

INTRODUCTION TO THE 555 INTEGRATED CIRCUIT.

TO ANSWER ALL THE QUESTIONS YOU WILL NEED TO DOWNLOAD THE '555 INTEGRATED CIRCUIT' APP, FROM THE INTERACTIVE MOBILE APP SECTION OF www.technologystudent.com

LINK

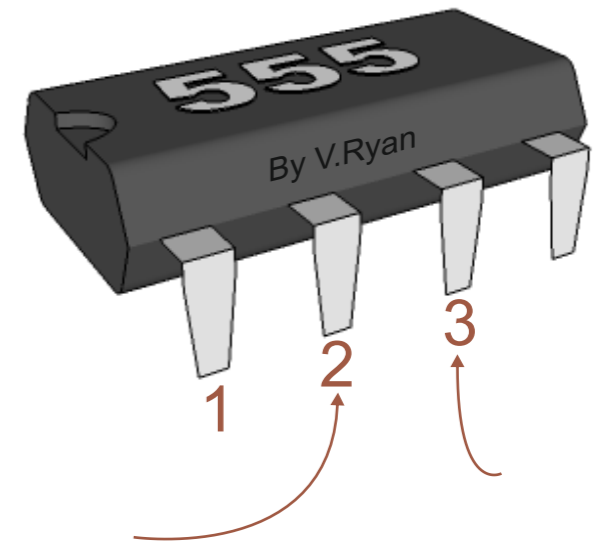
<http://www.technologystudent.com/mobapps/555%20Intergrated%20Circuit.pdf>

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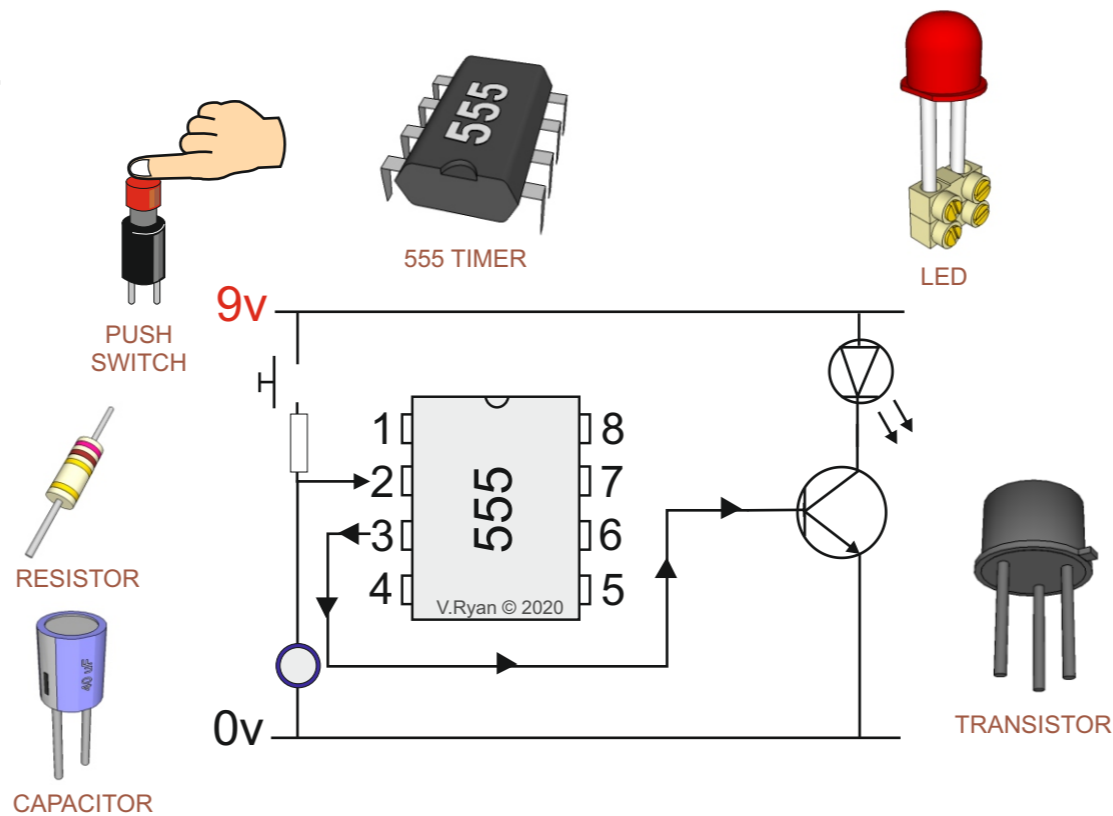
1

A 555 INTEGRATED CIRCUIT IS SEEN BELOW. PINS 2 AND 3 HAVE SPECIFIC FUNCTIONS. EXPLAIN EACH FUNCTION



2

THIS IS A SIMPLIFIED VERSION OF A 555 CIRCUIT. IT IS A TIMER. WHEN THE SWITCH IS PRESSED IT STARTS TO WORK. EXPLAIN HOW THE CIRCUIT WORKS.

