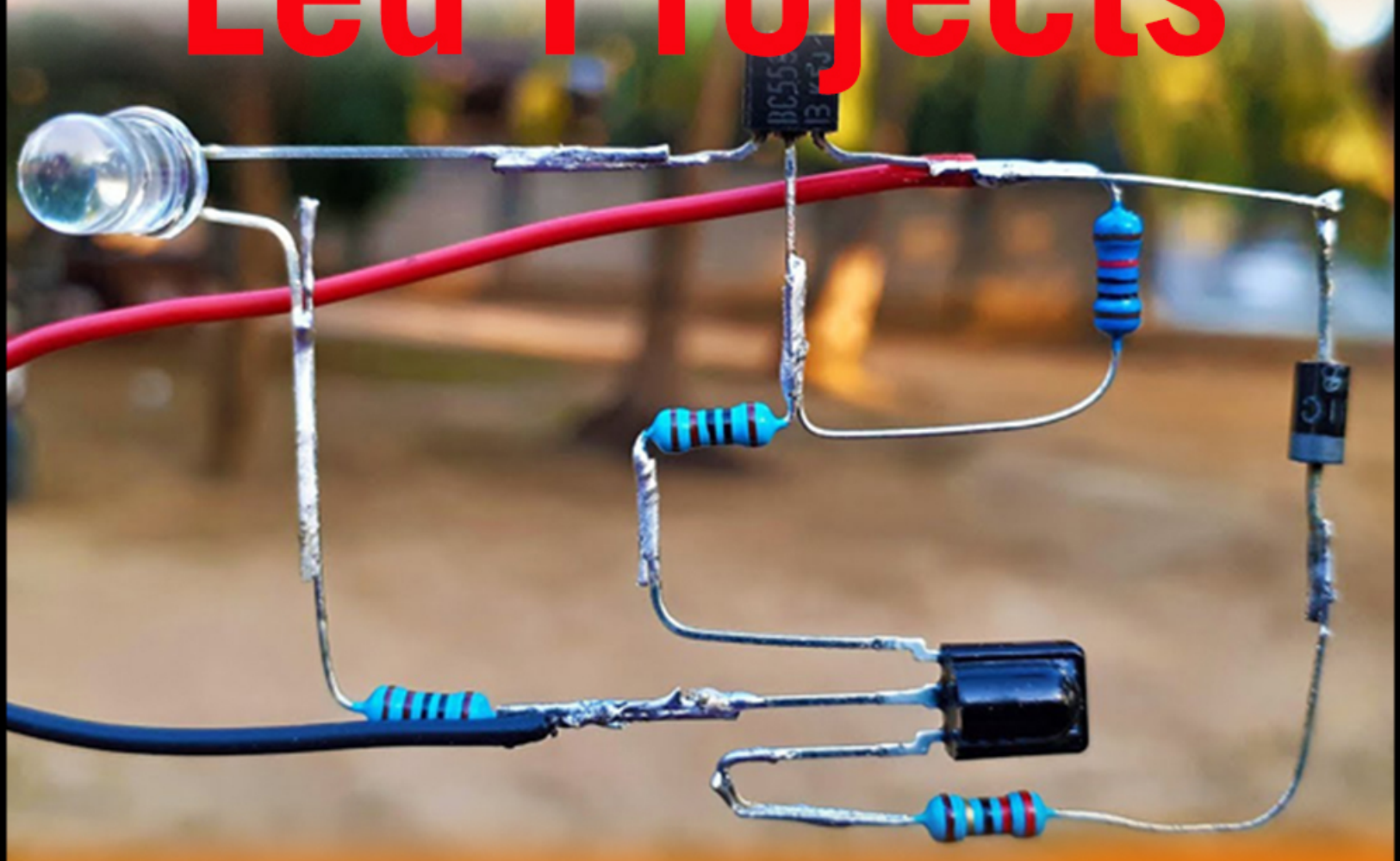
20 Electronics Beginner

Led Projects



Electronic Basic Technology Simple Circuit and Projects

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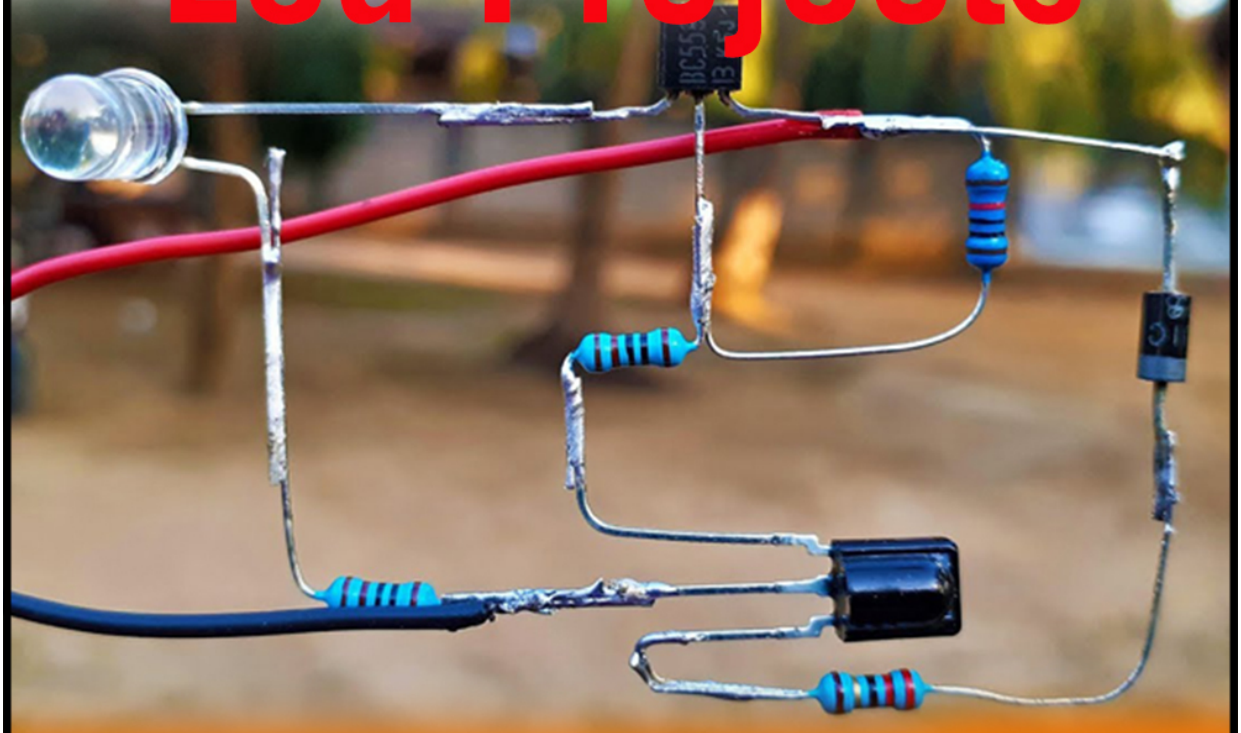

Electronic Basic Technology Simple Circuit and Projects

LED Simple Project

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Interaction

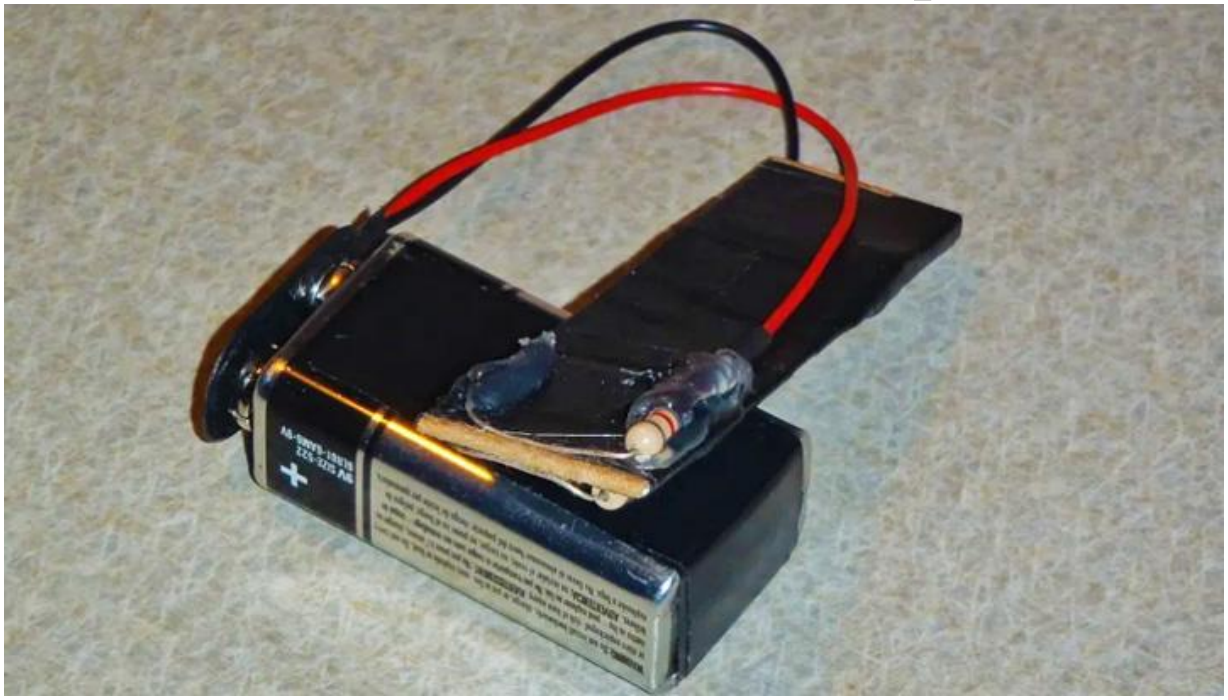
I am pleased to introduce and write the foreword to this project to easily identify and troubleshoot parts of the E-Tech Project as communication Led Simple Project Make Idea.

Today Electronic Technology Ignorance has become a necessity for everyone. The purpose of my initiative to do this project is to use more and more good devices in daily life.

Electrical and Electronic Beginner Amazing Idea Mini 20 Project Publish.

S.Nithukanth

LED Tester - Simple



I use LEDs in almost all of my projects. For those small circuits that require only a few guides, it is easy to replace the LED on the circuit itself and replace it if it is faulty, but what about those systems that cost a lot or even hundreds of LEDs? It is because of these types of projects that I have come up with this simple LED test.

It should take about 10 minutes to build up the most parts for any hobbyist who may be lying around. This thing has saved me countless heads from

removing and replacing flawless LEDs with great order!

So you might be thinking, "Can I trust the parts I am ordering will just work?" In fact, we should be able to do just that, but the fact is that there will always be that one component in all the many malfunctions - LEDs are also different. I'm not talking about long-term testing or failure here. This is just a simple test to see if the LED is on when it should. The number of faulty parts per batch order will increase with very large orders, vintage products, or unreliable manufacturers or distributors.

I buy cheap LEDs. It's no secret, and I'm not ashamed of it. The 10 difference between a 10 and a 20 kusuka LED from two different distributors can really add up if you buy a few hundred at a time. Even 10% of cheap LEDs have flaws, there is still a 45% savings. The caveat is that each LED needs to be tested before it can be used to make sure it is really working. Other than that, you may spend a lot of time unpacking to replace a few idle LEDs - this is not an easy task in most lists of LEDs that have been sold together and locked in another enclosure. It is very time consuming and tedious to check them all first.

Step 2: Collecting Materials

LEDs - What kind of LEDs are you testing? You need to know the minimum amount of power needed to unlock it. I once worked with a bright white LED that turned on at about 5V DC, but most of the LEDs I work with turn on between 2V and 4V.

Battery - The best option here is a single 9V battery - alkaline or loaded, but anything (any cable) that produces at least 4V should work OK on most LEDs.

Battery Holder / Connector - Anything that will work to connect your battery to a circuit.

2 x Resistors - I use 1000 ohm using hole protection holes in this project. With a 3V LED forwarding voltage with a 9V battery, there should be a 6V left - 3V on all combat equipment. That means 3mA [3V / 1000ohms] should flow with LED - enough to see if it works. If you want more of a bright LED now or are using a low power battery, use smaller resistors.

Cardboard - This forms the body of the device. I used a 1 "x 8" string.

Scissors - Cut out cardboard.

Electric Tape - Holding cardboard together.

Hot Glue with a Gun - Protect resistors in place.

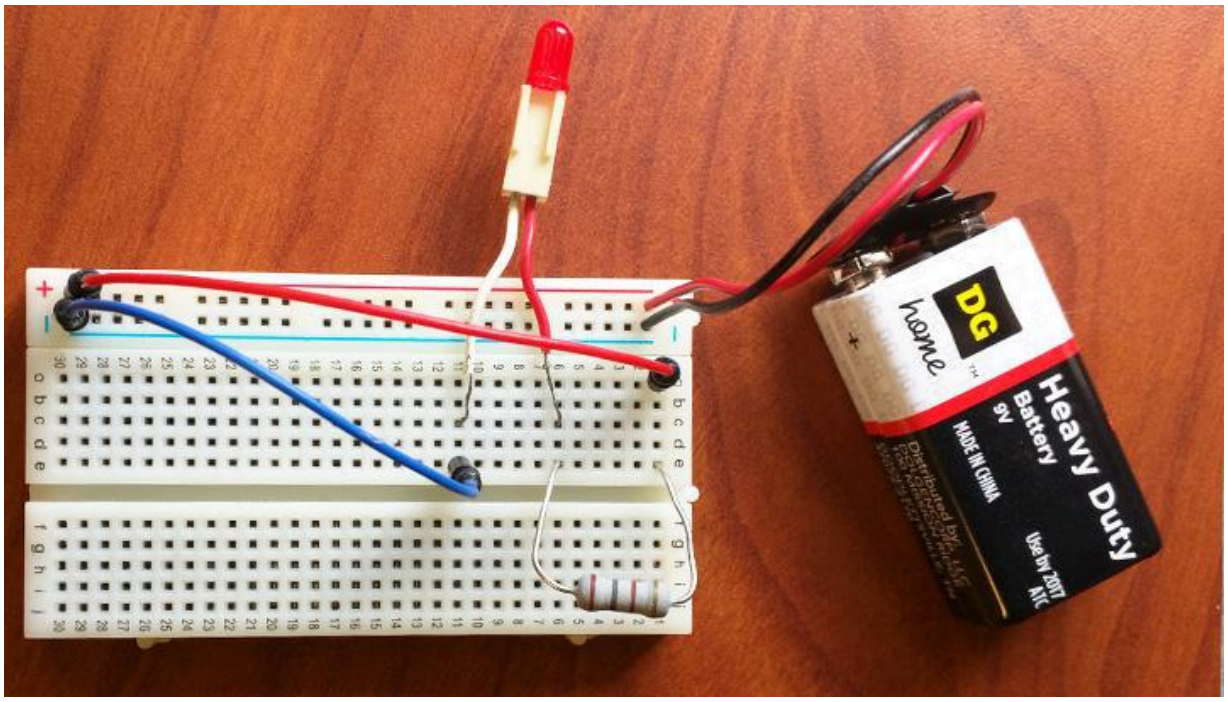
Soldering Iron and Solder - Resistant battery cable.

