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RESCUE MISSION

PRINT PDF & DETAILED INSTRUCTIONS

Riddle 1: Electric puzzle

The goal of this puzzle is for participants to correctly read the electric schematic and use it to properly connect the electronic components to the Arduino.

Item list:

- Arduino UNO
- Micro Servo
- Pushbutton 2X
- High resistor 2X (10kΩ)
- A power source (USB cable or Battery)
- Breadboard
- Set of Jump Wires
- Cardboard / Wood

Program for Arduino

The following lines of code must be copied into Arduino IDE and uploaded to Arduino UNO. (Online you can find multiple tutorials for this)

Program:

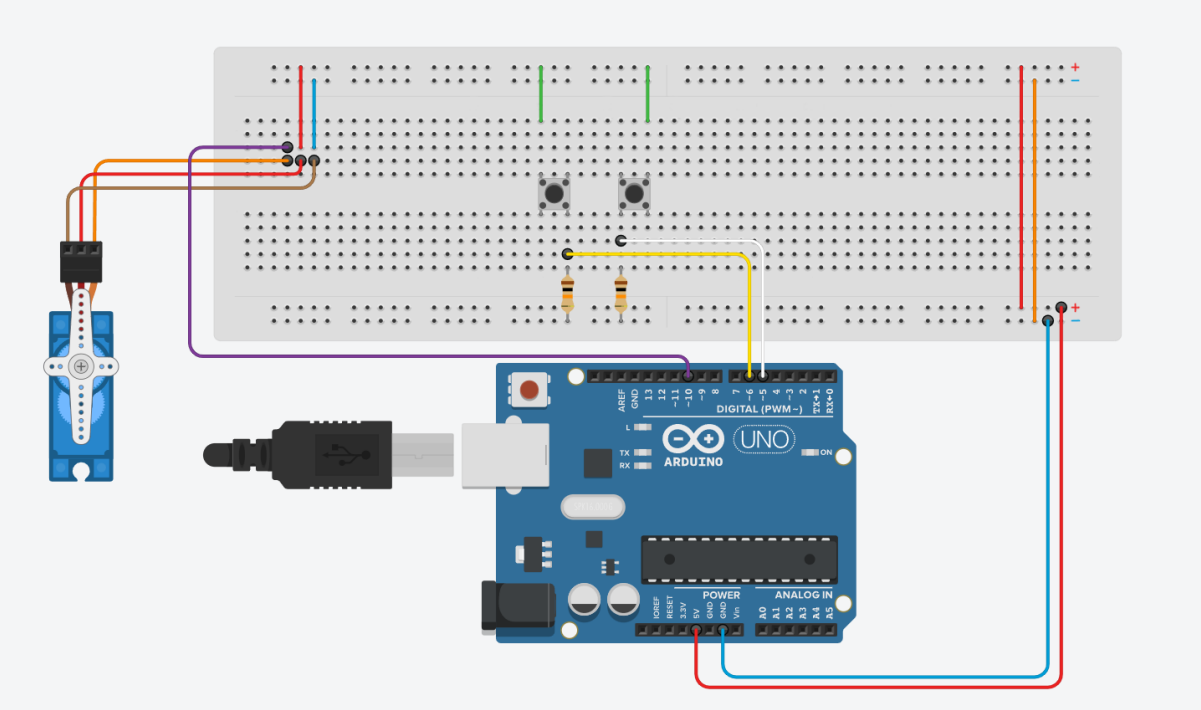
```
#include <Servo.h>

int Button = 0;

int Button1 = 0;

int CanRotate = 0;

Servo servo_10;

void setup()
{
  pinMode(5, INPUT);
  pinMode(6, INPUT);
  servo_10.attach(10, 500, 2500);

}

void loop()
{
  Button = digitalRead(5);
  Button1 = digitalRead(6);
```

```
        if (Button == HIGH && Button1 == HIGH) {
          CanRotate = 1;
        } else {
          CanRotate = 0;
        }
        if (CanRotate == 1) {
          servo_10.write(45);
        } else {
          servo_10.write(2);
        }
        delay(0.1); // Delay a little bit to improve simulation performance
}
```

