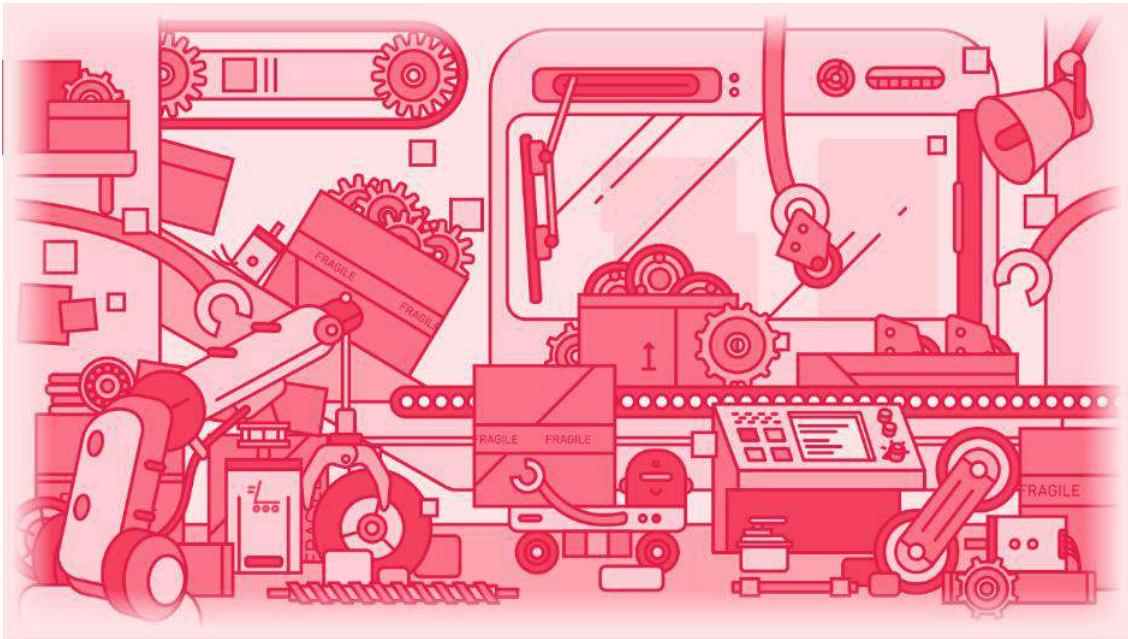


Eddy's Secret : Actuators

1. Online game : room contents

Actuators are all elements that can modify the behaviour of the robot. This modification can be made by: motors moving, LEDs emitting light, loudspeakers emitting sound or with Wifi or radio waves.



Here are the different clickable elements, as well as the text displayed in the game:



This motor is too small. Did you know that this is also an actuator? An actuator is anything that converts one type of energy into another, e.g., turning electricity into motion or light.



Gears and pulleys are widely used to convey motion, or even to speed up or slow down motion, as needed.



By combining motors moving in different directions, we can create very complex movements, e.g., some robotic arms.



Not every actuator is a motor! It can also refer to a source of sound, for example, just like with this loudspeaker.



Not every actuator is a motor! It can also refer to a source of light, for example, the multi-coloured LEDs in this light panel. That's right! By combining the light of red, green and blue LEDs, any colour can be emitted. This is what happens inside every pixel on a computer screen.

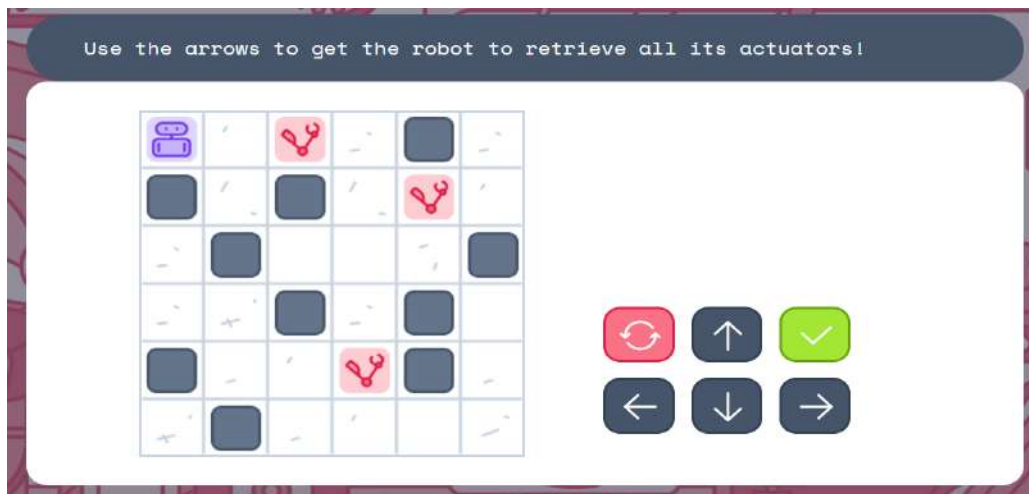


The motors in a robot depend on how it works. Will the motors drive wheels, robotic arms or rotor blades? This one has to lift objects with its arms and move using its wheels!