Heat Gun and Heat Gun - Not absolutely necessary, but it protects the solder joints.

Step 3: Build Build

Building this explorer is incredibly easy.
Cut out the cardboard on a long line and fold in half. The edges can also be folded for extra support on the base.
Wrap the cardboard with electrical tape to wrap it.
Solder is the only limit on a good battery cable.
Solder ends one resists the wrong battery cable.
(Optional) Reduce the heat tube above the solder joints.
Fold the unmarked lead with a single opponent in the 'U "and paste it down with an exposed lead section running over the cardboard.
Repeat step 6 with another opponent on the other side of the cardboard.
Connect the battery, then test the LED by inserting the top of the tester between the LED lead, paying attention to the size of the battery and the LEDs.

Simple LED Circuit



We will build a simple LED circuit. This guide is aimed at beginners entirely on electronic entertainment. There is no presumption in previous knowledge; Explicit instructions are explained so that the beginner knows what to do as the circuit is built.

Step 1: Building materials and information required

First include the following:

Bread board
Two jumper strings
One 1.8k ohm resistor
One LED
One battery and one battery clip
These items are readily available at any electronics store: perhaps an older Radioshack or something similar. Any basic electronic kit will have, without battery, everything.

The 1.8k ohm resistor is used for this purpose because it is the only opposition I had in my hand. Do not use (read: do not use at all) a resistor with an ohm rating of less than 330 ohms. This exceeds the normal 3V LED limit across the LED @ 20 milliamps which will overload the LED. Anything over 330 ohms is fine, but going too high could cause the LED to light up.

Breadboard is the foundation on which we build the circuit; will generate electricity and allow some of the above items to be connected to the circuit. The bread board looks like the top; it is not a loaf of bread. Instead there is a plastic board with metal in it, with spaces where we can put 'tracks.'

I have written above the driving lines above the picture of the bread board. The current notification is only executed on the lines, and then made in the middle of the board. This means that, when a complete circuit is built, the lead in some parts should be in the same line as the other items.

It is not necessary to fully understand this, but knowing it helps to assess problems that may arise during the construction of the circuit.

Step 2: Connect the battery clip

Bread boards usually have power bars on one side or both sides. These devices are where the battery is connected, so the battery lead is not inserted directly into the center of the circuit; power lines allow for efficient handling of cables.

The red cord of the battery clip should be installed in any area of the red power train, often referred to as '+', because good battery lead is often connected here. Insert the black lead of the clip into the blue line marked '-.' If you have not guessed why, it is because the line '-' is designed to detect the wrong lead of a battery clip.

Step 3: Attach the Opponent

The resistor, which usually looks like a small drum with two metal tracks, can be placed in two places not above. This is so the tracks are not connected; think of lead as input and output of the machine. It would make no sense to connect the output input!

Resistors don’t care how the current direction flows through them; they only work to prevent the current flow slightly. The number of ohms associated with each calculator helps to interpret how the current is restricted; The 1.8k ohm protector currently blocks more than 100 ohm resistors (note: 1.8k ohms simply means 1800 ohm.)

Resistor value can be easily determined by color bands on the resistor. I have included a piece of paper that I use to help understand these belts.

Usually it helps to follow the pictures I gave you when you were just starting out, as any easily made mistake can cripple the circuit so it doesn't light up the LED.

Step 4: Attach the LED

The LED (usually) looks like a small bulb with two metal tracks coming from it. The LED I'm using has retired (unfortunately) from an old computer, so your LED will look different. LEDs do not care which side accepts current and which side emits current (meaning LED is 'polar.') Frequently, and especially with non-opening tracks, the longest LED direction is fine. Otherwise the flat side on the LED lamp can indicate the negative side of the LED.

A good LED lead should be placed in the same line as one of the two opposing directions. This ensures that the cost will move from the resistor to the LED. The resistor is located in the circuit so the electricity does not go fast enough to blow the LED. The opponent may have been placed anywhere within the circuit but this setting is preferred.

Step 5: Connecting the jumper wires

We will now introduce a power line in the region. Because the power lines are connected to the body of the bread board, at present it will not normally flow between the two. That’s why jumper strings are required. It can be any type of phone call with the clues shown. Soon my bread board came with a lot of jumper cords so I would use those, but a steel wire fence can be used locally.

Connect one lead lead to the same line as the LED non-LED lead and connect the other lead to the '+' column of the power line. Insert, then, lead one second jumper wire to the slide inside the same line as the LED lead off the resistor, and connect the other end to the column of the power cord.

The jumper wires are connected where they are because we want the current to enter our little system from one side and out to the other side. If it were to come out, for example where the LED and resistor connect, the LED would not be in the circus!

Step 6: Connect the battery

The battery will drive this region, and is required for its operation. The battery contains a potential difference which we will use to illuminate the LED.

Connect the battery to a battery clip. There's only one way to hit it, so don't worry about sticking it back.

Step 7: Circuit Inspection

I have included a small diagram of the current flow from the battery by circuit.

Note: This is not how electrons flow. Electrons actually flow in the opposite direction of what we currently think of as flow. The current flow is only useful for electricians, as it was the way the charging was originally thought to go; don't worry too much about this.

If your LED doesn't light up, don't worry, you may have attached the LED back. Just change which direction is in place. If that doesn't solve the problem, read the pictures I posted and the circuit is complete (i.e., the charger can flow from the battery through the circuit and back to the battery without interruption.

There are many more electronic sites to explore; I would encourage you to find these places, as following these is very fun, and there is a reward for their challenge.

Simple LED Torch

It’s not its very powerful flashlights but an easy way to show circuits and it takes every minute to make.

Step 1: What You Need

Clothing pin (I found most of the plastic has a nice gap in the back which is what we will be using.)

a suitable LED bulb with long connectors (sorry if my names are incorrect)

3 volt watch battery

Blu-Tac

Step 2: Battery and Blu-tac

You will notice that the LED has one phone longer than the other, this is a phone that requires a good battery side (smooth side)

side the battery between the two wires. not too far away as you are looking for a small space for the next bit. paste a short two-wire attachment on the wrong side of the battery using blu-tac. the idea is that the blu-tac holds the phone battery without interfering with the connection.

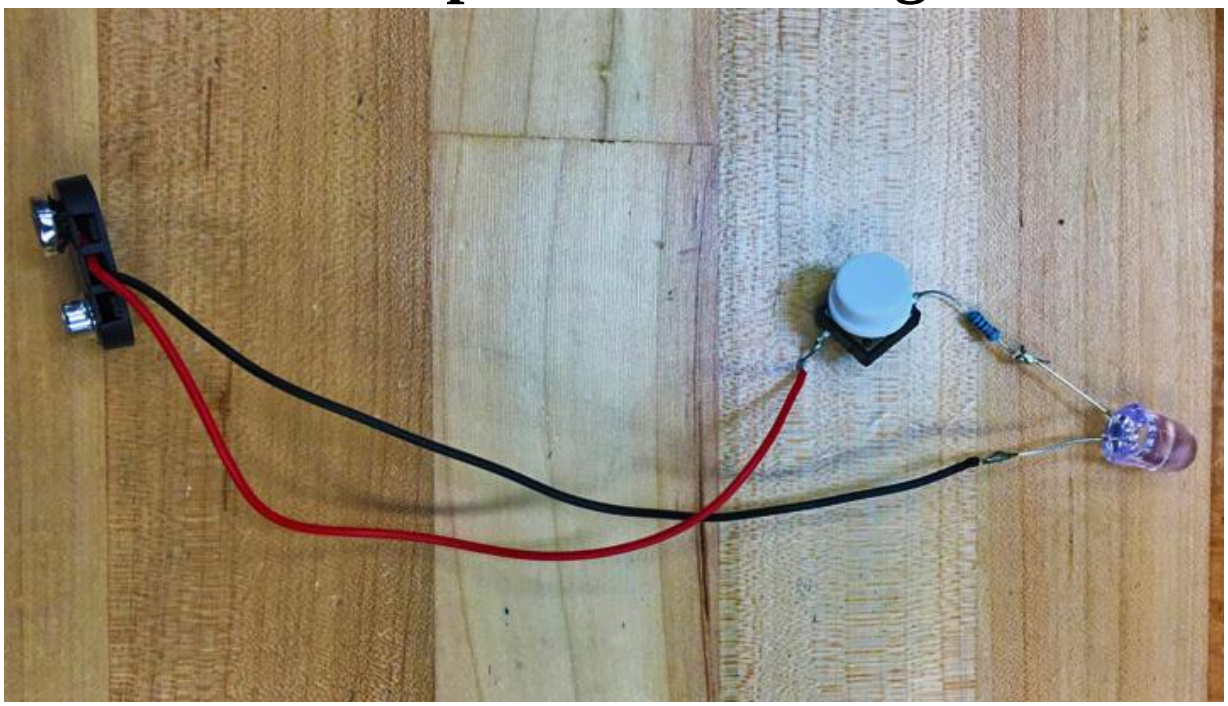
Now gently bend the long wire away from the face, enough to break the circuit.

using the back end of the anchor (side that is always open) press Blu-Tac on one of the legs and place a free wire under the other.

Done! when you pressurize it drains the circuit and turns it on, releasing it to turn it off.

Enjoy and as usual I welcome any comments or criticisms in the comments below.

Simple LED Flashlight



Have you ever wanted to make a flashlight and not worry about complicated capture? Here's a simple, quick project that shows you how to make a compact button activated with a flashlight.

Assemble the Parts
4-Prong Button
330 Ohm Resistor
Wipe the LED
9v battery connector

9v Battery
Soldering Iron and Solder

Step 2: Click the button

Remove the instruments as shown in the picture above. Be sure to click separately.

Step 3: Solder on Button and Resistor

Using your Soldering Iron, insert a soldier to connect to the Prong Button on the RED line of 9v Connector. Solder on Resistor went to another Button prong. These parts do not have to be sold properly because they are not installed.

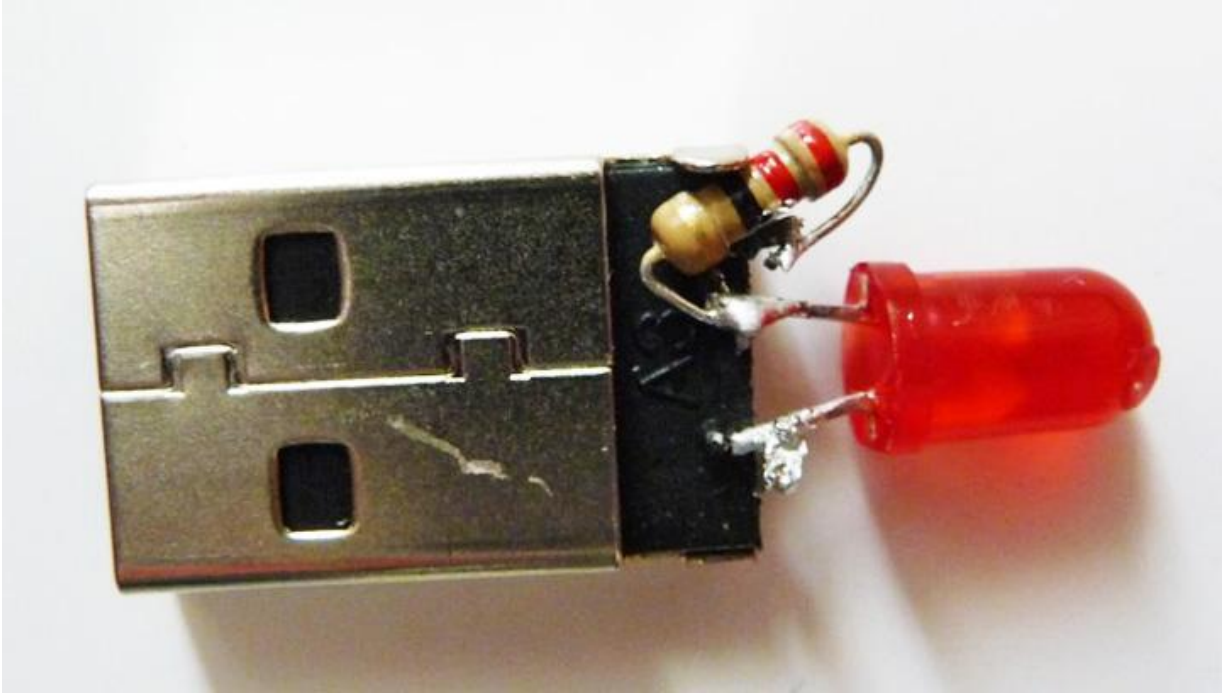
Step 4: Solder on LED

Using Soldering Iron, apply solder to attach the non-LED side (short leg) to the resistor. Apply solder to the positive side of the LED (long leg) on the black leg. These sides need to be properly adjusted as the LEDs are separated.

Step 5: Complete the touch

Your new flashlight should look like the picture above. Attach the 9v battery and press the button. The LED should light up. If not, make sure the parts are sold properly or check and make sure the LED is sold properly.

Simple Cheap USB LED Light



This is my first manageable one so I thought I would start with something simple.

For this project you will need:

1 - Male USB Plug (received mine from $ 1.50 Wii Intercooler)
1 - 22 ohm Resistor (red-red-black) is all I had, dunno if perfect
1 - LED
Soldering / Iron Detoldering
Solder
Hot glue (if you like)

Step 1: Uninstall USB Plug

Open the Intercooler (or other sacrifice) and get a male USB plug ... not hard. Next desolder the USB plug to the board. I pulled out 2 middle tabs because those are data.

Step 2: Connect

We are meeting here today to celebrate the joining of Mr USB and Miss LED .... umm err whatever

First, solder down the LED down to the USB plug.

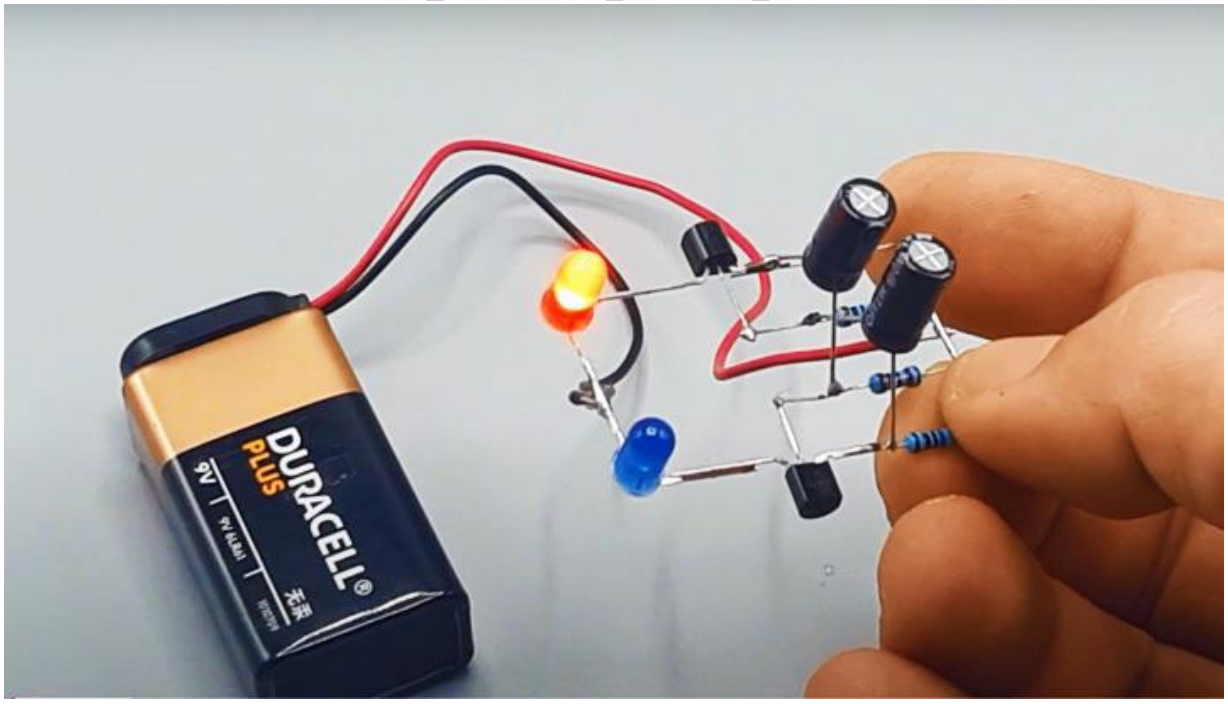
Now solder one resistor limit on the +5 volt (power) plug (USB) port to the USB port, switch to the other limit for good LED lead.