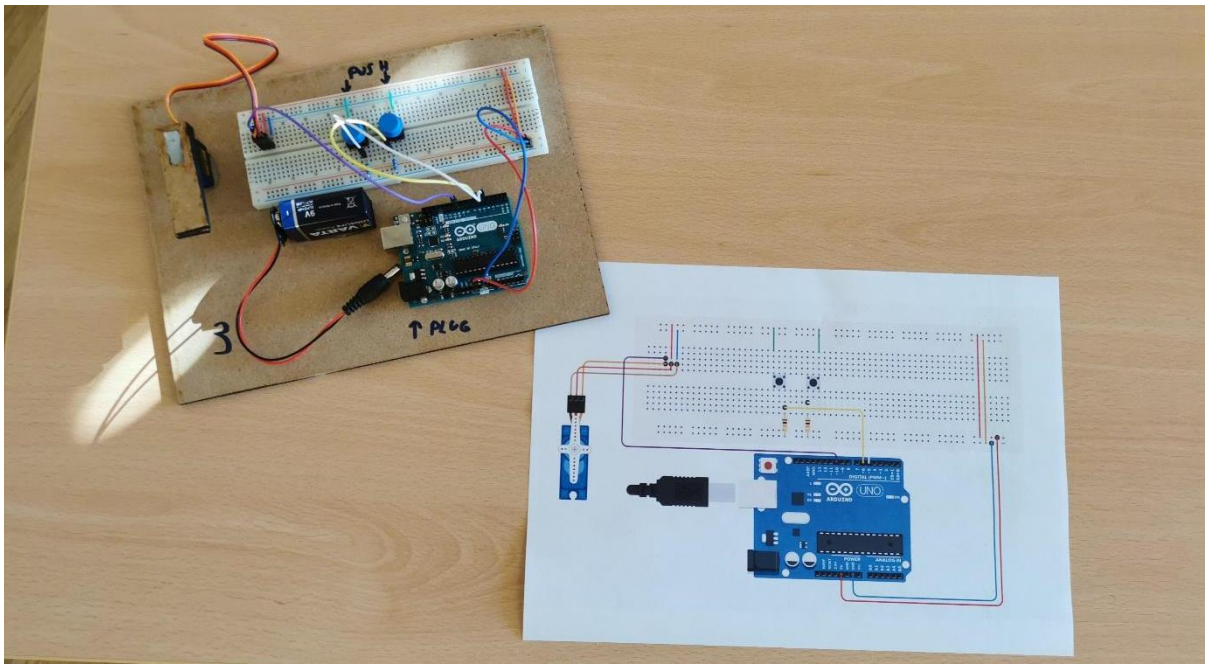
End of program

Electronics set up

For the challenge to be played it is required to set up the electronics first. We recommend fully assembling the challenge to test if it works correctly. When everything is set up as shown in the picture below the servo should rotate for 45 degrees when both buttons are pressed, when released the servo returns to the first position.



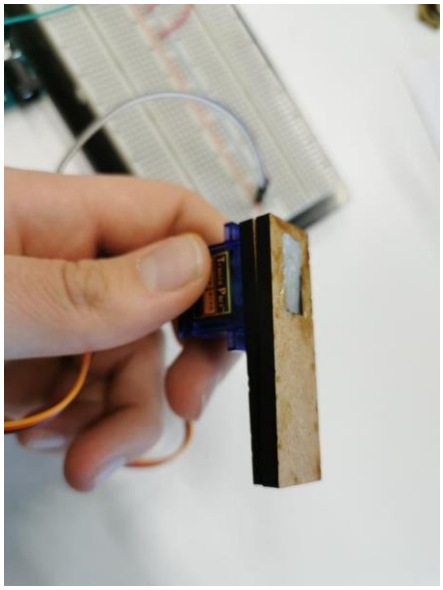
Picture 1 Schematic



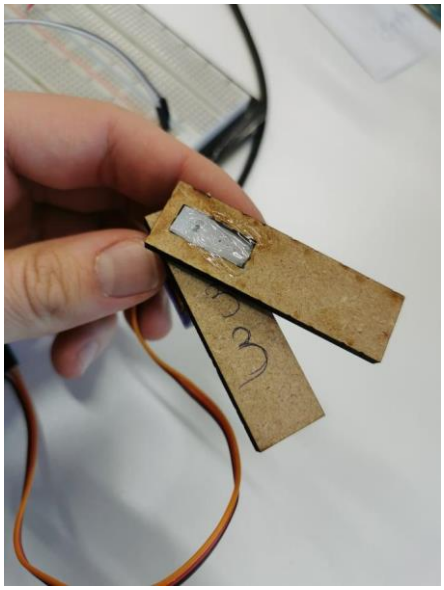
Picture 2 Actual connections based on schematic

Servo setup

The servo motor must be set up in a way that when activated will reveal the code number. It is best to first make the electronics and start it so that the Arduino rotates the servo to 0°. When you are sure the servo is rotated to 0° you can glue on two pieces of wood or cardboard to make like a scissor arrangement.