The main puzzle starts when you click on the large engine containing the room symbol.



In this puzzle you have to collect all the necessary actuators from a grid: motors for the articulated arm and for the tracks, coloured LEDs and a loudspeaker. To do this, you have to plan the robot's path on the grid, with a sequence of arrows, avoiding obstacles. The code to find is 2331.



2. Additional puzzles on paper

Activity 1: Trajectories

Difficulty: ★☆☆

A drawing has been coded with arrows. You have to draw the trajectory to decode it, starting from the coloured square. The secret code is the name of the drawing you get.

Objective: Carry out a series of instructions

Activity 2: The chocolate machine

Difficulty: ★★☆☆

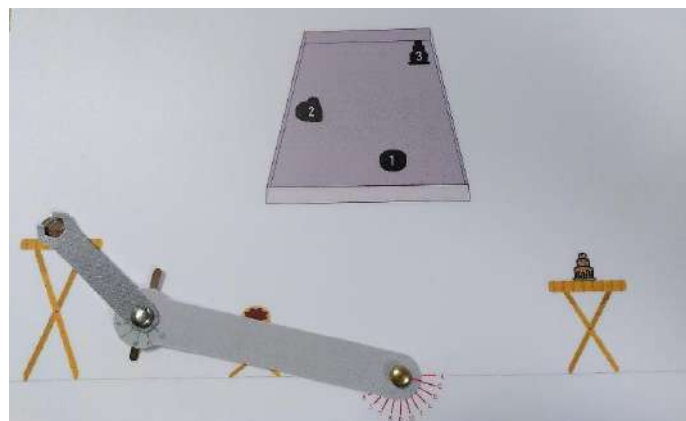
You are an engineer and you have to program the robotic arm of a machine that places chocolates in their boxes. Start by cutting out the machine and the two parts of the robot arm. Cut small holes in the black circles and join them together with two brads. Pay attention to the colours: the red lines must be together, and the green lines too. To program the position of the arm, you have to find a code with an uppercase letter (position of the big arm, in red) and a lowercase letter (position of the small arm, in green). For example, the code for the chocolate heart is Cu. Your task is to program the robot to grab each item from its table, and place it on its black silhouette in the box, in the order indicated by the numbers.

If you program the right sequence of movements, the secret code will appear.

Objectives: Plan a series of instructions
Understand and utilise a new positional coding system

Materials: Two brads
Scissors

It is advisable to print the material on thick paper or cardboard



Activity 3: Tangram

Difficulty: ★★☆☆

You have built a beautiful robot, covered with LEDs to colour its surface. Unfortunately, the LEDs have gone out and the colours are no longer visible! You have to cut out the coloured pieces and put them back in the right place on the robot's silhouette to fix it. When the robot has all its colours, you will see a 3-digit secret code appear. Attention: the number 0 is not part of the secret code!

Objectives: Understand that LEDs are also actuators
Reconstruct a silhouette from simple shapes

