

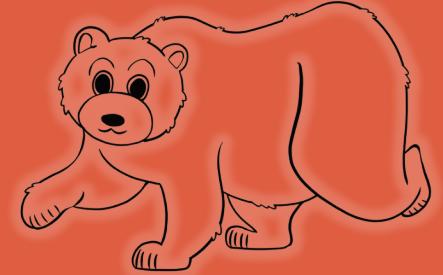


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Don't touch box

Bear-O the Bear
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The Idea



Initially, the bear is in a state of perpetual relaxation, indulging in carefree dreaming inside its box.

However, if a trespasser happens upon its nest and disturbs its wintery slumber by **pressing the switch** outside its lair, the bear will promptly creep out and scare off the intruder.

After ensuring that its home is **secure**, the bear will then **press the switch** and seals off its lair again, returning to sleep – hopefully undisturbed for the rest of the winter.

How it works



First, the right-hand side button acts as a power button. The device will be inactive until it is pressed.

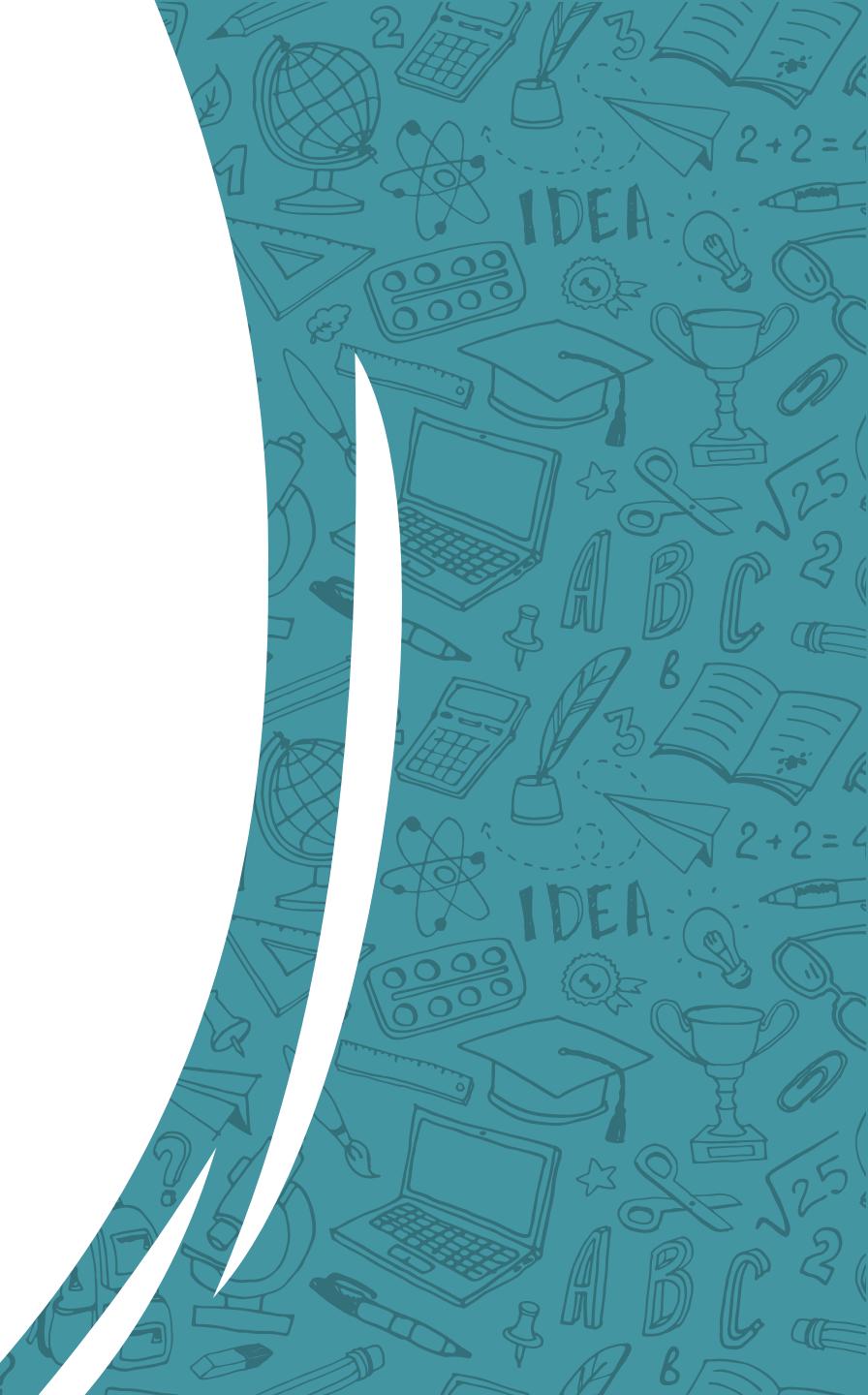
After the device is turned on, using the left switch, the servos powering the bear and the LEDs are activated simultaneously.