Step 3: Check and finish

Now connect it to your computer to see if it works. If possible, proceed; if not, go back and try again.

If you want, you can apply hot glue around the contact to protect yourself. I did it because my stuff always breaks.

Simple Flip Flop Circuit



In this Readable I show you how to make a Flip Flop LED circuit. The special thing about this region is that it does not use IC (Integrated Circuit).

Using different resistors, capacitors and transistors, I succeeded in this project to make a circuit that illuminates the LED lights one by one.

Components
2 LED lights (any color you want)
2 BC547 transmitters
2 470 Ohm resistors

2 10K opponents
2 100 capacitors

Step 1: Prepare 470 Ohm Resistors

For this step you need 2 470 ohm resistors. Bend one of the two pins against 90 degrees. Then tie the pegs together.

No matter how the resistor is positioned, it works the same in both directions.

Step 2: Upload 10K Resistors.

For this step you need 2 10K resistors. Cut a piece of pin on the other side of both sides. Then solder the resistors to the two resistors from the previous step.

The resistors in this step do not need to be 10K. As long as there is anywhere between 10K and 50K is fine. (conversion speed is also different)

Step 3: Mount the first Transistor

Bend the collector and emitter terminals of the BC547 transistor 90 degrees. Solder the Collector at 470 Ohm countertop and Base at 10K opponent.

The final image is the pinout of the BC547 transistor.

Step 4: Mount the Second Transistor

Bend the collector and emitter terminals of the BC547 transistor 90 degrees. Solder the Collector at 470 Ohm countertop and Base at 10K opponent.

Step 5: Turn on the LED Lights

Bend the LED light connectors so that they are at a 90 degree angle. Solder is the first LED anode (+) of one of the loose pins on the BC547 (emitter) transistors.

Then insert a second LED anode into another transistor.

Connect the cathodes (-) to both LED lights by connecting them.

Step 6: Mount Capacitors

For this project I used 100 UF capacitors. Between 10 F and 100 F works anywhere (LED interval changes also)

Install the first capacitor by connecting + between "transistor 1 and resistor 470 Ohm" and connecting between "transistor 2 and 10K Resistor".

Mount the second capacitor by connecting + between "transistor 2 and resistor 470 Ohm" and connecting between "transistor 1 and Resistor 10K".

Step 7: Mount the power supply

The district is finished so far. Only power supply requires connection. I used a 9V battery for that.

Connect + battery clip connection and connection of 4 resistors.

Connect the battery clip connection and the connection between the 2 LED lights.

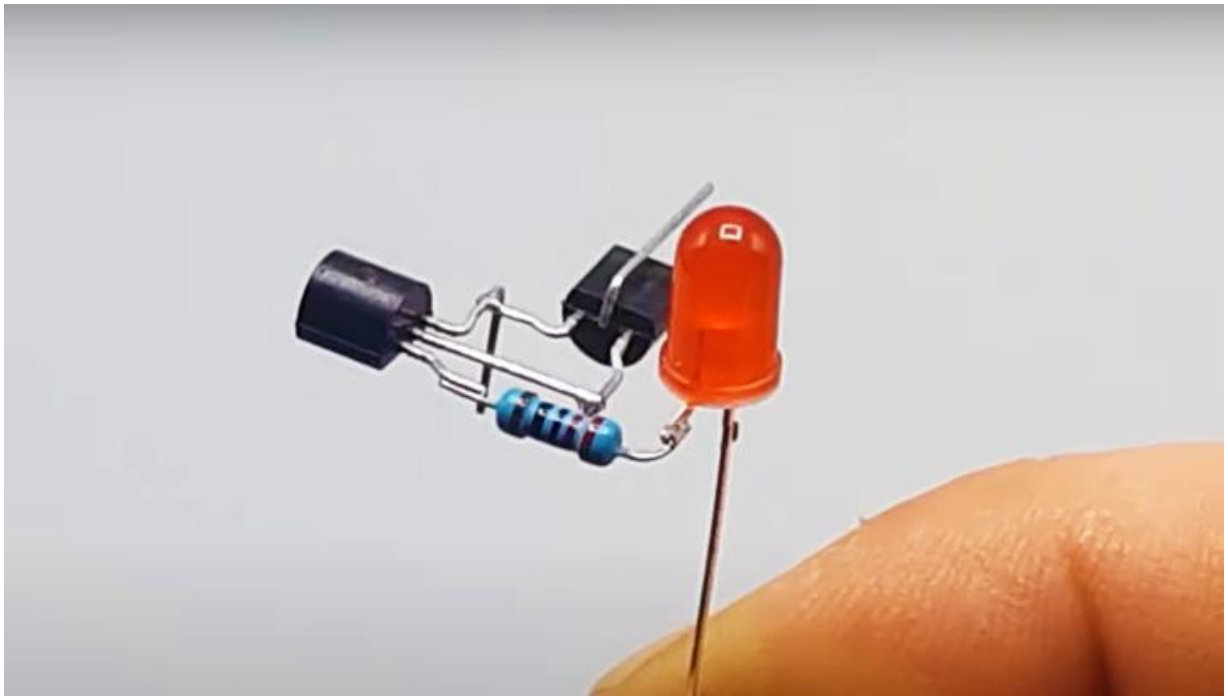
Connect a 9V battery to the connector.

Flip Flop Region is ready

How does this work

The base of both transistors is connected to a + connection with a resistor. Any single transistor will be activated first. (this is because no transistor is exactly the same). Let’s assume transistor 1 opens first. When the transistor opens the collector pin is down and leads to the light of its collector. And the capacitor starts charging with ground given 1 transistor and 10k Resistor on the base of 2 transistors. As the first capacitor charger takes current from the 10k Resistor below 2 transistors. The base of the 2 transistors does not have a current to activate its lead. Sometimes the first capacitor will charge. And if it does, it no longer flows in it. Now there is enough current to flow through the base of the 2 transistors. The second transistor is active. (Includes lead linked to its collector).

Wireless AC Current Detector



While doing my previous Instructable (near-infrared proximity sensor) I discovered a few things using 2 transistors in a row to amplify a very weak signal. In this Study I will elaborate on this policy also called the "Darlington policy".

In this circuit, the antenna (spring) is connected to the base of the first transistor. When we place this antenna near an AC power object, a small stream is inserted into the antenna for electrical input. This current creates the first transistor. The output of the first transistor creates the second. The second transistor switches to an LED indicating that AC voltage is present.

Component
2 BC547 transmitters
LED
220 Ohm Opponent
Spring (spring ball or copper wire)
9V Battery
9V battery clip

Step 1: Connecting Transistors

Explaining this step is very difficult. The pictures make it very clear!

Fold the transistor collector 1 degree nine
Bend the base of transistor 1 all the way over the transistor
Bend collector transistor 2 ninety degrees
Connect the emitter from transistor 1 to the base of transistor 2
Connect collector from transistor 1 to transistor 2 collector
Cut the outgoing end
Bend the end exit where the collectors are connected by 90 degrees

Step 2: Connecting Resistance

The second transistor controls the LED. The resistor should intervene here to protect the LED. In this region I use a 220 ohm resistor.

The resistor can be installed in front of or behind the LED and works similarly in both directions. To save the entire disc so that it can be placed on the battery connector over time, it comes directly to the back of the transistor.

Solder Resistor to emitter (output) of the second transistor.
Bend the other pin 90 degrees and cut just after bending.

Step 3: Connect the LED

Fold the LED anode (+) 90 degrees and cut it to a few millimeters.
Direct the anode to the opponent.
Cut the cathode (-) at the same length as the pin from the connected emitters.
The 2 outgoing pins should have the same pitch as the 2 battery connector connectors. This is because everything can be plugged into the battery connector over time.

Step 4: Configure Connector.

Everything is set to the connector in the next step. For this reason, the connector must first be slightly adjusted.

Cut the wires from the connector.
Drill two small holes about two millimeters with the connector.

Step 5: Mount the Connector

Slide 2 pins that appear with a connector.

Point the pins to the connector.
Collector pin on connector +, LED cathode pin will connect.

Step 6: Enter spring

The spring is attached to the basic connection of transistor 1. This will act as an antenna to detect electromagnetic input from the AC circuit.

Slide the feather over the base and connect the connection.
If you do not have a feather, you can also make a whirl from, for example, a piece of copper wire.

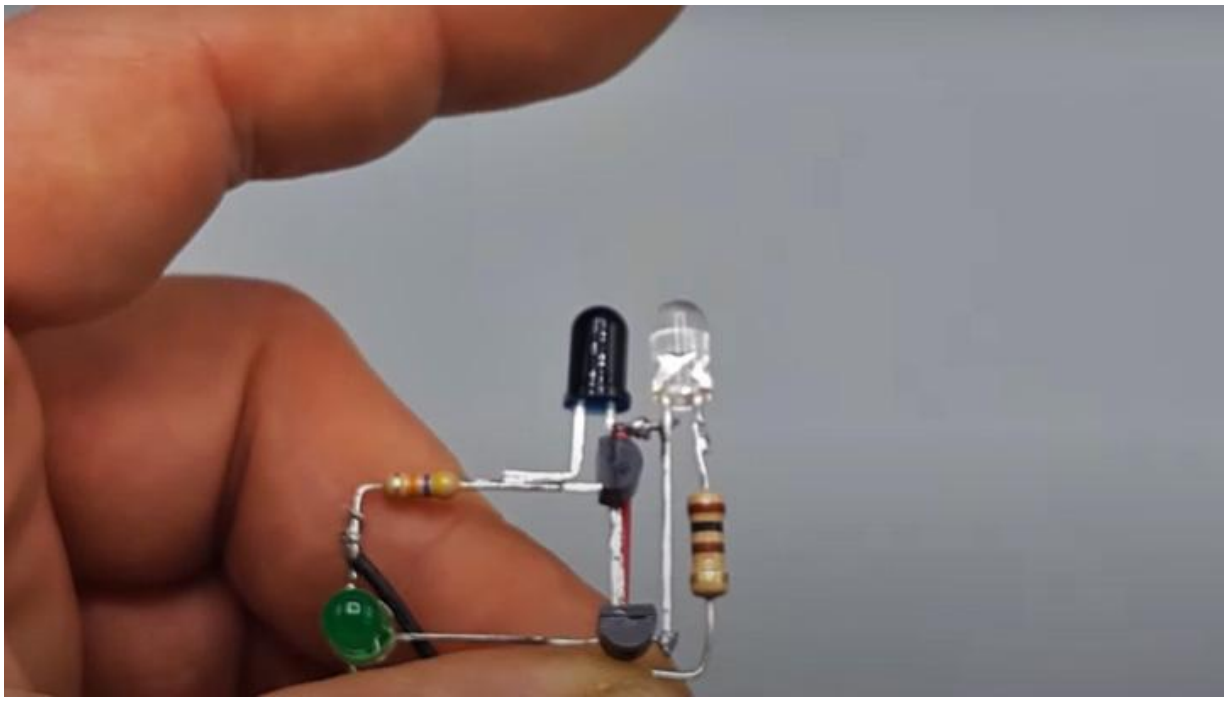
The current Wireless AC Detector is ready!

You just have to click the battery and you can use it

Note that this is a hobby project to understand how transistors work!
Always use authorized tools when working on electrical installation!

Updates: User raddevus made a circuit plan, included in the images for this step. Thanks raddevus!

How to Make a IR Proximity Sensor at Home



In this Reader I show you how to make a simple infrared sensor for hobby projects and learn how the infrared sensor works.

I used an infrared sensor in one of my previous instructions (automatic hand washing) but I wasn't sure how the sensor worked so I dug into it a bit.

An IR sensor is basically a device that contains an IR LED and a photodiode collectively called a photo-coupler or opto-coupler. The IR LED emits IR radiation. IR radiation is emitted by a beam from an IR LED. When this beam is disturbed, it expands and "hits" the photodiode. The photodiode converts IR light into electrical energy. Because photodiode emissions are not permanent, I chose a circuit with BC547 transistors. I will explain how this works in step 1.

Appendices contain a simple diagram to keep the project clear.

Component
IR LED
Photodiode
Green LED
2 BC547 transmitters
100 Ohms Opponent
47K resistance
9V Battery

9V battery connector

Step 1: BC 547 Transistors

A transistor is a device that is widely used to change targets. As one of the largest semiconductor devices, the transistor has found its use in fine digital systems such as embedded systems, digital circuits, and control systems. In both digital and analog domains transistors are widely used in the use of different services such as amplification, cognitive functioning, switching and so on.

In this project we use transistors as a switch. The transistor operates current across the collector-emitter mode only when a voltage is applied to the base. If no base voltage is present, the button is turned off. When the base voltage is present, the button is turned on. To provide the LED with sufficient power, we use the first transistor, which is controlled by a signal from the photodiode, to control the second transistor. This provides LED power directly from the battery.

Solder emitter of transistor 1 at the base of transistor 2.

Step 2: IR Led

Maintaining good IR connections has led to the connections of both converters. Cut some connections slightly (we need an opponent space here).

Step 3: Resistor 100 Ohm

IR lead requires 100 Ohm resistor. Direct this to the IR LED.

It doesn't matter which side or side IR IR is on. The antagonist works the same way in both ways.

Step 4: Green LED

Bend the LED pins. Solder green LED side + to emitter of transistor 2.

Step 5: Resistor 47K

Connect a 47K resistor between the LED terminal and the BASE terminal for transistor

Step 6: Photodiode

Now the photodiode is connected across the collector and the base of transistor 1. Bend the photodiode pins to fit snugly. Align communication.

Step 7: Finish closing

Bend the pin of the 100 Ohm Resistor. Connect with a resting clip to the wrong connection of the green LED.