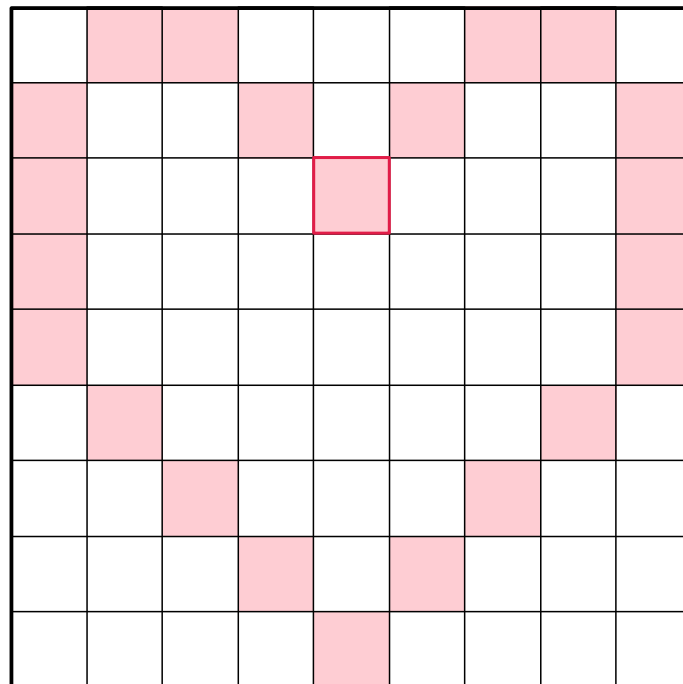
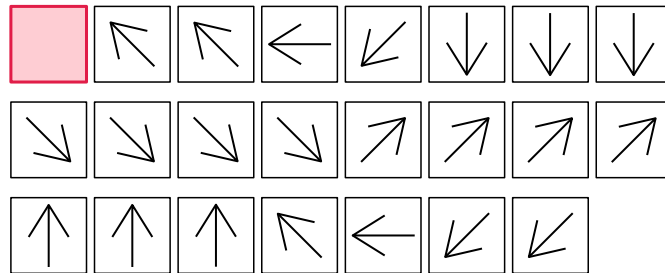
Material: Scissors

3. Answer to the additional puzzles

Eddy's secret – Actuators

Trajectories

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Secret code: H E A R T

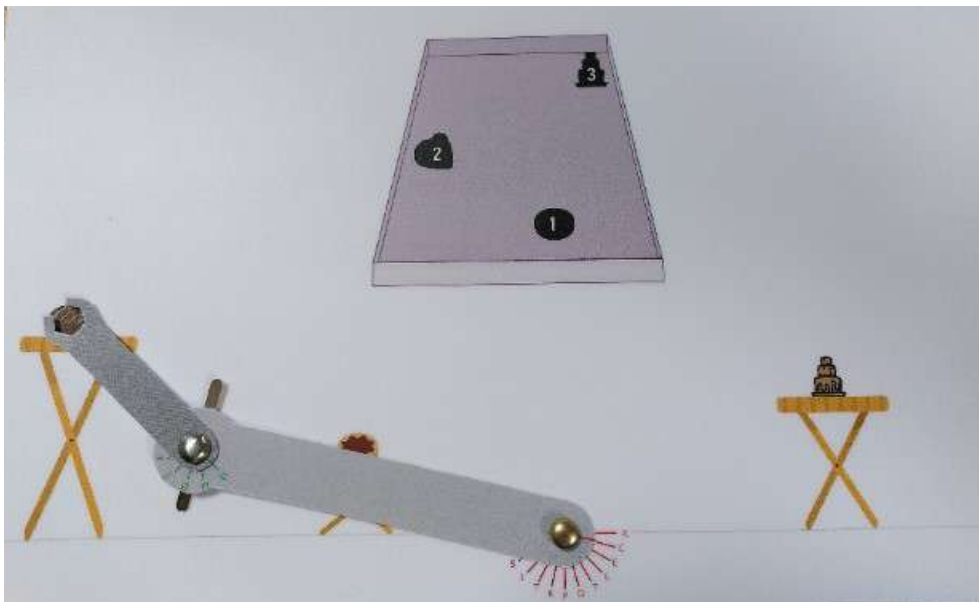
The chocolate machine

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Start by cutting out the machine and the two parts of the robot arm. Cut small holes in the black circles and join them together with two brads. Pay attention to the colours: the red lines must be together, and the green lines too.

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Your task is to program the robot to grab each item from its table, and place it on its black silhouette in the box, in the order indicated by the numbers.



