

HighTechU

ECE Academy

Speaker:

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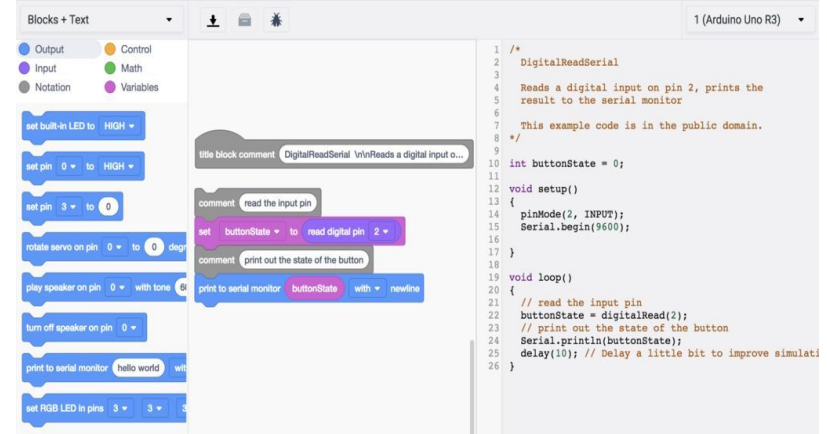
TINKERCAD

- Online Interface To Simulate Electrical Circuits.
- CAD - Computer Aided Design
- AutoCAD, EagleCAD, etc.



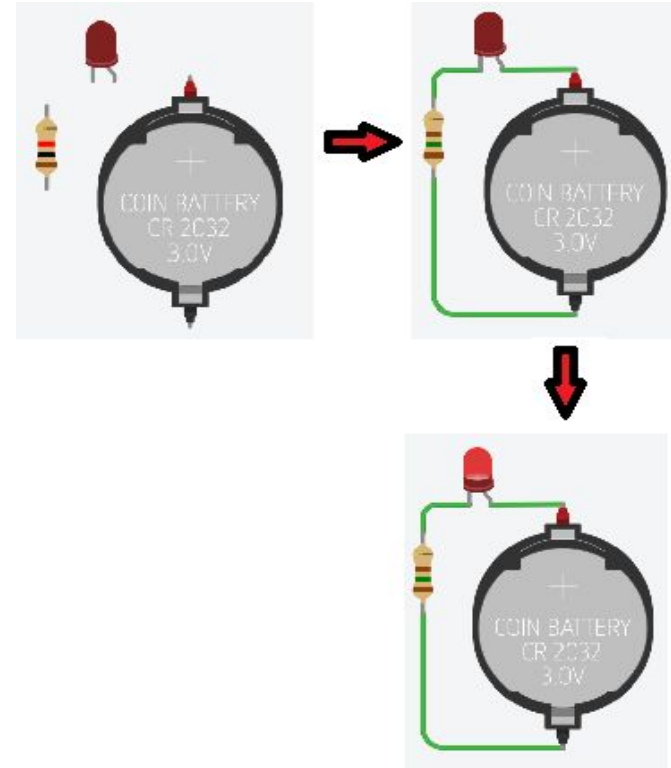
WHY TINKERCAD/

- Verify Circuits
- Finalize Components
- Short circuit/ Damaged Components/ Don't worry...
- Easy Interface
- Graphical/Block Coding



THE 'HOW' PART - TINKERCAD

- 1) Drag and Drop Components
- 2) Connect to build the circuit
- 3) Press Simulate



Resistors

Used to limit the current flowing in a circuit.

Measure using :


- Colour Code
- Multimeter

How to Read Resistor Color Codes

6-Band  = 274 Ω ± 2%, 250 ppm/K

Color	1st Digit	2nd Digit	3rd Digit	Multiplier	Tolerance	Temperature Coefficient
Black	0	0	0	1 Ω		250 ppm/K
Brown	1	1	1	10 Ω	± 1%	100 ppm/K
Red	2	2	2	100 Ω	± 2%	50 ppm/K
Orange	3	3	3	1k Ω		15 ppm/K
Yellow	4	4	4	10k Ω		25 ppm/K
Green	5	5	5	100k Ω	± 0.5%	20 ppm/K
Blue	6	6	6	1M Ω	± 0.25%	10 ppm/K
Violet	7	7	7		± 0.1%	5 ppm/K
Grey	8	8	8			1 ppm/K
White	9	9	9			
Gold				0.1 Ω	± 5%	
Silver				0.01 Ω	± 10%	