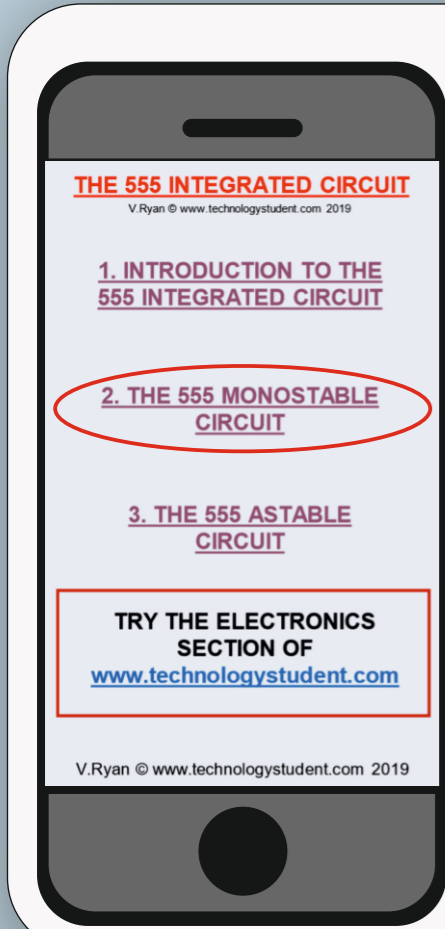


3

THE PINS OF THE 555 ARE NUMBERED. COMPLETE THE TABLE BELOW, BY ADDING THE MISSING FUNCTIONS. SOME HAVE BEEN COMPLETED FOR YOU.

FUNCTION	PIN
GROUND	1
	2
OUTPUT	3
	4
CONTROL V	5
	6
DISCHARGE	7
	8

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THE 555 MONOSTABLE CIRCUIT.

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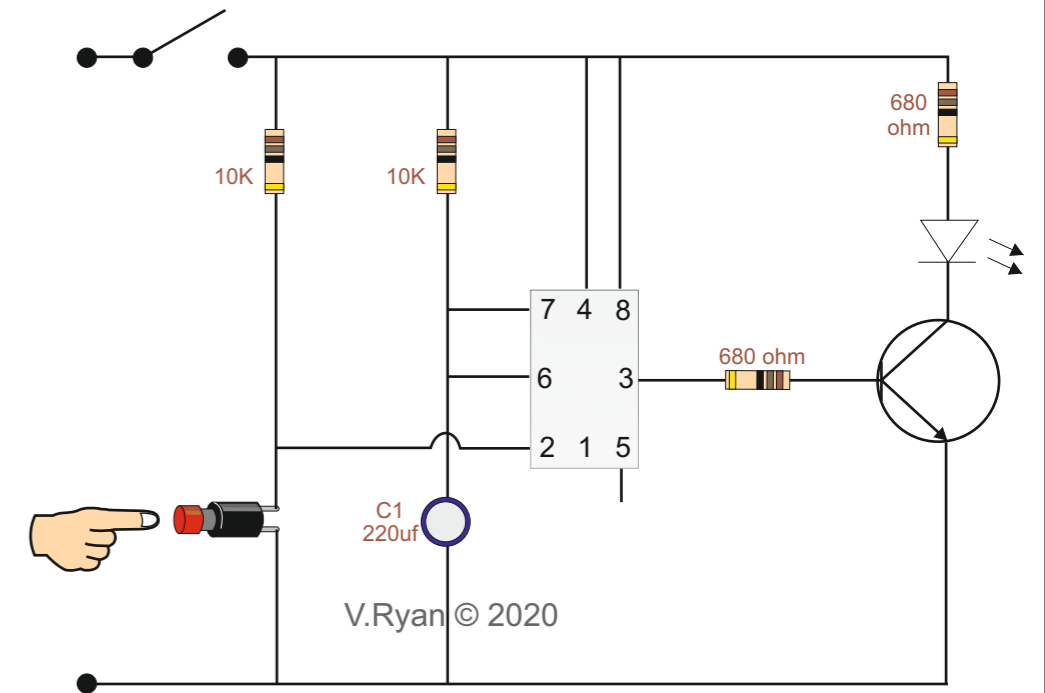
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1

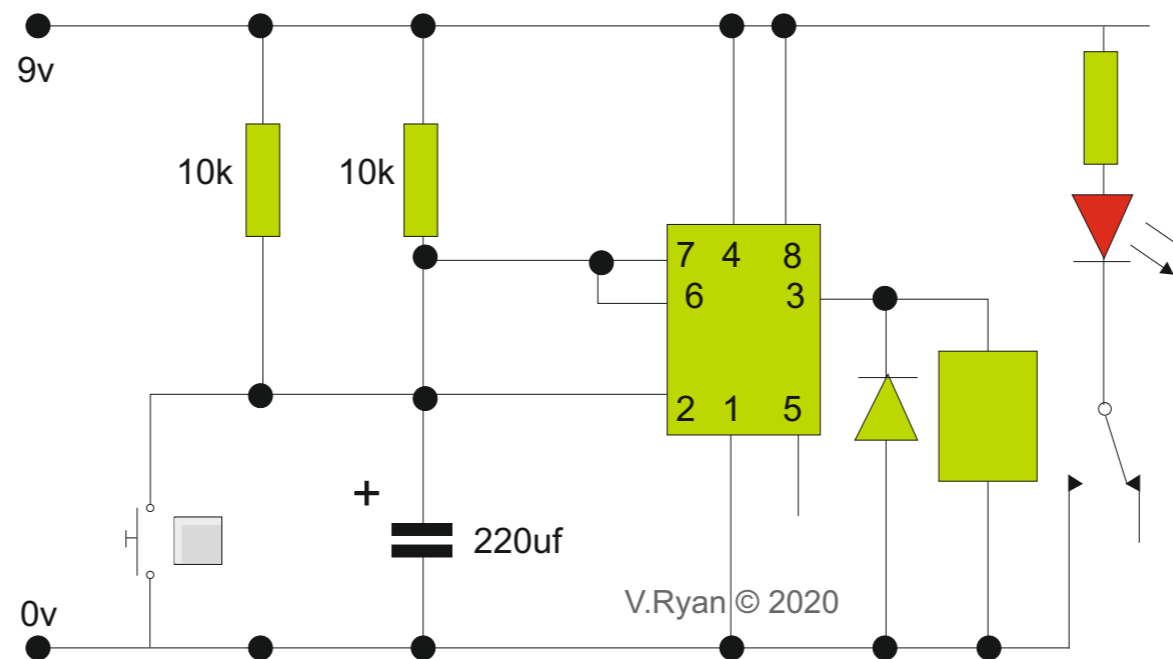
DESCRIBE HOW THIS 555 MONOSTABLE CIRCUIT WORKS.