The first servo lifts the lid, while the other one, disguised as the bear's paw, gets out and reaches for the left-hand side switch.

After this action is performed, the bear gets back inside, the box is closed and the LEDs are turned off.

<code/>

```
1 #include <Servo.h>
2
3 Servo myservo; // create servo object to control a servo
4
5 void setup() {
6     Serial.begin(9600);
7     myservo.attach(9); // attaches the servo on pin 9 to the servo object
8     myservo.write(0);
9     pinMode(12, INPUT_PULLUP);
10    pinMode(13, OUTPUT);
11 }
12
13 void loop() {
14     int now = digitalRead(12);
15     static int currentState = 0;
16     static int onStreak = 0, offStreak = 0;
17     if (now == 1 && currentState == 0) {
18         offStreak = 0;
19         onStreak++;
20     }
21     if (now == 0 && currentState == 1) {
22         onStreak = 0;
23         offStreak++;
24     }
25
26     if (onStreak >= 500) {
27         onStreak = 0;
28         currentState = 1;
29
30         // rising edge -> switch UP
31         myservo.write(180);
32         digitalWrite(13,HIGH);
33         delay(1500);
34         digitalWrite(13,LOW);
35         myservo.write(0);
36         delay(1500);
37     } else if (offStreak >= 500) {
38         // falling edge -> switch DOWN
39         offStreak = 0;
40         currentState = 0;
41     }
42 }
```

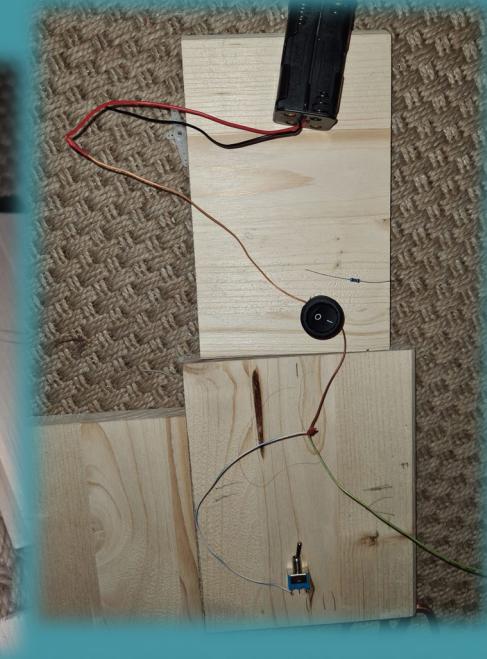
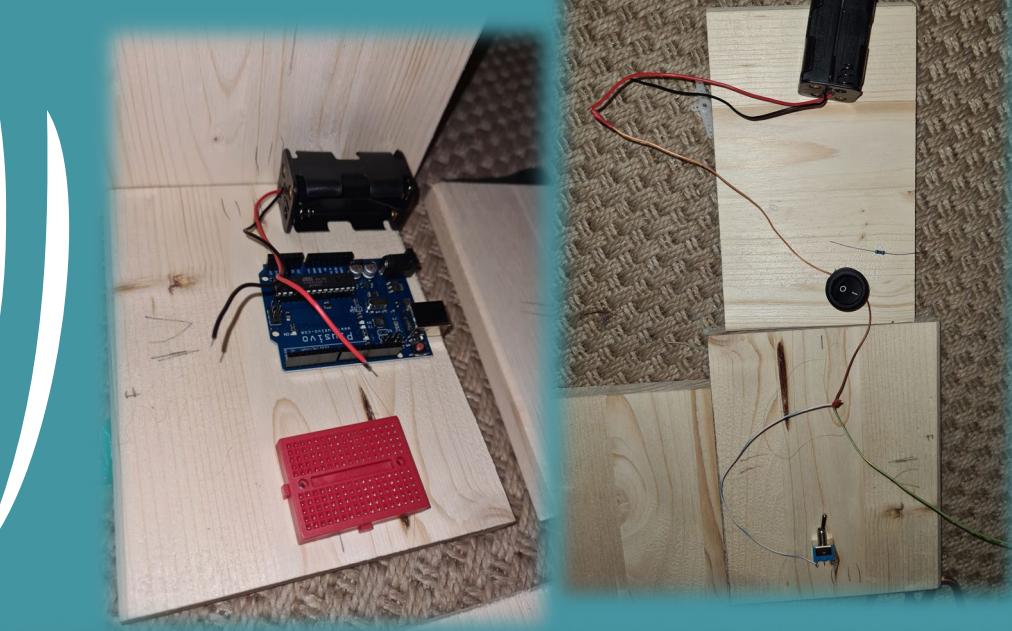
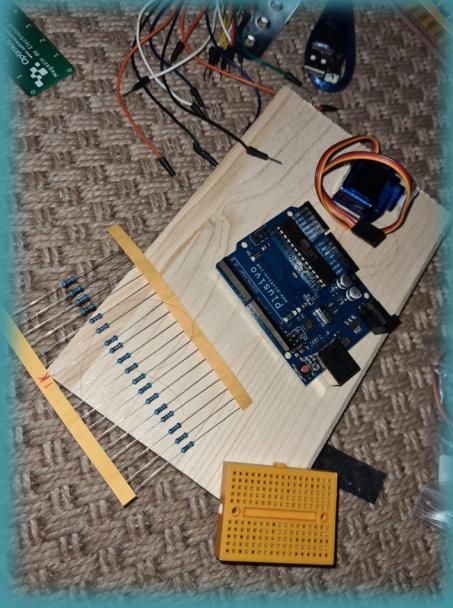
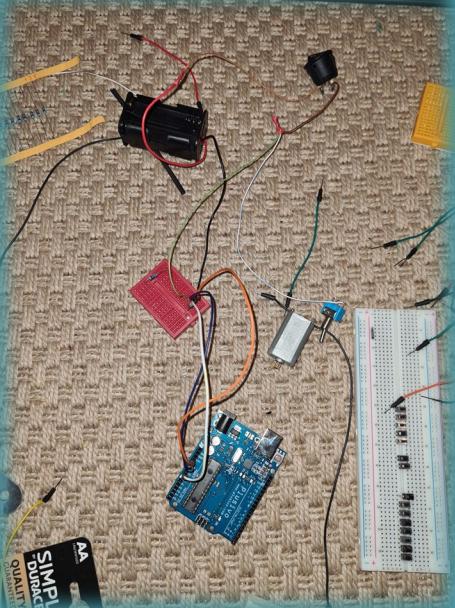


