A POSTERIORI

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Name:		**Class:**	

Scratch + Arduino

Before you start…

Make sure you have the **mLink** software installed. The icon should look like this…


You will also need the following hardware…

Item	Qty
Laptop	x1
USB Cable	x1
Arduino	x1
Jumper wires	A bunch
LED	x1 set
Resistors	x1 set
Push button switch	x1
Breadboard	x1

As the lessons progress, you will be provided with more hardware, but this is enough to start.

Getting the slides…

Slides for this programme are available at **https://a9i.sg/huayi**

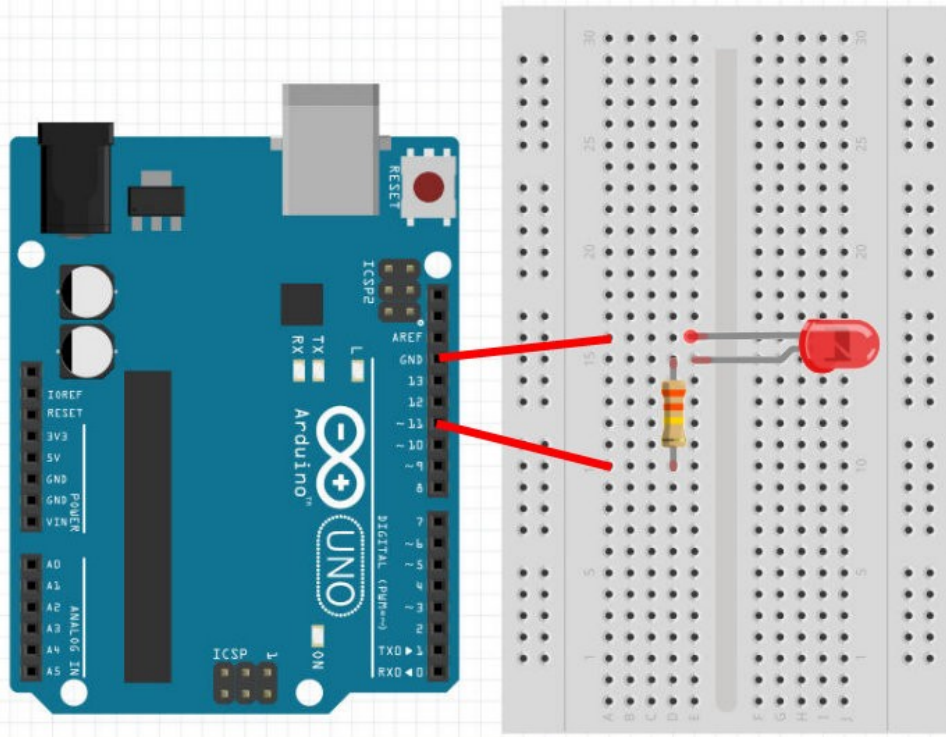Your school laptops do not have LibreOffice installed, so please use the PDF version.
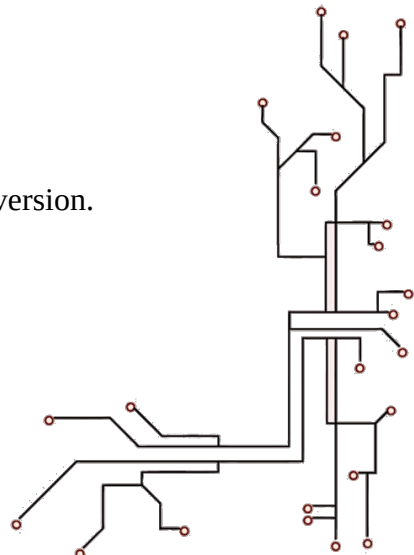
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Lesson 1 (Outputs / Inputs)

Exercise 1a (External LEDs)

LED
Connect short leg to ground (GND) and long leg to resistor.

Resistor
Use a 330 ohms resistor.
Connect one end to resistor and the other to Pin 11.