2

THIS 555 MONOSTABLE CIRCUIT ENERGISES A RELAY. EXPLAIN HOW THE CIRCUIT WORKS

You can label the circuit if this helps your explanation.



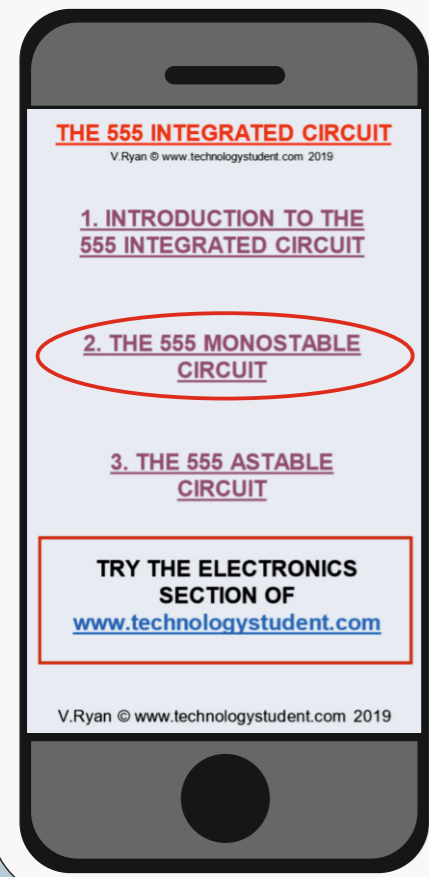
3

LIST THE COMPONENTS USED IN THE CIRCUIT, IN Q2.

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EXAMINATION QUESTIONS

THE 555 MONOSTABLE CIRCUIT.