Picture 3 Closed scissors (0°)

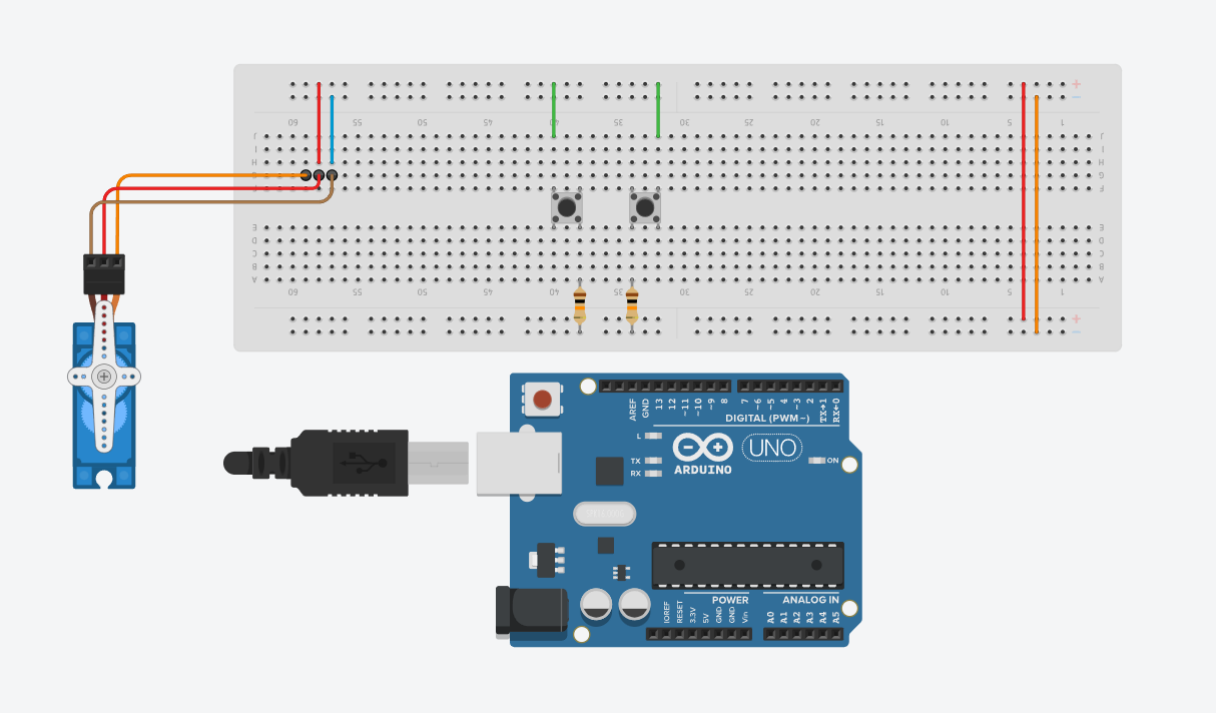


Picture 4 Open scissors (45°)

With cardboard or wood, we must achieve that when the servo is rotated to 0° the two pieces are aligned and hiding the number and when the Servo is activated and rotated to 45° the two pieces must come apart and reveal the number. On the bottom piece, write 2 numbers that are part of the lock.

Game preparation

When we confirm that the electronics work and the Servo is set up, we must prepare the puzzle for players. First, we can print the schematic picture that we provide next to the electronics. Second, we must remove a few Jumper Wires from the electronics as shown in the picture below.

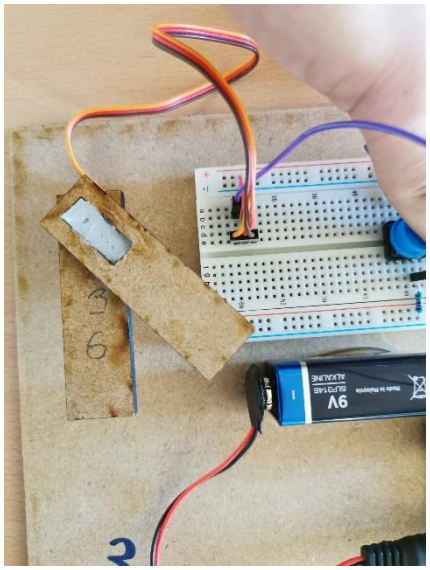


Picture 5 Disconnected schematic

Now the challenge is ready to be played.

Solution:

The solution for our puzzle is: 36



Print the last page.