Why have a resistor?
- Arduino pins provides 5V
- LEDs requires different voltages depending on color
    - Red, Yellow, Infra-red: 1.8V
    - Blue, White, UV: 3.3V
    - Green: Depends. Try 1.8V first.
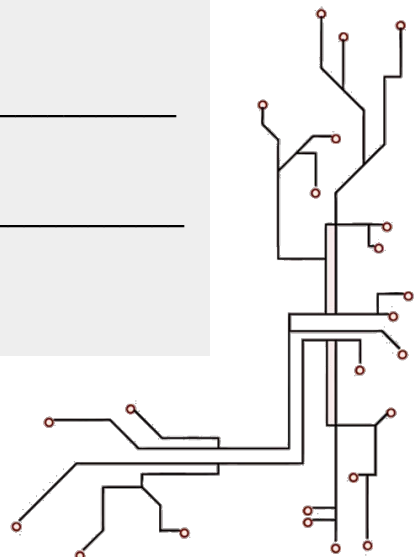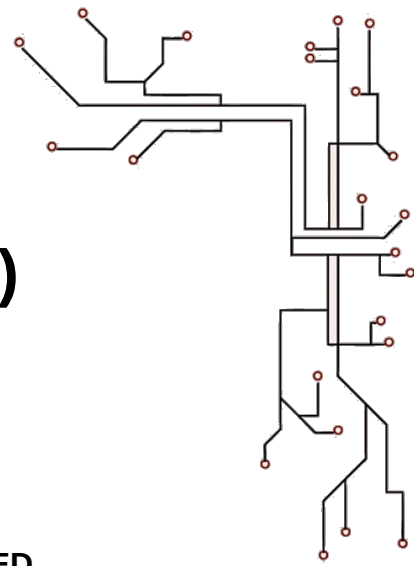- Resistor helps to reduce the voltage

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Challenges!

1) Modify your earlier program to control the external LED instead of the internal LED. What changes did you make?

Ans: _____
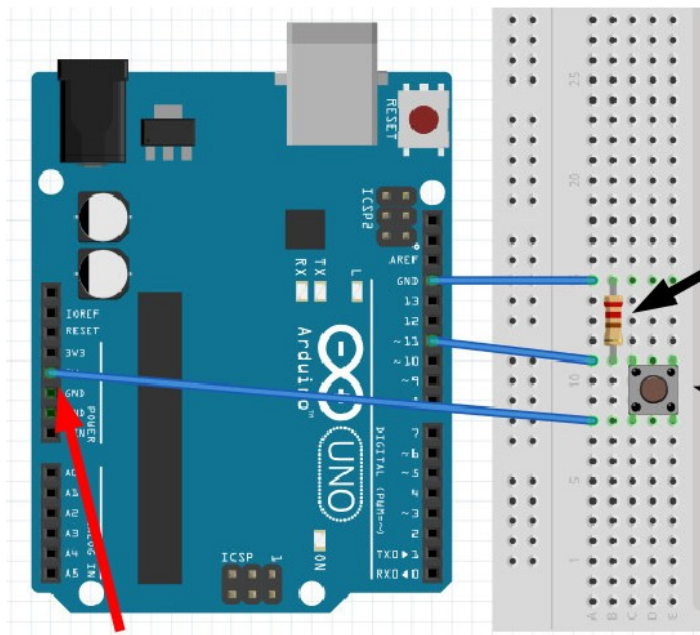
_____

2) Program the connected LED blink continuously.
**Do this on your computer and inform the instructor when done.**

Exercise 1b (External Inputs)

Make these connections

Resistor
Value isn't as important as before. Recommend to pick 1000 ohm, but most other values will do as well.

Push button switch
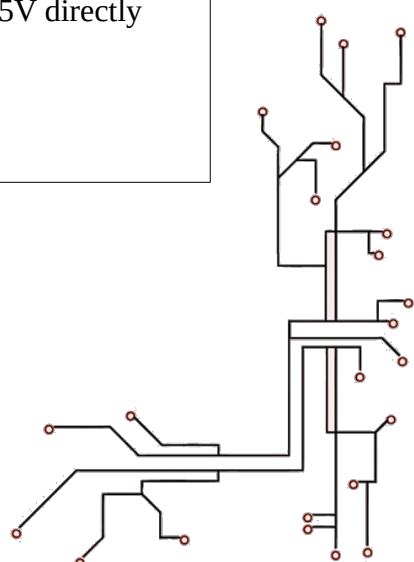Connects the top and bottom when pressed

Connected to 5V

5V

To Arduino Pin 11
What is the voltage?