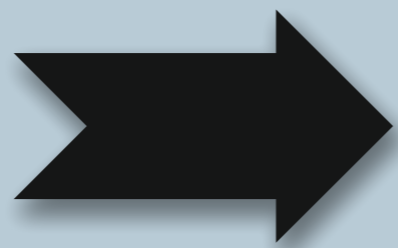
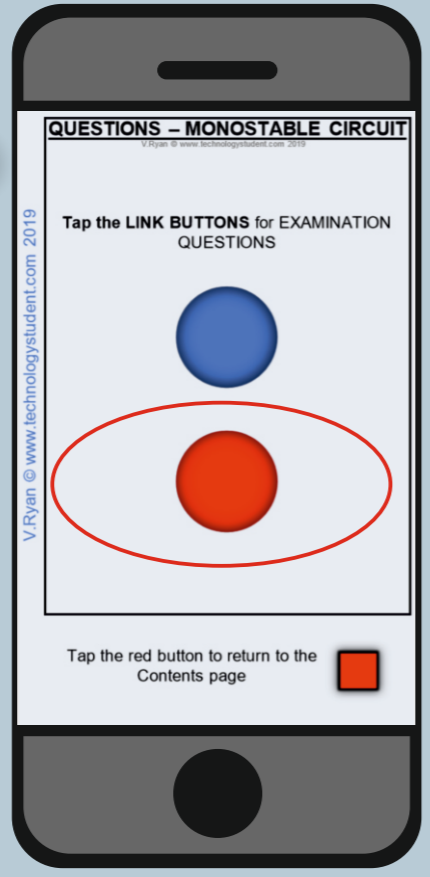
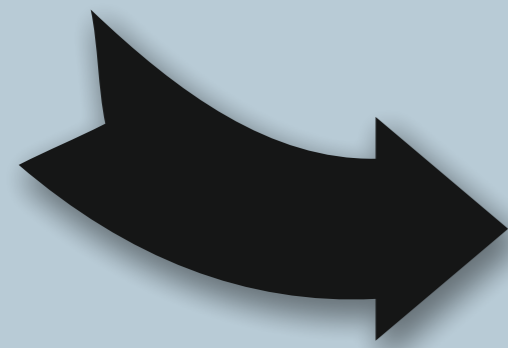
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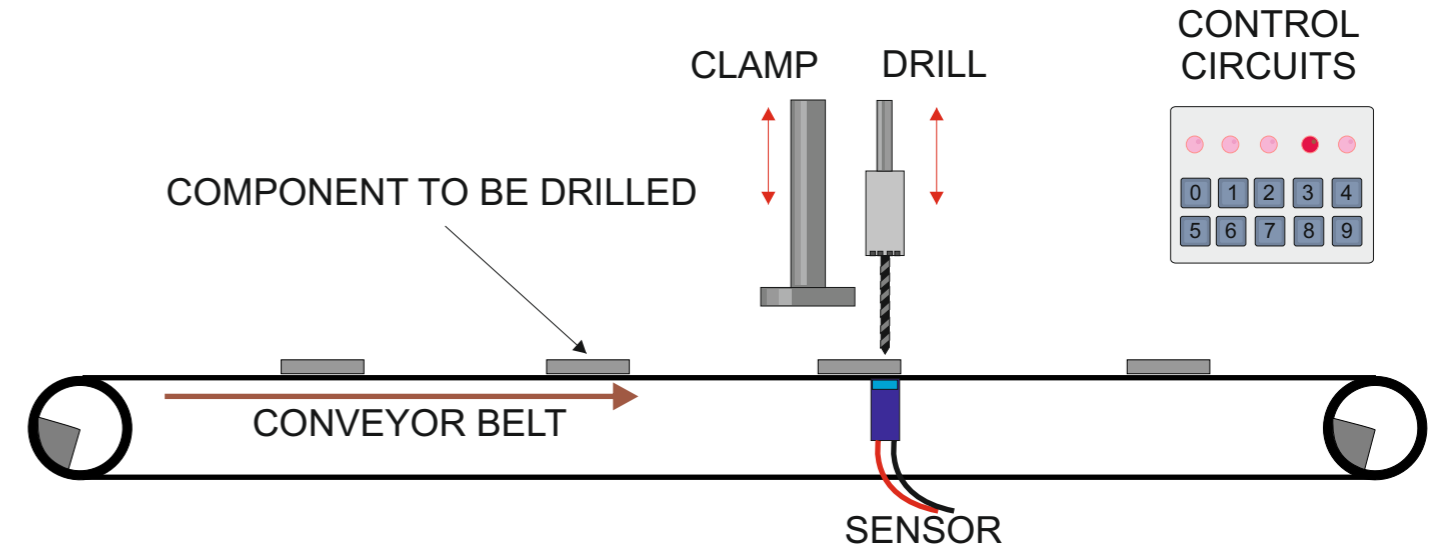
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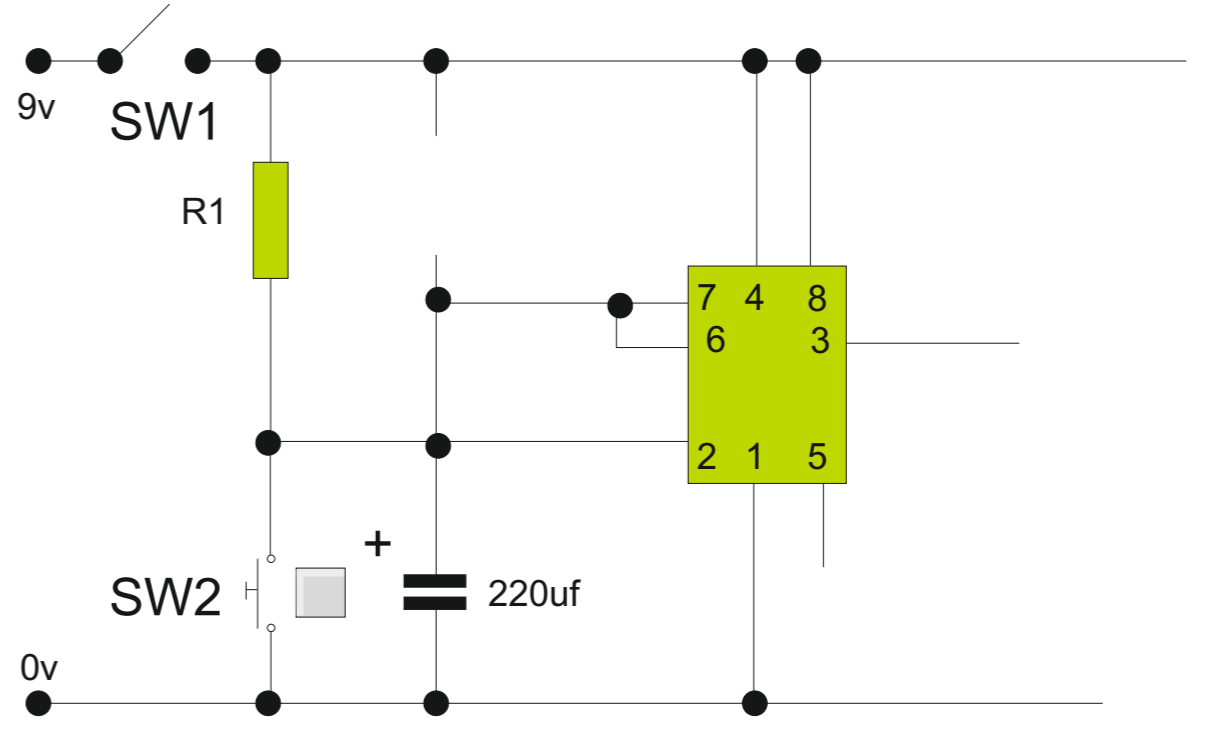


1. The following question is based on the 555 monostable circuit. The circuit shown is part of a production line and controls the timing sequence. The automated production line is shown below. Parts / components move along the production line where they are sensed, clamped down, drilled and then released, moving down the production line again. The 555 monostable circuit controls the timing of the entire production line.



