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Hello, I hope everyone is well. I created a bicycle horn from a CO detector simply because the buzzer isextremely loud and can be heard from a long distance. When I use the (modified) CO detector board the buzzer is very loud. I created my own circuit from a schematic I found on the net,however the buzzer is not as loud as it was on the original board.I have included my circuit below. Any advice as to how I can increase the volume on the buzzer?For the R1 resistor, I used 1M instead of 1.5M because that is all I had here.Any advice is greatly appreciated. Last edited: Sep 20, 2021 Does the buzzer have a part number so we can look up the specs? In your circuit, R1 is there to prevent the IC1B input stage protection diodes from messing up the oscillator waveform. As long as its value is 10x R2, just about anything will work. If the sounder is a 3-terminal piezo element, then the original circuit might be driving it at its self-resonant frequency. This is the way to get the max possible volume despite minor variations in the elements due to production tolerances. Another possibility is that the 4049 cannot source or sink very much current, maybe much less than the original circuit components. Photos of the original circuit board? akps. Gold star for having reference designators. Last edited: Sep 20, 2021 Here are two variations. One is a CMOS circuit with paralleled inverters to increase drive current, and one is a 1-transistor version. Note that the transistor can move a lot more current than a single inverter output stage. ak Wire up the other 4 inverters in your original circuit in parallel with IC1A. Highly recommend you looking at 4049 pins in terms of voltage outside its Vdd and VSSpin or clamped to that pin + a diode drop. If you see that add external diodes at pin toground (especially 4049 inputs, for protection) - I am thinking IC1B input is potential problem pin, rupturing its gate oxide inputdue to excessive transient V. Regards, Dana. Last edited: Sep 20, 2021 Does the buzzer have a part number so we can look up the specs? Yes its in the schematic. EFM-290ED. The exact part number of the inverter I am using is CD4049BE. Last edited: Sep 20, 2021 Photos of the original circuit board? Not a very good one but here it is. This is the CO detector board. It worked well for 4 years until recently.It is necessary for the horn to be very loud so I can warn others that are far away that I will be passing them(just in case they decide to move in front of me at the last second). This horn has saved me many times.I haven't found any bicycle horn (reasonably priced) that is as loud as the CO detector buzzer! Last edited: Sep 20, 2021 I am thinking IC1B input is potential problem pin, rupturing its gate oxide input due to excessive transient V. Nope. That is what R1 prevents. It also prevents soft-clipping of the capacitor voltage waveform, which would increase the oscillator frequency above the calculated value.ak What is a CO2 detector? We breath out CO2 and soda pop has CO2 in it, it is not dangerous.. Maybe it is a CO detector because CO is poisonous. A CO detector circuit uses a transducer is a piezo that is loudest at 3kHz to 5kHz. Its frequency is much higher than then 455Hz of your CD4049 circuit.I agree that its piezo uses 3 wires (one wire is for feedback) so that it operates at its loudest frequency. Nope. That is what R1 prevents. It also prevents soft-clipping of the capacitor voltage waveform, which would increase the oscillator frequency above the calculated value.ak Agreed, did not look at left hand side of schematic. No one trained me to look at the wholeschematic Reactions:tomizett Is there any way I can increase the frequency in my circuit in post #1 above?Like maybe change the capacitor? Would this work on the circuits you posted? The inductor I have is 5.6uH (0.0056mH). Based on the linked circuits, that's 3000x too small, so I don't think you'll have much luck. Your 4049 IC has unused inverters; have you tried paralleling them, as per AnalogKid's post, above? This should give you some increase in volume with the parts you have. Is there any way I can increase the frequency in my circuit in post #1 above?Like maybe change the capacitor? Why do you want to increase the frequency? The circuit should oscillate at the resonant frequency of the transducer, thus max output. The 455Hz mentioned by audioguru will just be to kickstart the transducer initially. I wired up the CD4049 inverter using all of the inverters like in post #4 above (thanks AnalogKid).It is very loud but still not as loud as the alarm board (using the same buzzer and voltage) I tested both circuits (by ear) side by side and the alarm board is definitely louder.The 4049 version is loud enough, however I am just curious as to why it is louder. I created a schematic of the actual buzzer circuit on the CO board. I triple checked it.I am hoping it is correct. If something is obviously wrong please let me know.I am not very experienced with eagle. I didn't find a 3 pin inductor so i just used a 3 pin header and labeled the pins, same with the buzzer. I also don't know what part number the inductor is, as there are no markings on the component except for one red dot.