Secret code: ArTiCuLaTiOn

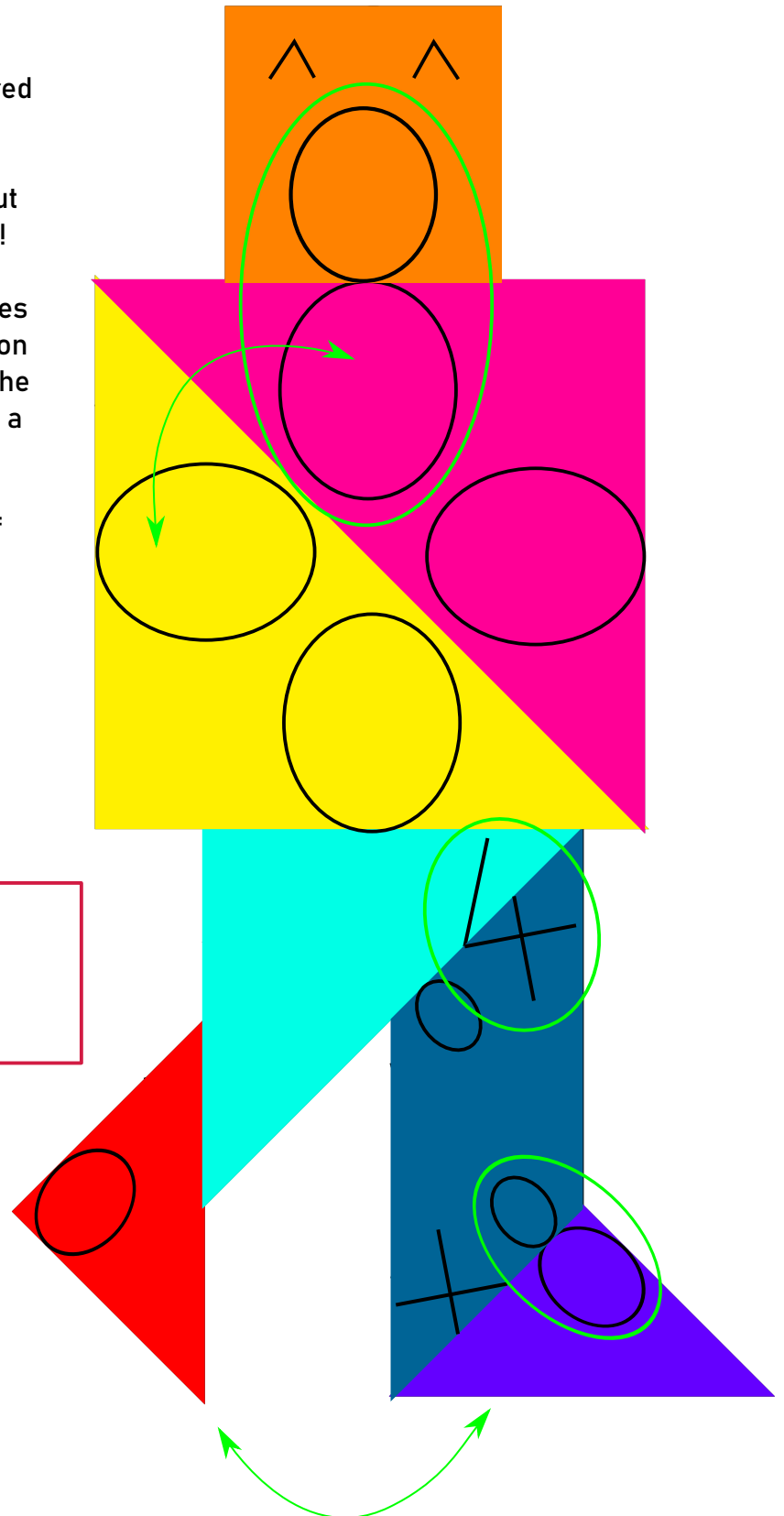
Tangram

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Unfortunately, the LEDs have gone out and the colours are no longer visible!

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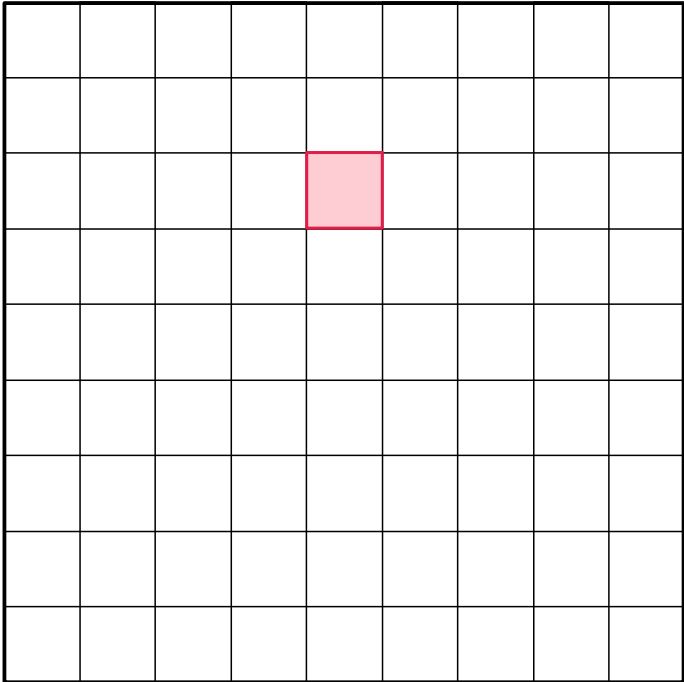
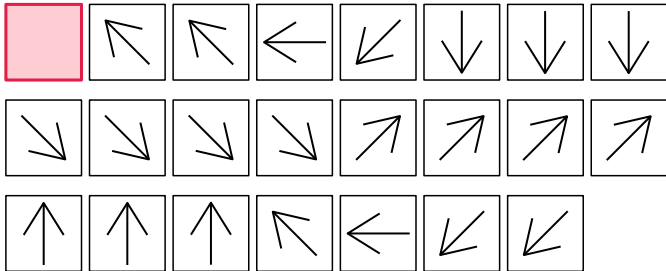
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Secret code: 8 4 8