The timer circuit is found inside the control circuit box. The incomplete circuit diagram is found below. Add the following components to complete the timer circuit:

- A. 0v and 9v supply
- B. A variable resistor for altering the length timing sequence.
- C. A buzzer that sounds during the timing sequence.



D. Explain how your completed circuit works.

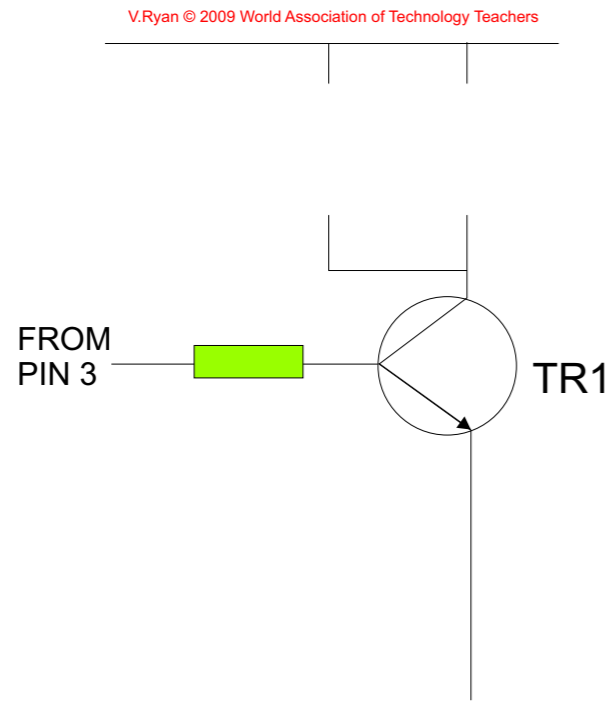
2. What is the role of the variable resistor and capacitor?

3. The 555 timer is an IC. What does IC mean?

4. The 555 timer has a DIL layout. What does DIL mean?

5. It has been found that the sound emitted by the buzzer is too low. A circuit designer has suggested that a relay be added. The circuit also needs protecting by the addition of another component placed in parallel with the relay. (See layout below)

Complete the circuit diagram by adding the relay and a suitable additional 'protecting' component.



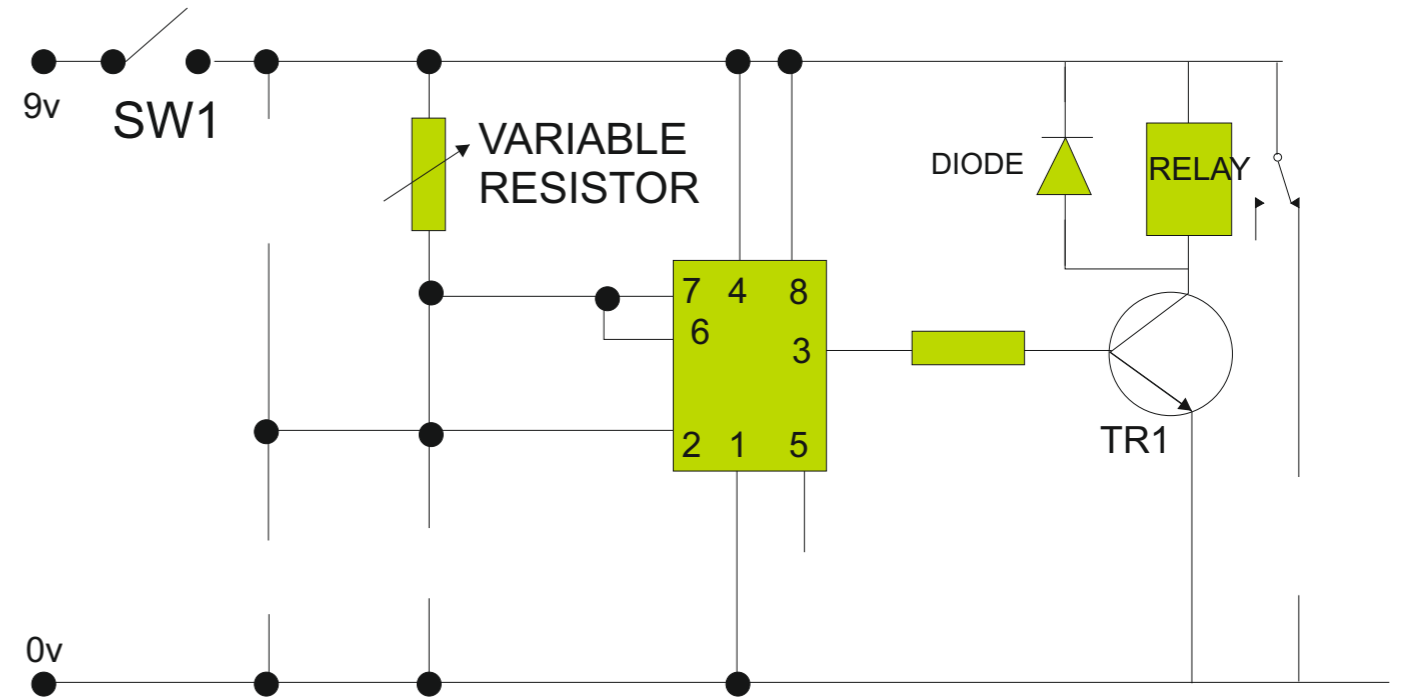
6. Name the component that protects the circuit and explain how it does this.

