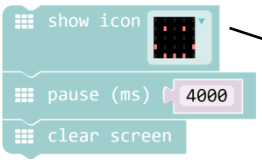
Information:

Using the hidden blocks behind Logic you can build branches. A sequence only starts if several conditions are met. This could for example be that the Calliope mini is shaken AND the button A is pressed.

Task 1:

The Calliope mini should smile if he is shaken and the button A is pressed.

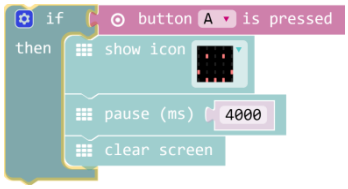
a) Write a sequence where the Calliope mini smiles for 4 seconds.



There are ready made icons for the led screen

b) Write a branch where the Calliope mini only smiles if the button A is pressed.

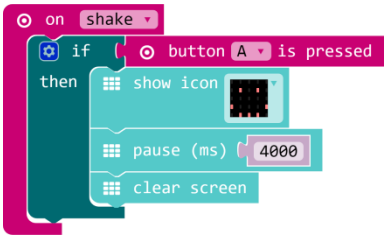
Branch from the category Logic



Input

c) Write a second input.

Only if the Calliope mini is shaken it checks if button A is also pressed.



d) Save your program on the Calliope mini and test it. (Aid: Worksheet 7)

Task 2:

Write a branch where the Calliope mini smiles if it is shaken and button A is pressed at the same time. But in case the button A is not pressed while the Calliope mini is shaken it should look sad.

For this use another branch from the category Logic.

9 a. A pet

Information:

The next worksheets concern pets.

Task 1:

Do you have a pet?

If yes, describe it.

If no, which pet would you like to have? Describe it.

_____

_____

_____

_____

_____

_____

Task 2:

Draw your pet or the pet you would like to have.

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9 b. Variables

Information:

If you want to count how many times the Calliope mini is shaken, you can use the number as a variable, also called placeholder. You can display the value of the placeholder on the screen

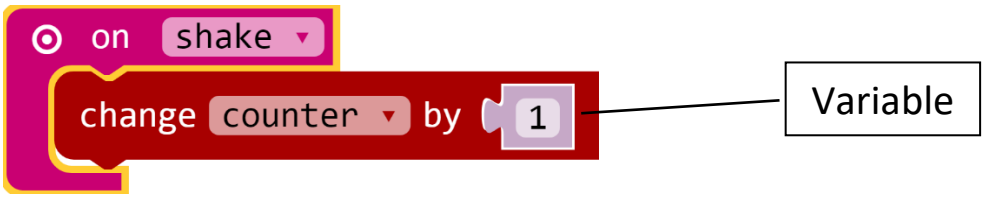
Task 1:

The Calliope mini should count, how often it is shaken.

a) Use 

from the category Variables to create a new variable. Call it “counter”.

b) If the calliope is shaken change the value of counter by 1. Click “item” in the respective block and select “counter”.



c) Make the Calliope mini display the value of the variable counter after every shake.

Use 

from the category Basic.

d) Save your program on your Calliope mini and test it. (Aid: Worksheet 7)

Task 2:

Set the value of the variable counter back to 0 if the button A is pressed. Test your shake counter under different conditions, e.g. while springing, cycling, on a trampoline or on the school bus.

10. Your pet

Information:

The next worksheets are about a pet of your choice.

Task 1:

Choose a pet.

Talk about your choice with your teacher.

Note the pet you choose with your teacher here:

_____

Task 2:

Write a profile of your pet.

General

Name:_____

Characteristics:_____

Required temperature:_____

Lifespan:_____

Physical characteristics

body length:_____

body height:_____

Lifestyle

Diet (food and drink):_____

Motion (much or little):_____

11. What does your pet need?

Information:

By writing the profile you already learned a lot about your pet.

Before you consider to get a pet it is important to know what the pet needs.

Task 1:

What does your pet need to be happy? Write down the five most important points using a pencil.

1._____

2._____

3._____

4._____

5._____

Information:

The Calliope mini will soon become your pet. To be able to take proper care of your pet, you will code/program these five points on the next worksheets.

Task 2:

Talk about the five points with your teacher. Maybe you need to adapt the points from task 1.

12. How does your pet feel?

Information:

You want to check if your pet feels well.

Task 1:

Read the tasks and note your ideas using a pencil.

a) How can you check if it is warm enough for your pet?

_____

_____

b) How can you check if your pet is being touched?

_____

_____

c) How do you know if your pet gets enough exercise.

_____

_____

d) You feed your pet two different things. How do you recognize what your pet prefers?

_____

_____

e) How can you test with closed eyes if your pet has enough to drink in its bowl?

_____

_____

Task 2:

Talk about your ideas with your teacher.

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13 a. Greeting

Information:
Your pet wants to greet you.
When you start the Calliope mini, your pet should greet you.

Task 1:
Code a statement or a sequence (Aid: Worksheets 3 and 4) where the Calliope mini greets you on start.

Use:
Basic

Music

Code:

 or 

Task 2:
Show your program to your teacher.

Task 3:
Save your program under the name of your pet.
(Aid: Worksheet 6)

13 b. Greeting

Information:
Your pet wants to greet you.
When you start the Calliope mini, your pet should greet you.

Task 1:
Code a statement or a sequence (Aid: Worksheets 3 and 4) where the Calliope mini greets you on start.

Use:

Basic

Music

Code:

 or 

Task 2:
As last statement of the greeting sequence, set the accelerometer range to 8g.
You find this in the category Input under "...More".

Task 3:
Show your program to your teacher.

Task 4:
Save your program under the name of your pet.
(Aid: Worksheet 6)

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14. Temperature

Information:

Your pet does not want to be cold.

After you press button A, your pet should tell you if it feels warm or cold.

Task 1:

Open your saved pet project.

(Aid: Worksheet 6)

Code a branch (Aid: Worksheet 8), where the temperature is tested after you press the button A.

If the temperature is below 20°C, the Calliope mini should tell you it is cold.

If the temperature is 20°C or above, the Calliope should tell you it is warm.

Use:

Logic

Code:

Task 2:

The Calliope mini should first display the temperature if you press button A and then tell you if it is cold or warm.

Hint: You need the block „show number“ from Basic.

Task 3:

Show your program to your teacher.

Task 4:

Save your pet project.

(Aid: Worksheet 6)

15 a. Touching

Information:

Your pet wants to be petted, otherwise it feels lonely.

Task 1:

Open your saved pet project. (Aid: Worksheet 6)

Code a branch. (Aid: Worksheet 8)

If pin 2 is pressed, the Calliope mini should display first the heart, then pause for 2 seconds and then clear the screen.

Use: Logic Basic Input

Code:

Task 2:

a) This branch should be checked continuously.

The block used is called „forever“ and you find it in Basic.

b) Show the program to your teacher and save your pet project on your Calliope mini. (Aid: Worksheet 7)

Task 3:

a) Get template 1. Cut out the touch card. Glue it on cardboard and cut it out again.

b) Stick the copper tape on the yellow line on the card.

c) Connect the touch card to the Calliope mini (see picture). Use a white and a red crocodile clip. Touch both copper tapes with your fingers. What does the Calliope mini display?

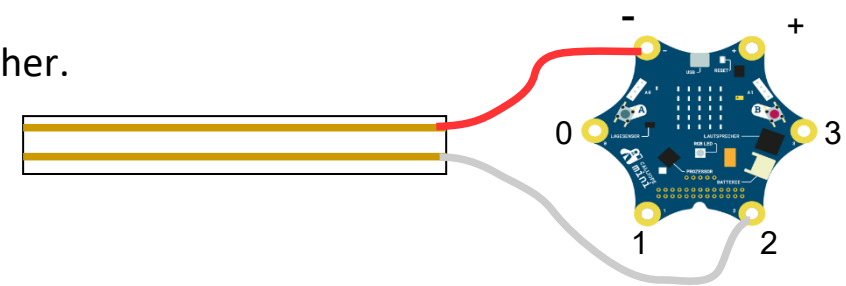
Task 2:

Show the program to your teacher.

Task 3:

Save your pet project.

(Aid: Worksheet 6)



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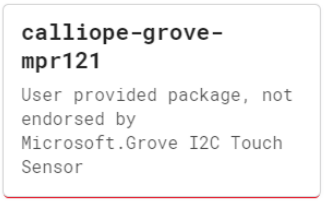
15 b. Touching

Information:

Your pet wants to be petted, otherwise it feels lonely.
Use the touch sensor with the four feelers for this task. You connect it to the port left of the screen. Every feeler will later be fastened to another part of your pet.

Task 1:

a) Open in the category Advanced "Add Package". Enter the following exactly:
https://github.com/infchem/pxt-calliope-grove-mpr121
Click on the magnifying glass to search and then on the result "calliope-grove-mpr121".



The editor reloads and you can find the added category Grove I2C Touch Sensor.

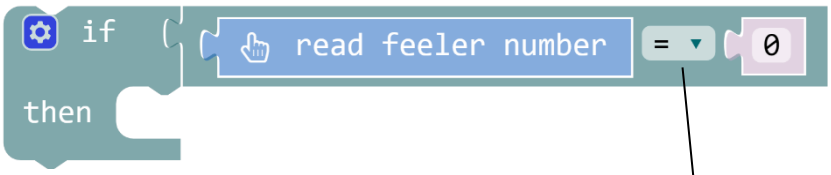
b) Open your saved pet project. (Aid: Worksheet 6)

Program the Calliope mini in such a way that it initializes the sensor on start. Use the event "on start" from the category Basic. The statement to initialize the Sensor can be found in the category Grove I2C Touch Sensor.

c) Code several branches. (Aid: Worksheet 8)

Compare the different numbered feelers constantly: If the feelers 0 and 2 are touch, the Calliope mini should display first a heart, then pause for 2 seconds and then clear the screen. If feeler 1 and 3 are touched, the screen should display a sad smiley.

You find the block for comparison in Logic.



Compare to 0

Use:

Basic

Grove I2C Touch Sensor

Logic

Code:

Task 2:
Show your program to your teacher.

Task 3:
Save your pet project.

(Aid: Worksheet 6)

Task 4:

The sensor provides specific values if no feeler is touched or if several feelers are touched simultaneously. Test it and complete the sentences:

If no feeler is touched, the Calliope mini gives the number ___ as output.

If several feelers are touched, the Calliope mini gives the number ___ as output.

Task 5:

Choose two areas on your pet's body where it <u>likes</u> to be petted.

0: _____

2: _____

Choose two areas on your pet's body where it <u>does not like</u> to be petted.

1: _____

3: _____

The numbers correspond to the respective feeler number you used in task 1c).

You will fasten the feelers later no your pet according to the parts of the body you choose.

Show your list to your teacher.

16 a. Motion

Information:

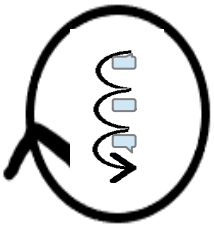
Your pet wants to get exercise. It does not like to be shaken. But it likes to be tilted to the left and the right. You can decide if it likes to lie on its back.

Task 1:

Open your saved pet project. (Aid: Worksheet 6)
Code four sequences or loops (Aid: Worksheets 4 and 5) in which you move your pet.
a) shaking
b) lying on its back (display upside down)
c) tilt to the right
d) tilt to the left

Use: Basic | Loops | Input | Music

Code  and

or 

Task 2:

Your pet should only execute these programs if the buttons A and B are pressed simultaneously.

Use:

Logic | Input

Code: 

Task 3:

Show your program to your teacher.

Task 4:

Save your pet project.
(Aid: Worksheet 6)

16 b. Motion

Information:

Your pet wants to get exercise. It wants you to walk with it.