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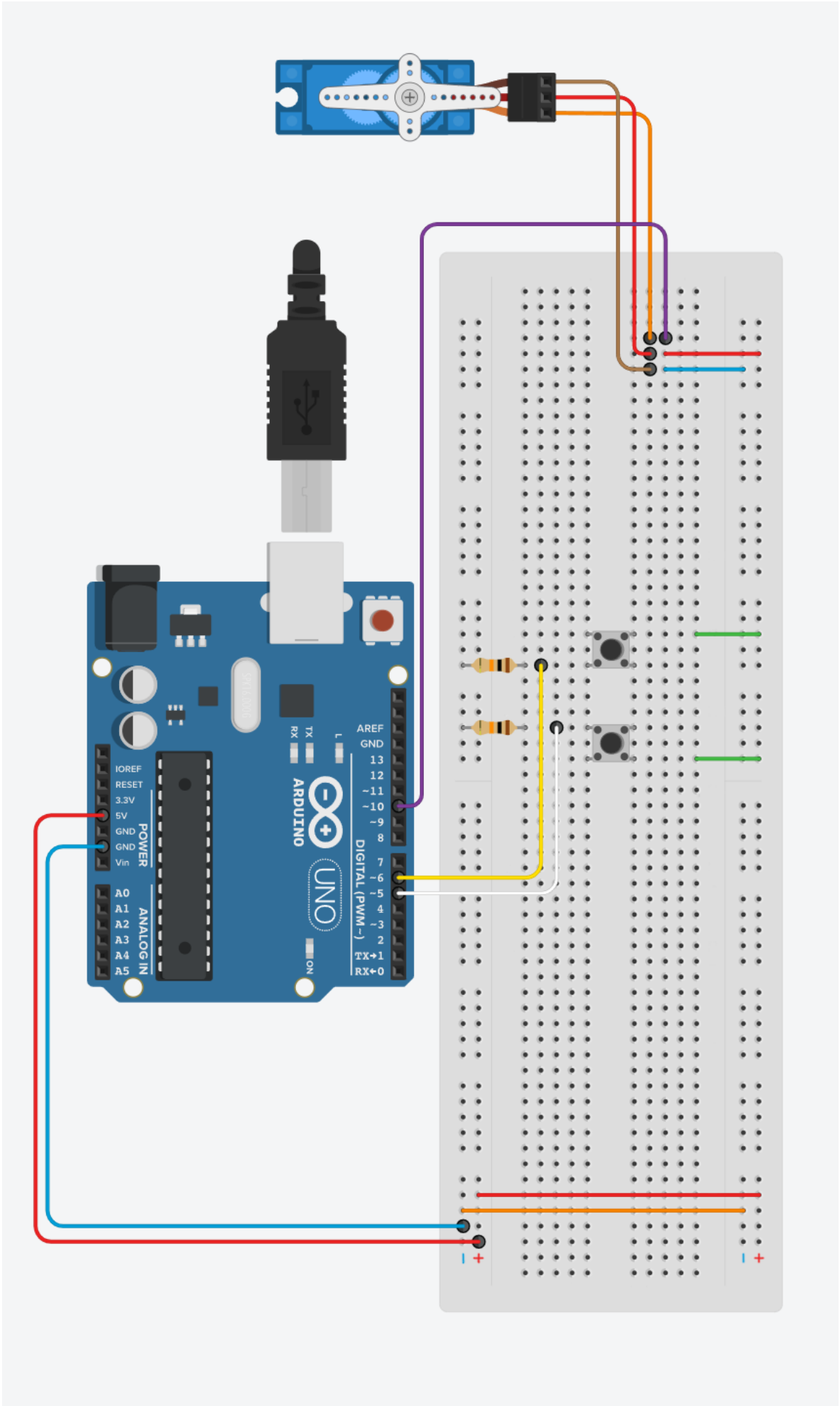