(you can see the component I am referring to in post # 7, the blue component in the picture)Hopefully someone will know what the value is so I can order a few of them. Most of those parts just make up a switch. The oscillator part only uses a single transistor. Here it is without the unneeded parts: The circuit is similar to the two I posted, above. You can make your own 3-legged inductor by winding a bunch of turns around a 2-legged inductor (you want 10mH or above). Alternately, just use the circuit that doesn't need the 3-legged inductor. I tested both circuits (by ear) side by side and the alarm board is definitely louder.The 4049 version is loud enough, however I am just curious as to why it is louder. With a 9V supply, the 4049 circuit can drive the piezo with 9V one direction, and 9V in the other; this is 18V peak-to-peak (maximum; limited by 4049 output current). The circuit with an inductor will drive it 9V in one direction, and spikes of perhaps up to 50V (wild guess), in the other direction. You'd expect this to make it louder. In this post I have explained a buzzer circuit with an incrementing beeping rate, which can be used in critical warning signalling applications. The idea was requested by Mr. Lee.Table of ContentsBuzzer with Progressive Beep RateThe DesignBuzzer with Progressive Beep RateCould you help me with a circuit. I've been trying to find but so far had no luck! I need a pulsing piezo that will start with a short blip and then over a period of may be 2 minutes, progressively increase the frequency of blips to maybe then permanently on or just rapid blips, similar to a game type of timer where the blips get quicker as the seconds pass.I want to use it on a car(so 12volt) to indicate when an anti car jack type immobilizer is about to operate. I've got ideas for the main immobilser circuitry but i'm struggling with the rising pulse rate buzzer/piezo.To simplify it slightly i would just use a 12v piezo driven by the rising pulse circuit.from when power is connected the timing cycle can start and maybe a variable resistor to tweak the pulsing cycle?Any ideas would really really be appreciated-if you can help,The DesignNOTE: Please connect the 1k resistor of the opto LED to ground, which is mistakenly shown connected to positive.The requested design for a buzzer circuit with progressive or an incrementing beep rate can be basically implemented through a voltage to frequency converter circuitAlthough you may find many variants of voltage to frequency converter circuits, these may not be entirely easy to build due to their fairly complex design or due to the inclusion of unpopular, obsolete IC in it.An alternative easier way of achieving this function could be by modifying an existing IC 4060 astable circuit with a homemade LED/LDR optocoupler as shown above.As can be seen in the diagram, the LED/LDR opto is triggered through a slow rising voltage across its LED leads, which in turn induces a correspondingly slow decreasing resistance on the attached LDR.The slow decreasing resistance of the LDR causes the timing capacitor of the astable to charge at proportionately faster rate, which subsequently causes a proportionately progressing or augmenting frequency rate at the output of the IC 4060.P1 is for fine tuning the timing delay between the progressive beeps, possibly this component could be completely eliminated.C1 can be also tweaked for adjusting the delay period between the beeps in order to make them faster or slower as per the application requirement.The indicated buzzer unit here may be procured readymade in the form of a piezo buzzer or this can be also built at home by following this simple buzzer circuit guide.Update:Another interesting way of implementing a progressive buzzer beeper circuit could be by using a IC 555 monostable circuit and apply a slow rising voltage at its pin#5 control input....will update the circuit soon here. 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A powerful buzzer in the room, combined with a Power Loss Beeper - For some medical equipment it is important for an operator when power is lost to the machine. The beeper is powered from a 9v battery and requires the machine to have a power switch with a third set of contacts. . . Circuit by David A. Johnson P.E.