Task 1:

Open your saved pet project. (Aid: Worksheet 6)
Code a branch. (Aid: Worksheet 8)
Your pet should check after you simultaneously press the buttons A and B if it is walking.
If you walk with it, its heart should throb.
If you walk slowly with it, it should tell you to walk faster.
Hint: If the acceleration (milli-g) on the y axis is ≤ 150 or ≥ -150,
you walk to slow.
If the acceleration on the y axis is > 150 or < -150, you walk fast enough.
If the value on the y axis is positive, you walk forwards.
If the value on the y axis is negative, you walk backwards.

Use: Input Basic Logic Code: 

Task 2:

Code four additional sequences or loops (Aid: Worksheets 4 and 5), in which you move the pet.
If it likes it is up to you.

a) shaking **b)** lying on it back (display downwards)
c) tilt to the right **d)** tilt to the left

Task 3:

Show your program to your teacher.

Task 4:

Save your pet project.
(Aid: Worksheet 6)

17 a. Food

Information:

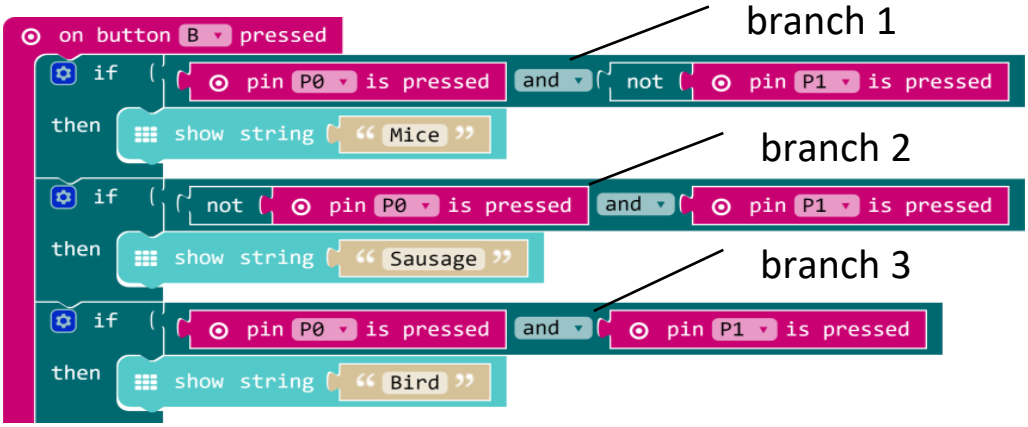
Your pet needs food to survive.

Your pet wants to be fed three different things.

Task 1:

a) Open your saved pet project. (Aid: Worksheet 6)

Write the following program.



Use

Basic

Input

Logic

b) Change the three strings in food suitable for your pet.

Save your pet project on the Calliope mini.

(Aid: Worksheet 7)

Task 2:

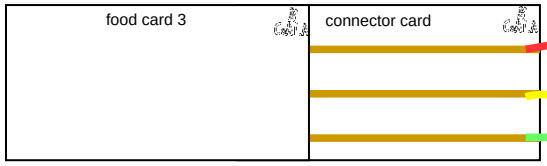
a) Get the template 2 from your teacher. Glue the template on cardboard. Cut out the cards along the lines. Glue the front and the back of each card together. Attention: The CoALA symbols have to be opposite each other.

b) Draw a picture of one type of food on each card on the front. Attention: food card 1 = drawing of branch 1

c) Stick copper tape on each card along the yellow lines.

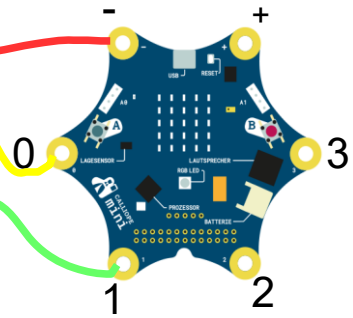
Task 3:

Connect the connector card to the Calliope mini (see picture). Use crocodile clips. Press button B and press a food card with the back onto the connector card. What does the Calliope mini display?



food card 3
front

connector card
front



CoALA: M. Hančl, J. Winckler

17 b. Food

Information:

Your pet needs food to survive.
Your pet wants to be fed three different things.

Use the wireless card reader with the antenna. You connect it using a cable to the port left of the screen. First remove the touch sensor and connect the I2C hub to the left port using a cable. Now you can connect the touch sensor and the card reader at the same time to the hub. It does not matter which ports on the hub you choose.

a) Open in the category Advanced "Add Package". Enter the following exactly: https://github.com/infchem/pxt-calliope-grove-pn532

Click on the magnifying glass to search and then on the result "calliope-grove-pn532".

The editor reloads and you can find the added category Grove NFC Tag.

b) Open your saved pet project. (Aid: Worksheet 6)

c) Program the Calliope mini in such a way that it forever displays on the screen the text message saved on the card.

Use:

Basic

Grove NFC Touch

Task 2:

Show your program to your teacher. Ask your teacher for prepared cards and draw a picture appropriate for the respective text message on each card. Use a non-permanent pen!

If you have a smartphone with Android and NFC functionality, ask your teacher for a special worksheet.

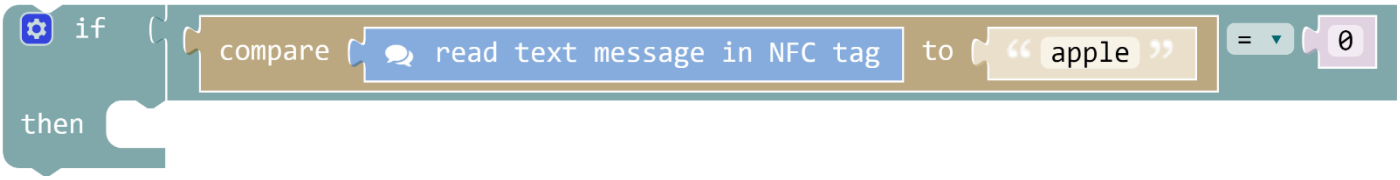
Task 3:

Your pet does not like every kind of food. To test this, you can compare the text message on the card with given text. Under Advanced, in the category Text you find

Put the block to read the text message in the first text box.

Write the comparative text in the second box.

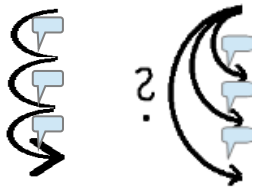
If both words are the same, the result is 0. If you add a comparison to 0 from the category Logic, you can use everything together in a branch, like this:



Program the Calliope mini in such a way that it displays a happy smiley if your pet likes the food and a sad smiley if the food is not appropriate for the animal.

Use
Basic Logic Text
Grove NCS Tag

Code:



Task 4:

Show your program to your teacher.

Task 5:

Save your pet project. (Aid: Worksheet 6)

17 b. Create your own food cards (special worksheet)

Information:

If you have a smartphone with Android and NFC functionality and if you are allowed to install apps, you can create your own food cards!

In this worksheet you can for example use the app NFC TagWriter by NXP to learn how to write on the cards. Download the app from the play store and ask your teacher for three empty cards.

Task 1:

Choose “Write tags” from the main menu. If you have not activated NFC on your phone, the app will remind you to activate it now. Choose “New dataset”, then “Plain text” and enter “apple”. Click on “SAVE & WRITE”.

Attention: Do not check “Protection”!

Choose “WRITE” and hold the card close to your smartphone. The NFC antenna of your smartphone is usually at the top of your smartphone, often in the corner. Sometimes it is in a completely different place. It might be that you have to move the card around a bit to find the right position. When the right position is found, your smartphone will vibrate for a moment. Click “Touch to beam” to finish.

Task 2:

Although text messages can be saved on the card, the read block in the programming environment can’t process infinite text messages. Determine the maximum length for text messages by trial and error.

Answer: _____

Task 3:

Find 3 different food names which do not exceed the maximum length for text messages on the food cards.

1: _____

2: _____

3: _____

Write the food name electronically on the card and draw an appropriate picture on the cards.

CoALA: M. Hančl, J. Winckler

18 a. Drink

Information:

Your pet needs to drink in order to survive.

Task 1:

a) Open your saved pet project. (Aid: Worksheet 6)
Code a branch (Aid: Worksheet 8) from the category Logic, in which after you press pin 3 first the string "Water!" appears and then a happy smiley. The smiley should be displayed for 3 seconds, after which the screen should clear.

b) Draw the branch you just wrote underneath the three branches for food. The Calliope mini should only check if there is water available if you press button B.

Task 2:

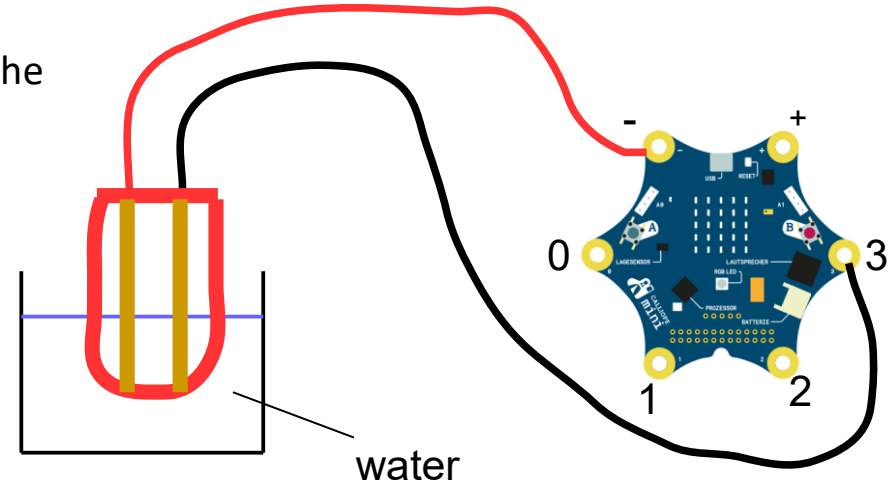
Show your program to your teacher.
Save your project on the Calliope mini. (Aid: Worksheet 7)

Task 3:

a) Select a tongue from template 3. Get some red craft plastic. Cut a tongue out of the plastic. Stick copper tape to the tongue. The yellow lines one the template help you with that.

b) Stick tape on the rear end of the tongue. The template shows where you need to place the tape.

c) Connect the tongue with the minus pin and pin 3 using crocodile clips. If button B is pressed and the tongue is submerged in water, the Calliope mini should display "Water!" and smile. Test it.



CoALA: M. Hančl, J. Winckler

18 b. Drink

Information:
Your pet needs to drink in order survive. You use a humidity sensor for measuring. Depending on the humidity it delivers values between 0 and 800.

Task 1:
a) Open your saved pet project. (Aid: Worksheet 6)

Connect the sensor using the cable to the port on the right of the screen. Program the Calliope mini in such a way that it outputs a number forever. Draw the statement “analog read pin P1” in the number field. You find the statement under Advanced in the category Pins.

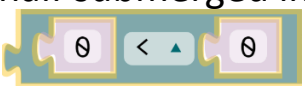
Change P1 to C16. This connection is in the right port

b) Use a glass of water to determine the output of the Calliope mini

- when the sensor is not submerged in water (value: _____)

- when half the sensor is submerged in water (value: _____)- when the sensor is completely submerged in water (value: _____)

Attention: Make sure that you do not submerge the sensor farther than the golden electrical contacts.

c) Code a branch (Aid: Worksheet 8) from the category Logic, in which first the string “Water!” and then a happy smiley are displayed. The smiley should be displayed for three seconds and then the screen should clear. The sequence should only be executed if the sensor is significantly submerged in the water, i.e. the sensor value is higher than the value for “half submerged in water”. To compare you find in the category Logic the block 

. Put the

block “analog read Pin 16” in the right number field and write the appropriate comparison value in the left field.

Task 2:

Show your program to your teacher.
Save your project on the Calliope mini. (Aid: Worksheet 7)

Task 3:

a) Select a tongue from template 3. Cut a tongue out of the plastic. Fasten the humidity sensor on the tongue. The yellow lines one the template help you with that.

b) Stick tape on the rear end of the tongue. The template shows where you need to place the tape.

c) Connect the tongue with the port on the right of the screen. If the tongue is submerged in water, the Calliope mini should display "Water!" and smile. Test it.