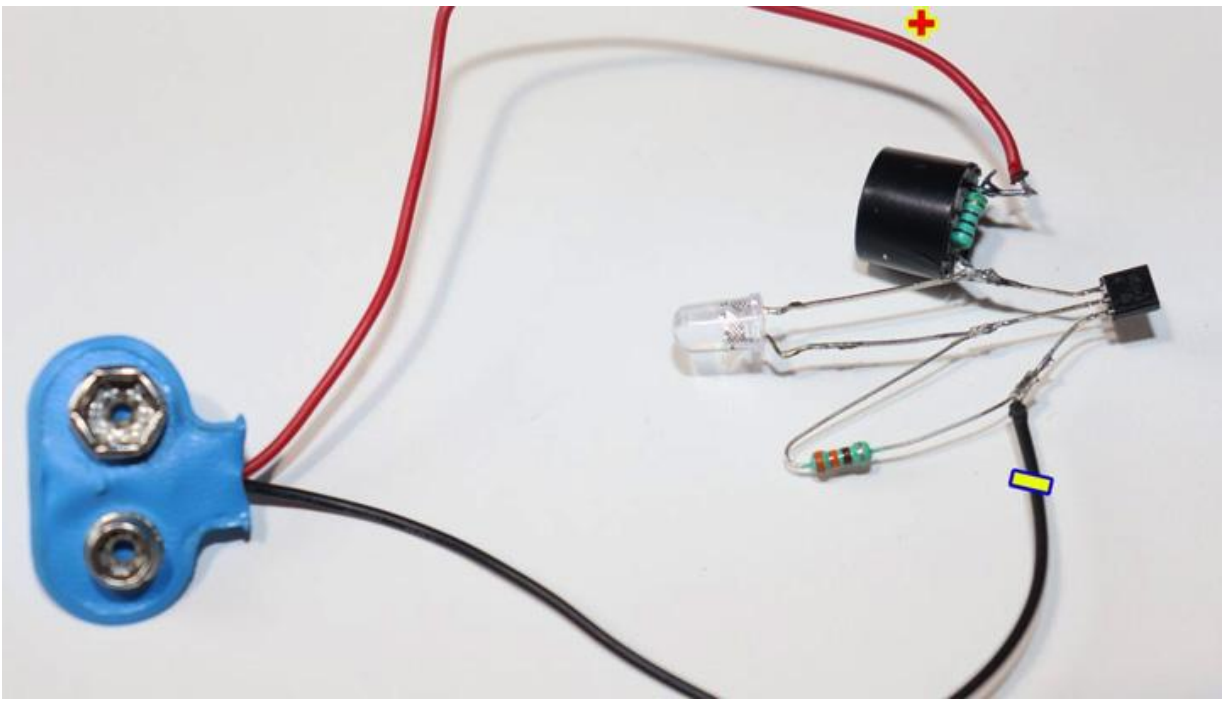
Step 8: Connecting Power Supply

Insert the battery connector into the 9V sensor. Red thread to good connection, black to negative.

The sensor is ready! Connect a 9V battery to the connector and the sensor will work.

If the LED is always on, the IR LED or photodiode may need to be slightly bent so that the infrared will not hit the photodiode (if not disturbed).

Sound Generator Project With RGB LED



Today I am going to make you an awesome audio generator circuit using RGB LED and BC547 transistor. This region produces sound like a bicycle horn.

Let's get started,

Step 1: Take All the Features As shown Below

Parts required -

(1.) Transistor - BC547 (NPN) x1

(2.) RGB LED - 3V x1 (RGB LED color change)

(3.) Resistor - 330 ohm x1

(4.) Resistor - 100 ohm x1

(5.) Buzzer x1

(6.) Battery - 9V x1

(7.) Battery clip x1

Step 2: Connect the 330 Ohm Resistor to the Transistor

First we have to connect a 330 ohm Resistor to the transistor as solder in the picture.

Pinout for BC547 transistor: - Pin-1 is a collector, Pin-2 base and pin-3 is an emmiter pin.

Solder 330 ohm Resistor between base pin and emmiter pin of this transistor.

Step 3: Connect RGB LED

Next we have to connect the RGB LED to the circuit.

Solder + RGB LED leg to collect pin again

-ve leg at the base of the transistor pin as you can see in the picture.

Step 4: Connect 100 Ohm Resistor

Solder 100 ohm Resistor in the middle of the + ve & -ve Buzzer pin as solder in the picture.

Step 5: Connect Buzzer to Circuit

The next Solder -ve buzzer pin to collect the transistor pin.

Step 6: Connect the Battery Clipper Wire

Next we have to connect the clipper cable to the circuit.

Solder + ve wire of clipper clip to + ve pin of Buzzer again

Solder -ve wire of battery clipper to emmiter pin of the transistor as you can see in the picture.

Step 7: Region is OK

Now our amazing power circuit is ready.so connect the battery to the battery clip.

Result: Buzzer sounds like a bicycle horn.

this type we can make an amazing audio circuit using BC547 transistor and RGB LED.

Simple Flashlight LED Bulb

You can always buy one pre-made for $ 14 but if you are a DIY'er, I think I'd better spend $ 0.50 cents and enjoy doing it. Yes, buying 20 pieces of bead particles will cost you from $ 3 + to $ 5 + but if you have many extras, you will have several creative uses for it. Like: I turned the $ 2 Harbor Freight incandescent headlight into an LED. I also intend to light up by inserting 4 LED wires into the series on an aluminum plate and using a 12v 1a power plug set as power. (I think those 4 D cells MAG LITE use the same type of bulb.)

I have made two bulbs now and have been using them for a few months now. It is much brighter than the original bulb and is happy with the results. That’s why I love sharing it with you. The end of imperfection is that when it is light, there is a wider distribution than a hole in the middle. This is how the lens is designed and constructed by an incandescent lamp. Like the title, "it's easy"! If you think you have a better idea, share it!

With this flashlight mod mod, I was determined to hack my old AA (4 - 1.5v series) 6v flashlight. I used a 3.9 ohm resistor on this DIY, (I used this calculator: http://led.linear1.org/1led.wiz). With a two-cell flashlight, there is no need to place any resistance but you still need a heatsink (HF head lamp).

PARTS YOU NEED:

1) Type L Equipment Connector, split bolt, or anything like that (I just used that because I have it in my dump cabinet).

a. The main thing is that the width corresponds to the base of the bulb and the top should be flat to fit the sender,

b. Must be aluminum or copper to make a heatsink (to receive heat from an LED emitter)

c. You should have a hole in the bottom and on the side of a good rope.

2) Alcohol (cleansing)

3) Incandescent flashlight lamp

4) Resistor

5) wrap a gun and lead

6) Arctic silver alumina epoxy

7) 1w or 3w LED bead emitter (I used white 170-190Lm 6000K)

Available on Amazon (from $ 3 + to $ 5 for 20 PCs). You can search for "1W or 3W White LED Bead Emitters"

8) A piece of string, rich enough to get a plastic insulator.

9) Not mandatory: Any plastic with a 1/8 "hole and a small wire (I cut about 1/4" of anchor wall wall an 1/8 "hole) I used this to protect the 1/8" bead sender's lens. width.

Tools:

Hacksaw, pliers, needle pin, metal file, drill or dremel very small size (1/16 "), and safety glasses

Step 1: Prepare the Required Parts

1. Using a pliers, break / break part of the lamp glass (pointing towards the trash can), and carefully clean everything inside the bulb.

2. Using a hacksaw cut the device connector tab and use a metal file to rotate it. You have just created your copper heatsink.

3. using a dremel or drill, carefully scrape the bottom center of the bulb. Note: the dark part of the installation under the lamp is very strong (I broke my first attempt that I need to attach it back).

Step 2: Mix

a) insert a small piece of plastic insulator (approximately 1/4 ", removed from any electrical cord) into the resistor and use a 1/16" hole.

b) I used foam on my soldering base to hold it. After that, solder the wire from the resistor on the bottom of the bulb. Cut the rest of the resistor lead plush under the bulb.

b) place another piece of plastic wire protection on the top of the handle, touch the hole on the side of the copper heatsink. After that, place the heatsink under the lamp.

c) If you are going to use a clamp and a plastic spacer, this is the time to check if it will fit the lamp and emitter. Using alcohol, clean both the top of the heatsink and the bottom of the bead emitter. then dry. Mix just a little bit of Arctic Silver epoxy. Just a dot for each A&B segment. Attach the ad and make sure the positive side looks the positive side with the installation. Let it dry overnight.

d) With the needles of the nose needle bend the good and bad plate of the emitter up to 90 degrees pointing down. reduce the protective / protective trace and send it to a good emitter plate (make sure it fits snugly and does not touch any metal). I just used a cut piece of resistor and solder on the wrong side of the lamp (which is the metal part of the base of the bulb).

Converting a 230V AC Bulb to USB Power

I found these clerks almost had good results on eBay, they just glowed and had a subtle animation built-in. Normally power is enabled to install 85-265V AC mains, but for portable applications such as flashlight or decoy lamp this is not correct.

I changed the lamp so that instead of the actual power supply, these bulbs can be powered by any 5V supply, from a single li-ion battery, or even to 2-3 AA batteries.

Step 1: Disassemble the Bulb

The state-of-the-art housing has just been opened, and an inspection revealed an AC-DC driver, and on the other side of the board, a flexible PCB is installed.

The flexible PCB has a microcontroller and LED array on which it is sold before it is folded and installed. If you look at this PCB, there are only two electrical connections to the driver's board on the DC side. If a voltage is applied to these connectors similar to the AC-DC voltage output voltage, then the lamp must operate properly.

The metal cover of the lamp can be removed, revealing that the AC Live connection is simply pressed against the plastic.

Step 2: Testing the Output Voltage

To test the power output, I sold two wires to DC output and wrapped them in my DMM lead as illustrated. I then turned on the bulb and checked the DMM to see that the voltage was around 6.3V.

I was hoping it would be 5V, but a slightly higher voltage makes sense as two pairs of LEDs can be powered by a series of ~ 6V. This makes turning the lamp very difficult but since I did not have an upgrade converter that would fit the base of the bulb.

Step 3: Convert Boost Converter - Theory

I had this magnification module that has been around and after looking at the IC datasheet, I realized that I could modify it to my needs.

This pressure converter provides a constant output of 5V at any voltage in the range of 2.5V to 4.5V. Since I need ~ 6.3V for output and not 5V this module will not work as it is.

In the circuit diagram above you can see that the IC controls the output power in a direct response from the output (thick line). If a power separator is inserted between the ground and the output power, and the voltage divider node is connected to the IC's "VOUT" pin, then we should be able to deceive the IC by controlling over its set point.

For large components in the discharge capacity, other components such as inductor and capacitors may need to be replaced, but as I only increase the voltage slightly, there is no need to replace anything else.

Step 4: Convert Boost Converter - Active

After removing the USB jack, I disappointed the IC to check the structure of the PCB reinforcement.

The center pin "VOUT" is connected to a tab in the IC, so I cut a copper that separates this connection from the rest of the board. I calculated the resistor values and chose the closest adjectives I had on hand; 220kOhm and 50kOhm to build an electrical power separator.

These resistors are then sold consecutively throughout the output of the magnification converter, and the central node is sold to the VOUT tab on

the IC as indicated.

I used 5V on board from the power supply and rated the output power of 6.56V. This reading is a little higher than I wanted, but with the zener controller of the microcontroller this level of power is acceptable.

Step 5: Reconstruction of the Bulb

With the removal of the metal cover, the wire can be transferred to a small hole in the base. For this I show you the short USB cable used, but you can also use any other type of cable to connect directly to the battery.

I have tied a knot in the USB cable for ease of use, the cable cord will also work. USB cable limits are sold in an advanced converter that is already connected directly to the DC bulb side.

Note that I have left the AC-DC circuit on the bulb as it holds the flexible PCB together, it does not serve any other purpose and can be completely removed from this setting.

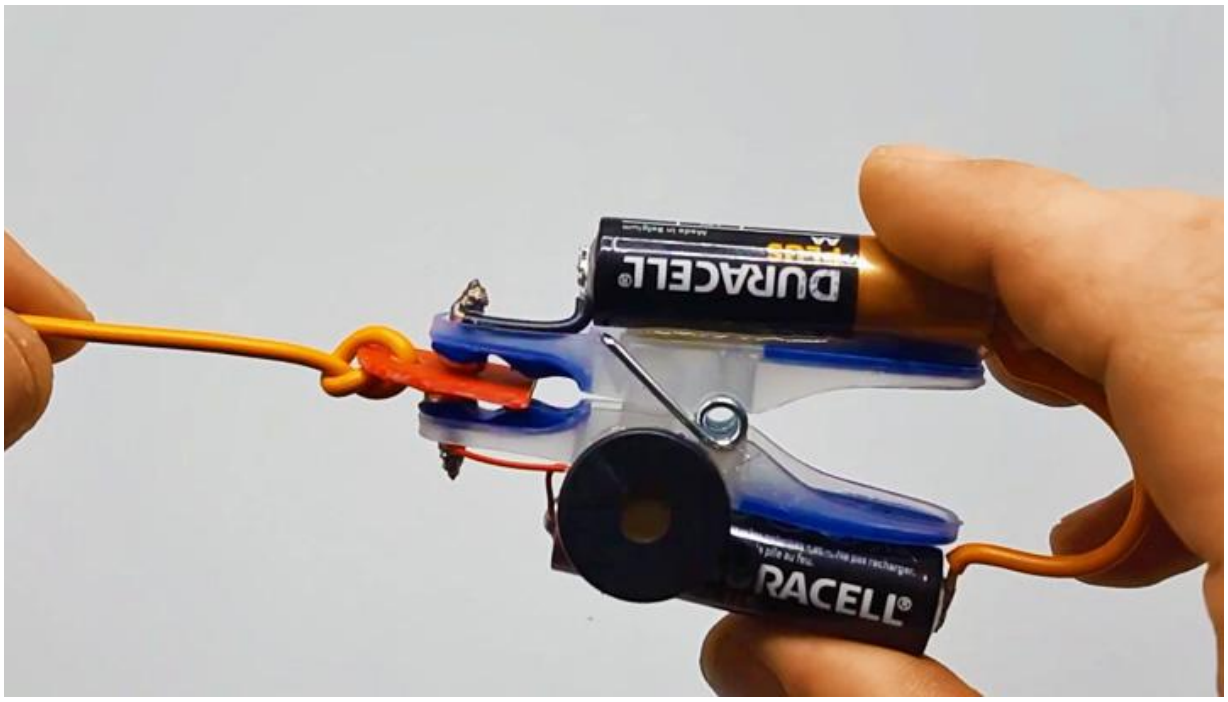
To squeeze everything back into place, you are left with a strange looking lamp and a string hanging from the end. I also made a version with a 2 pin JST connector that can be connected to your favorite battery - this time I went with a 18650 protected cell with the same JST connector.

Done

So here it is; Mains powered lamp modified to a low voltage battery operator lamp that can be used for a variety of displays or other visual effects. Of course if you have a mini adjustable boost converter you don't have to worry about changing any circuit boards .. but what's fun in that? :)

Thank you so much for watching you get here and I hope you found it interesting!

Easy Door Alarm



In This Lesson I Can Show You How To Make A Simple Door Alarm. This alarm is cheap, quick to perform, and works well. It was fun work to do and could be completed in less than an hour. Have fun with Instructable!