Riddle 2: Math puzzle

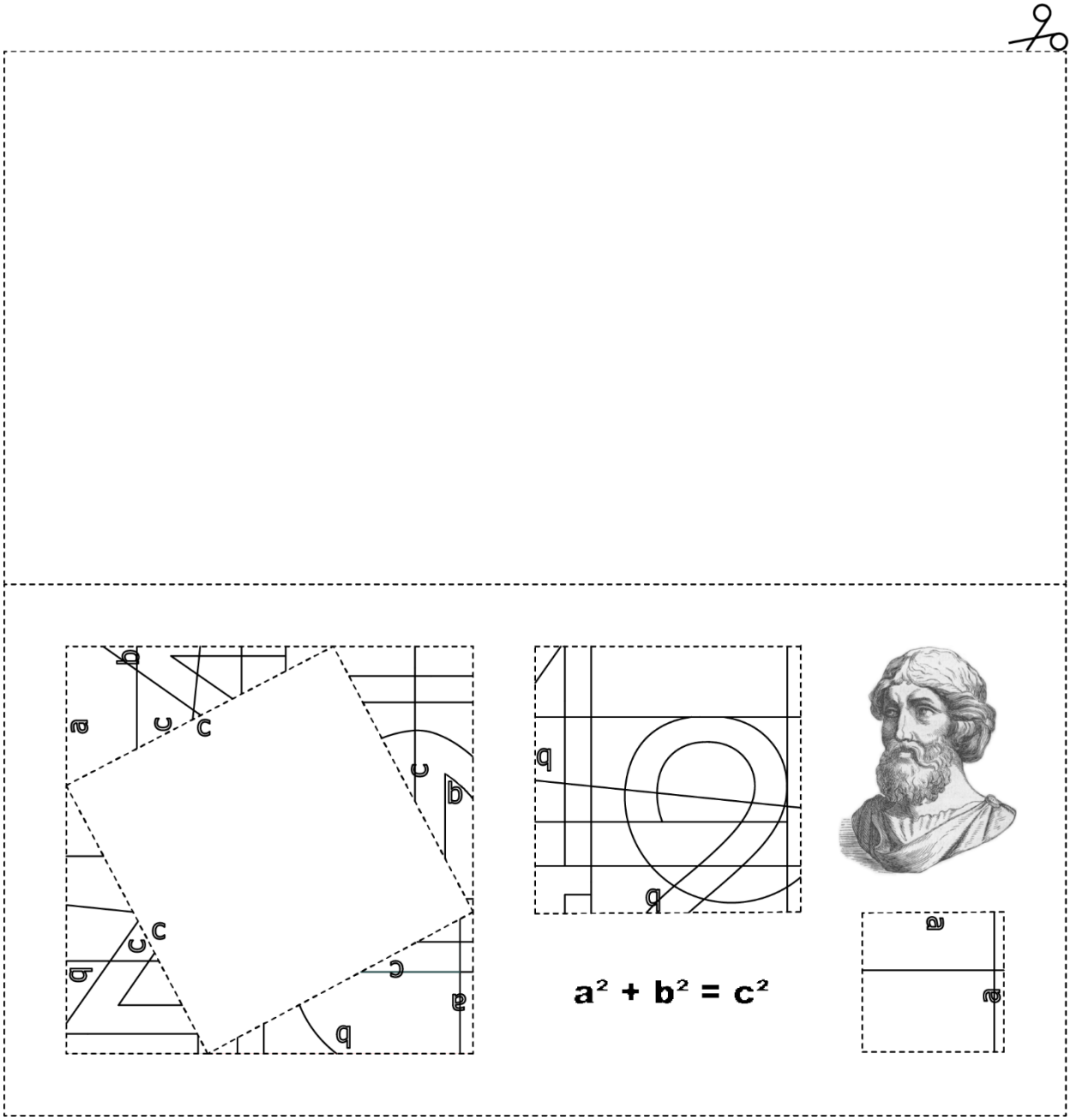
The goal of this puzzle is for players to re-arrange the pieces of the puzzle. They must fit squares A and B into the big hole where the C square was. If they arrange them properly, they will get a code number. This puzzle is a visual example of how the Pythagoras theorem works.

Item list:

- Cardboard / Wood

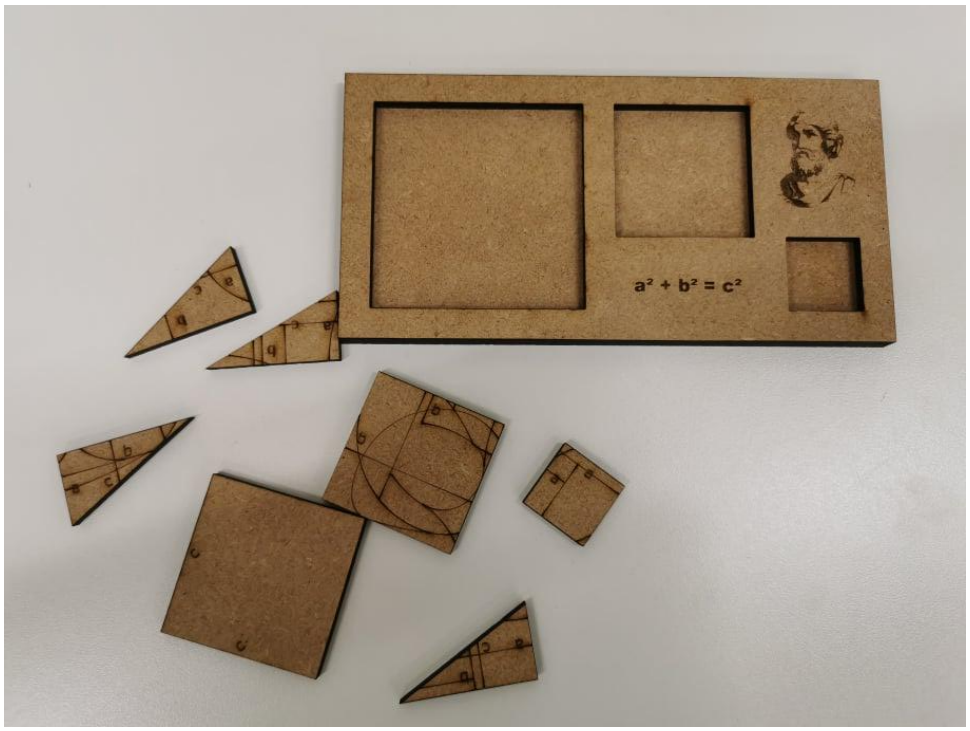
Printing

For this puzzle, we must print the template below.