19 a. Body of your pet

Information:

The Calliope mini wants to look like a pet.

Task 1:

Work carefully. Always ask your teacher if you have any questions.

a) You need the right template for your pet (templates 4-11).

Cut out your pet and glue it on a poster. Leave enough space at the top of the poster for the Calliope mini.

b) Ask your teacher to cut along the red lines (not the red areas) with a cutter.

c) Glue the connector card and the touch card in the appropriate areas on your pet.

d) Fasten the Calliope mini above the pet. Leave a bit room.

Attention: Be careful with the Calliope mini, it is important that you can remove it again later.

e) Ask your teacher to cut lines next to the minus pin, pin 0, pin 1, pin 2 and pin 3 with the cutter.

f) Put the tongue on the head of your pet.

Connect the tongue, the connector card and the tough card with the Calliope mini using crocodile clips. The cables of the clips should run along the back of the poster and only come out where the poster is cut.

Attention: Each crocodile clip needs to be in the right place. Check worksheets 15, 17 and 18 for instructions.

Task 2:

Does your pet react?

- Turn on your Calliope mini.
- Press button A.
- Press the buttons A and B simultaneously, shake your poster, tilt it to the right and the left, turn it upside down.
- Press button B. Feed your pet.
- Press button B. Give your pet something to drink.
- Pet your pet.

CoALA: M. Hančl, J. Winckler

19 b. Body of your pet

Information:

The Calliope mini wants to look like a pet.

Task 1:

Work carefully. Always ask your teacher if you have any questions.

a) You need the right template for your pet (templates 4-11).
Cut out your pet and glue it on a poster. Leave enough space at the top of the poster for the Calliope mini.

b) Cut along the red lines (not the red areas) with a cutter. Let your teacher help if there are any difficulties.

c) Glue the NFC sensor and the touch sensor in the appropriate areas on your pet. Glue feelers 0 and 2 on those areas where your pet likes to be petted. Glue feelers 1 and 3 on the areas where your pet does not like to be petted.

d) Fasten the Calliope mini above the pet. Leave a bit room.
Attention: Be careful with the Calliope mini, it is important that you can remove it again later.

e) Ask your teacher to cut lines next to the minus pin, pin 0, pin 1, pin 2 and pin 3 with the cutter.

f) Put the tongue on the head of your pet. Glue the humidity sensor on the tongue. Connect the NFC sensor and the touch sensor with the U2C hub using cables. Connect the I2C hub with the port left of the screen using a cable. Connect the humidity sensor with the port on the right of the screen using a cable. The cables should run along the back of the poster and only come out where the poster is cut.

Task 2:

Does your pet react?

- Turn on your Calliope mini.
- Press button A.
- Press the buttons A and B simultaneously, shake your poster, tilt it to the right and the left, turn it upside down.
- Feed your pet.
- Give your pet something to drink.
- Pet your pet.

CoALA: M. Hančl, J. Winckler

Template 1

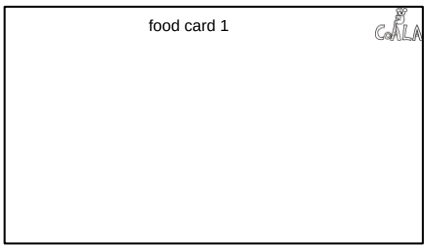
Touch

The two copper bands must not touch each other.

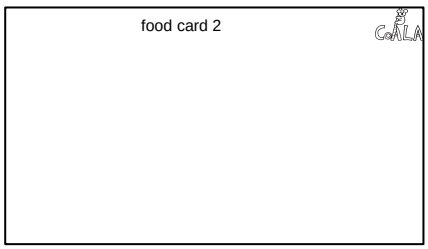
CoALA: M. Hančl, J. Winckler

Template 2

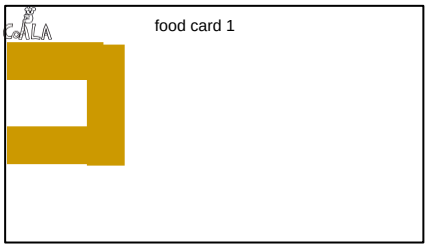
Food



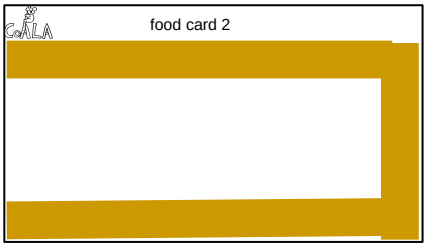
food card 1
front



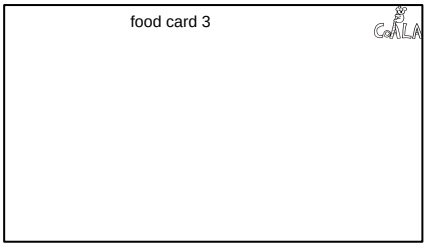
food card 2
front



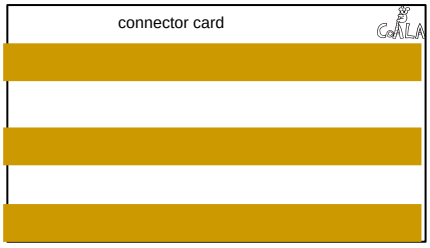
food card 1
back

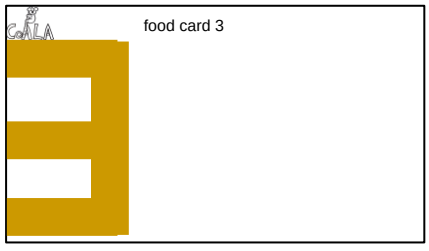


food card 2
back



food card 3
front





food card 3
back

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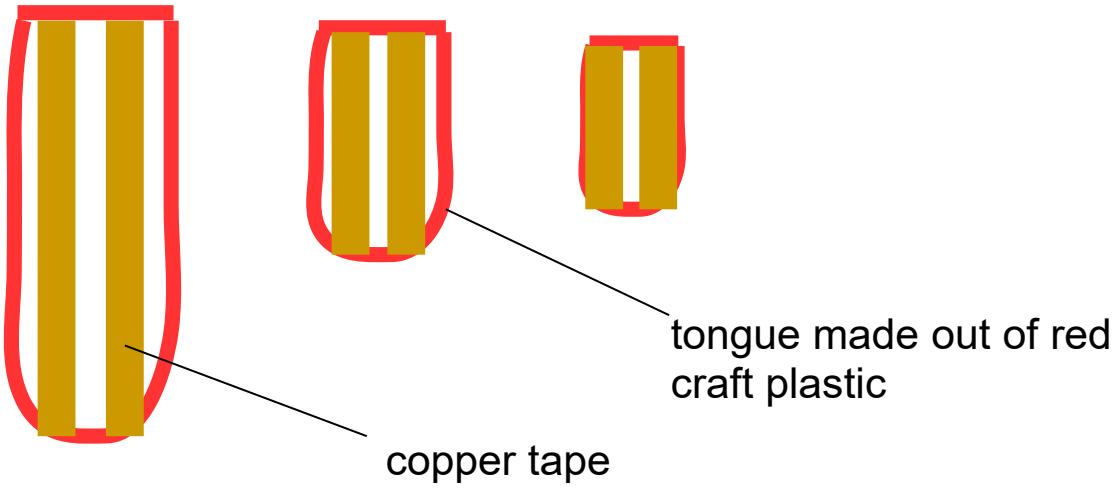
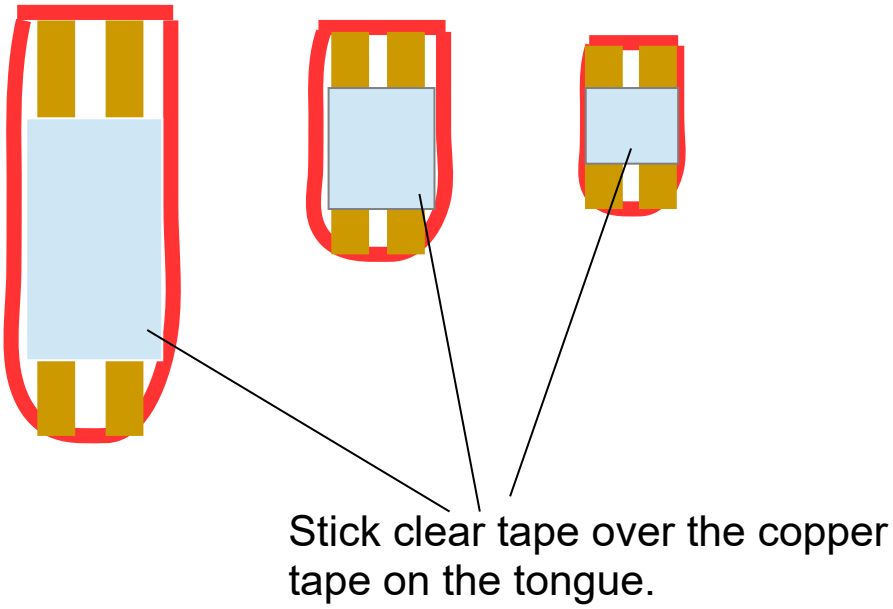
Template 3

Drink





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Template 4

Body cat

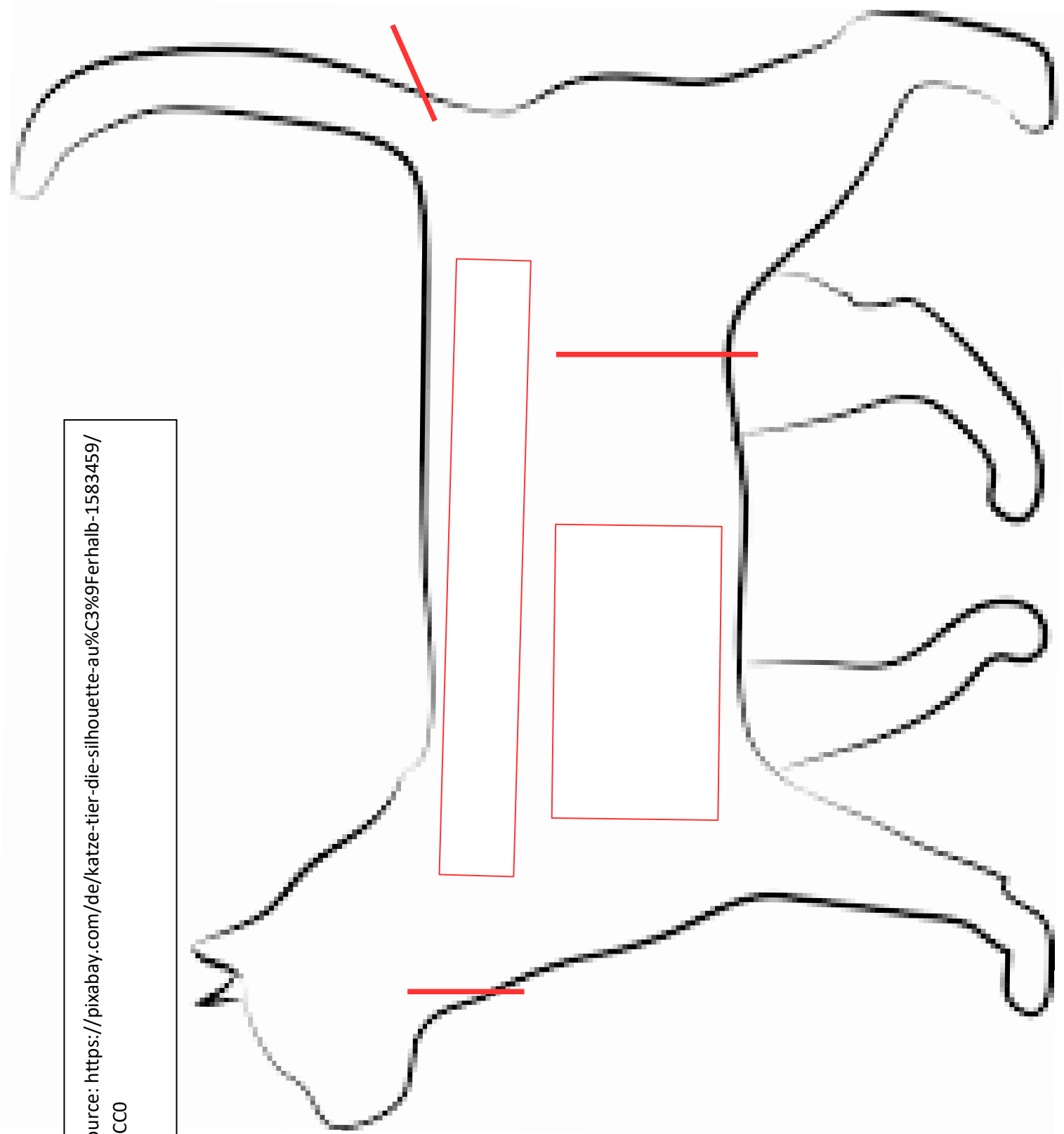

Image source: https://pixabay.com/de/katze-tier-die-silhouette-au%C3%9Ferhalb-1583459/
License: CC0