NAME: _____

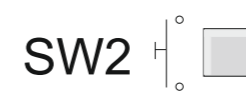
How the component protects the circuit.

7. What is back EMF ?

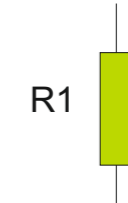
8. The incomplete timer circuit is shown below. Some components are missing. Draw the missing components in the correct positions, adding suitable labels. The missing components are shown below the circuit diagram.



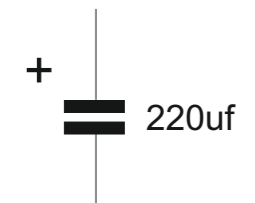
BUZZER



SW2

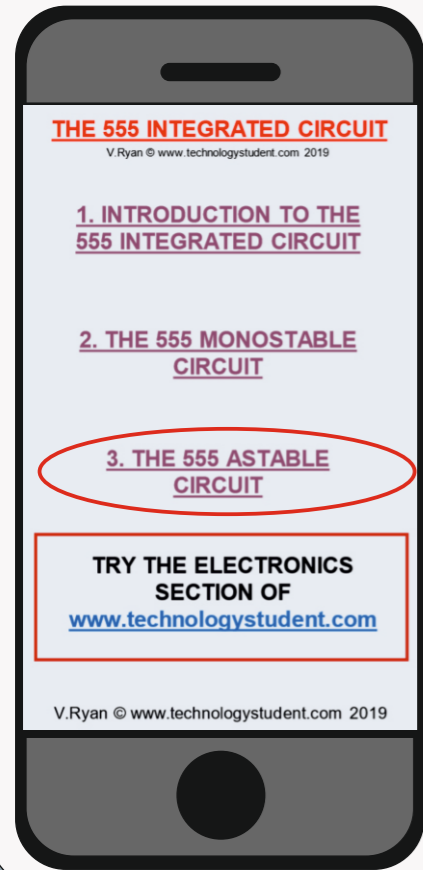


R1



CAPACITOR

9. In the space below explain how the entire circuit works. Include an explanation of the key components and their role in the circuit.



THE 555 ASTABLE CIRCUIT.

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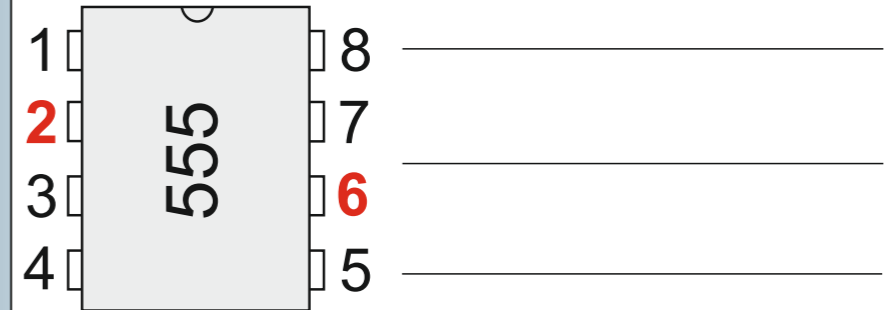
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1 HOW DOES A 555 ASTABLE CIRCUIT, DIFFER FROM A 555 MONOSTABLE CIRCUIT?

2 WHAT IS THE EASIEST WAY OF DETERMINING, IF A 555 CIRCUIT IS SET UP AS ASTABLE?

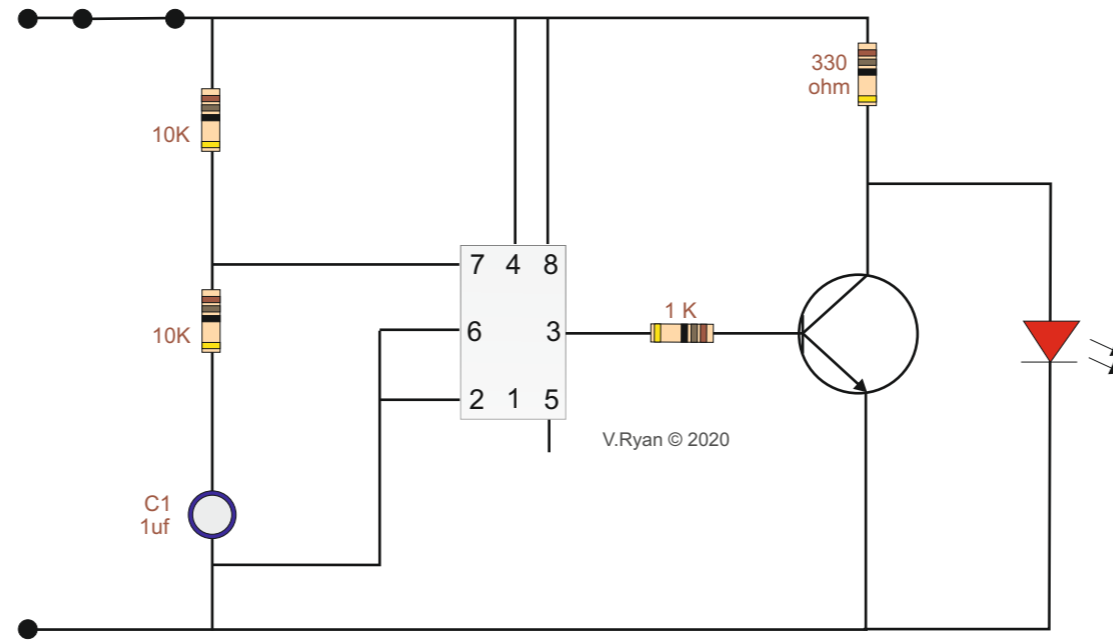


AN ASTABLE CIRCUIT IS SOMETIMES CALLED AN 'OSCILLATOR'. TRUE OR FALSE?