Picture 1 Template

When you print the template, you must glue it to a piece of wood or cardboard. Now all you must do is to cut out everywhere where there is a spaced line. You will end up with one full rectangle and a rectangle with 3 holes. This two are now glued together so that the picture of Pythagoras is facing up.



Picture 2 Glued rectangles and other pieces

Now the puzzle is finished.

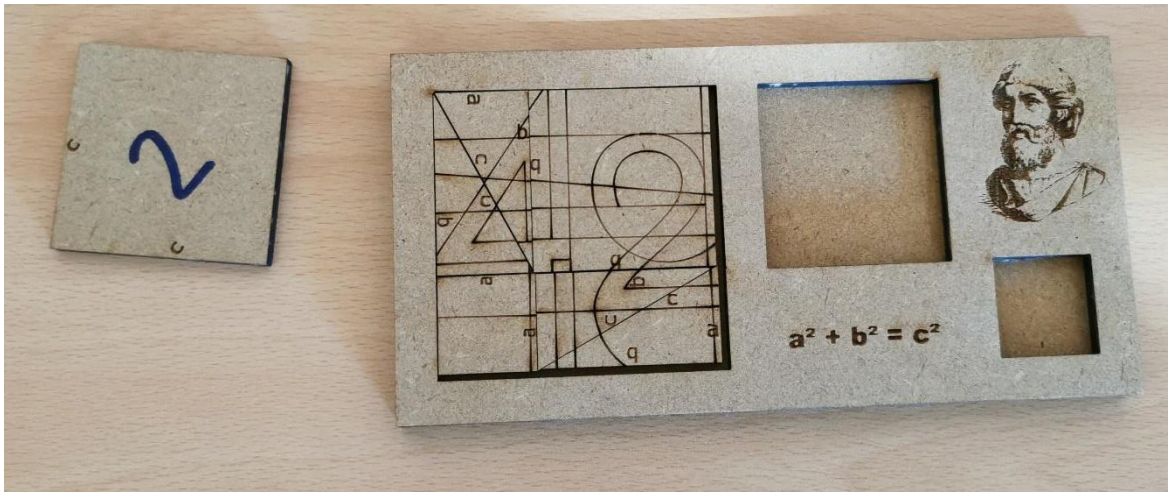
Game preparation

We have completed the puzzle now we have to prepare it for players. We must assemble the puzzle to its basic state, as shown below this is all the setup we need.

Picture 3 Base state of the puzzle

Solution

The solution for our puzzle is: 42



Picture 4 Solved puzzle

Riddle 3: PC Puzzle

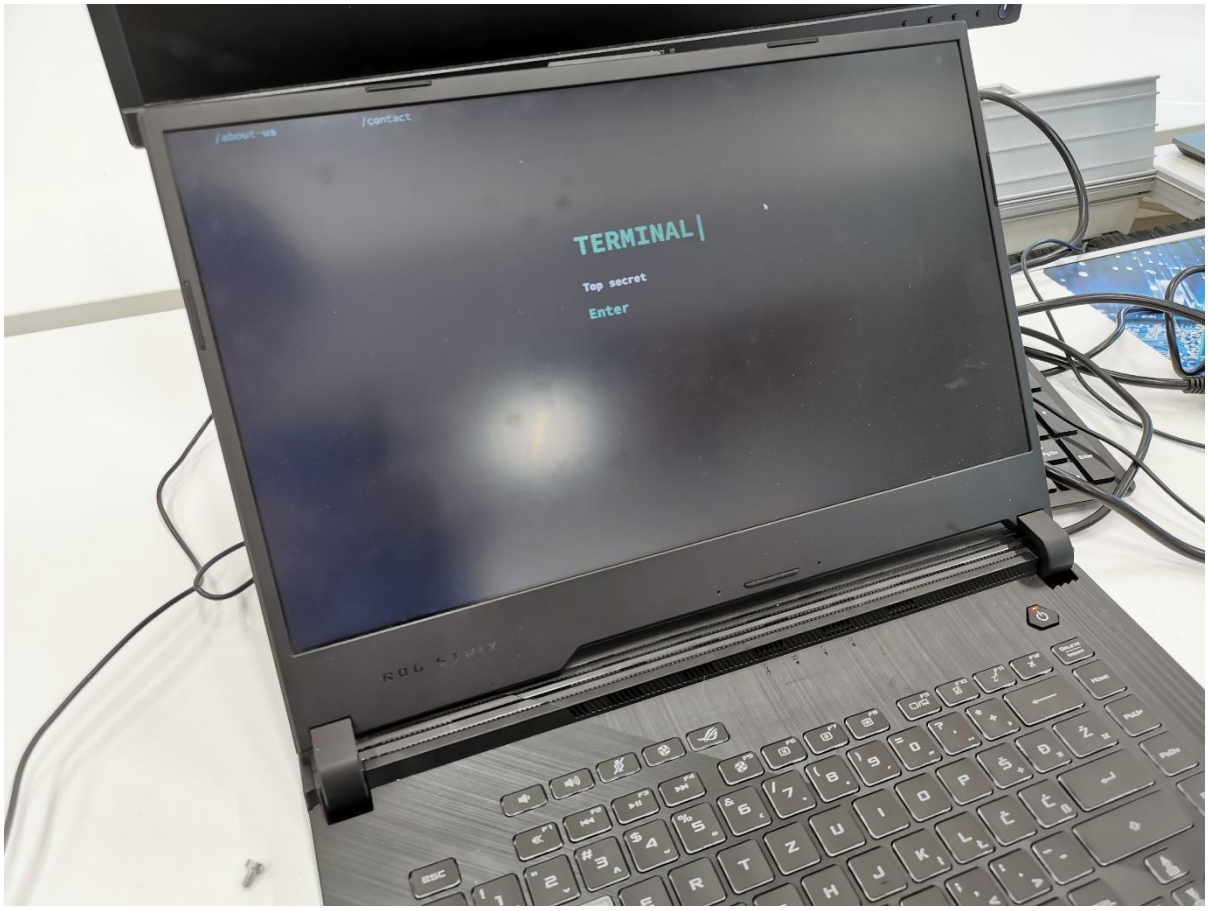
The goal of this puzzle is for the participants to decrypt a message on a WEB Page.