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Template 5

Body dog

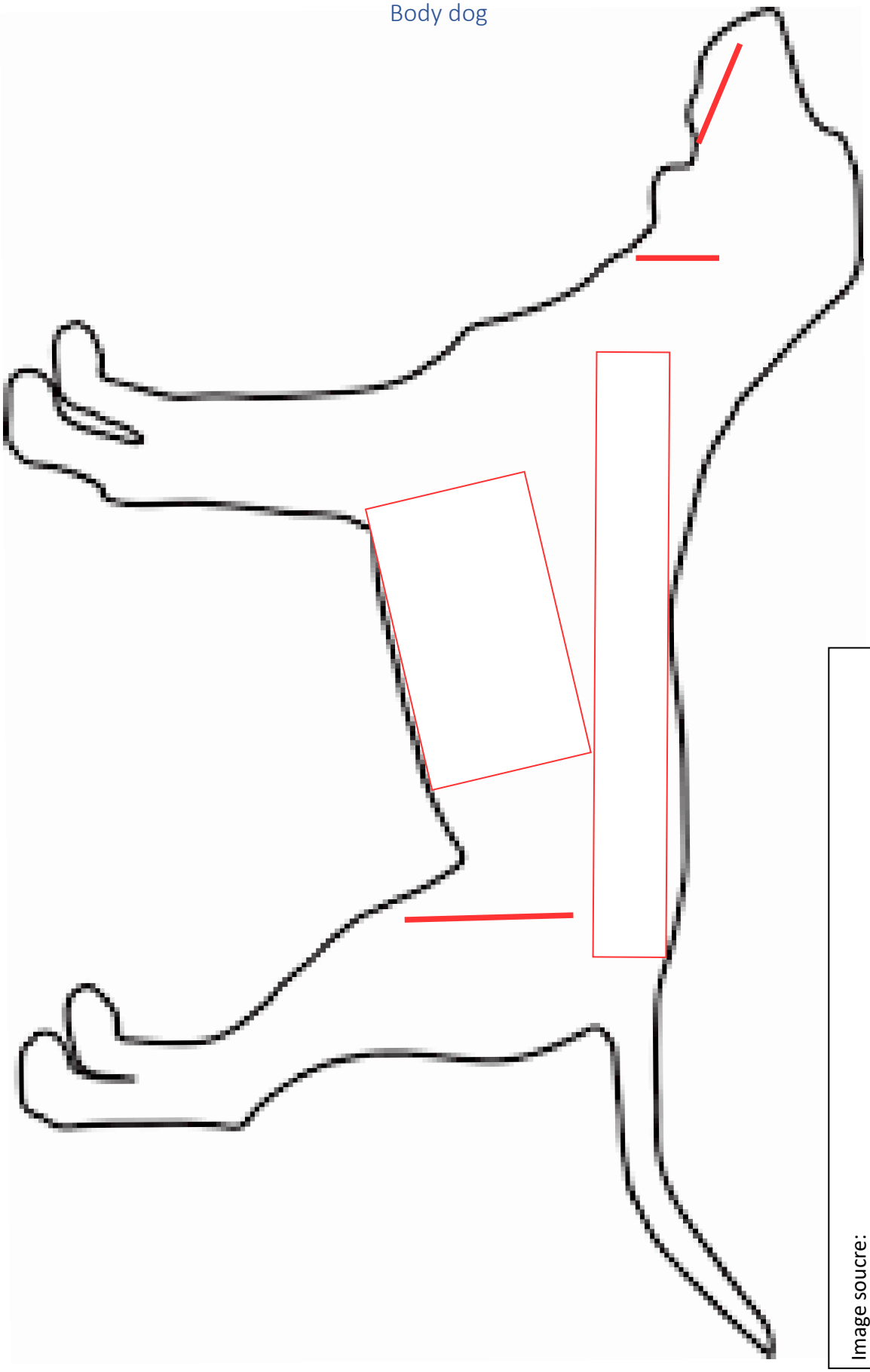

Image soucre:
https://pixabay.com/de/hund-doggy-tier-hundehaus-geht-2798821/
License: CC0

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Template 6

Body guinea pig

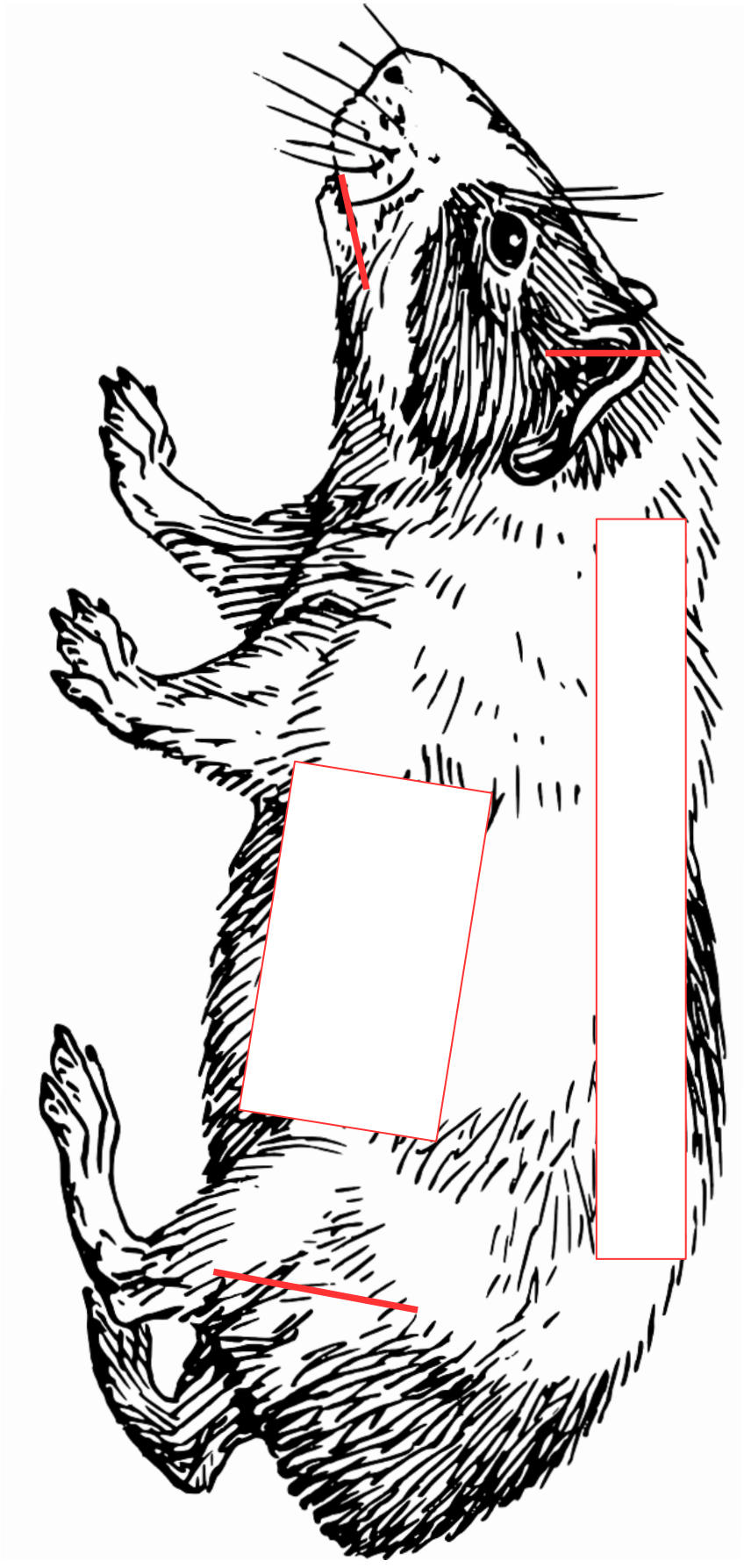

Image source:
https://pixabay.com/de/meerschweinchen-tier-biologie-153029/
License: CC0