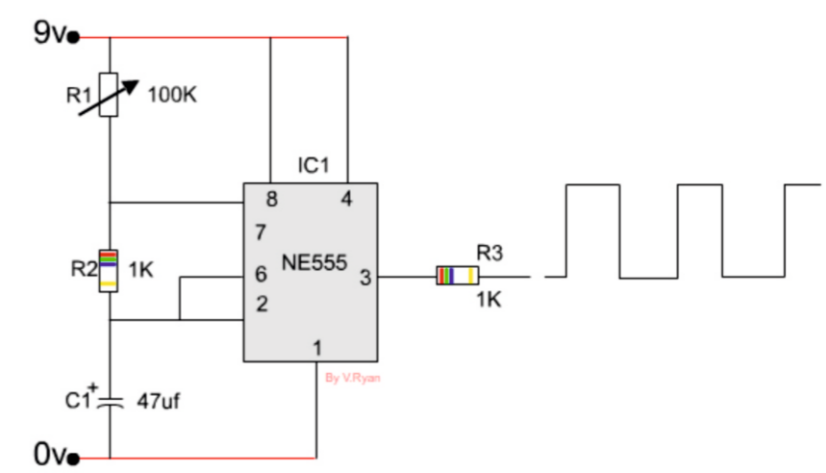
TRUE

FALSE

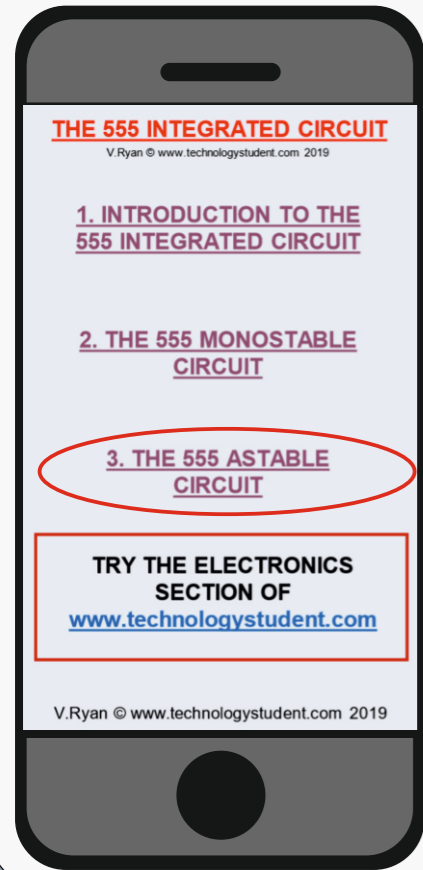
3 THIS IS A SIMPLIFIED VERSION OF AN ASTABLE 555 CIRCUIT. EXPLAIN / DESCRIBE HOW THE CIRCUIT WORKS.