5V

To Arduino Pin 11
What is the voltage?
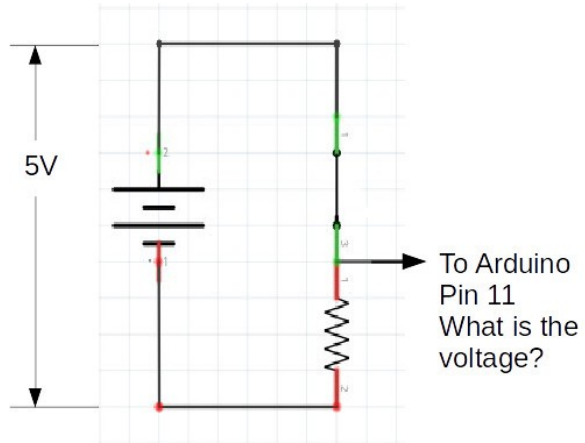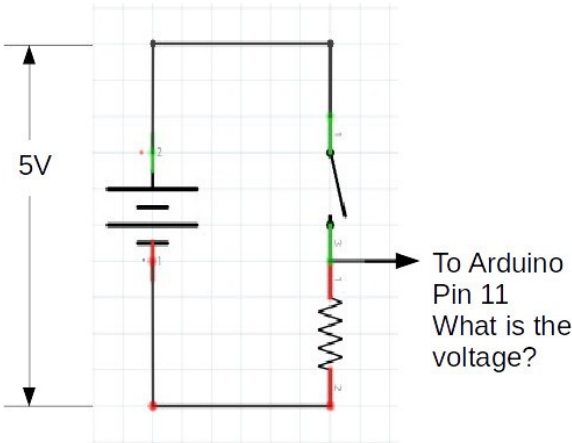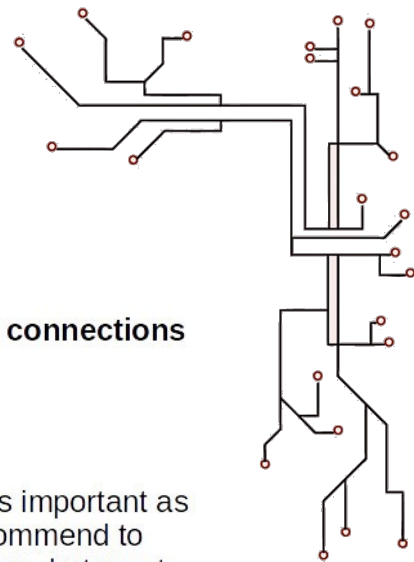
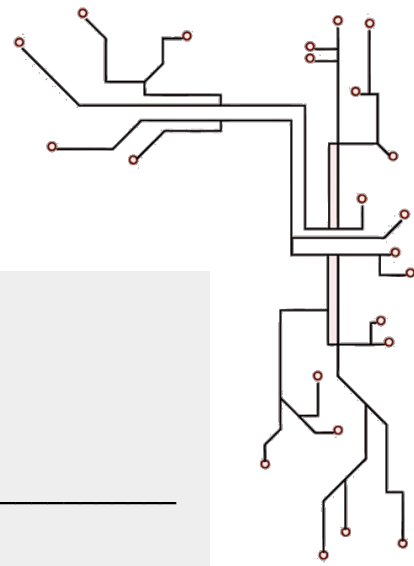| Switch Open	Switch Closed

• Pin 11 is connected to 0V via the resistor
• Pin 11 not connected to 5V
• Voltage of pin 11:
  = 0 V
  = False
  = Low
	• Pin 11 is connected to 0V via the resistor
	• Pin 11 is connected to 5V directly
	• Voltage of pin 11:
	  = 5 V
	  = True
	  = High

Why?

Why can't we connect the switch directly to ground without a resistor?

Ans: _____

_____

Add this script to your "Device"

Add this script to your "Sprite"

Challenges!

1) Make an LED blink rapidly for 2 seconds when the button is pressed

2) Make an LED toggle between on and off when the button is pressed

Do these on your computer and inform the instructor when done.