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Template 7

Body rabbit

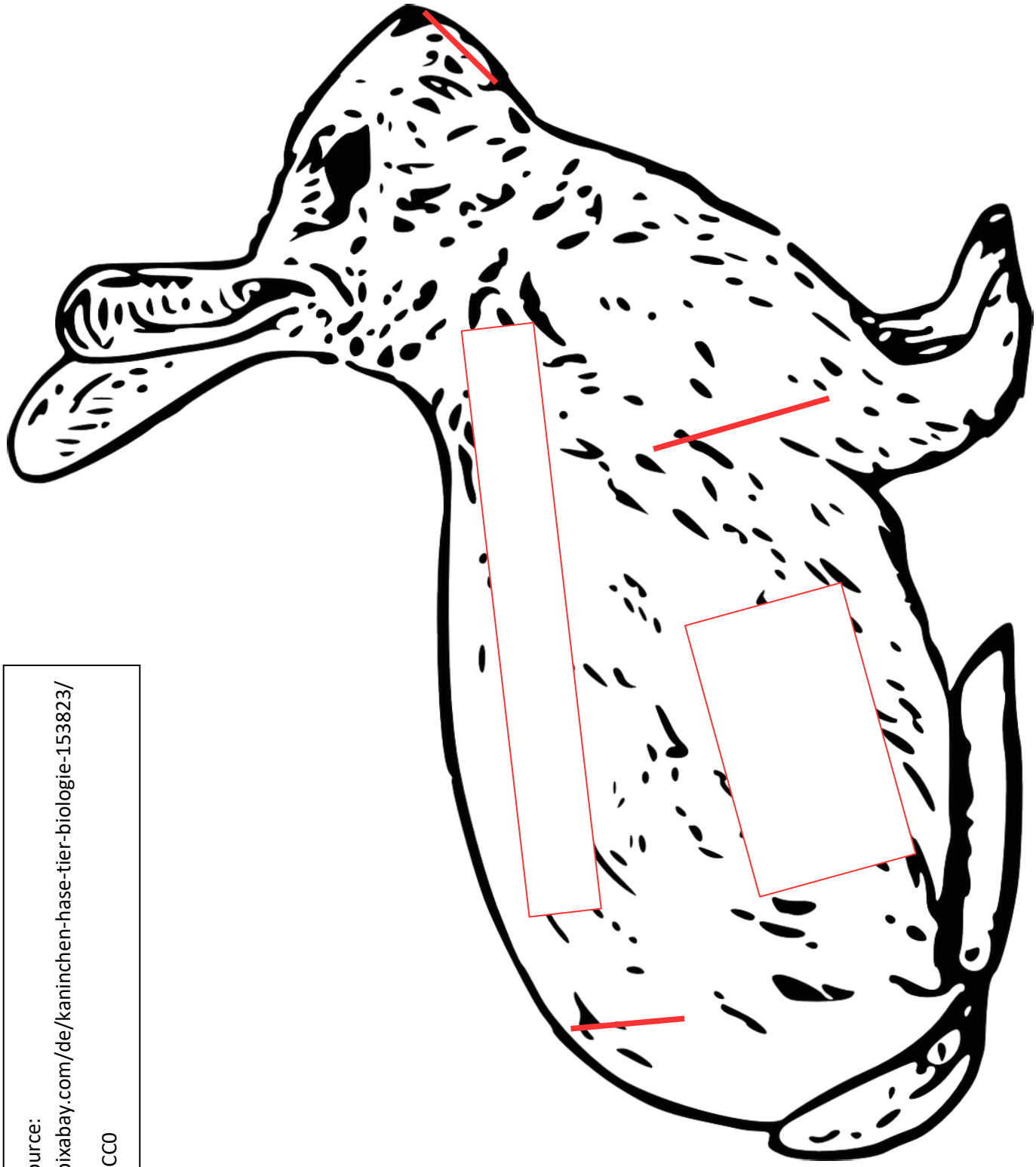

Image source:
https://pixabay.com/de/kaninchen-hase-tier-biologie-153823/

License: CC0

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Template 8

Body mouse

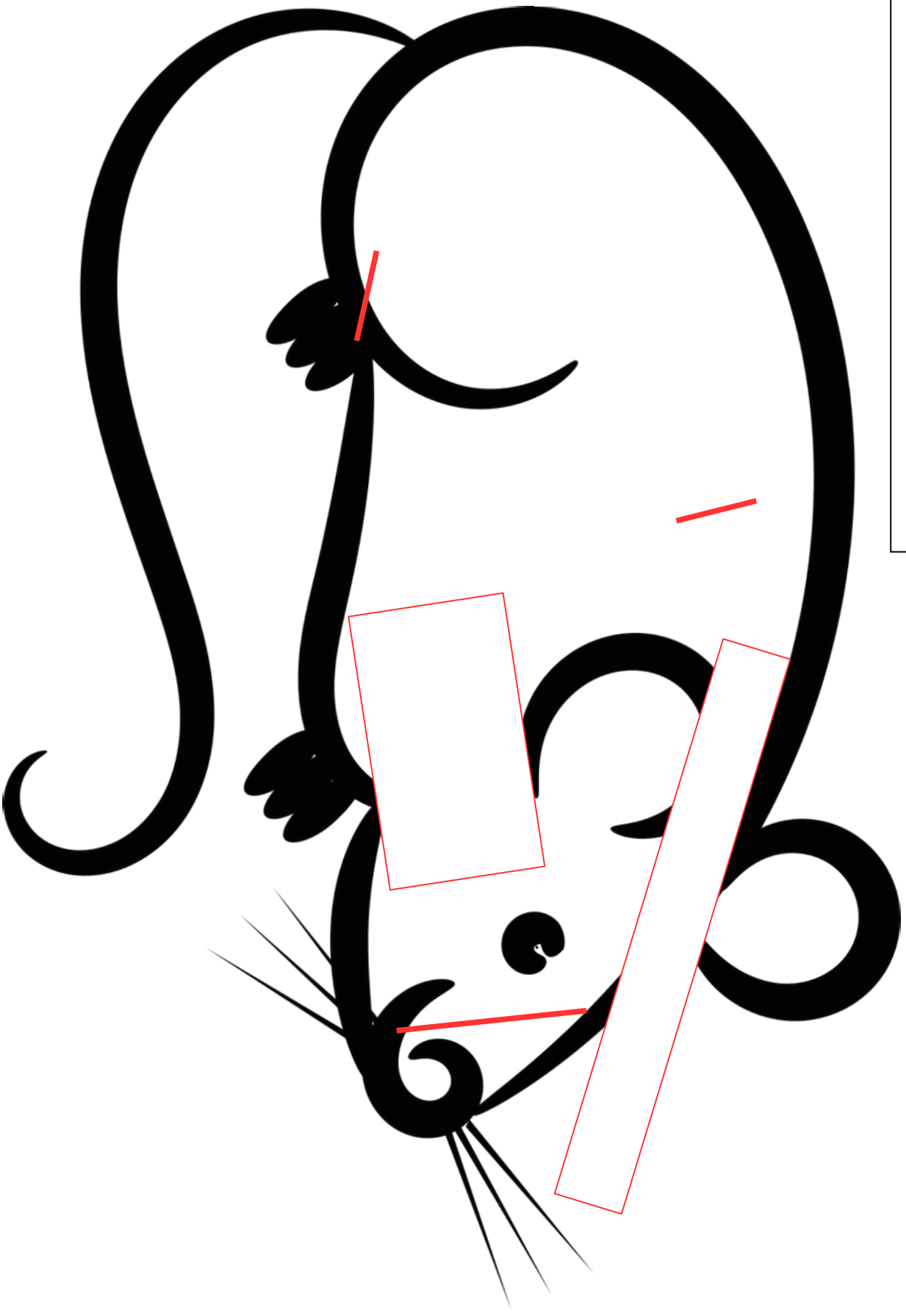

Image source:
https://pixabay.com/de/kegelrad-helix-maus-spirale-1294937/

License: CC0

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Template 9

Body budgie

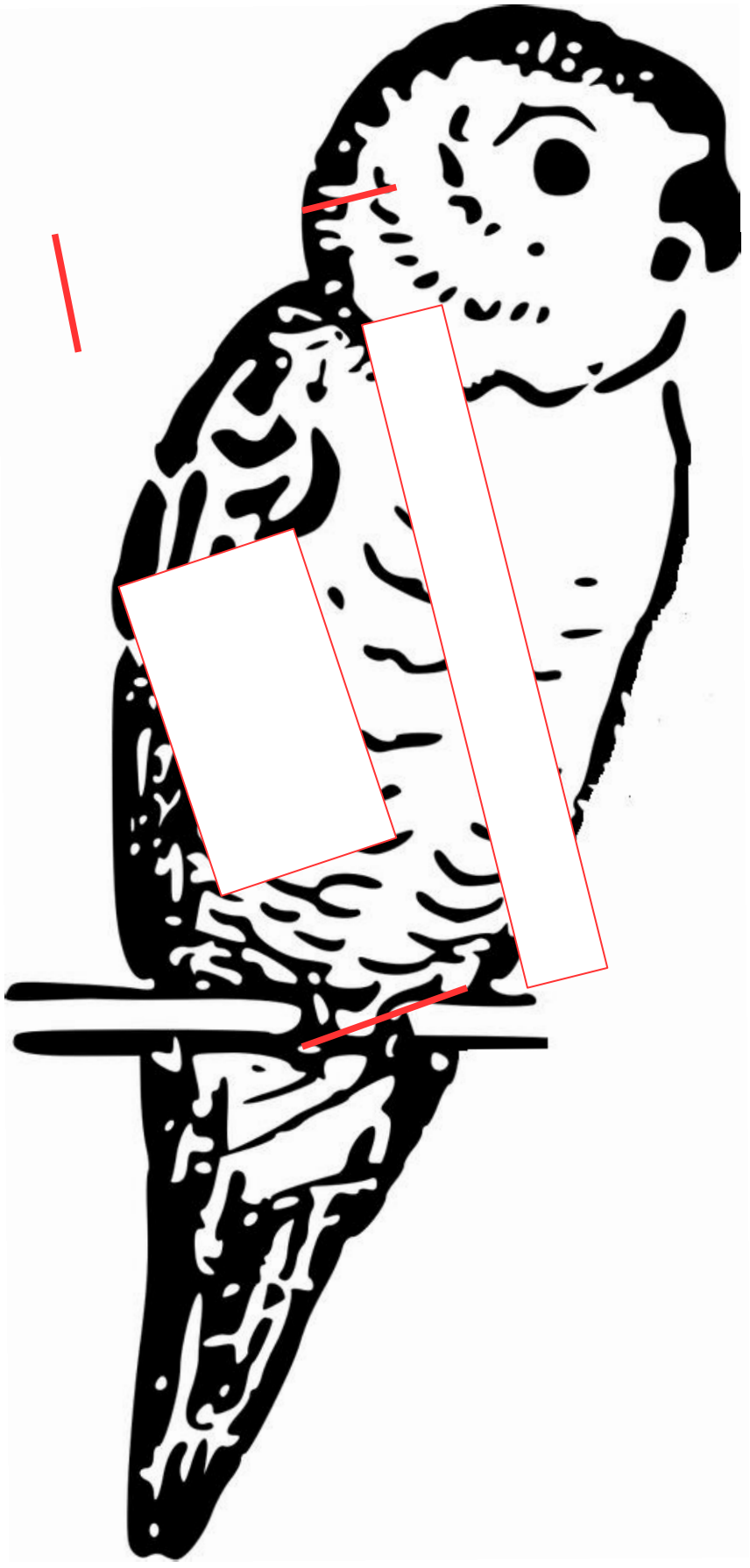

Image source:
https://pixabay.com/de/tier-vogel-wellensittich-lutz-2028596/

License: CC0

