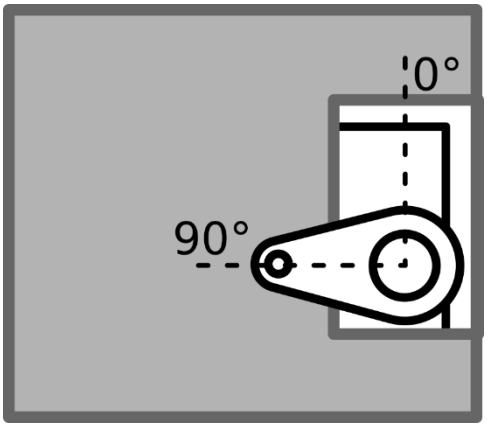
HIMALAYAN MAKERS GUILD

Foundation Activity 10
Servo Lock Box

LOCK BOX

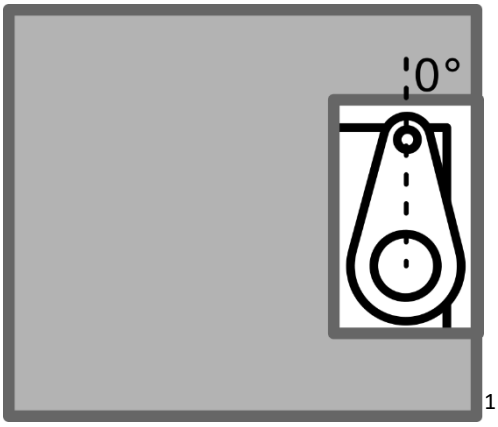
We want to make a box that is locked and unlocked by a turning servo motor. We will use a button to switch the motor position between locked or unlocked.

Box Locked



When the **button is not pressed**, the motor should turn so the lid of the box cannot be lifted.

Box Unlocked

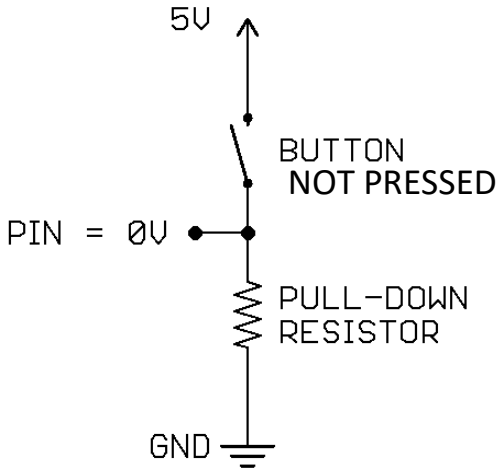


[1]

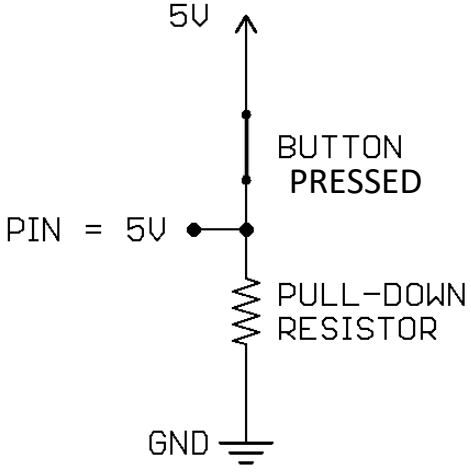
When the **button is pressed**, the motor should turn to allow the lid to be lifted.

DIGITAL INPUT

The Arduino can **read voltage values** on its pins. Digital input pins read values either as HIGH (~5V) or LOW (~0V). To give a clear digital value to the Arduino pin we use a **pull-down resistor** with the button as shown here:



The resistor pulls the PIN voltage down to GND. No current flows.



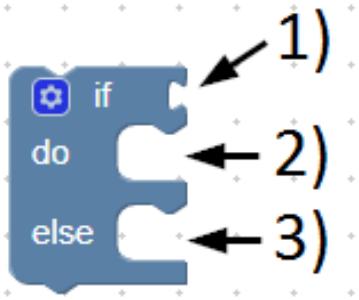
PIN is connected directly to 5V. Current flows from 5V to ground.

[1] Servo motor and Arduino breadboard images from Fritzing

PROGRAMMING WITH IF ELSE STATEMENTS

We want the Arduino to understand whether or not the button is pressed.
If the **button is pressed**, unlock the box; **otherwise**, lock the box.
For this we use an if/else statement which has three parts:

1. **if**: the Condition/Question.
2. **do:** What to do if the condition is true.
3. **else:** What to do otherwise.



So for the lock box,

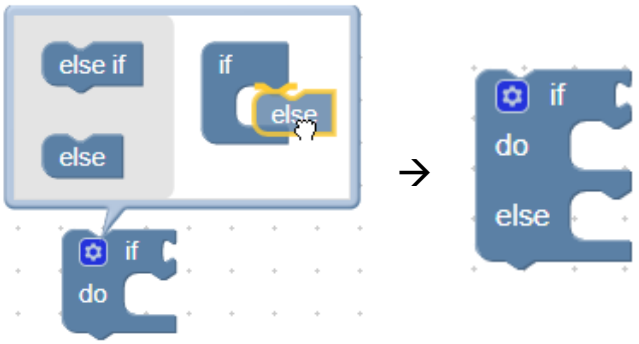
1. **if:** the button pressed
2. **do:** unlock the box
3. **else:** lock the box

In an if/else statement condition (1), a HIGH (5V) value means **true** (go to 2) and reading a LOW (0V) value means **false** (go to 3).

FUNCTIONS IN BLOCKLYDUINO

If/Else Statement:

If/Else is under "**Logic"** in the left side-bar menu. Click the gear and drag **"else"** into the **"if"** block.



DigitalRead Function:

DigitalRead is under "**Input/Output**" in the left side-bar menu. Set the PIN# that the Arduino should read. This is how the Arduino can check to see if the button is pressed.

SERVO MOTOR PINOUT

Wire	Colour
Signal	Yellow or Orange
5V	Red
GND	Black or Brown