Parts you will need:

Dress code
2 AA batteries
Buzz
Two small screws
4 pieces of electrical cord
A piece of plastic (or other non-operative material)

Step 1: Making the Switch

Drill a hole in the 2 edges of the dresspin. The hole should be slightly smaller than the screw so that the screw can tighten. Tighten the 2 screws on the pinpin. They have to come out a little later, the power cords will be attached to this later.

Screws will act as a switch.

Step 2: Installing Batteries and Buzzer

Put a little hot glue on the clothespin and attach the battery to it. Open the dressspin, apply hot glue to it and stick to another battery.

Note that one battery has a positive pole on the left and the other battery has a positive pole on the right.

Now apply a little hot glue to the side of the dresspin and attach the buzzer to it. Wires coming out of the buzzer must be able to reach the battery and screw.

Step 3: Connect the batteries

Apply a small amount of solder flux to the battery poles. Now insert a small solder into it with a soldering iron.

Direct the buzzer connection to the battery + connection.

Connect the end of the battery to the other end of the battery.

Guide the piece of black string to the rest - the end.

Note: A simple string drawing is added to keep it clear.

Step 4: Connect the Switch

Wrap 2 wires (- from the battery and - from the buzzer) around the screens with screws. Insert soldering flux into it and connect the connection.

The noise is now buzzing! To prevent this, you can place a piece of plastic between the screws.

Step 5: Prepare a piece of plastic.

Make a hole with a piece of plastic. This can be done with a drill. Because I didn't have a proper drill, I did this with a soldering iron.

Insert a piece of string (power cord or piece of string) into the hole and lock it.

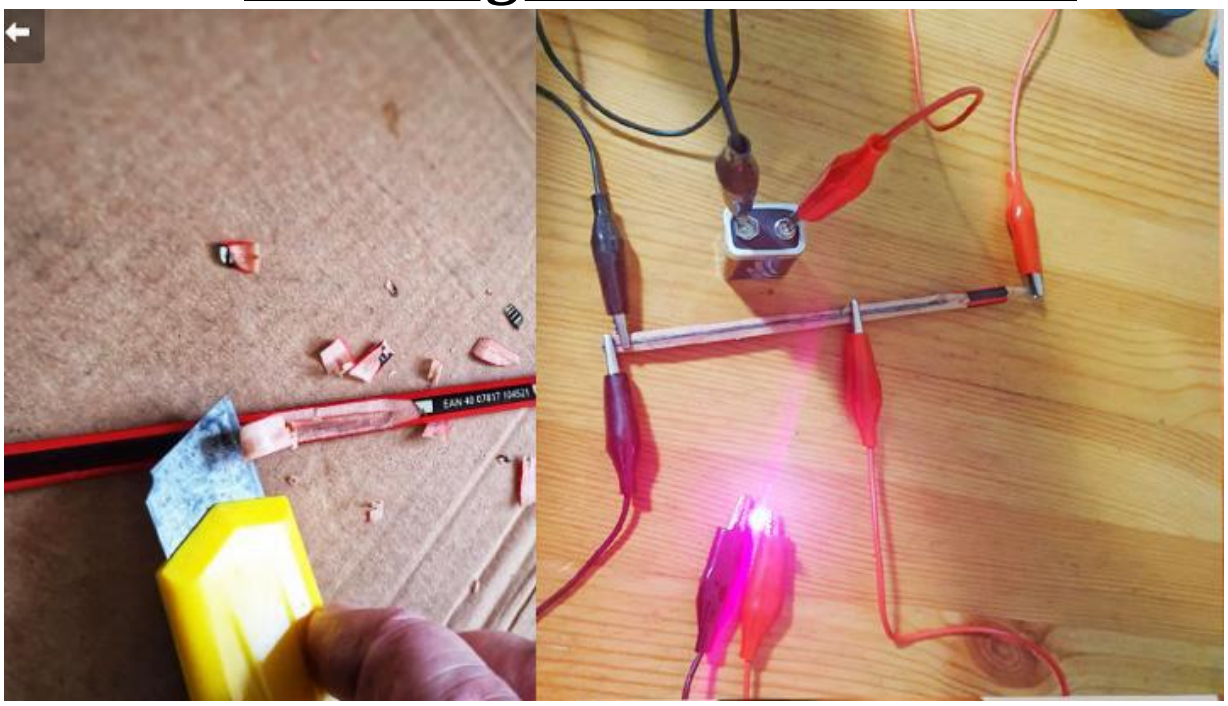
That's right!

Door alarm is ready! I put it by the door with a little hot glue. This can also be done with screw or tape on both sides, depending on the situation.

The thread is attached to the frame. When the door is opened, a piece of plastic is removed from the dressing door and an alarm goes off.

I hope you enjoy this Reading and would like to know more about your feedback and additions!

Whittling a Variable Resistor



If you have a 9 volt battery and want to check if the red LED (3 Volts) is working, don't hit it, what do you do?

Answer: Make flexible opposition by hitting the pencil.

Component and Tools
2H pencil
The knife
4 alligator clip strings
Multimeter

Step 1: Perform some Whittling

Whittle the end of the 2H pencil with a sharp knife until the lead appears. This will allow the alligator clip to be connected.

Connect the multimeter to both ends of the pencil and measure the resistance.

Step 2: Testing the Resistance of Different Pencils

Pencils use graphite as lead. They come in a range of hardness ranging from 6B (almost pure graphite) to 5H (Hard, lead is a mixture of clay and graphite).

Graphite conducts electricity. Hard pencils (H) do not make electricity and Blackers, soft (Bs). H (Hs) are more resistant and act as an electrical resistor.

I measured the resistance of the different pencils.
5H - 40 ohms
2H - 30 ohms
HB - 16 ohms
6B - 2 ohms
Different pencils of the same type may vary slightly.

Step 3: Whittle Some More

The 2H pencil looks great to make a flexible opponent from.

Whittle lead in the middle of the pencil. Cut away from the fingers, facing the center, rotating the pencil 180 degrees after a few cuts.

Check the resistance of the pencil section with a multimeter.

Step 4: Opposition Counting Statistics Needed

The 'readaboutelectronic.com' website said:

'To reduce the power by half, we simply build a circuit to divide the power supply between 2 resistors of equal value (for example, 2 10KΩ resistors).' It showed the picture above.

It also displays the formula, selecting any voltage power. It seems complicated. Picture above.

They even installed a math calculator

Anyway, go back to the pencil.

Step 5: Connect and Explore

Connect a 9 volt battery and test the voltage at the end and go half way. I found that the voltage was almost half.

Step 6: Excess Whittling Then Test

Blow more wood with a pencil, so that most of the lead is exposed. Leave at least an inch at the base end so that the pencil can still be used for writing.

Check the power output at various points next to the pencil. If you have the required voltage, use it.

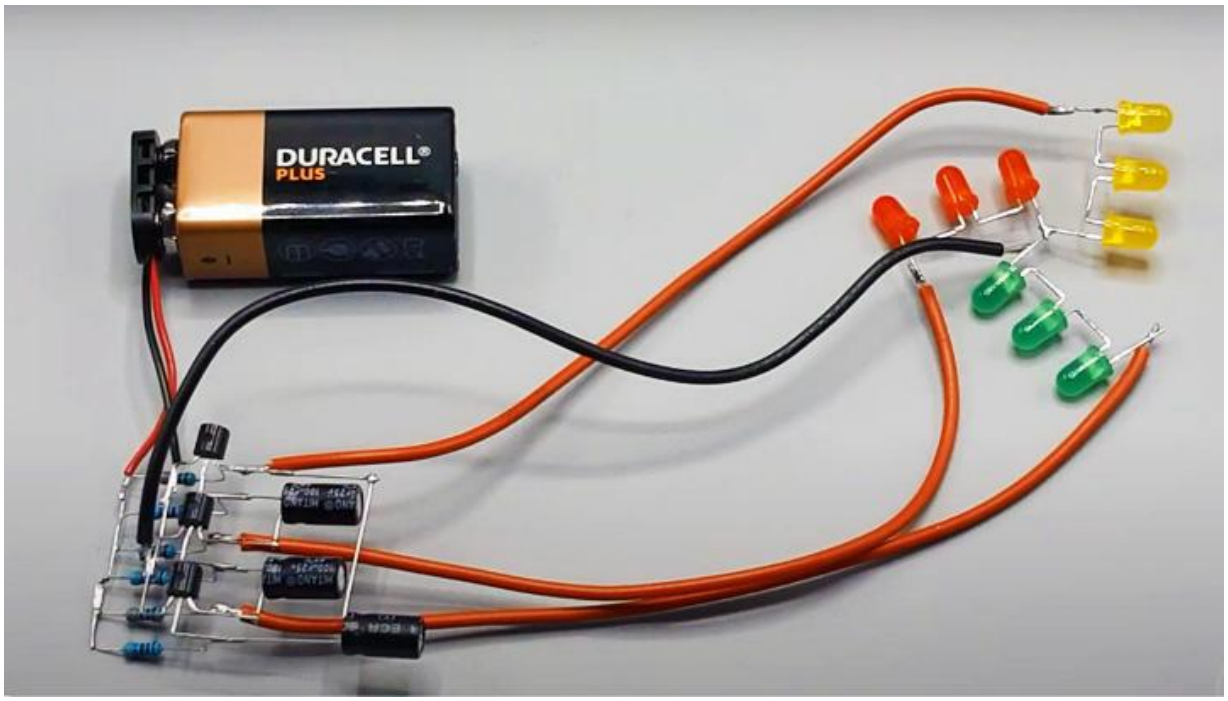
Step 7: Testing the LED light

I tested the red LED light. I found it brightly bright at 3 volts but also light at 2 volts. This is helpful to know because I have a project to use, which does not produce many volts:

Mini Drone to Mini Electrical Generator

This flexible resistance uses the battery very quickly so it should only be used if you do not have the best options.

LED Chaser Circuit Without IC



In this Readable I show you how to make a simple LED chaser circuit. The special thing about this region is that it does not use IC

Using different resistors, capacitors and transistors, I succeeded in this project to make a circuit that illuminates the LED lights one by one. The base of both transistors is connected to a + connection with a resistor. Any single transistor will be activated first. (this is because no transistor is exactly the same). Let’s assume transistor 1 opens first. When the transistor opens the collector pin is down and leads to the light of its collector. And the capacitor starts charging with ground given 1 transistor and 4.7 K Resistor on the base of 2 transistor. As the first capacitor charger takes the current from 4.7 K Resistor below 2 transistor. The base of the 2 transistor does not have a current to activate its lead. Sometimes the first capacitor will charge. And if it does, it no longer flows in it. Now there is enough current to flow through the base of the 2 transistor. The second transistor is active. (Includes lead linked to its collector). The process is repeated when 2 capacitors are charged and the third transistor is operational. Then the first, the second and so on.

Component
3 x 3 LED lights (any color you want)
3 transistors 3 BC547
Chemicals 3 330 Ohm

3 4.7 K antagonists
3,100 capacitors
Power cord (small pieces)

Step 1: Connecting Transistors

For this project I used BC547 NPN transistors. Attachment photo with pin sharing to keep it clear. Bend the collector and base connections of all 3 transistors to the left. Keep the emitter pins to the right and stitch them together.

Step 2: Mount Capacitors

As described in the introduction, capacitors are placed between transistors to “control” the circuit.

Solder capacitor 1+ in transistor collector 2
Solder capacitor 1 - base of transistor 1
Solder capacitor 2+ in transistor collector 3
Solder capacitor 2 - bottom of transistor 2
Solder capacitor 3+ in transistor collector 1
Solder capacitor 3 - bottom of transistor 3

Step 3: 4.7K Resistors

Solder is a 4.7K resistor for all 3 basic connections of 3 transistors. Connect the other ends of the resistors together.

Step 4: 330 Ohm Resistors

Solder 330 Ohm Resistor for all three collectors of transistors. Connect the other resistor ends and the resistor limits from step 3.

Step 5: Configure the LEDs

Because I like it it looks like I chose to install LEDs in star type. Of course this can also be done in a straight line or in another situation.

Assemble the LEDs together in each of the 3 groups. Note that the anodes and cathodes are in the same position.

Then solder cathodes (-) three groups together.

Step 6: Connect the LEDs to the Circuit

Solder red wire for 3 plus LED connections. Solder black wire for integrated LED output connection.

Guide the other ends of the red wires to the collectors of the transistors. Sequence of functions determines whether the sequence of LEDs is left or right
Point the other end of the black wire to the connected emitter terminals.

Step 7: Connect the battery

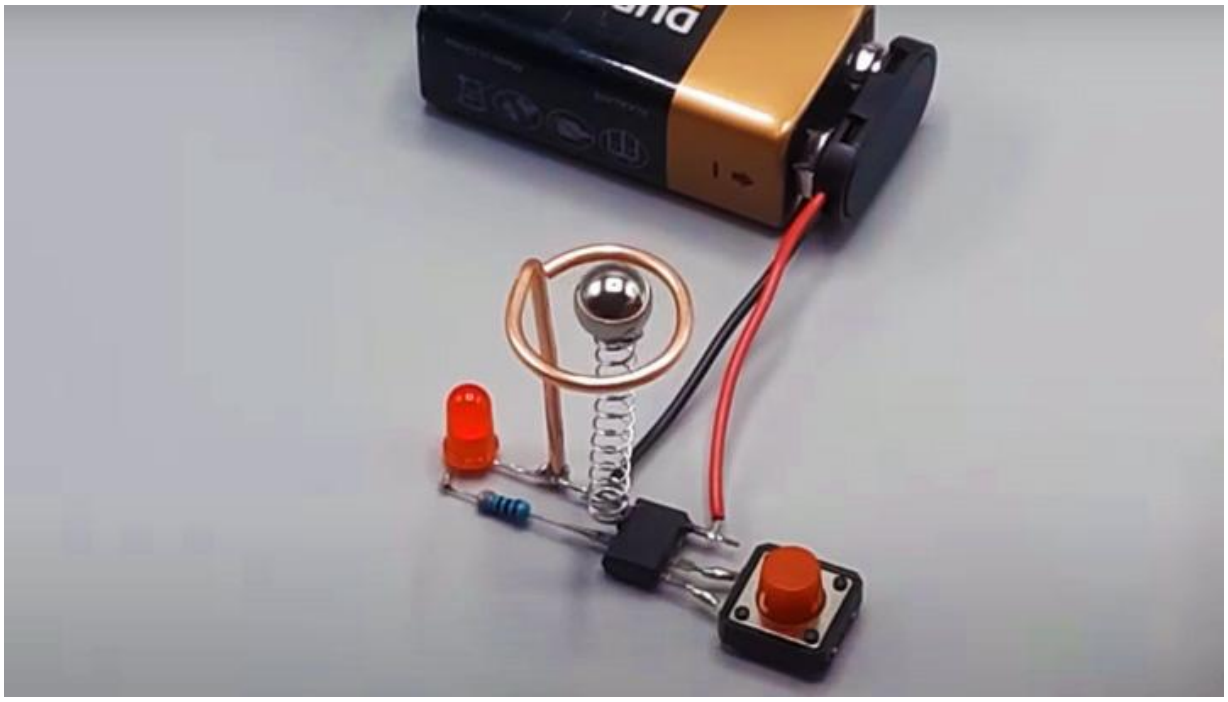
Redirect the red wire from the battery connector to the connected edges of the resistors. Solder black cable from the battery connector to the connecting terminals of the transistors.