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Template 10

Body parrot

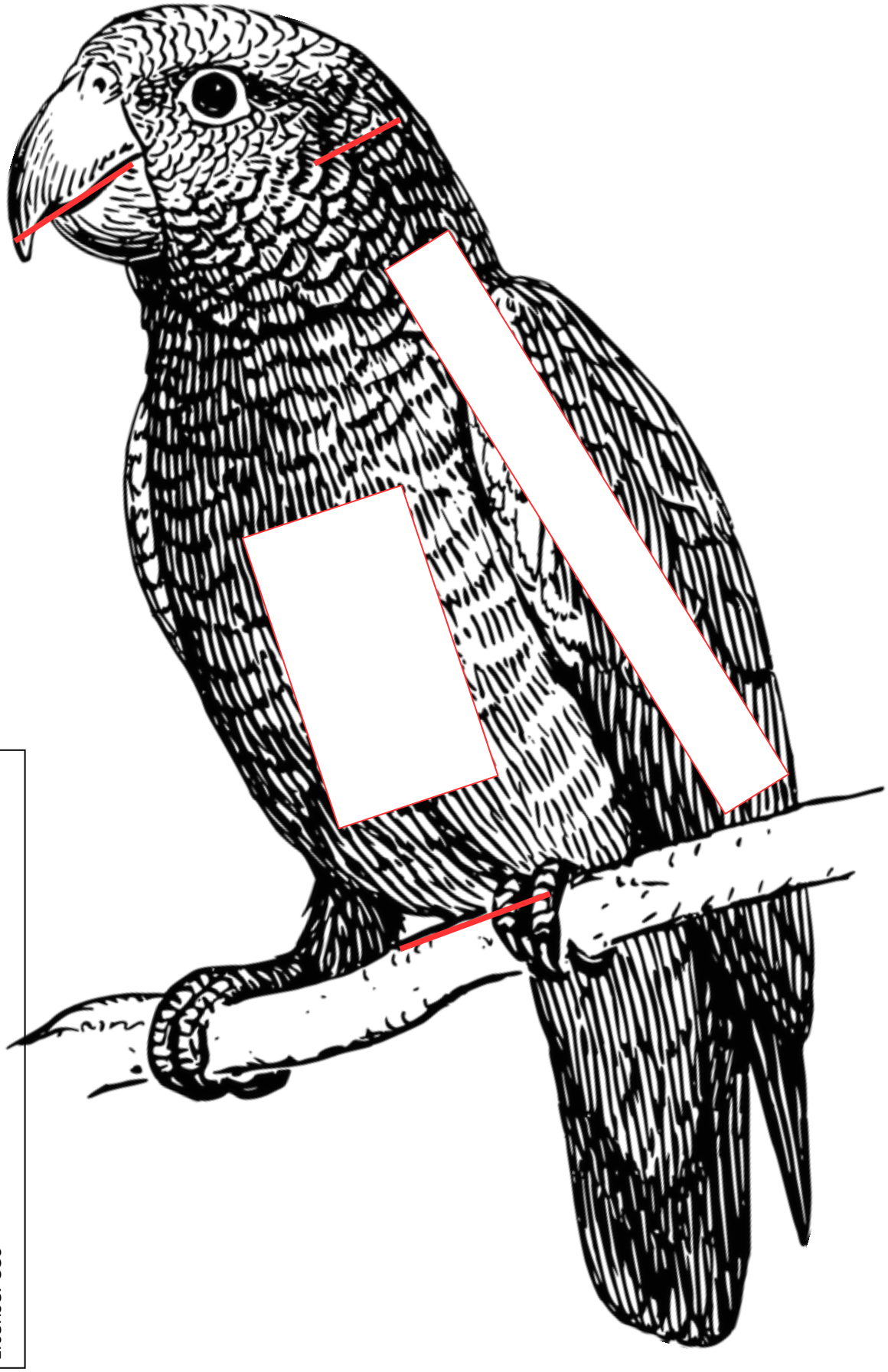

Image source:
https://pixabay.com/de/papagei-tier-biologie-vogel-153487/

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Template 11

Body pig

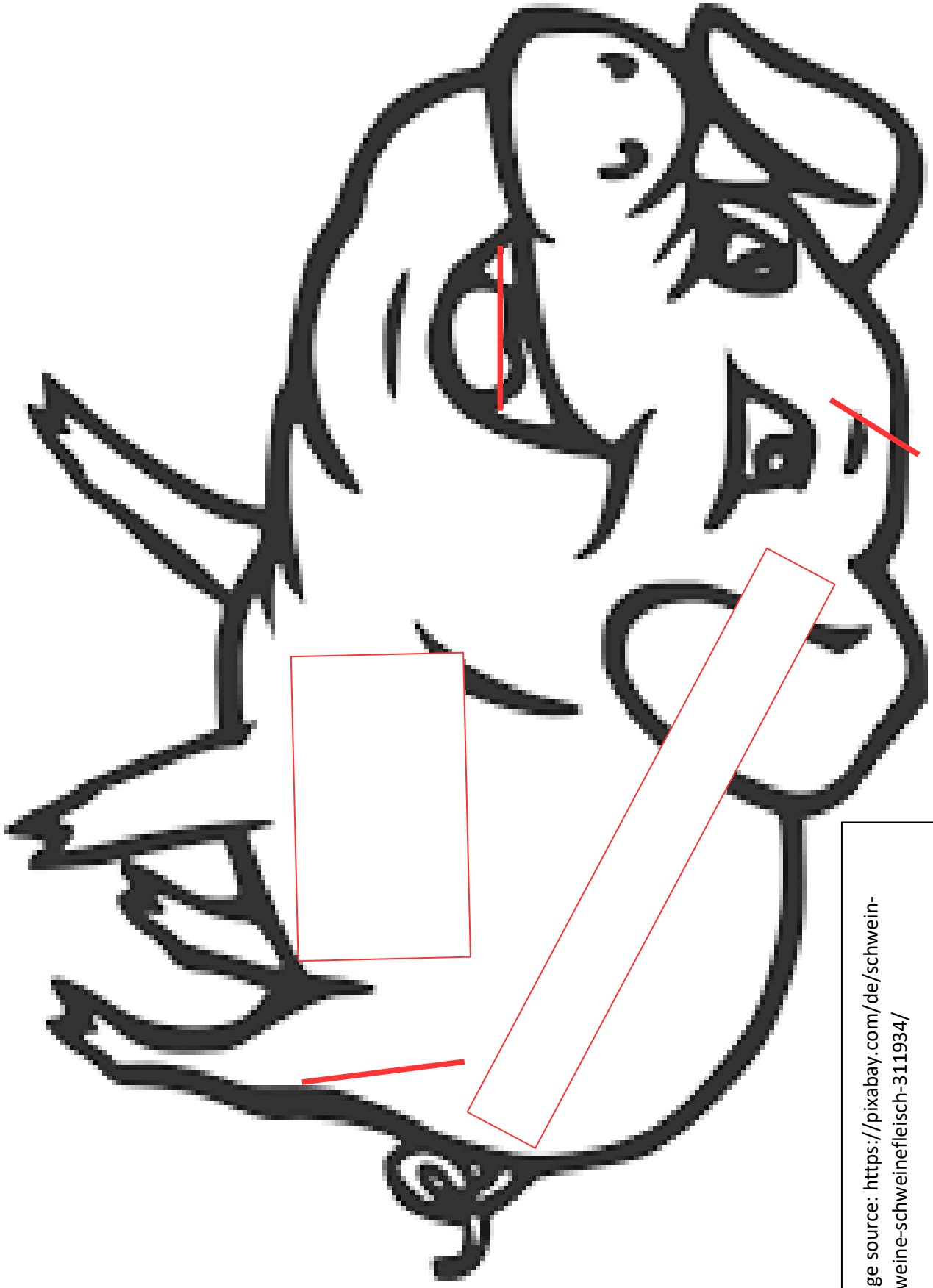


Image source: https://pixabay.com/de/schwein-schweine-schweinefleisch-311934/

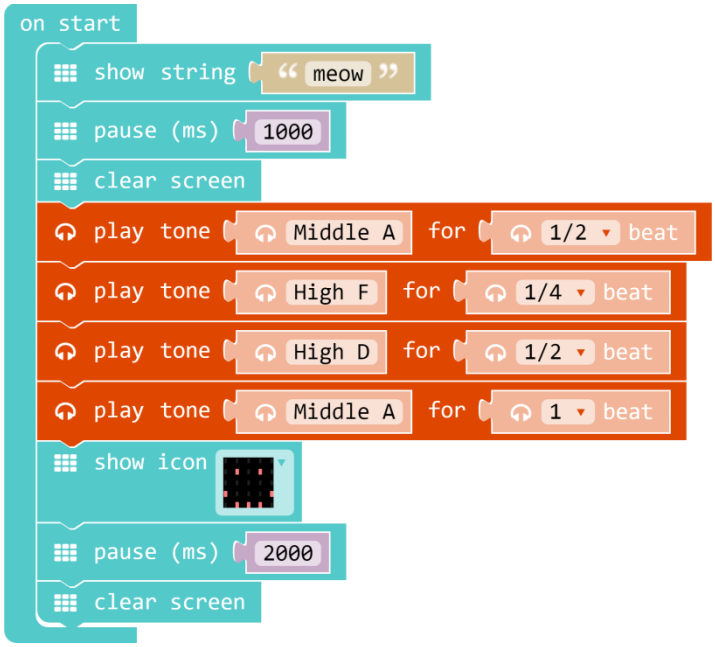
Lizense: CC0

CoALA: M. Hančl, J. Winckler

Example 1

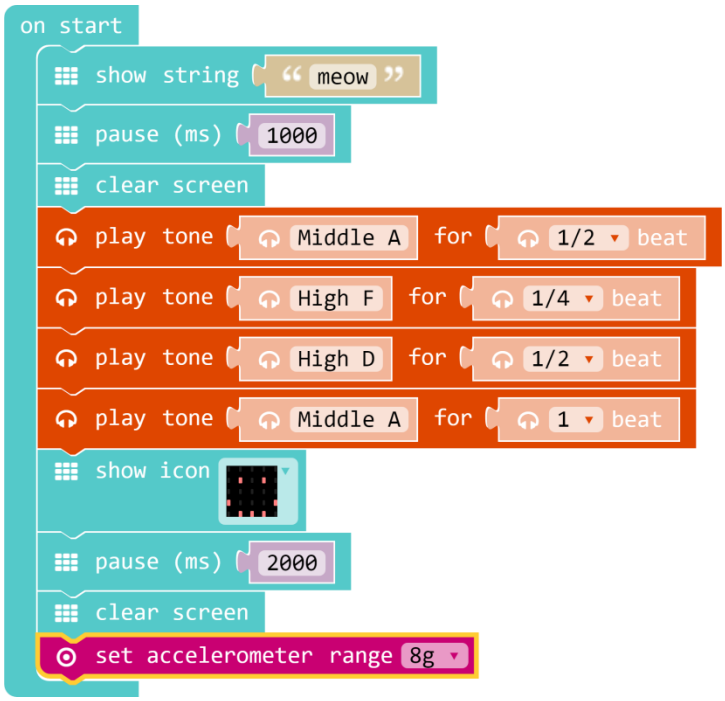
13 a.

Greeting



13 b.

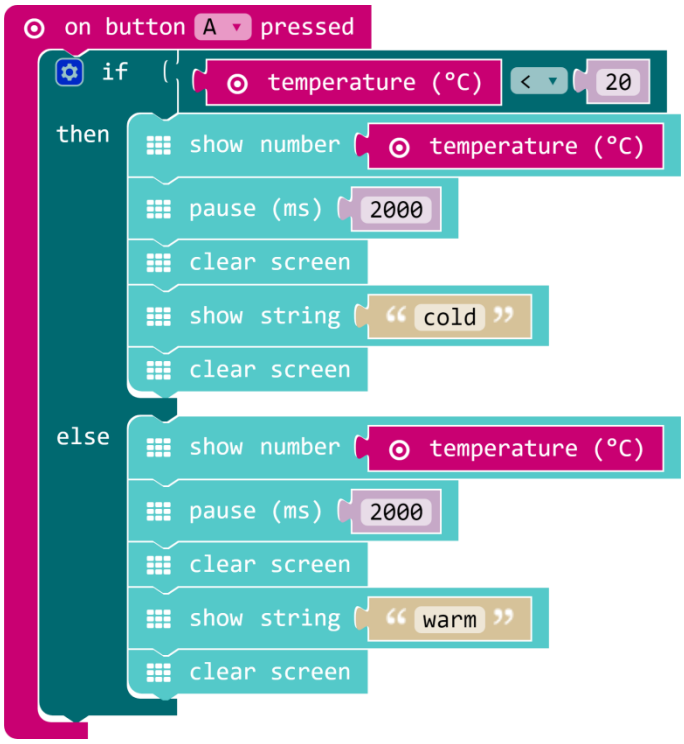
Greeting



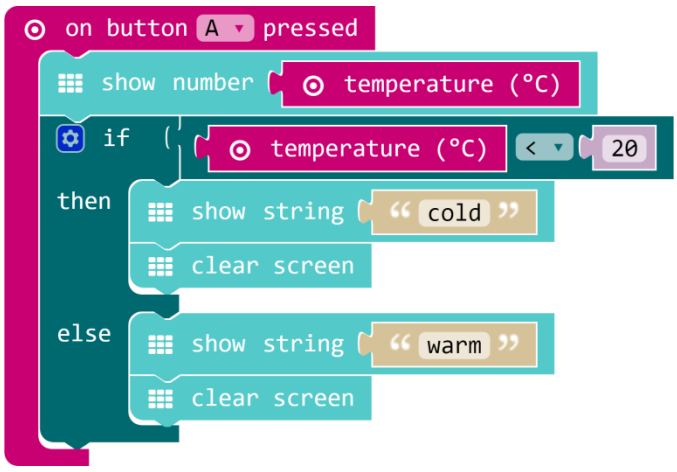
Example 2

14.