Item list:

- PC or a Laptop.

Preparation:

Download the compressed folder > extract it > open the Browser file named index > press F11 for fullscreen.



And the challenge is set up.

Solution:

The solution for our puzzle is: 87

Riddle 4: Wood puzzle

The goal of this puzzle is for the participants to figure out the right position of pieces and then finish the equation to get the right result.

Item list:

- Cardboard / Wood

Printing:

For this puzzle, we must print the template on the next page.

Game preparation:

When we successfully assemble the puzzle we must just place the board and the free pieces on the table and the puzzle is ready to play.

Picture 1 Assembled and prepared puzzle

Solution:

The solution for our puzzle is: 28

Picture 2 Solved puzzle

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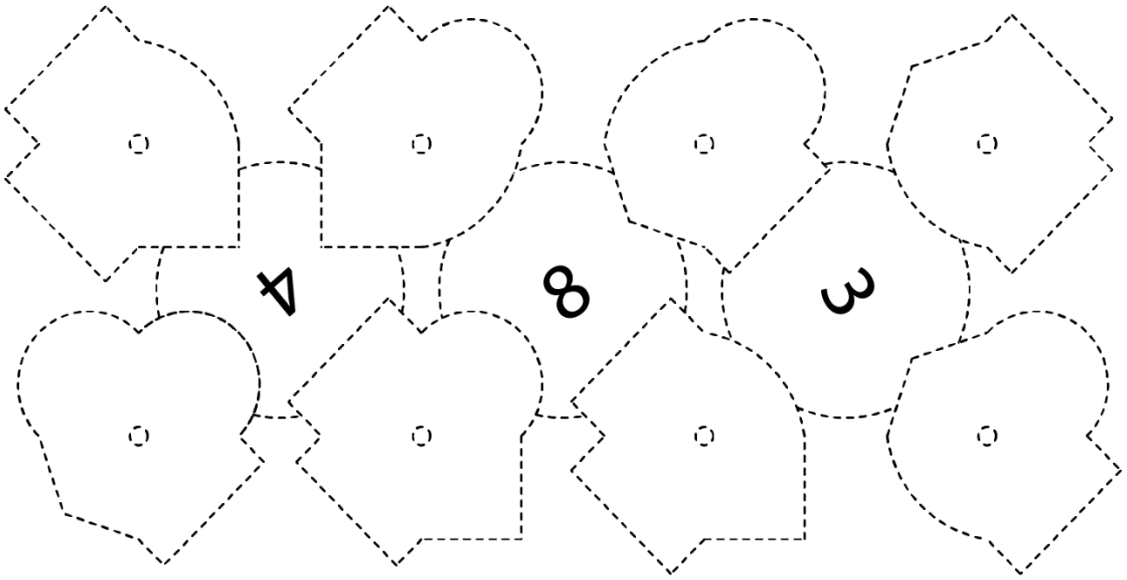