That's right! Just press the battery and the LED chaser will work!

The electric drawing is in the appendix.

At the last few orders came the question of the electrical circuit system. Since I have no knowledge of painting, I would like to know what you think about this! Is this program well designed and applicable to you?

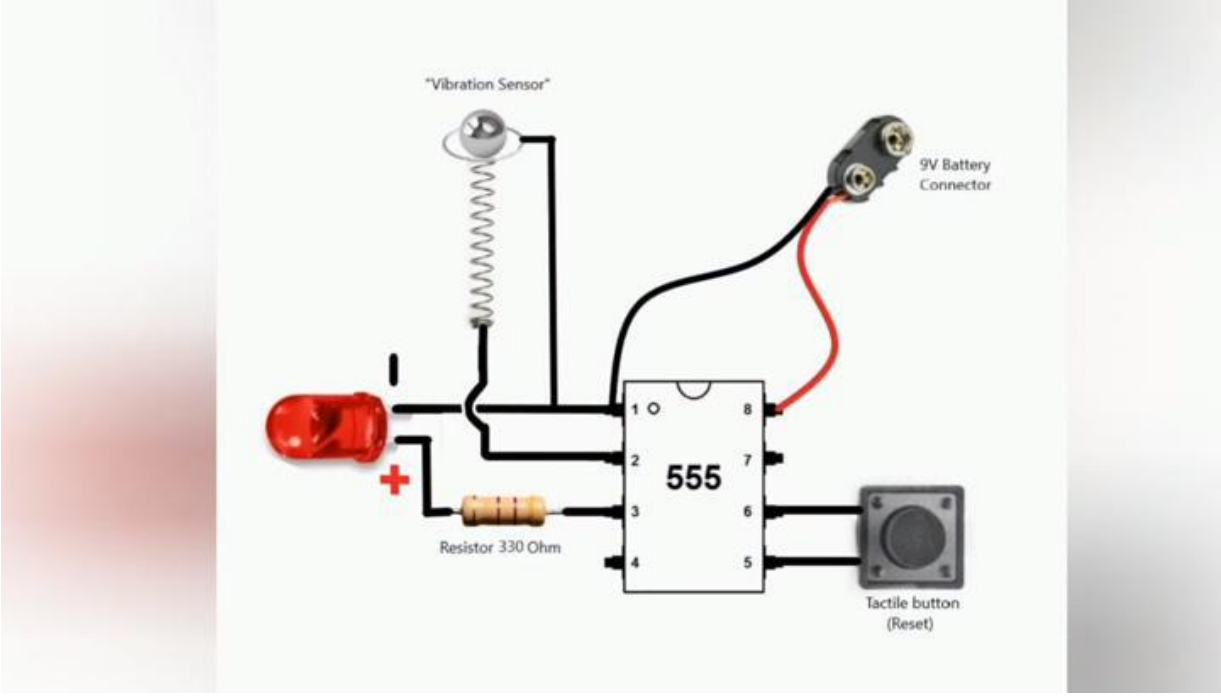
How to Make a Vibration Sensor



While looking through the tutorials I discovered a teebee918 project in which he performed 2 different types of "movement" sensors. I continued with the goal of one of the senses. This sensor contains a spring in which a metal ball is inserted. As the ball moves, it strikes a moving ring around the ball, causing the sensor to contact it.

The contact time for this sensor is too short. Connecting a lamp or an alarm to it so that you can be notified when the sensor is moving is therefore difficult. By connecting a simple circuit with the IC555 timer as a base (as in Touch on Touch off Instructable) this problem is solved. When the sensor registers movement, the output is activated. Output must be reset with a reset button.

The combination of these 2 projects creates a perfect sensor. You can use the vibrator sensor in various applications. They are used, among other things, to get loads on the engines. This sensor is not the most direct and ideal for recreational purposes or simple projects.



Component
555 time
Touch switch
LED (any color)
330 Ohm resistance
9V battery
9V battery clip
Spring (from the barn)
Iron Ball (from football)

Step 1: 555 Time

In this project I will personally control the "flip flop" circuit at the 555 timer. The "vibrator sensor" opens the flip flop circuit which causes the output to rise and the LED to light up, the press button resets the flip flop circuit causing the output to drop and the LED to turn off.

To keep it clear, I added a 555 timer scheme performance image and pin allocation. And a simple drawing of ropes.

Step 2: Connect the LED

To visualize the output of the 555 timer is high, I installed an LED. The timer output is pin 3, which gives the voltage power when high. The LED

will be between pin 3 and pin 1 (GND).

LED protection is definitely a resistance in the middle. Actually, it doesn't matter before or after the LED, but because there will be a GND connection later in this project, I chose to attach it directly to pin 3.

Solder the 330 Ohm resistor to pin 3. Then insert the LED between pin 3 and 1, with anode (+) pin 3 and Cathode (-) pin 1.

Step 3: Reset button

Reset the flip flop circuit is a 555 timer, with the touch button set between pin 5 and 6.

Solder touch button between pin 5 and 6.

Step 4: Enter spring

To enable the internal flip flop circuit in the 555 timer, connect the trigger connection (pin 2) to the GND connection (pin 1). Part of the vibrating sensor is attached to these 2 pins.

To start, insert a metal ball into the spring by inserting it into it. I chose to assemble the metal because by gluing it is not sure if the spring and the ball are in contact so it is not sure if they are going.

Now solder the other side of the spring to pin 2. Make sure the spring is as straight as possible.

The first part of the vibrating sensor is ready, I'll show the other part in the next step.

Step 5: The ring

A well-run ring is placed around the ball. I have chosen to choose the piece of copper wire that lay here. I made a twist around the circular object (holder of the solder tin). And you can use a marker or something like this.

Place the ring around the ball and connect it to the GND connection (pin 1).

Part of the vibration sensor is now ready. When you move the sensor, the ball hits the ring and 555 timers switch to output.

Step 6: You Are Ready

The sensor is almost ready. Only power supply should be installed. This is possible with a flexible power supply, but I chose a 9V battery.

Insert the red cable into the battery clip to pin in 8 (+ Vcc) of the 555 timer.

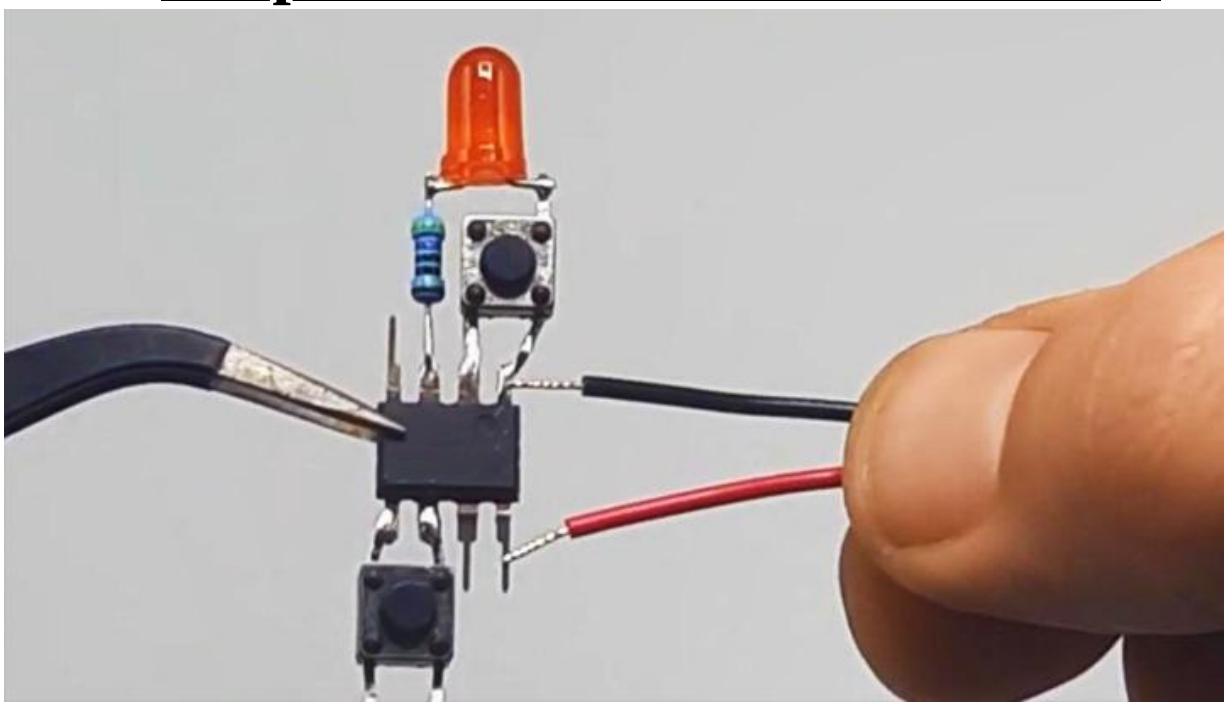
Mount the black cable from the battery clip pin 1 (GND).

That's right!

Connect a 9 volt battery and the circuit can be tested. Shake the device to turn on the LED, the touch button turns off the LED. Remember a simple circuit is added as a picture to make it even clearer.

The 555 timer is very weak. When you apply soldering, make sure you do not let it get too hot, it can break it.

Simple Touch on Touch Off Circuit

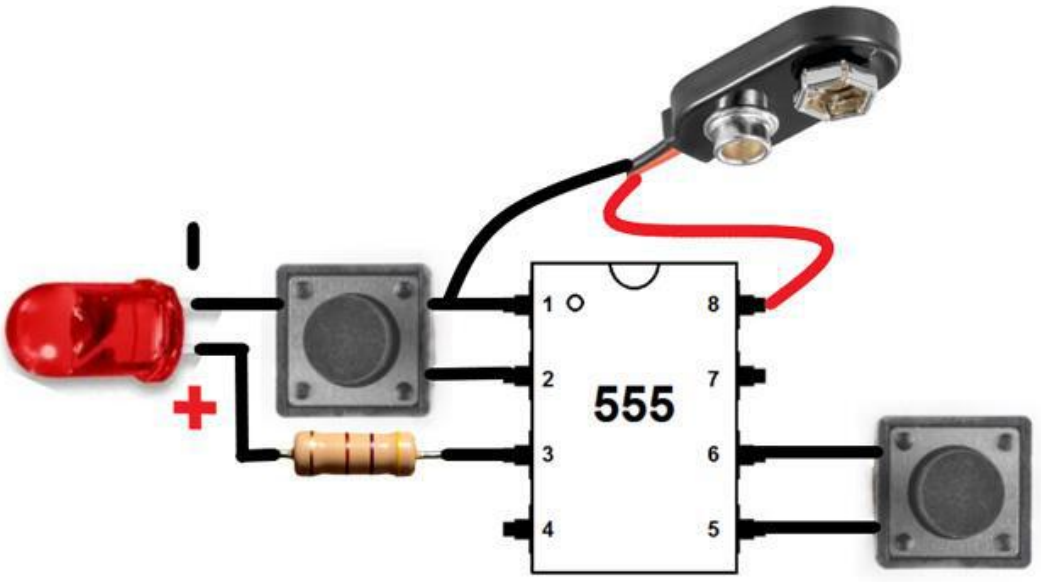


In this Readable I show you how to make a simple Push to push the circuit with a 555 timer.

Because I had encountered many projects that used this 555 timer and did not know what the 555 timer was doing well, I wanted to do a project so I could know better. So a simple circuit first.

The basic 555 timer gets its name from the fact that there are three internally connected 5k intern frames that we use to produce both comparison comparisons. The 555 IC timer is a cheap, popular and usable precision timeline that can serve as a simple timer to produce a single pull or long delay, or as a relaxing oscillator that produces a series of stable waveforms of cycles ranging from 50 to 100%.
The 555 timer chip is powerful and very stable with 8 PINs that can be used as a Monivable, Bistable or Astable Multivibrator accurate to produce various applications such as single-shot or delayers timer, pulse generation, LED as well as flashlights, alarms and tone production, logic clocks, frequency separation, power supply and converters etc., in fact any circuit that needs some kind of time management as the list is endless.

Like I said, I'm going to start getting easier. In this project I will personally control the "flip flop" circuit on the 555 timer with 2 push buttons. One push button opens the flip flop circuit causing the output to rise and the LED to light up, the other button to reset the flip flop circuit causes the output to drop and the LED to turn off.



Component

555 time
2 Touch change
LED (any color)
470 Ohm resistance
9V battery
9V battery clip

Step 1: Connect the touch button to 555 Time

The dot on the top left of the timer 555 shows you which connect number 1. See the figure in the first step of the 555 timer pins.

Connect the affected button between pin 1 and pin 2.

Step 2: Mount the Protector

To protect the LED, the resistor interferes. This comes with a 555 timer output (pin 3). Cut the pins and solder 470 Ohm Resistor to pinch 3 timer.

Step 3: Install the LED

Guided to see if the top comes out between the output (pin 3 per Resistor) and the ground (pin 1). Solder the LED between pin 1 and 3. The anode (+) of the LED must be connected to pin 3.

Step 4: Reset button

The second touch button is placed between pins 5 and 6. When this button is pressed, the flip flop circuit is reset.

Solder touch button on pins 5 and 6.

Step 5: Mount the battery clip

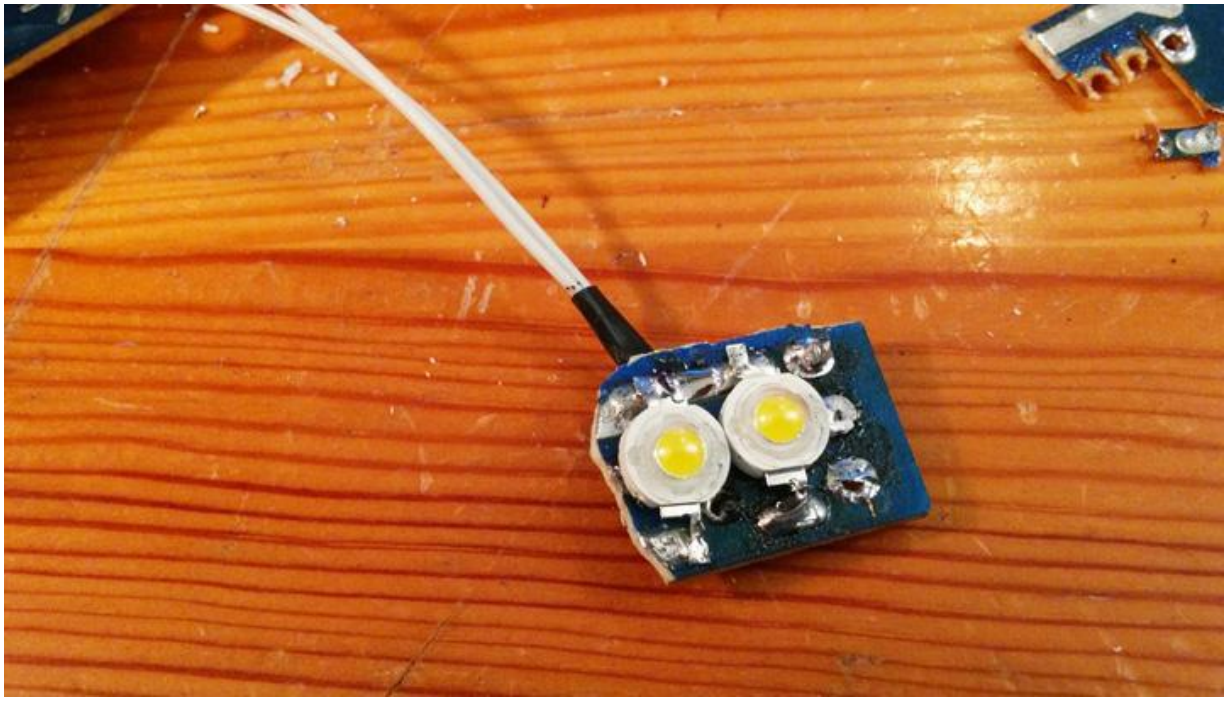
The circuit is powered by a 9 volt battery. Solder the red cable to the battery clip to pin 8 (+ vcc) and the black cable pin 1 (ground).