Temperature

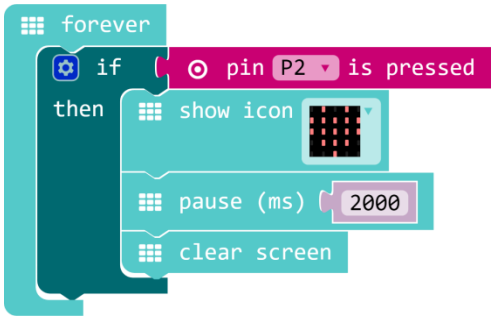


Version 2

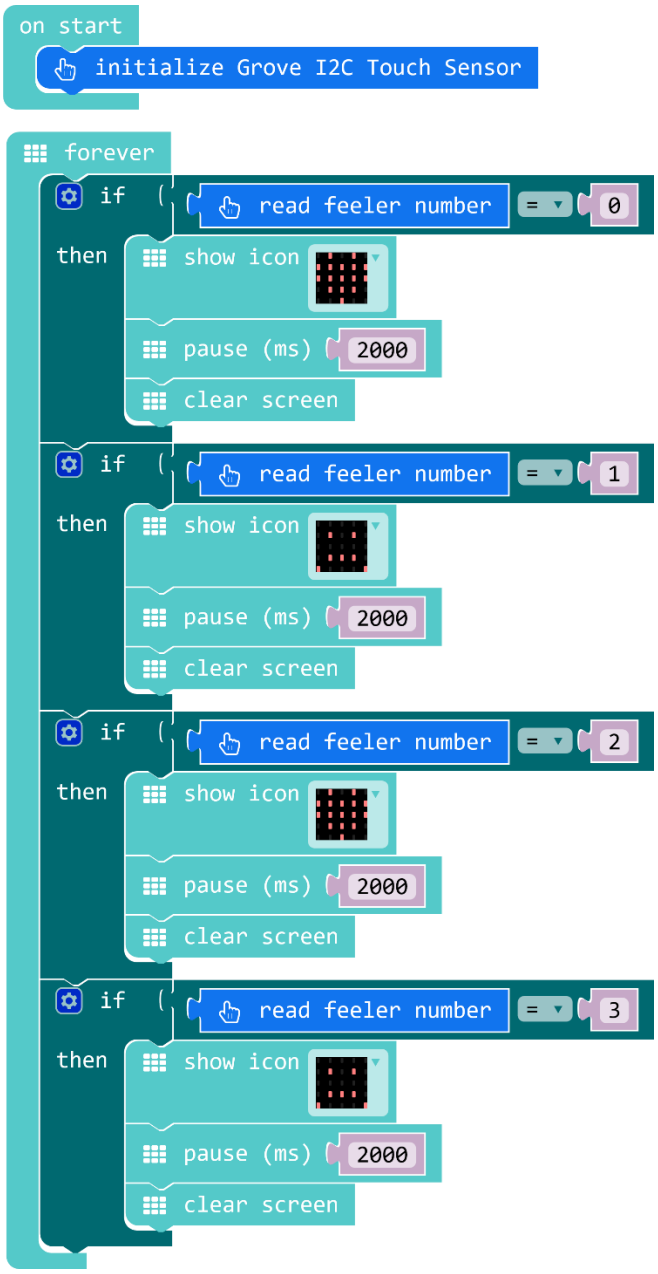


Example 3

15 a. Touch

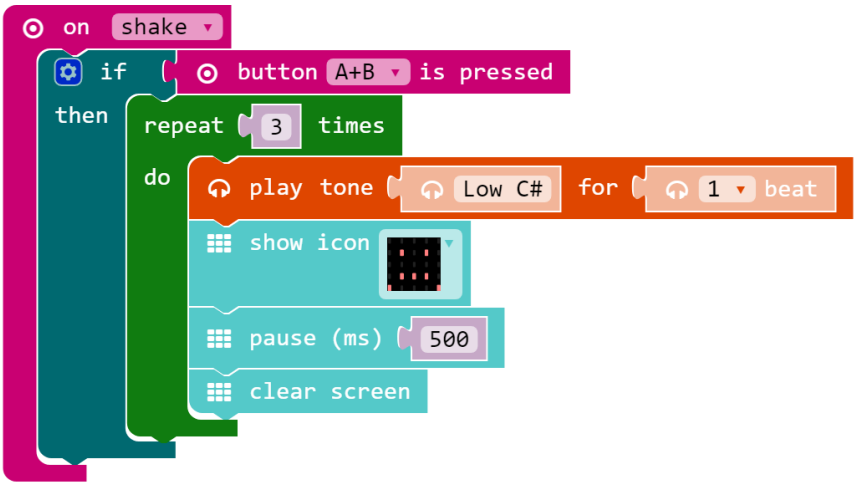


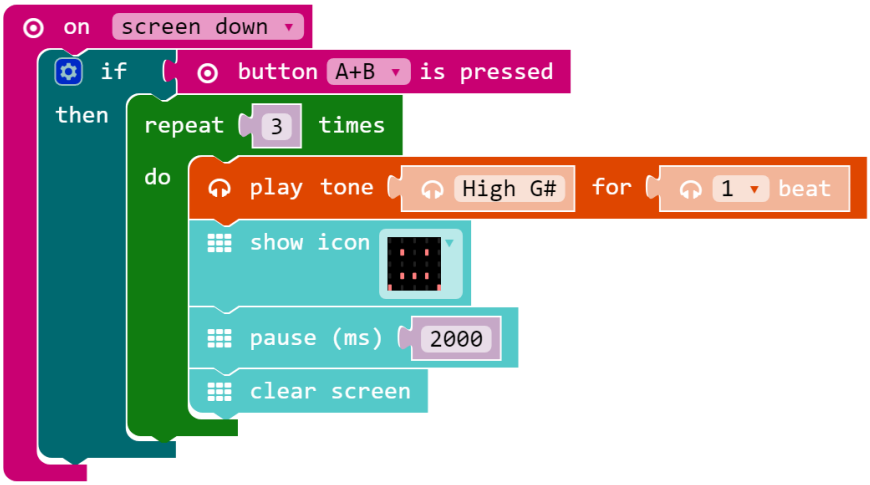
15 b. Touch

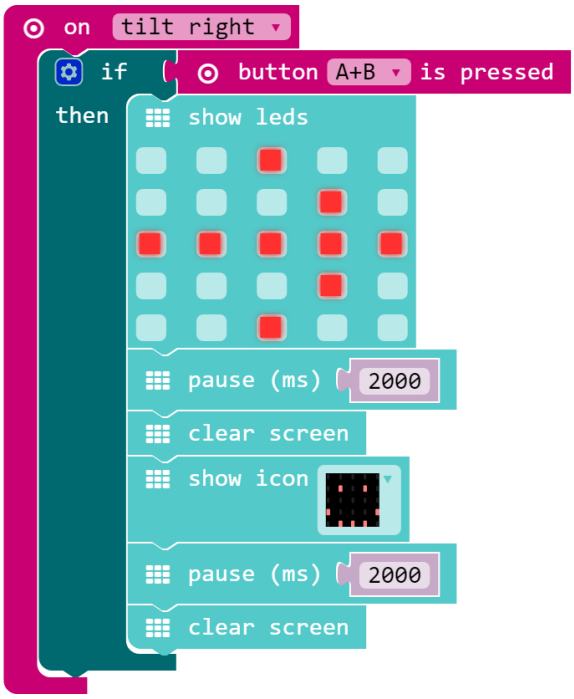


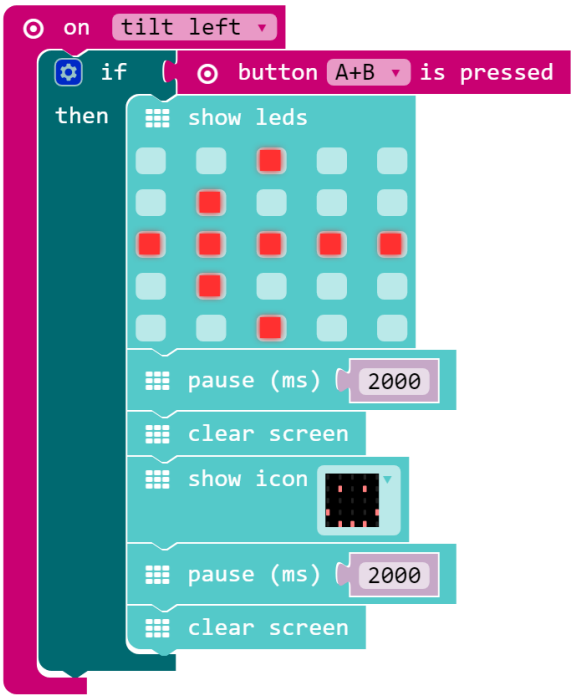
Example 4

16 a. Motion



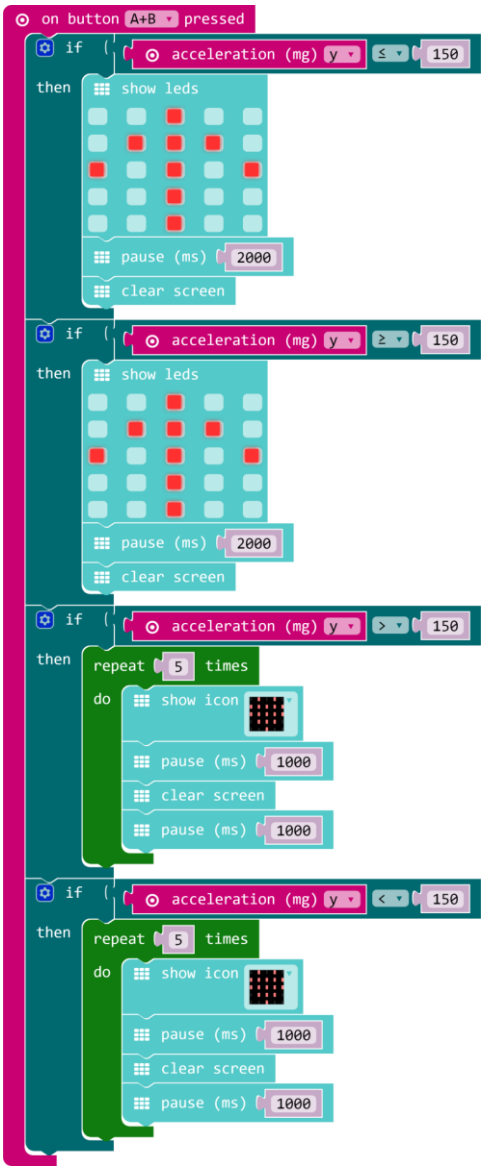


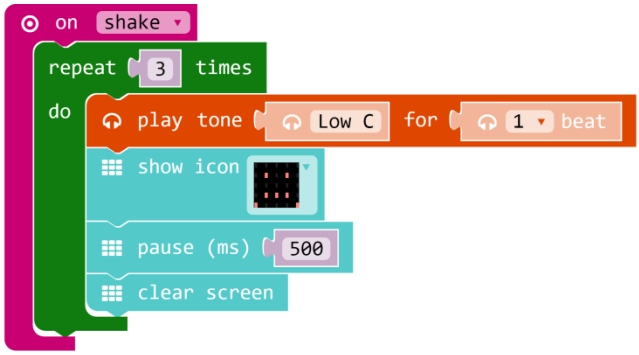


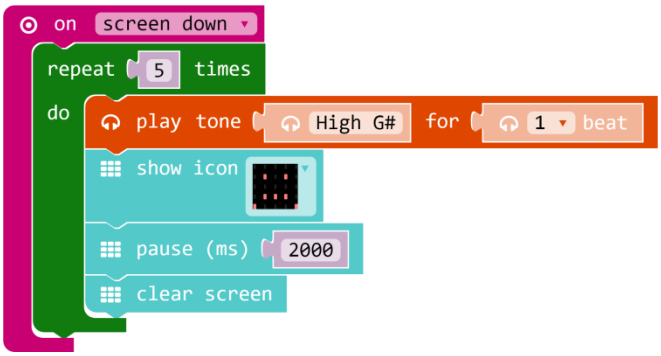


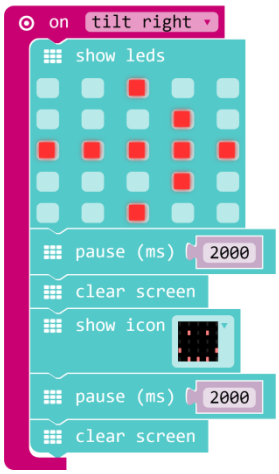
Example 4

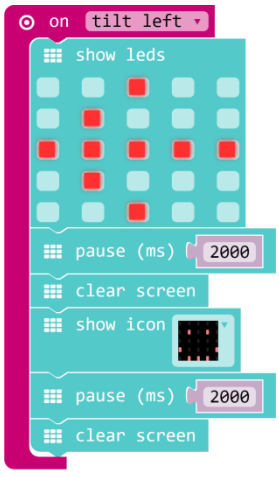
16 b. Motion











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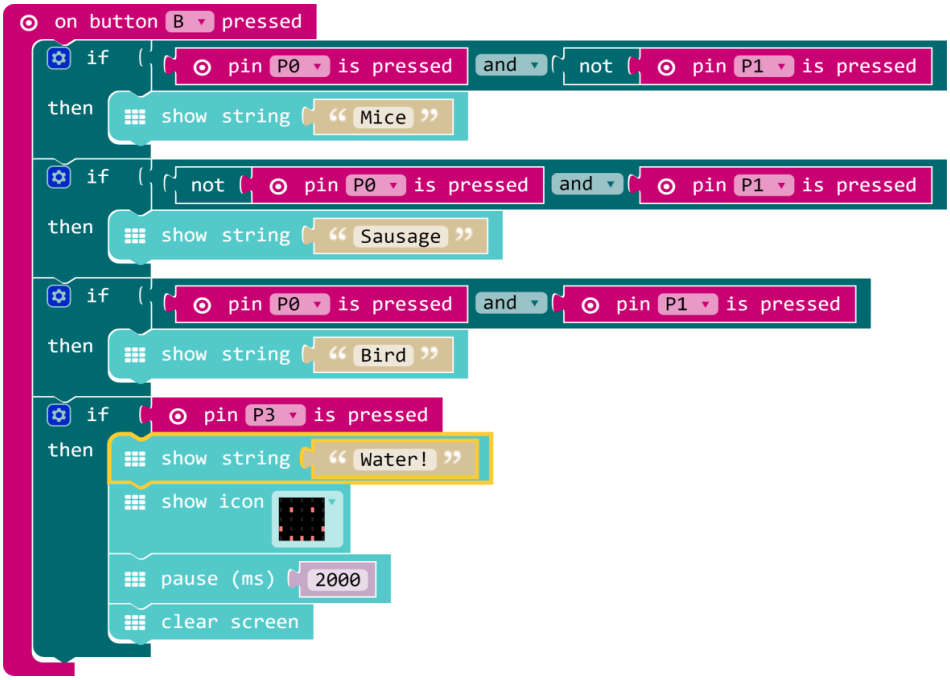
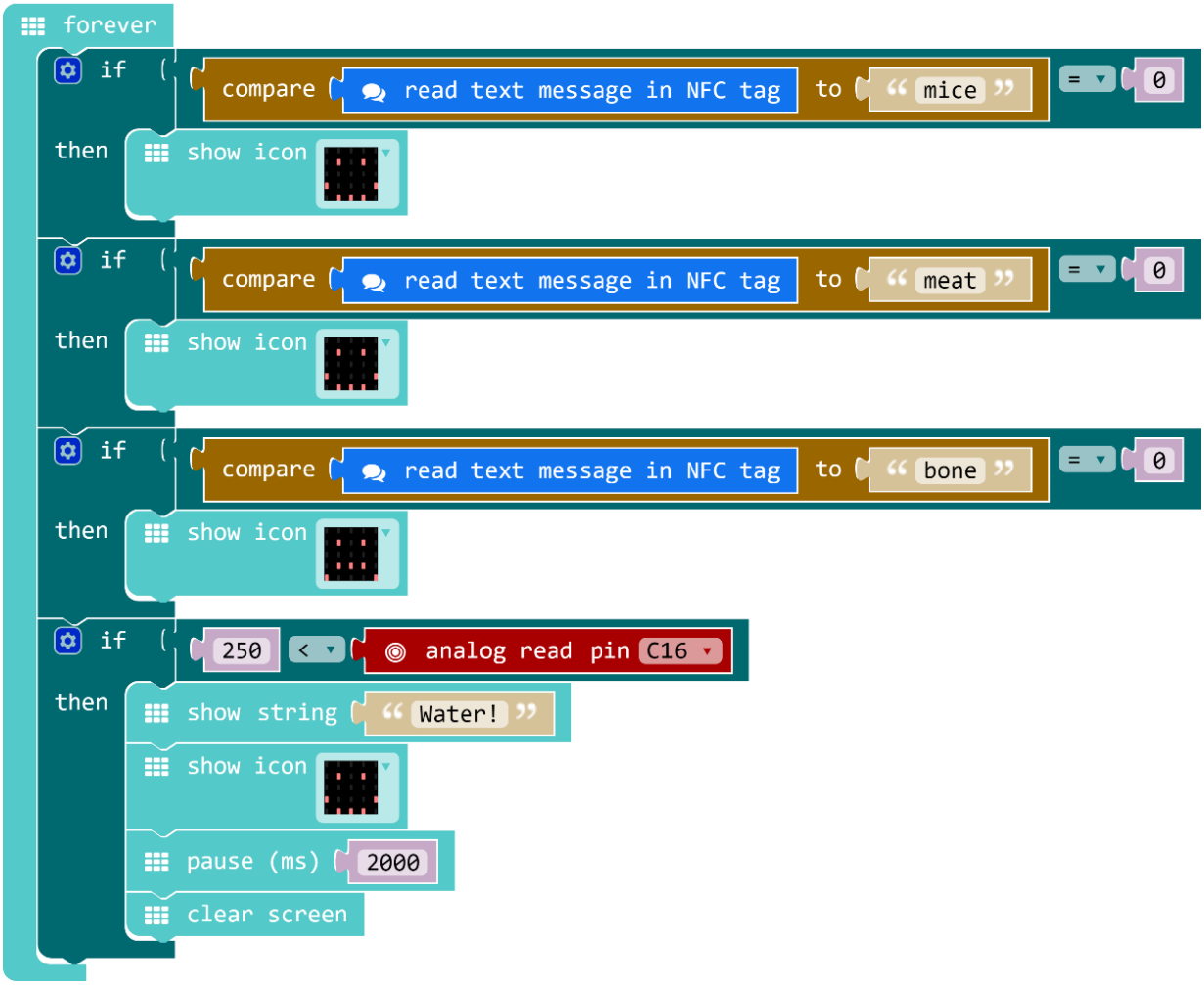
Example 5

17 a. and 18 a. Food and drink



