

EE 1st Projects – 2nd semester – spring 2016

Project 04

Cascaded self-triggering mono-stable timer

#	Student ID	Student Name	Grade (10)
1 (bread bard)			
2 (PCB)			

Delivery Date	
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<p>١. يتم تسليم المشروع على bread board خلال أسبوع من نشرة ٢. يتم تسليم المشروع على PCB بعد أسبوعين من نشرة ٣. كل طالب يقوم بتسليم مشروع منفصل ٤. غير مسموح بالتأخير في تسليم المشاريع منعا لتداخل المشاريع و تراكمها</p>

Objective

Explore how to use 555 mono-stable output as trigger for another 555 mono-stable.

Theory

One common way to use a 555 timer is to connect several 555 circuits in monostable (one-shot) mode, with the output pin from the first 555 timer connected to the trigger pin of the second 555 timer and so on.

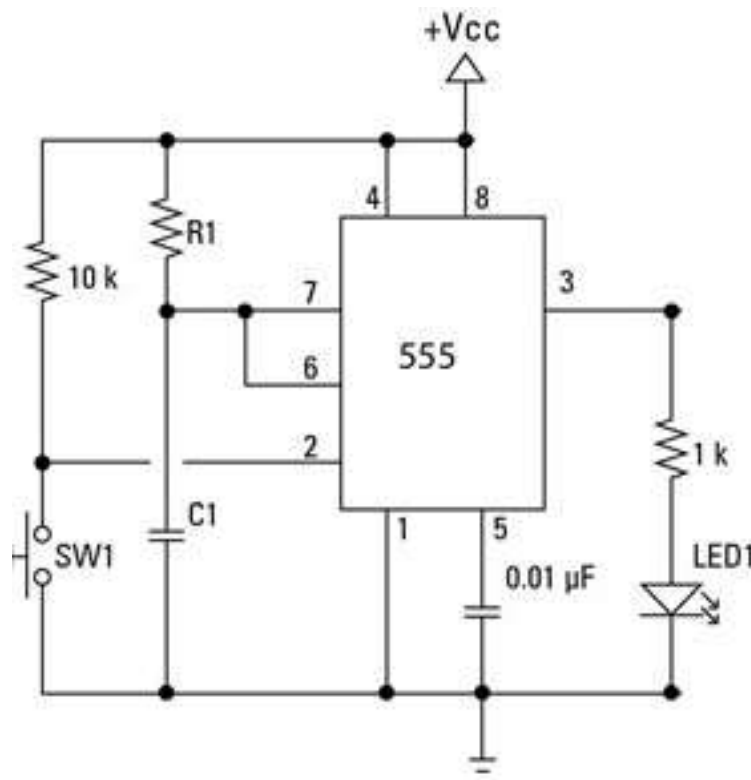
Then, when the output of the first timer goes low, the second timer is triggered.

You can connect as many 555 timers as you want in this way, with each timer's output connected to the next timer's trigger so that the timers work in sequence, one after the other.

For example, consider a cascaded timer circuit that uses four separate 555 timer chips. In this circuit, both of the 555 timer chips are configured in monostable mode. The time interval for the first 555 is controlled by R1 and C1. For the second 555, the interval is controlled by R2 and C2. You can choose whatever values you want for these components to achieve whatever time intervals suit your objective.

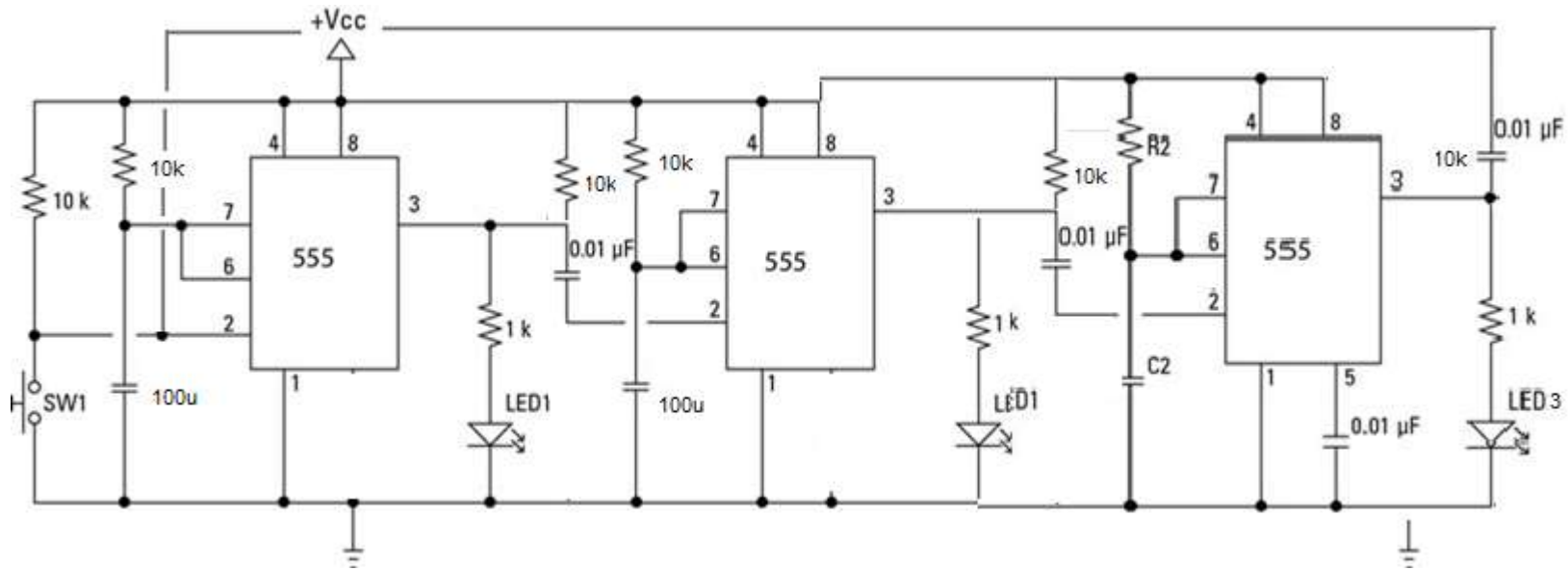
The first 555 chip is triggered when SW1 is depressed, taking pin 2 to ground. This takes the output on pin 3 high, which lights LED1. Notice, however, that pin 3 of the first 555 is connected through a small capacitor to the trigger input of the second 555.