Measurers & Actuators



- Arduino Uno
- 1 action switch
- 1 power switch
- LEDs strip
- 1 fluffy bear (and two magnets)
- 1 servo opening the box
- 1 servo that acts as the bear's paw
- Batteries 4 x 1.5, 1 x 9V
- Toothbrush
- Wires
- Breadboard
- Resistors

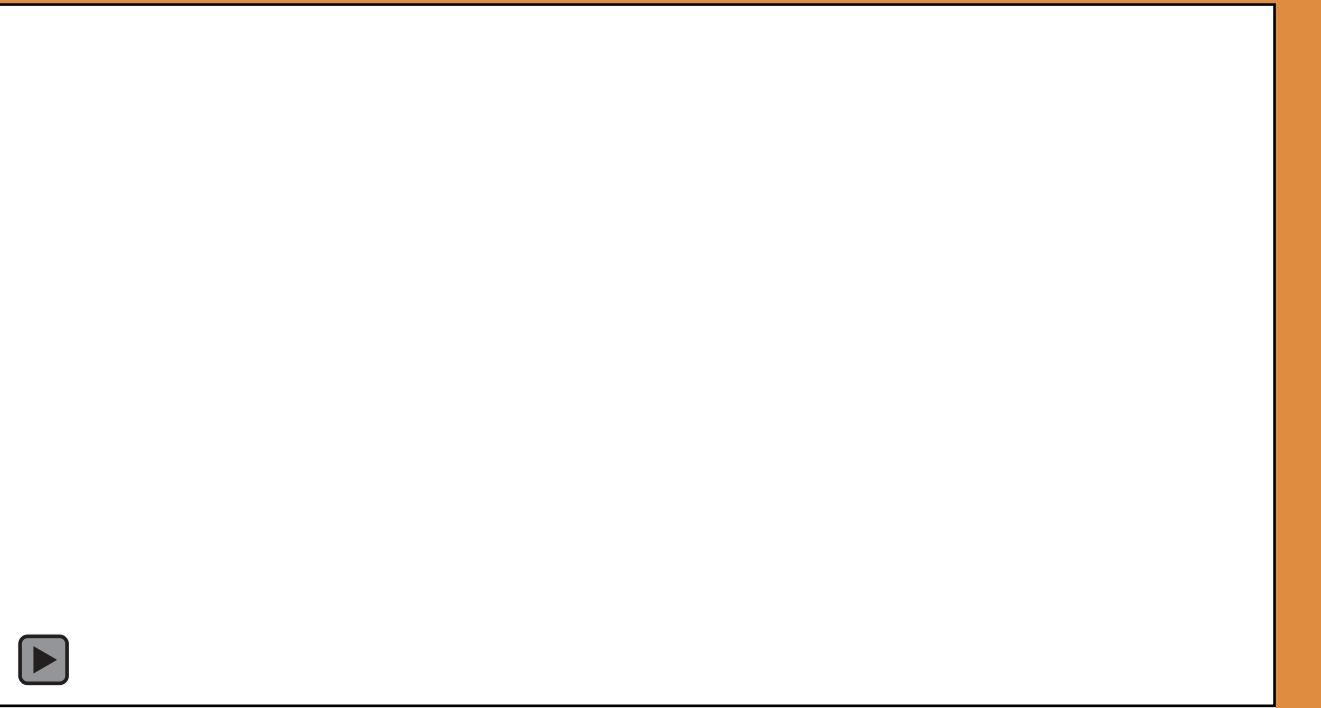
The Process



Difficulties

- Faulty initial planning of the circuit overall