4-Band  = 1,200 kΩ ± 5%

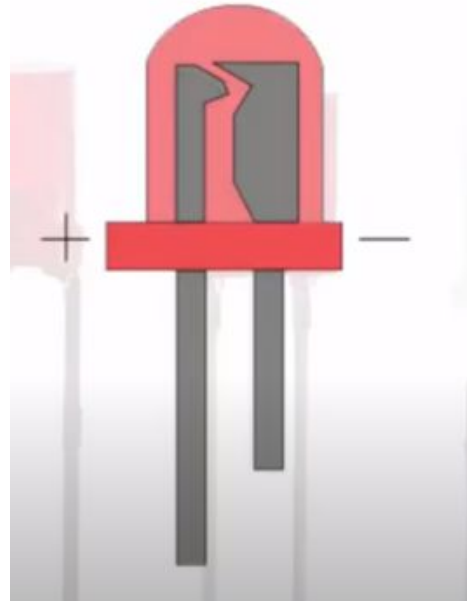
5-Band  = 10,000 Ω ± 1%

Light Emitting Diodes - LEDs

Two terminals :

Positive - Anode

Negative - Cathode



Potentiometer

Variable Resistor

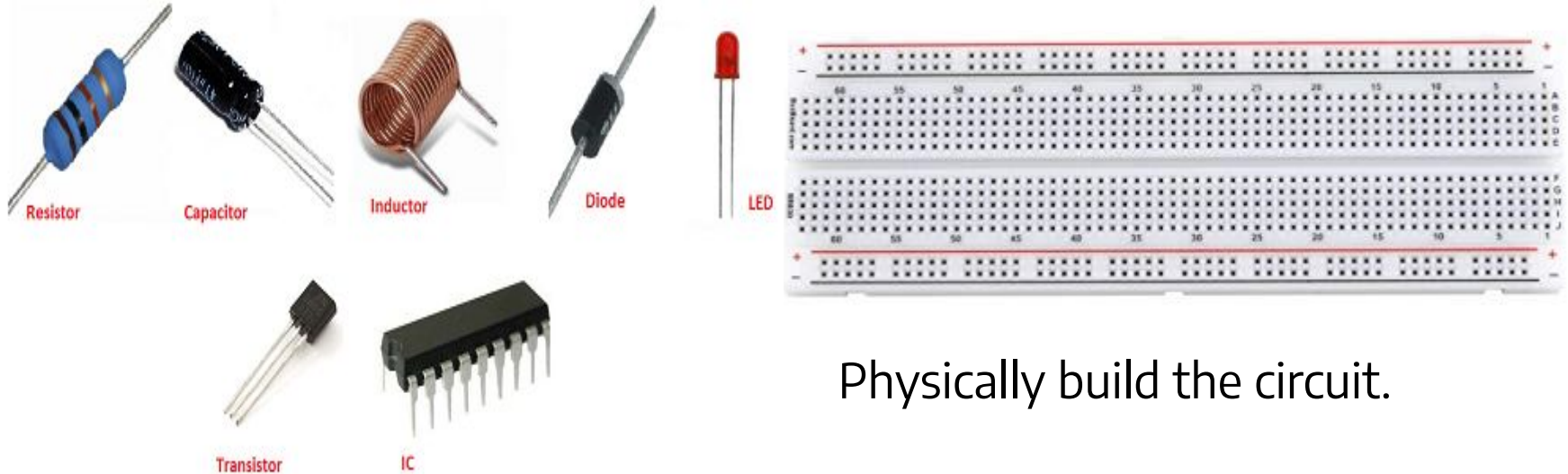
Control

- Current flowing in the circuit
- Voltage across the load

Range - 0 to max resistance



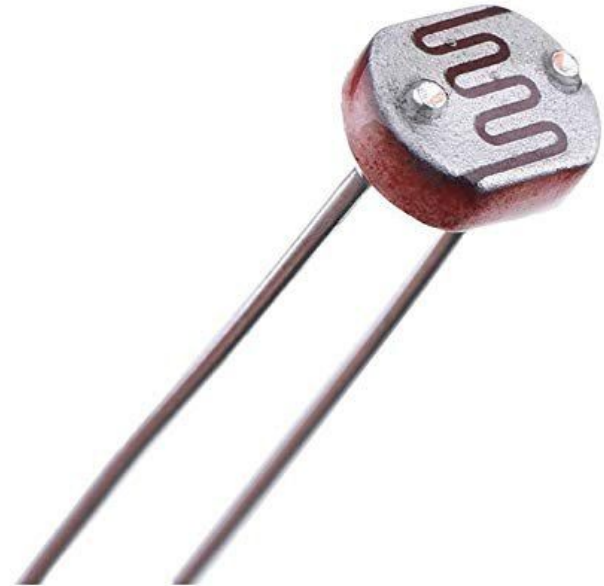
Breadboards



Physically build the circuit.

Light Dependant Resistor

- Also known as Photoresistors.
- Resistance changes according to intensity of light
- Dim light = Max. Resistance
- Bright Light = Min. Resistance



Multimeters

Instrument used to measure different electrical parameters like

- Resistance - Parallel
- Voltage(AC/DC) - Parallel
- Current - Series



DC Motors

- Circular Actuation
- No Polarity
- Speed \propto I/P Voltage
- Easy Control





“...Go break some eggs!”