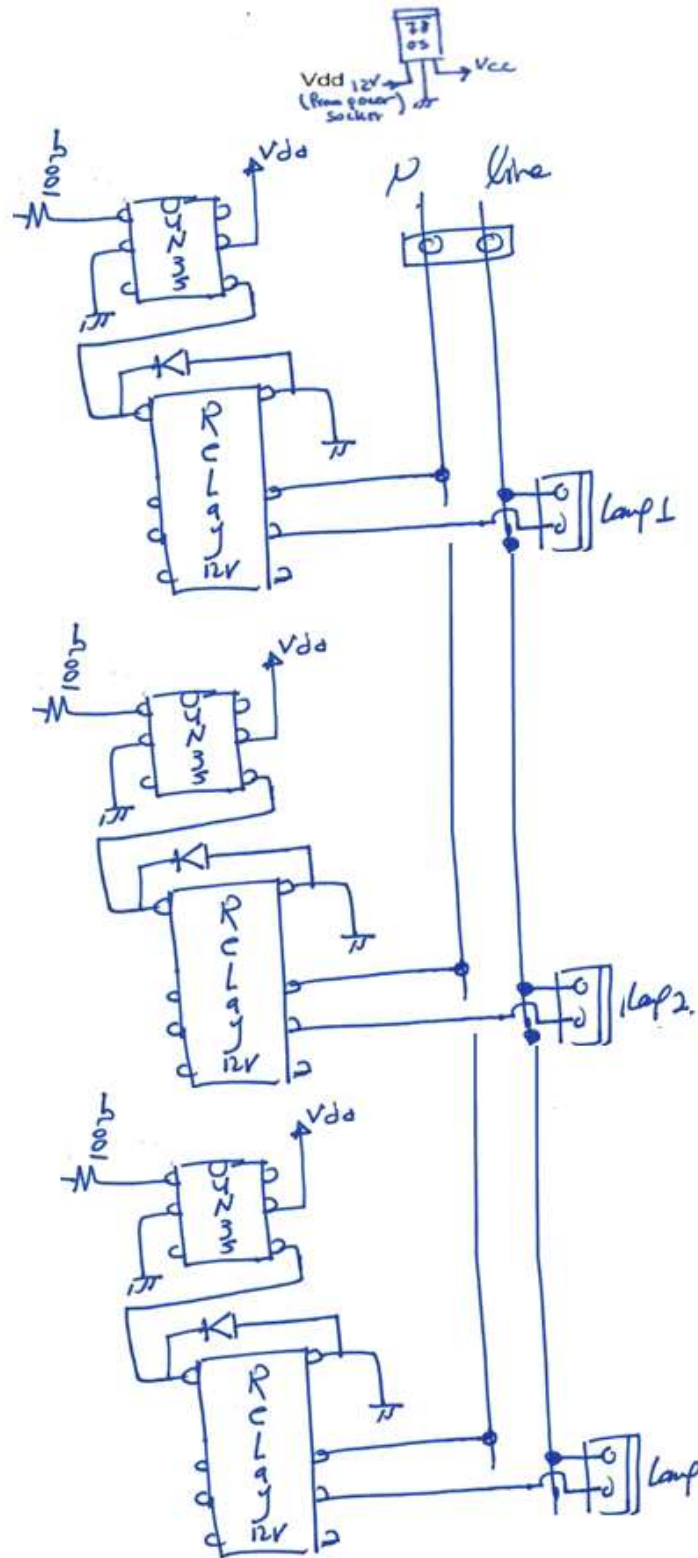
As soon as the time interval expires on the first 555, its output goes low, which turns off LED1 and at the same time triggers the second 555, which in turn lights up LED2. LED2 stays lit until C2 charges, and then it goes out. The circuit then waits to be triggered again by a press of the switch.





Schematic





Components list

#	item	link	Quantity
1	DC Power 2.1mm Connector on PCB	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=1203	2
2	Wall Adapter Fixed 12Vdc (1A)	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=1394	1
3	L7805CV "Positive Voltage Regulator 5V"	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=635	1
4	4N35	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=465	3
5	NE555	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=609	3
6	Relay 12 V	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=940	3
7	Terminal block 2	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=752	4
8	Cap 100 uF	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=503	10
9	Cap 0.01 uF	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=1309	10
10	Resistor 100 ohm	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=313	10
11	Resistor 10 K	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=362	10
12	Led 5mm	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=362	10



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13	Diode	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=904	5
14	press	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=1567	5
15	PCB 15x9 cm2 (PCB4) - Bread Board Shape	http://ram-e-shop.com/oscmax/catalog/product_info.php?products_id=2732	2
16	Twisted pair wires (1 pair telephone or 4 pairs networks cable)	-	-



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