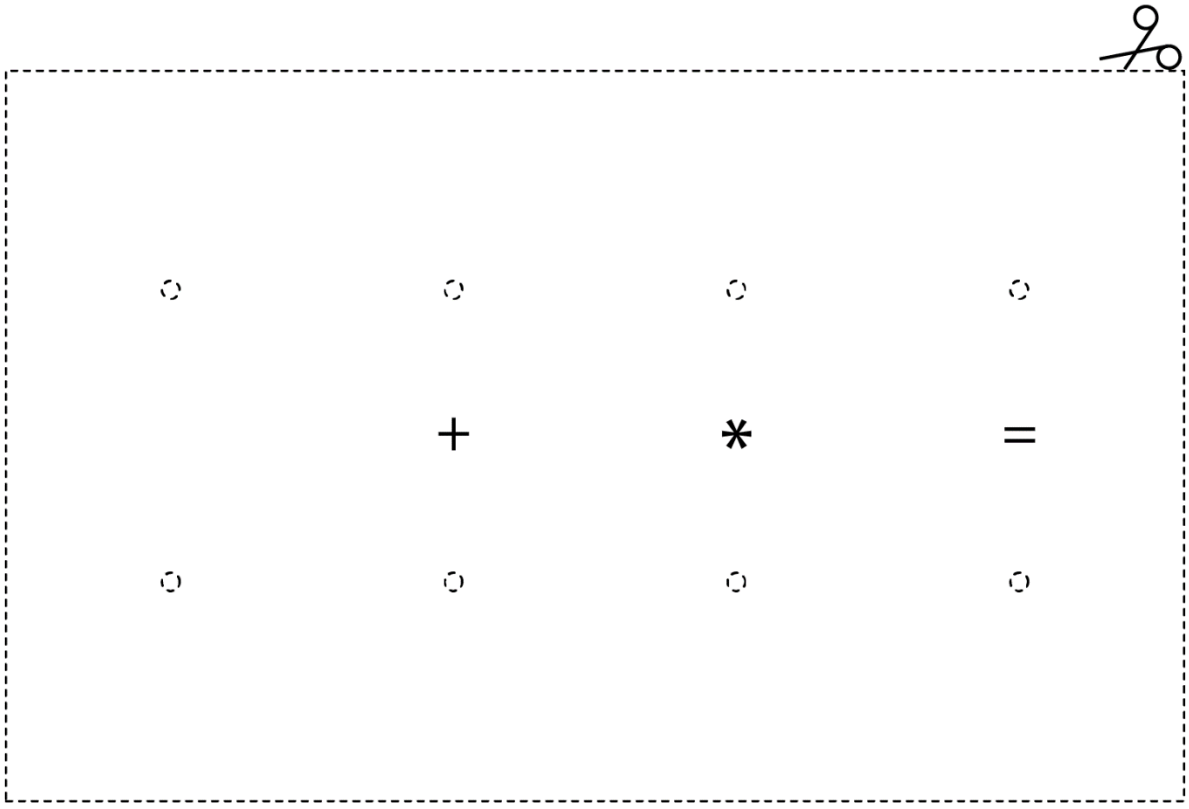

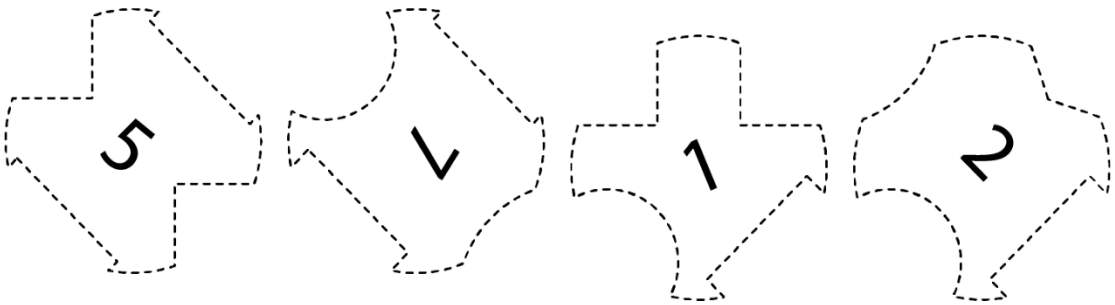

When the template is printed we must glue it to cardboard or wood and cut it out everywhere there is a spaced line. After this we must secure the pieces of the puzzle with holes in the mainboard, we used M6 screws and bolts.

Riddle 5: Final box

This is the challenge that connects all the other puzzles. The goal for this one is to collect all the results of previous puzzles and use them to unlock the box.

Item list:

- Simple box
- Two locks with four numbers

Preparation:

We used two four digits locks and set it up so from each of the four challenges we got 2 digits that have to be combined in order to unlock the locks.

We also labelled the puzzles from 1-4 and marked the corresponding two digits on the locks so it is clear where to use the results of the puzzles. For this, we used the same marker so it is easier to make the connection.

Picture 1 Final Box

Solution:

If you copied our challenges exactly than you can set the first lock to **code 1: 2842** and the second to **code 2: 3687**