These are ALL the Parts in your Kit!

Line	Part	Kit Quantity
	Capacitors	
1	.1uF / 100nF Capacitor	6
2	22 µF Capacitor	6
	Resistors	
3	470 Ohm Resistor	20
4	1k Ohm Resistor	20
5	10k Ohm Resistor	20
6	100k Ohm Resistor	20
7	270k Ohm Resistor	20
	Variable Resistors	
8	0-50k Trimmer Potentiometer	6
9	16-33K Ohm Photoresistor (Photocell)	2
	LEDs	
10	LED RGB Clear Common Cathode	4
11	LED RGB Diffused Common Cathode	4
12	LED Blue Clear	24
13	LED Red Diffused	10
	Various Discrete Parts	
14	Diode	20
15	Push Button Switch	8
16	7 Segment LED Display	2
17	NPN Transistor	10
18	Active Buzzer	2
19	Piezo Buzzer Transducer (Speaker)	2
	Integrated Circuits (ICs / Chips)	
20	555 Timer	2
21	4017 Decade Counter	2
22	4511 BCD to 7 Segment Latch Decoder	2
	Main Parts	
23	Breadboard	2
24	AAA Battery Case	2
25	65 piece male to male jumper wires various colors and lengths	1
26	140 piece male to male solid core jumper wires, various colors and lengths, in box	1
	Tools	
27	Phillips Screwdriver	1
28	Flat Head Screwdriver	1
29	4.5-inch Needle nose pliers	1
30	Multi-Meter with 9V 6F22 Li-ion Battery	1
31	Batteries (AAA)	6

You do not have to purchase our kit to do any of the projects in this manual.

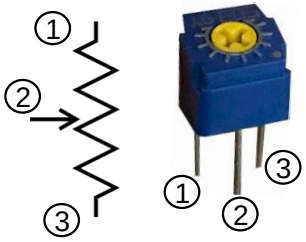
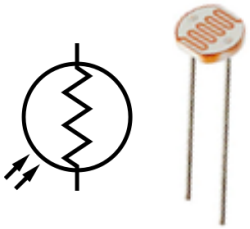
Here is a list of everything we provide in our kit as well as links to the electronic components if you want to buy them on your own.

List of Materials – Component Description

Resistors

Value	470 Ω	1 kΩ	10k Ω	100k Ω	270k Ω
Symbol						
	Yellow Purple Brown Gold	Brown Black Red Gold	Brown Black Orange Gold	Brown Black Yellow Gold	Red Purple Yellow Gold

Variable Resistors

Potentiometer (POT)	Photoresistor
 Change resistance from center (2) to either edge (1 or 3) by turning the top screw (0Ω to 50kΩ).	 Increased darkness increases resistance. Full Light = 16kΩ Full Dark = 30kΩ

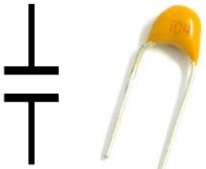
Battery Pack

Provides 4.5 volts to the circuit.

Red wire = (+)
Black wire = (-)

Capacitors

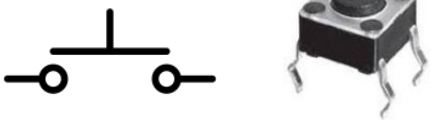
Can absorb energy and store it temporarily. Provides electricity like a battery.



104 → **100 nF**
226 → **22 µF**

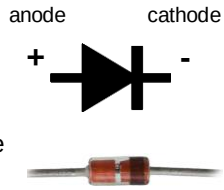
Button Switch

It can disconnect or connect the path of electrical flow in a circuit.



Diode

Electricity flows only in the direction of the arrow – from anode (+) to cathode (-). Black line on diode is the cathode.



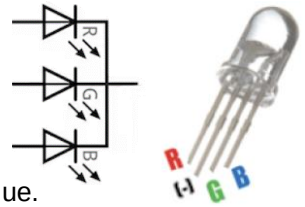
LED

Light Emitting Diode

A diode that emits light when electricity flows through it.

RGB LED

Works just like a normal LED but with three internal colors red, green, and blue.

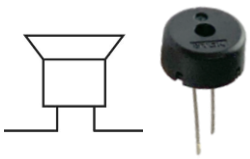


Buzzer

Makes a buzzing sound when a voltage is applied across the leads.

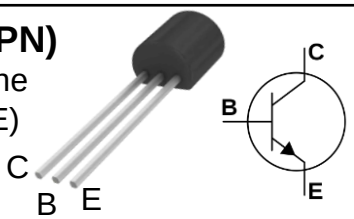
Speaker

Makes a wide variety of sounds based on the electric signals provided to the leads.
Will not buzz with just a voltage.



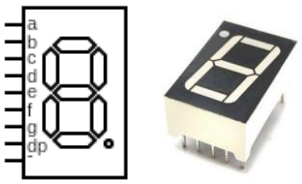
Transistor - (2N3904 NPN)

Allows current to flow from the collector (C) to the emitter (E) when voltage is applied to the base (B).



7 Segment Display

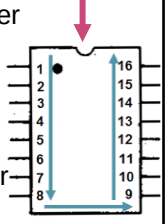
Displays numbers or letters by lighting up a combination of light segments, based on voltage received at the pins.



Chip/IC Labeling

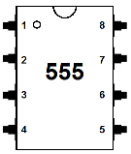
The notch marks the top of the chip.
The dot on the upper left is next to pin 1.

Pins are numbered counterclockwise starting in the upper left-hand corner.



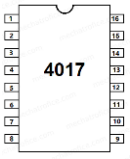
555 Timer

The 555 chip creates repeating pulses of electricity. It is used to flash LEDs, make sounds, run clocks, and more!



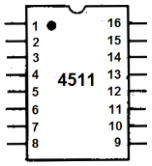
4017 Decade Counter

The 4017 chip allows circuits to count pulses (like from a 555) from 1 to 10 to count like we do!



4511 BCD - to- 7 Segment Latch Decoder

The 4511 makes the 7 Segment Display (above) show the correct number in response to a 4-bit binary input.



SQUARE BRAIN