That's right!

Connect a 9 volt battery and the circuit can be tested. One button turns on the LED, the other button turns off the LED. A simple circuit was added as a picture to make it even clearer.

The 555 timer is very weak. When you apply soldering, make sure you do not let it get too hot, it can break it.

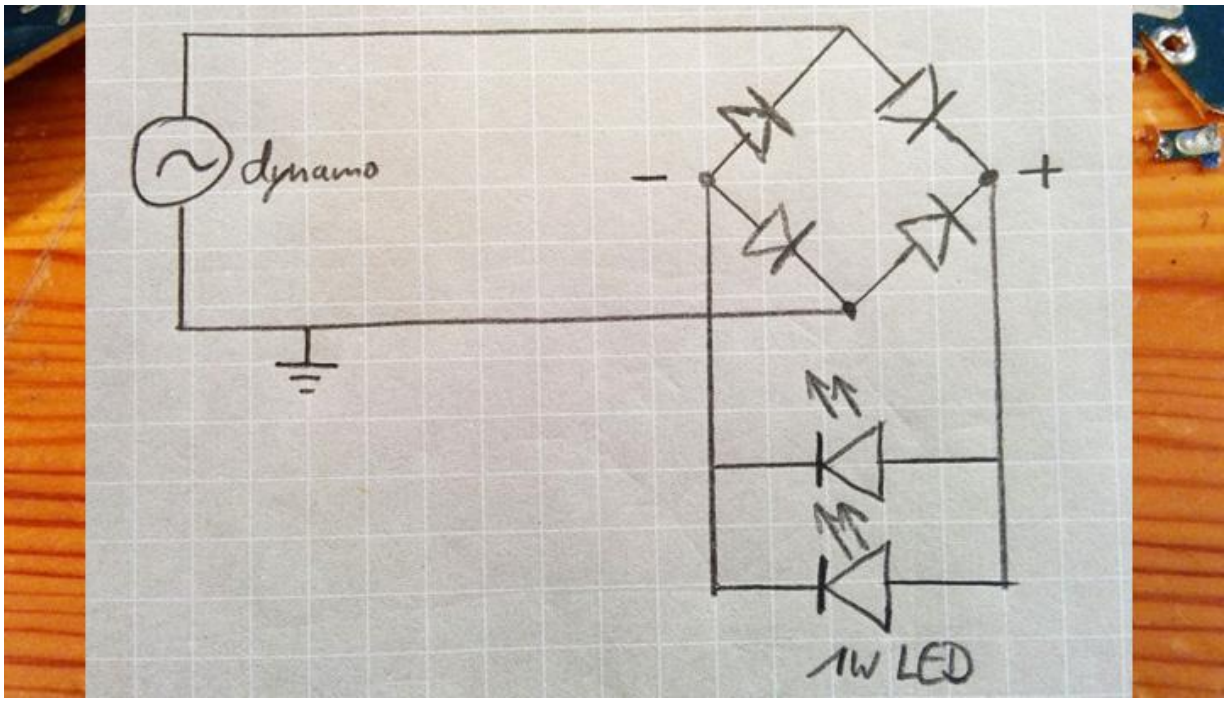
Simple LED Replacement for Bicycle Bulb



Easy LED Replacement of Balanced Bulb / Front Light

I wanted to replace the old inefficient light bulb on my front Bike with a simple LED circuit while using my power dynamo.

While most dynamos of a bike have something like 6V, 3W written on it, that is not entirely true. Their output is usually limited to 500mA at any potential voltage. This makes them perfect for use with LEDs. The only thing we need is an LED circuit that does not care to heat 500mA at any potential voltage;)



Materials used:

2x phone pieces to connect our circuit to the bulb socket.

4x Diodes, strong enough to drive 500mA each

2x 1W LEDs (If 330mA) - but you can use any combination that can operate 500mA.

PCB for conducting heat and durability. I used a piece of PCB from a broken ATX power supply

directions:

Solder everything together and attach your Bike.

Enjoy less pedaling & more light!

I've been using this circuit for over 4 months now and it still works perfectly.

Bonus
When you use warm white LEDs it looks like you are still going to use the lamp, just that it shines better.

The following level tests:

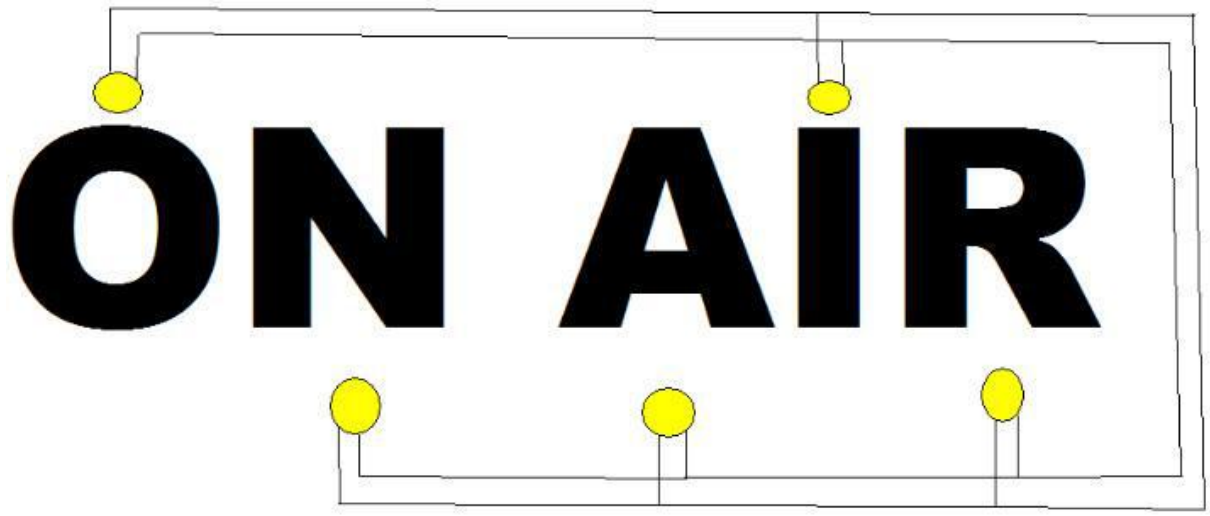
You can discard the repair diodes and use the LEDs instead (2 parallel on each side). I am not sure if the repeated operation that will occur will damage the LEDs. Try it and give me feedback if you like;)

Simple LED Backlit Sign

In this Weight Loss, I will show you how to create a simple but good looking backlit sign.

I created a project only with the materials I lay next to my electronics store so the materials I use are not the right ones but the final product ends well.

Step 1: Things You Will Need



Here is a list of things you will need.
Some corrugated cardboard
5x 5mm Straw warm white LED hat.
Opponents 6x 220 Ohm.
1x 5mm Red LED any color you like.
1x 1000µF, 6.3V or more electrolytic capacitor.
1x Switch
1x A can of tuna or a small tin top.

A long section of electrical cord to connect the signal and switch to a power adapter.
Electric red, green, yellow or blue electrical tape. (Depending on what color you want the characters / image to appear.)
Flat screen mirror background (Slice of tar may be better)
Split sheet from flat screen monitor (Clear plastic sheet will work as well)
Aluminum tape (aluminum foil will also work)

Now, let's start the project!

Step 2: Select a template

With a template you are free to do whatever you want, you can design one or get it online, Just make sure you do not take a very complicated template because you will have a hard time cutting it later. Don't worry about the

color of the template because we will only use it to know where to cut the letters or image.

Step 3: Print, Cut, Be Patient, and Cut Books.

First, first print out your favorite template and cut out the edges, then paste it on the old plastic back cover of a flat screen carrier or piece of tarmac and cut out both sides with a small knife to help get a direct copy of the template onto plastic / paper.

Step 4: Create a frame

To create a frame, cut six pieces of cardboard type your template, and then with a small cutting knife cut into five of them leaving 3/4 "round, When you're done paste and place five cardboard frame and hot glue only in the four corners so you can move the LEDs independent of time.

Leave six in the way it should be used as a back cover.

Step 5: optimize Colored Light Diffuser

I didn’t have a red plastic so this is how I did it.

Take a split sheet on an old flat screen monitor or clear plastic sheet and type a red, yellow, green or blue electrical tape by doing your best not to leave gaps or spacing on it to get back.

Step 6: Attach the Color Diffuser to the Back of Your Plastic / Target Signa l

When you are done with your colored diffuser, paste it on the back of your plastic / paper label, I use hot glue but the glue that takes a lot of time to dry will be better because you will have more time to use it, now you can stick to the inner parts of the letter / picture and let it dry.

Step 7: Attach your completed sign to the outline

Attach the frame to your finished sign with hot glue and you are ready to start building the circuit.

Step 8: Solder the LED's to Current Limiting Resistors

Start by cutting the anodes (+) of the 5mm grass hood to heat a warm white LED leaving about 1/4 ", Then cut the track on the other side of the 220 Ohm resistors leaving the same length as the LED anodes. together.

You now have protected LEDs that can now be safely used in 5 Volts.

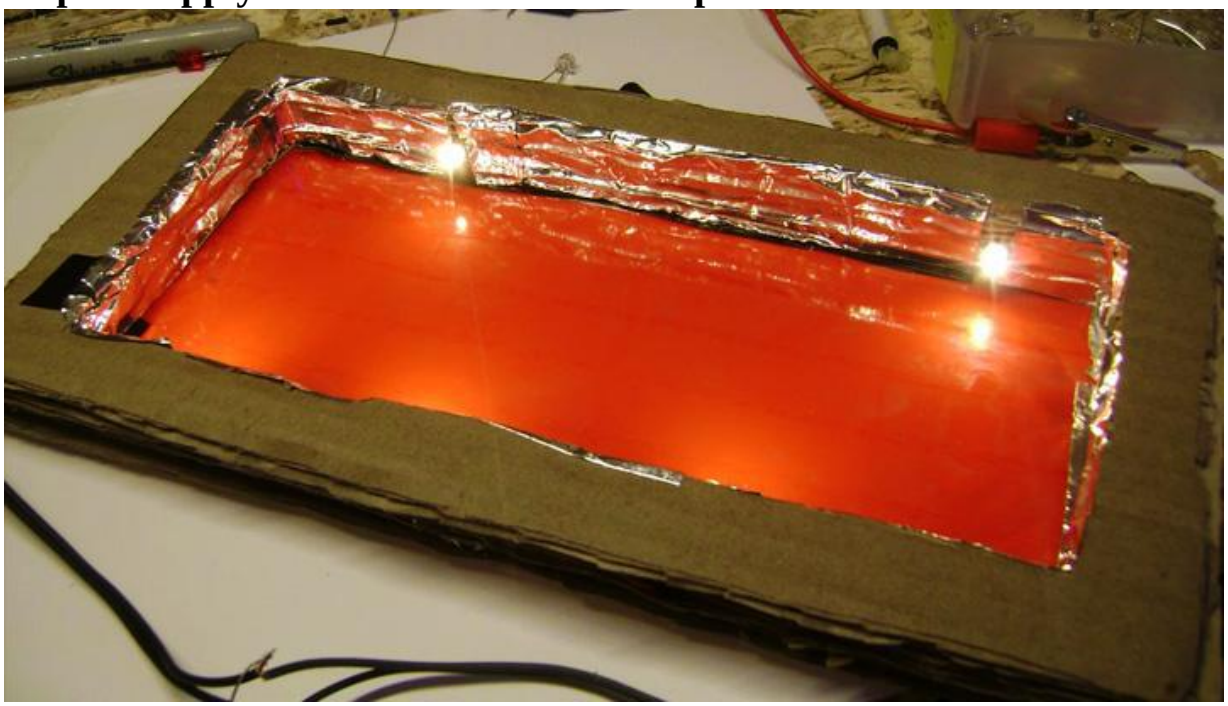
Step 9: Connect the wires to the LED's

Connect the wires to all the LEDs according to the correct call length to place them where you want them to, Connect the wire long enough to reach the plant and Install all connections with electrical tape.

Step 10: Insert the LEDs into the frame

Now take the corded LEDs to the frame and make sure that the wires do not come out and that everything is tight.

Step 11: Apply Reflective Aluminium Tape



now insert aluminum tape or foil inside the frame leaving the LED uncovered with 1/4 inch of surrounding space to reduce the risk of creating a short circuit.

Then take the back panel and touch the other surface with aluminum tape or aluminum foil and glue.

You can now turn it back on, test it with a 5V power source and it should work.

If commenting occurs, make sure the size of your power source is correct.

Step 12: Build a Switch.

Start by cutting a can that holds about 1 `` up or use a tuna fish can if you have one.

Mark the size of the switch hole with the help of a flat plate hammer and hammer, cut the can with a wooden chisel and install a switch. Hit the LED indicator hole and connect everything together (see photos and diagram for direction)

Step 13: Connect the Power Adapter to the Switch and Sign

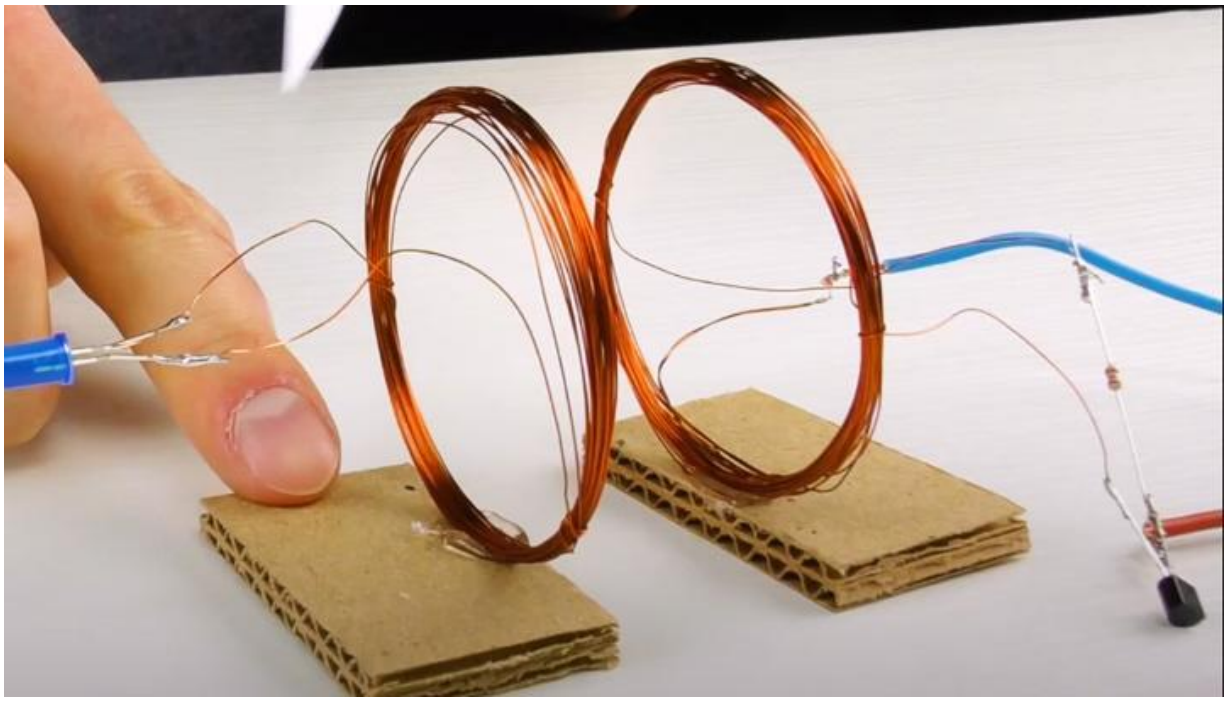
Connect all wires with soldering and put everything on the electrical tape and you're done!