- The motors were not strong enough compared to the weight of the lid
- The switch was too stiff for the motor powering the paw
- Finding an internal frame for the paw that reaches out
- Powering of the led strip





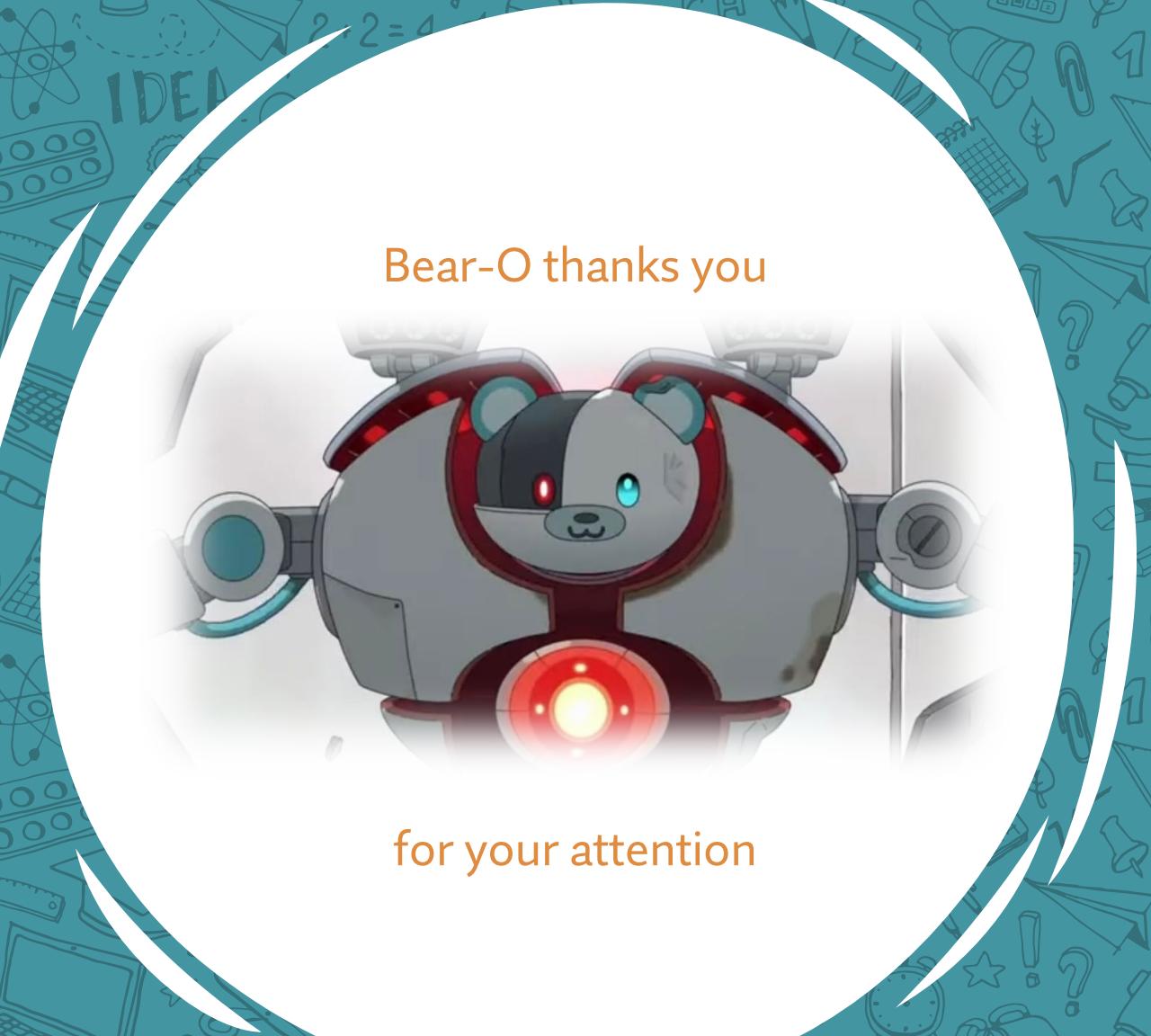
The Team



The
A - Team



B - Team



Bear-O thanks you

for your attention