Trajectories

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Secret code: _____

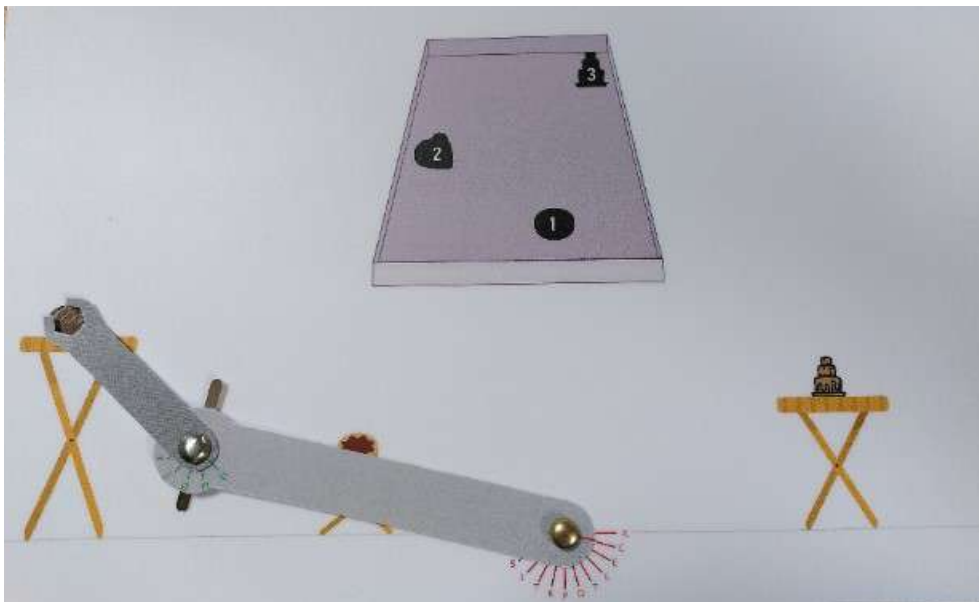
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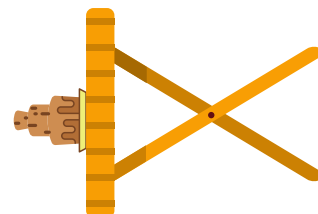
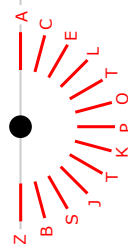
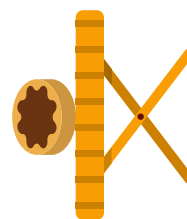
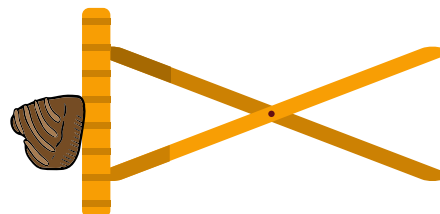
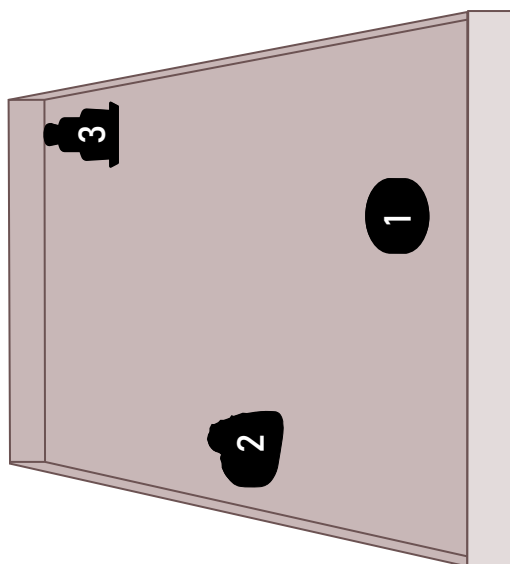
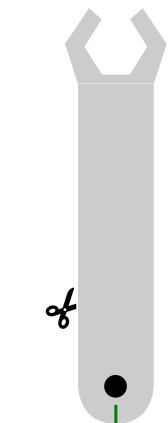
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Secret code:



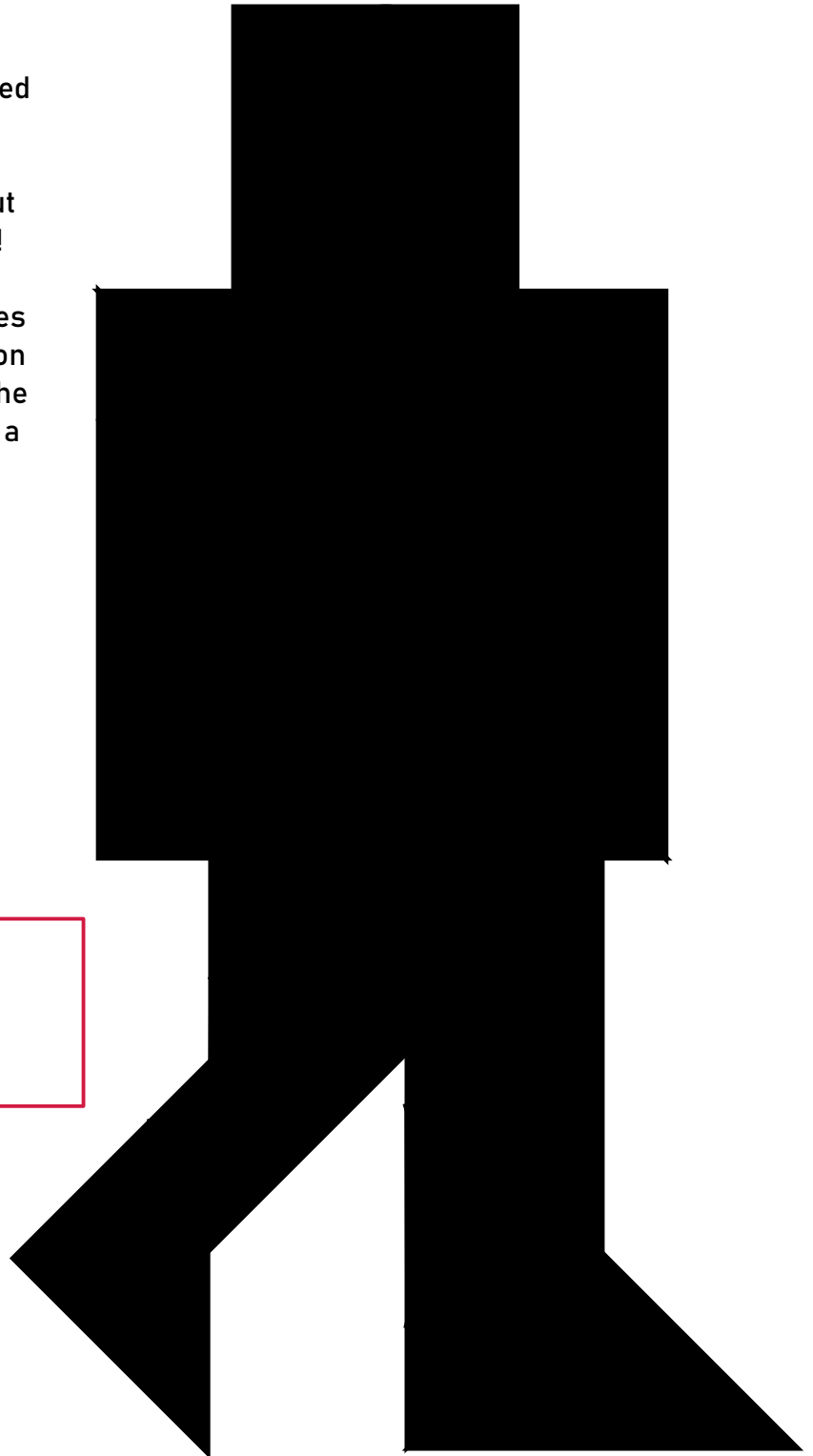
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Secret code:

— — —