Step 14: Hang Sign Your Custom Sign Backlit Sign and enjoy it!

Time to hang your amazing LED backlit sign and show it to your friends and family.

The LED backlit indicator is fun to watch and provides amazing lighting.

Wireless LED Project

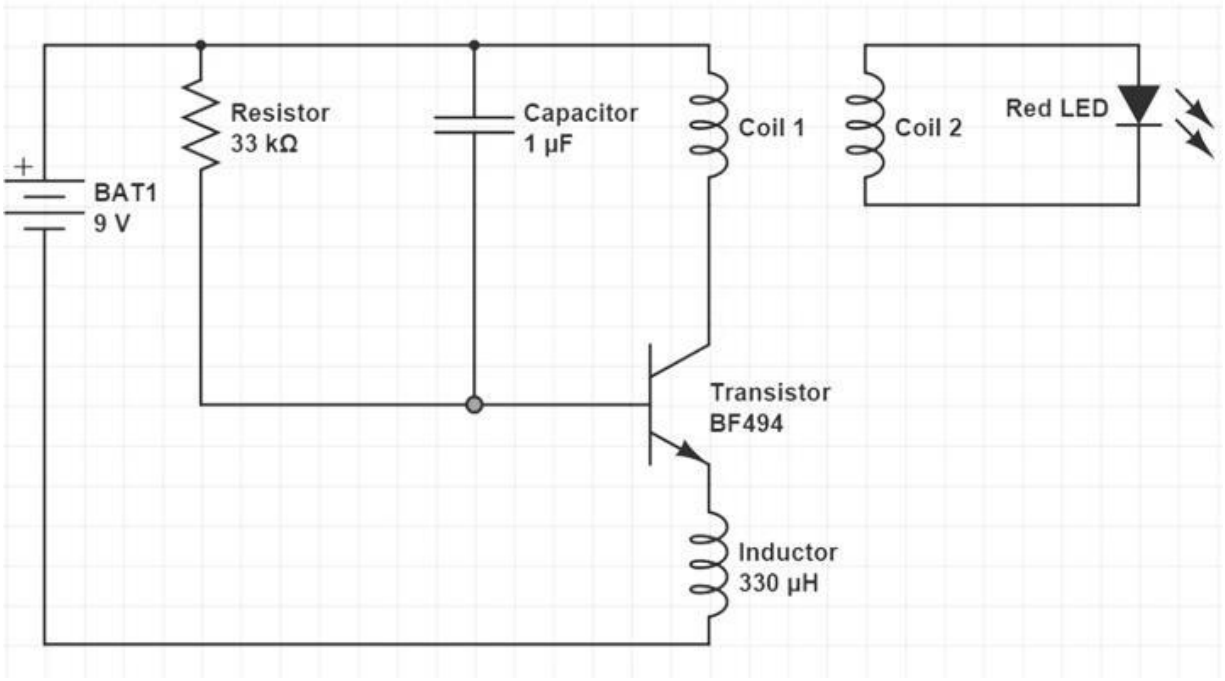


This will explain how to build a circuit that aims to illuminate the LED without a wire, previously recommended.

Required components are:

Battery: 6 Volt (smartphone charging device will work again)
Transformer type BF494 or similar
0.1 µFar Keeper
Inductor 330 µHenry
Resistor 33 kOhm
Copper Cables
Red LED (minimum power requirement)
Bread board
Ropes
Lead adhesive tools

Step 2: Circuit



In short the circuit changes the output of DC batteries to the most variable current (AC). This current is guided by coil 1, which creates a flexible magnetic field. When coil 2 is located directly above coil 1, this rotating magnetic field draws electromotive energy into coil 2. This force causes the LED to flash. Due to the high frequency transistor (BF494) in the circuit the current frequency generated in coil 2 is so high that the blink will be visible to the human eye as if the LED is flashing continuously.

Step 3: Construction

First, check to see if all the electronic components are working. After confirming this, we created the circuit shown in step 2 on the bread board. Then we made coils 1 and 2 by wrapping the copper wires around a circular object. Coil 1 is sold to the circuit, coil 2 goes to LED (no need to worry about LED whitening, as described in step 2 currently in coil 2 by AC). After that we connected the circuit to the battery.

Step 4: Testing

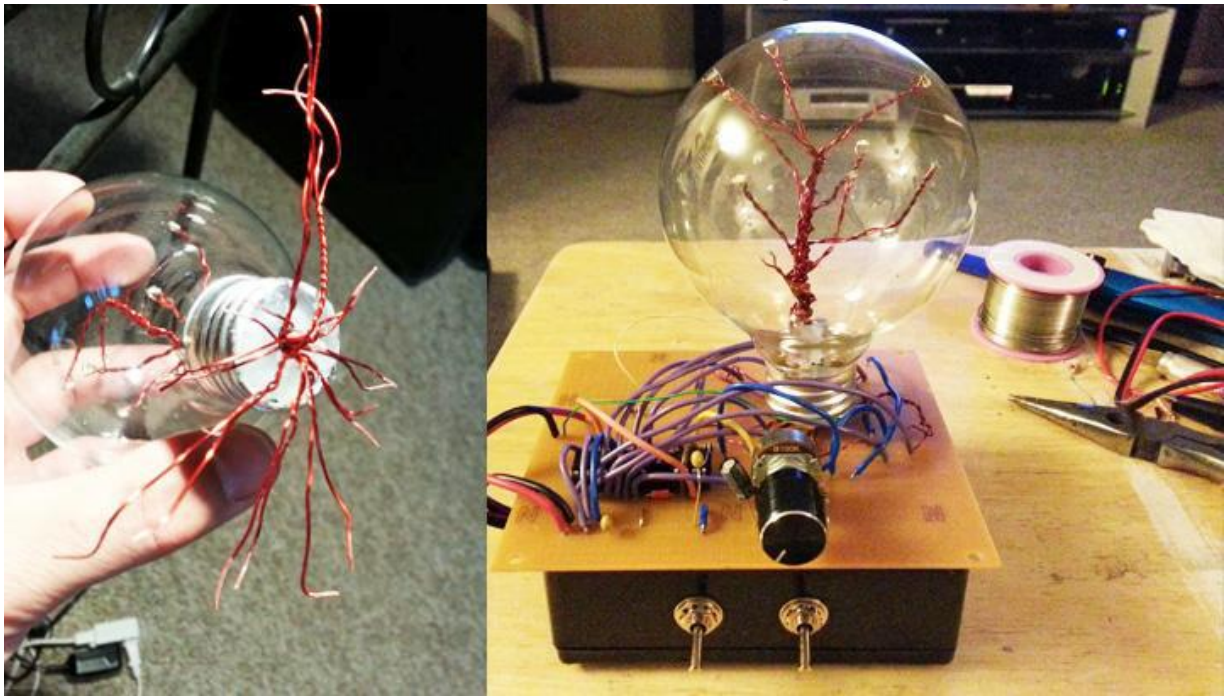
When coil 2 was placed higher above coil 1, the LED would glow slightly. It’s important to keep both coils aligned with each other and make sure they don’t touch. Tests showed us that the district was working.

Step 5: In addition

The next step in our project will be to build a circuit that can charge the smartphone wireless. To be able to do this, coil output 2 must be converted to 5V DC. To make this bridge adjustment (switch AC to DC), a capacitor (filter discharge) and a direct controller or bucket converter (switch current to 5V) are required.

The end result will be a bartop where smartphones can be charged using coils between bartop and beer coasters. The coil on the coaster is connected to a micro-usb output where the smartphone (or other device) can be connected. Since ordinary cardboard coasters do not have a very long life, this coaster will be sealed with plastic to make it

The Best Led Project Ever



I find it difficult to separate this project.

Step 1: Tools.

A dremel or similar rotating tool with a good selection of accessories is a well-used coin. It's not good at all but it is good for almost anything.
An electric drill of any kind is ideal
The choice of drill bits is also a good buy.

A "third hand" is not required but will be useful when installing small instruments.
Buy a good instrument. A decent pencil tip "Weller" is under $ 30 and I'll do a good job.
Get a good set of quality cables.
Find needle nose studs and a few pairs of mini cutters / nippers.
Get a solder sucker.
Find different types of screws
You also need a hot glue gun.
Many meters are less expensive for a good investment.
Find a few "olfa" style knives and set up a hobby knife.

Step 2: Large Assets

1) test board.
2) fine solder
3) connected phone. (I recreate my own from old tv)
4) jumper wire. (I bought a breadboarding wire kit) you can make a custom length from a stainless steel wire fence.
5) project box. large enough to accommodate a 9v battery / clip and 2-3 switches.
random missing strings.

Step 3: Specific BOM

Components and components.
1) 9v battery clip
2) 2x spst mini switch
3) 1x Large 40watt incandescent light bulb.
4) 1x 5mm dome UV. led
5) 10x smd ultrabright leds
6) 1x 555 timer chip
7) 1x ten counter chip chip
8) 3 x1K 1/4 watt resistors
9) 2x 104 ceramic disc capacitors
10) 1x 10 microfarad electrolytic capacitor.o
11) 1x100k line taper potentiometer
12) 1x 9 volt alkaline battery.
13) 1x 4.7K 1/4 watt Resistor

14) Tons of patience and system literacy.

Step 4: Cut the Bottom Off of the Lightbulb

Use a fixed disc to remove the light output of the metal lightbulb.
Then gently use a cut tire to cut out the part where the lamp sticks.

Step 5: Remove the Bulb

Once you have found the open adhesive part open, carefully break the rest of the glass with a screwdriver and the roots of the needle nose. When it was almost flat, I used a small disc cut diamond and gently pressed it against the glass opening. Be careful not to use flat-cut discs so be careful. Once you have passed it you can pull the cord and glass without the lamp. Slide the hole witj rotating diamond file.

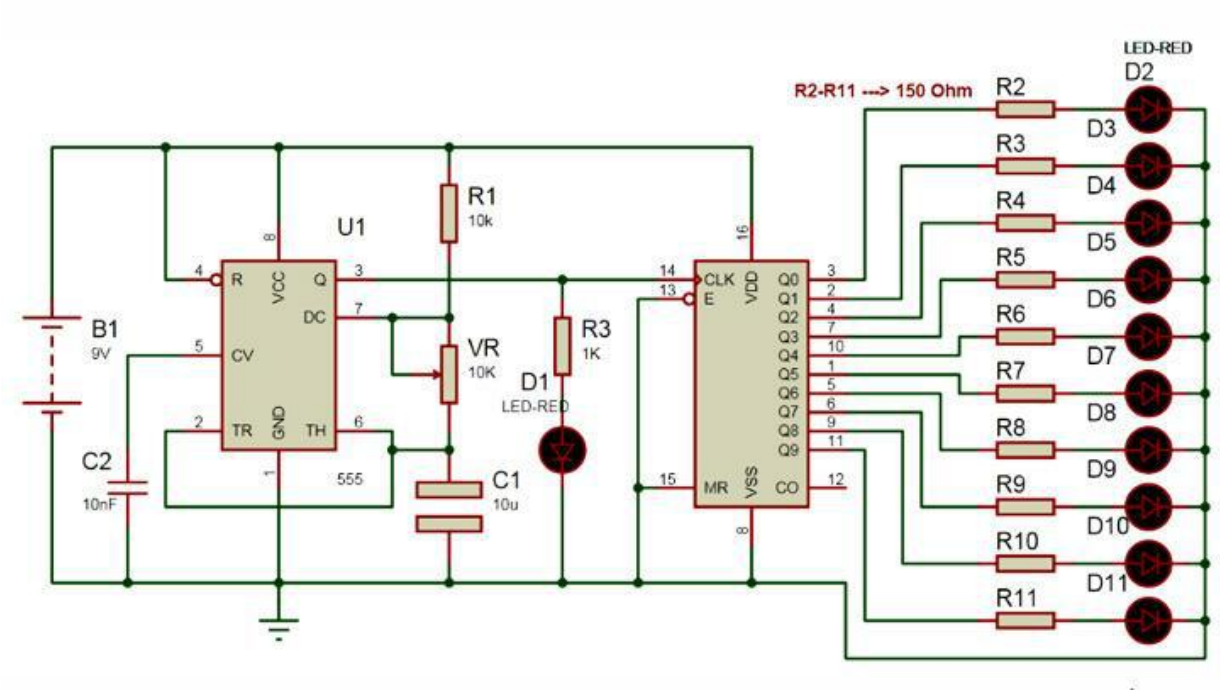
Step 6: Prepare the ropes

Fold the enamel wire length in half and twist it together. Cut the boundaries and remove some of the partitions. I used a rotating diamond file. The frozen border forms the birthplace of the small dunes that climb up. You can use whatever guidance you want anyway.

Step 7: Make a Tree

Wrap the enamel fence around the tree you have already sold. put them in the bulb and use the tweezers to pull the branches into place. Just like Christmas time? Use a hot glue gun to fix the tree at the bottom of the bulb. I also installed one U.V. led.
I used the battery to identify the good and bad wires. If you use 3 volts and quickly tap the wires, I have found that the leds survive the reversal. Sell the strings on the board and label their size.

Step 8: Circuit.



My browser searched for "Random led flasher" and found this. I'm sorry I can't remember where I found it.
It will randomly light up to 10 leds and the clock and reset pins are controlled by a 555 chip. Because of the way I wanted this circuit to look (dirty and natural) I can’t show you step by step the construction of the board as I just built it as I went along.

Step 9: Power supply

I used a small project box and changed two wires. One turns on the UV led and the other turns on the light region.
The circuit is powered by a 9 volt battery. The potentiometer controls the amount of charging and discharge of capacitors connected to the timer 555 timut. This allows you to control the speed at which the leds are illuminated. Leds light up each step.When the speed rises up it has a strobe light effect. You have to see it in the dark to appreciate it. There are two video links at the beginning of this operation. Enjoy