

ARDUINO SERIES

BASIC DIGITAL INPUTS AND OUTPUTS

1. THE BASICS: INPUTS, OUTPUTS, SOURCES AND SINKS
2. CONNECT A SWITCH TO AN ARDUINO – NORMALLY LOW OR HIGH
3. CONNECT AN LED TO AN ARDUINO – INVERTED LOGIC OR REGULAR

These slides are the companion to a webpage & youtube video:

<http://www.thecoderscorner.com/electronics/microcontrollers/switches-input/arduino-digital-input-output-tutorial>

1.1 INPUTS, OUTPUTS, SOURCES AND SINKS

- Most pins on Arduino boards can be configured as DIGITAL IN or OUT. Some can also be configured as Analog In / PWM out but we'll discuss those later.
- For outputs, HIGH means near 5V with ability to **sink** current, LOW means near GND potential with the ability to **source** current.
- When the pin is selected as INPUT, the input impedance is extremely high, so high that it's effect on most circuits can be ignored (high 10's of megaohm).

2.1 CONNECT A SWITCH TO ARDUINO INPUTS

- Arduino digital inputs **cannot** be floating because they are high impedance and will pick up interference.
- To connect a switch to an Arduino it must be **pulled** low or high when the switch is open circuit.
- Normally low means that when the switch is open, the input pin is held at GND potential by a resistor connected to GND.
- Normally high means that when the switch is open, the input is held at 5V by a resistor connected to 5V.

3.1 CONNECT AN LED TO ARDUINO OUTPUT

- Arduino outputs can be used to power smaller LED's directly (up to 5mm).
- Each Arduino pin can deliver between 20-40mA depending on the chip. Care should be taken to avoid exceeding this, as there is little on chip protection to prevent damage.
- An LED is very low resistance with a voltage drop, therefore a series resistor (usually 220R – 1K) must be added to prevent the LED or board being damaged.
- If the LED is connected from the output pin through to 5V, then the pin going LOW lights the LED, if the LED is connected from the output pin to GND, then HIGH lights the LED.

Thanks for watching, I hope the video has helped you out.
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Website: <http://www.thecoderscorner.com>

Youtube channel: <https://www.youtube.com/channel/UCIW7vBUMrfF33mUsfFaL6CA>