



Ultrabright LED Emergency Lamp

by **ASCAS** on November 8, 2013

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Hello There! I'm Angelo, unlike most people my friends and I have a hobby of making awesome projects at a young age. I'm currently 15 and started making projects at 4. I was 10 when I first published my first ever instructable :D Electronics & programming is my line of specialty, that's why I compete in the annual "National Robotics Competition". Last month I manage to earn my first "Championship Title" in the NRC prelims. Not to forget that I love HiFi audio setups, just like my dad. He has his collection of B&W speakers while I design my own out of scratch MDF wood, everytime I finish a speaker, we compare it to his HiFi setup and do a blind test. Astonishingly, after putting up a blindfold he was not able to determine whether it was his B&W setup or my DIY Bookshelf Speakers. I love sports, specially wake boarding and basketball :D Anyways, I plan to become an engineer someday, innovating and build projects that would build a brighter future.

Intro: Ultrabright LED Emergency Lamp

Preparing for a calamity or go camping? Make an ultrabright emergency light in just minutes! Best part is: it glows a 360° ray of light. In addition the jar's lid can be detached from the jar turning it into a compact flashlight! This is a simple project that uses a 3W LED and a BL-5C (Li-ion) Nokia battery. Macgyver Style!

It's completely rechargeable, via USB or wallwart (5v), only takes an hour to fully charge the lamp. If you remember my previous project: "[DIY Portable USB Solar Charger](#)", you can charge the jar using a solar panel. Free renewable energy!

Top 5 Practical Uses:

- 1st.) Portable Emergency Light
- 2nd.) Camping Light/ Lamp
- 3rd.) Camera's Focusing Aid (For Dark Areas)
- 4th.) Nightlight (Sidetable Lamp)
- 5th.) Solar Powered LED Lamp

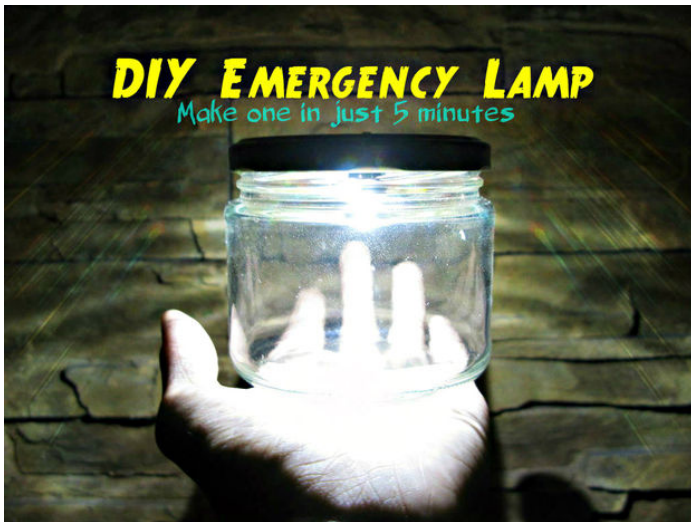
Real Life Scenario (my experience):

- (11/8/13) - A Category 5 typhoon has entered the Philippine area of responsibility. Codenamed: Yolanda
- (11/8/13) - President Noynoy declared a state of calamity, told to brace ourselves.
- (11/8/13) - My parents told me to charge all our lamps but 2 out 4 emergency lamps are broken.
- (11/8/13) - I made a simple "Jar Emergency Light" in just 5 minutes!
- (11/9/13) - Typhoon reached our area, extreme rain and winds.
- (11/9/13) - 1:00am The Blackout Started, my 1st time to use the LED Jar :D

The Typhoon We Prepared For:

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Step 1: Gathering Tools & Materials

Since this was a "Macgyver" type of assembly, the parts needed to come from recycled parts. Most of them came from my scrap radio on the other hand my 3W LED came from an old 220v LED Bulb.