4 THIS ASTABLE 555 CIRCUIT CREATES A PULSE. WHAT IS ANOTHER NAME FOR THIS TYPE OF CIRCUIT?



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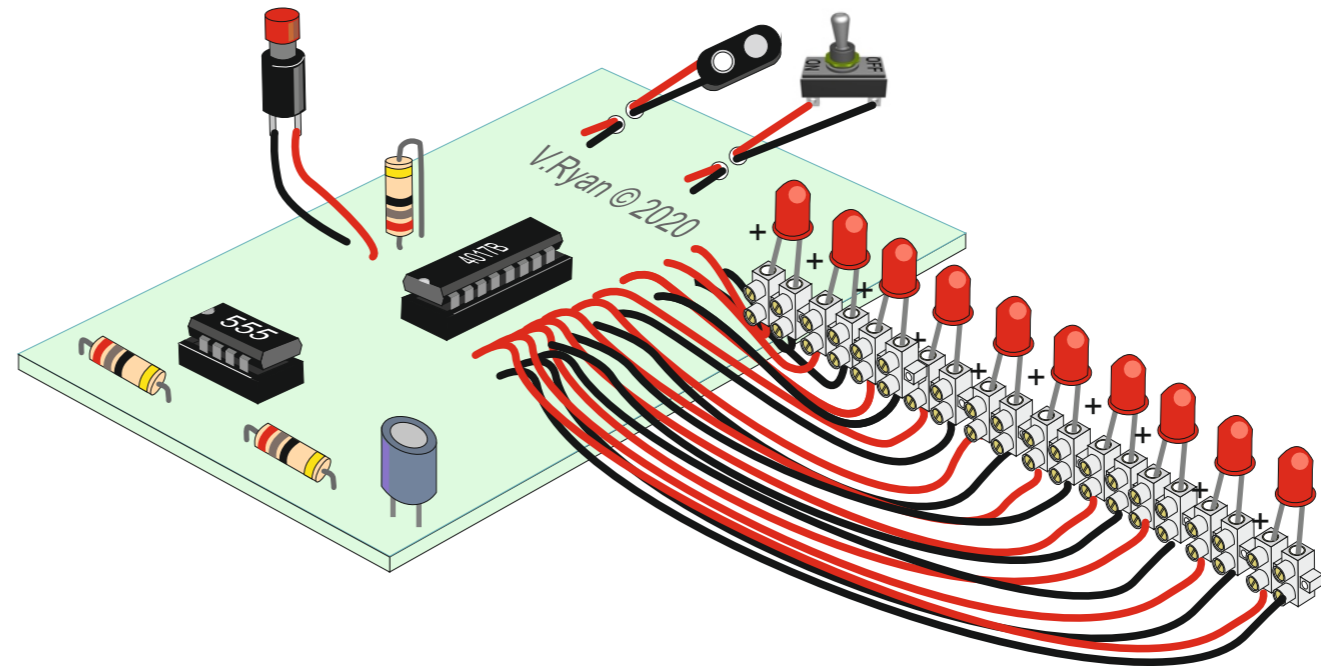
THE 4017B DECADE COUNTER - PULSED BY A 555 ASTABLE CIRCUIT.
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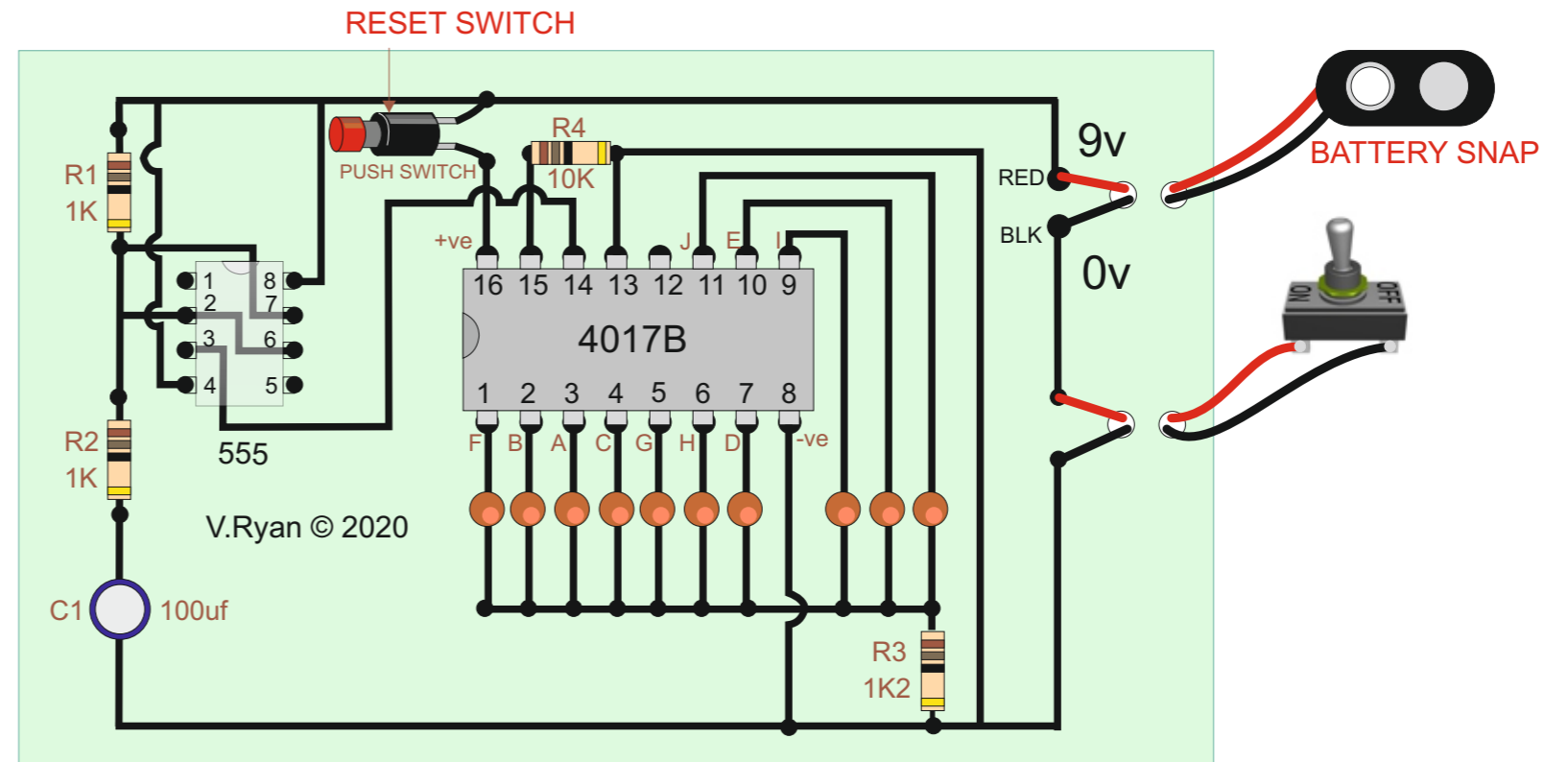
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1

EXPLAIN THE ROLE PLAYED BY THE ASTABLE 555 CIRCUIT, 'PULSING' THE 4017B DECADE COUNTER.



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