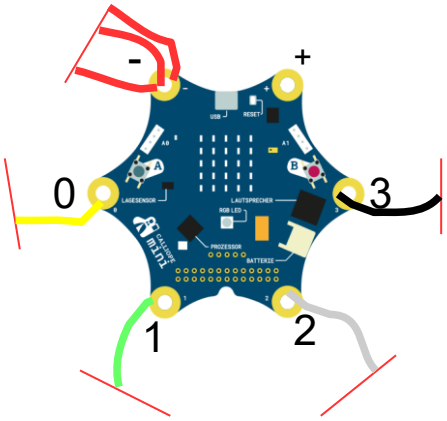
17 b. and 18 b. Food and drink

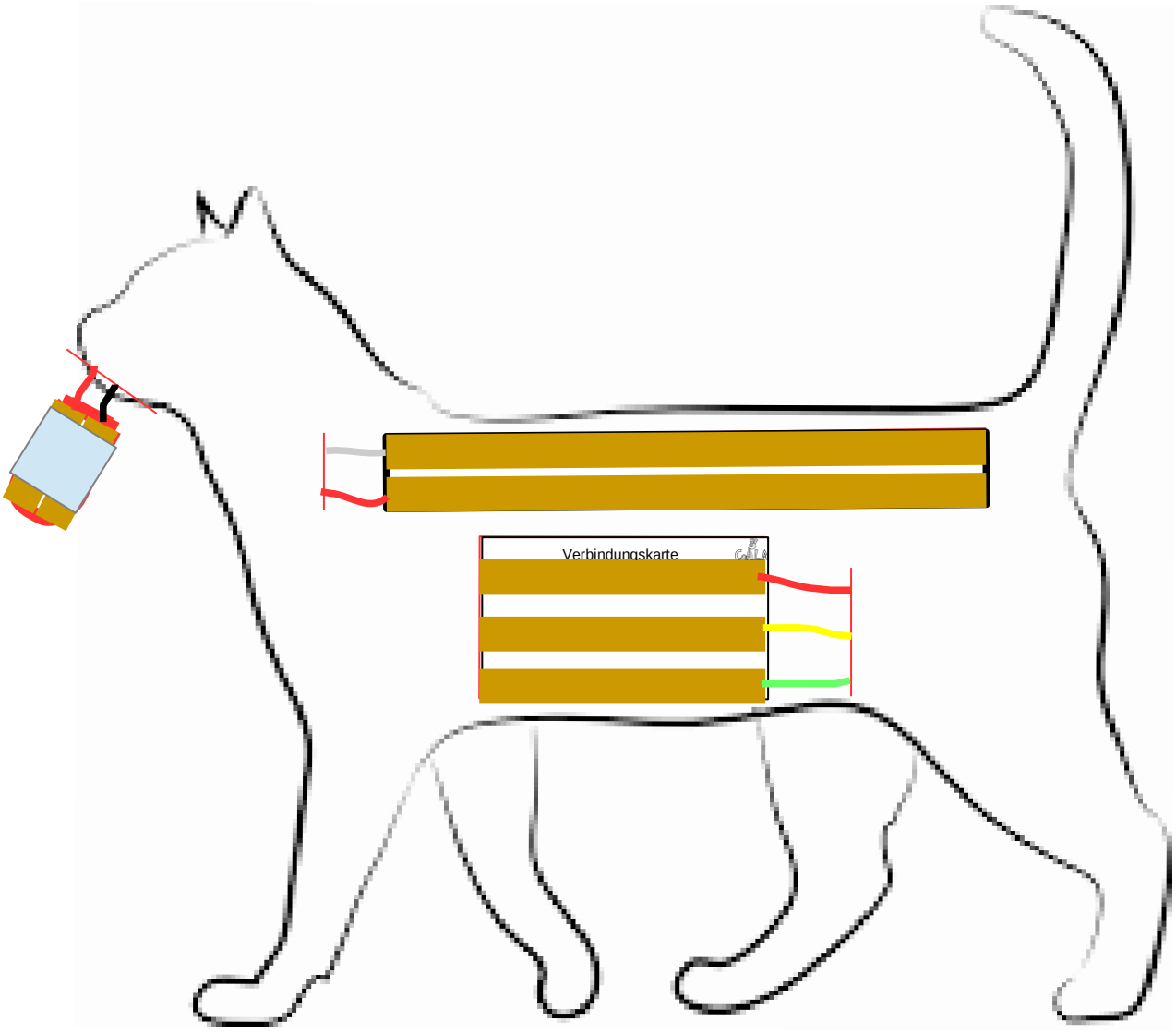


CoALA: M. Hančl, J. Winckler

Example 6

19. Body





Bildquelle: https://pixabay.com/de/schwein-schweine-schweinefleisch-311934/

Lizenz: CC0

CoALA: M. Hančl, J. Winckler

Test 1

Name:_____ Date:_____

Task 1: What is a statement? Explain.

Task 2: What is a sequence? Explain.

Task 3: Was is a loop? Explain.

Test 1

Name:_____ Date:_____

Task 4: Code your own program.

Task 5: Explain your program.

Test 2

Name:_____ **Date:**_____

Task 1: What is a statement? Explain.

Task 2: What is a sequence? Explain.

Task 3: What is a loop? Explain.

Task 3: What is a branch? Explain.

Test 2

Name:_____ **Date:**_____

Task 5: Code your own program.

Task 5: Explain your program.