Materials:

- 3W Ultrabright LED (Radioshack or AC LED Bulbs)
- Red LED Indicator (Recycled Parts)
- BL-5C Nokia Battery (Old Nokia Phone)
- 1N4007 Rectifier Diode (Recycled Parts)
- 470 ohm Resistor (Radioshack or Recycled Parts)
- On/ Off switch (Recycled Parts)
- DC Power Jack (Recycled Parts)
- Scotch Mounting Strips

Tools & Equipment:

- Soldering Iron
- Hot Glue Gun
- Leatherman
- Portable Drill



Step 2: Hot Glue The Parts In Place

- 1st.) Drill two holes (6mm) for your "Charger's Plug" and for the "Slider Switch"
- 2nd.) Solder two wires to your BL-5C's positive and negative terminals.
- 3rd.) Hot glue everything in place!
- 4th.) Use a small strip of Scotch's mounting pads to mount the 3W LED (BTW, they don't melt)

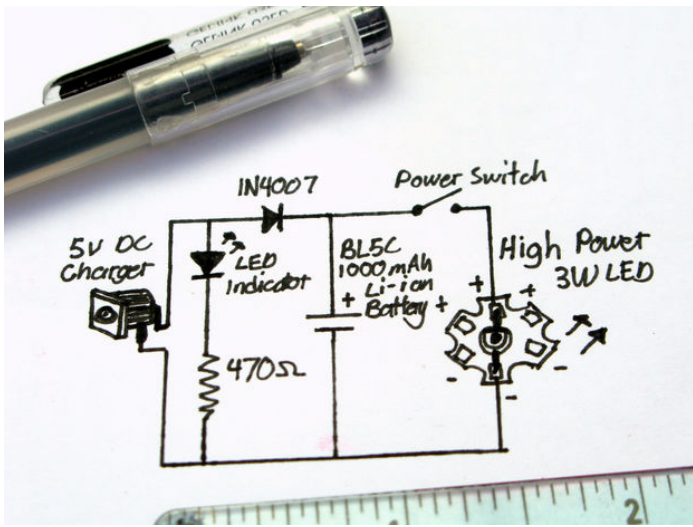


Step 3: The Schematic Diagram

One thing you must know BL-5C batteries, they have a voltage protection circuit inside them. You can trickle charge these batteries at 5 volts, just limit the charge time for an hour. If you want to take precaution, there are Lithium battery chargers available out there.

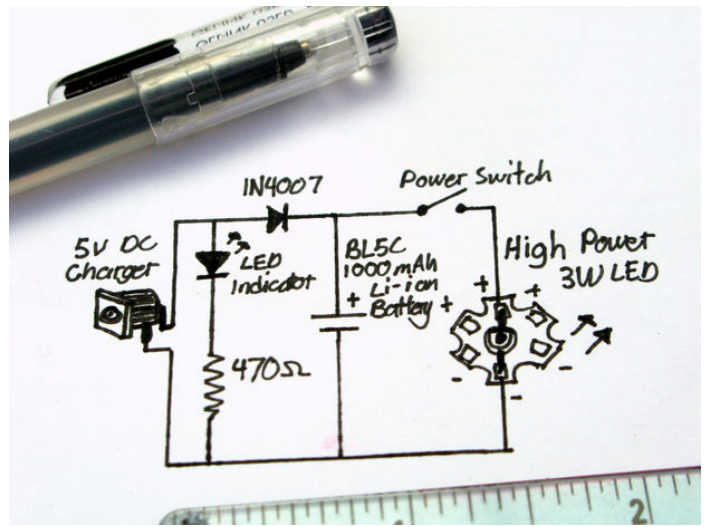
How Does The Circuit Work?

This is a very simple circuit that doesn't require circuit boards. All it does is trickle charge the battery, a rectifier diode was added to prevent the backflow of current. I added a LED charging indicator just to show whether the jar is charging or not.



Step 4: Solder Everything In Place

Just follow the circuit diagram and you are good to go! A perf board isn't necessary but if you insist then go ahead.



Step 5: Charge Testing

Cool! If you've done it right, the jar should glow red when charging. You can also charge this with my previous project: the "DIY Portable USB Solar Charger".



Step 6: You're Done!
How about let's go camping!



The Extreme Source of Light!



Related Instructables



Solar Supercapacitor Charger and LED Jar by algodelanada



Creepy UV LED Sun Jar! by depotdevoid



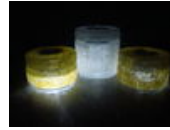
Snowies! LED by jamieisboss



Solar-Powered Glow-Jar by MdP1632



LED message system on a Strida folding bicycle wheel by hobbyman



How to Capture the Sun in a Jar! by craftknowitall