-March, 1999 Power Reminder Beeper - This circuit produces a short beep once each minute. It is powered directly off the 120vac power line to remind you that a device connected to the circuit is turned on. It is simple enough to be packaged inside a small plastic box. . . Circuit by David A. Johnson P.E.-June, 2000 Powerful buzzer for use as a doorbell - How often on average do you have to call members of your family each day to tell them that dinner is ready, its time to leave, and the like? The person you want is usually in a different room, such as the hobby room or bedroom. A powerful buzzer in the room, combined with a pushbutton at the bottom of the stairs or in the kitchen, could be very handy in such situations __ Learning Electronics Powerful Security Siren-Transistors based - This circuit was requested by several correspondents. Its purpose was to obtain more power than the siren circuit already available on this website (One-IC two-tones Siren) and to avoid the use of ICs. A complementary transistor pair (Q2 & Q3) is wired as a high efficiency oscillator, directly driving the loudspeaker. Q1 ensures a full charge of C2 when power is applied to the circuit __ Learning Electronics Powerful Siren - Simple circuitry No ICs 12V Battery operation __ Contact: Flavio Dellepiane, fladello @ tin.it Produces Beep once each Minute - This circuit produces a short beep once each minute. It is powered directly off the 120vac power line to remind you that a device connected to the circuit is turned on. It is simple enough to be packaged inside a small plastic box . . . Hobby Circuit designed by David Johnson P.E.-June, 2000 Pushbutton Activates Service Request Beeper - A single press of a pushbutton switch turns on a beeper for one second but cant be activated again for 60 seconds.. . . Circuit by David A. Johnson P.E.-September, 2005 Really Loud Output Beeper Circuit - I you need a real loud beeper, this circuit delivers about 110db (12 inches away) from a 9v battery using a single inexpensive C-MOS IC. An off-the-shelf piezoelectric beeping device is driven at resonance to insure maximum efficiency. By changing the control IC to a 74AC14, the same circuit can operate from 3v and 1.5v batteries . . . Hobby Circuit designed by Dave Johnson P.E.-June, 2000 Remarkable R-Beeper - As configured, this continuity beeper emits a tone when the input leads are shorted together. If a resistance is placed between the leads, the tone's pitch is lowered. A 1 ohm difference is audible, and the tone stops entirely at around 150 ohms. There is no tone for semiconductor junctions, even germanium or Schottky. Short-circuit current is under 1 mA, and open-circuit voltage is about 1.5 volts, so damage to external devices is quite unlikely. __ Designed by Tom Bruhns Remote Control Beeper - uses rf tx/rx modules with a range of about 30m. __ Contact: P. Townshend EduTek Ltd Remote Doorbell Beeper - This circuit will activate a beeper alarm whenever the AC line voltage is less than 100vac. . . Circuit by David Johnson P.E.-July, 2006 Screamer Siren - This is a low-cost screamer circuit to add to our range of alarm modules. It has been designed to protect your valuables on a 24 hour basis. __ Contact: Collin Mitchell Screamer Siren-Light Controlled - This circuit will produce an ear-piercing scream, depending on the amount of light being detected by the Light Dependent Resistor. __ 555-Timer Self-Announce for Electric Gates - The electric gate in many shops, factories (not to mention cooperative apartment houses) is kept open during working hours. This circuit detects when someone traverses the gate, ringing the bell in a very peculiar way. __ Designed by Projects & Ideas from Nutchip.com Service Request Beeper - A single press of a pushbutton switch turns on a beeper for one second but cant be activated again for 60 seconds. . . . Hobby Circuit designed by David A. Johnson P.E.-September, 2005 Simple Circuit Blown-Fuse Indicator Sounds an Alarm - 10-Jul-08 EDN-Design Ideas A simple blown-fuse-indicator circuit sounds a buzzer and flashes an LED when a fuse blows Design by Vladimir Oleynik, Moscow, Russia Simple Circuit electronic buzzer - This very simple circuit just uses a couple of resistors, a capacitor and the easily available 555 timer IC. Simple Circuit fix adds door-chime repeater - 05/13/99 EDN-Design Ideas Electromechanical door chimes can enhance your home, but they are vulnerable to costly repair problems. A defective pushbutton switch or a careless visitor can maintain the chime in an energized state for a prolonged period, thereby damaging the chime. The circuit in Figure 1 prevents damage to the chime and improves the chime's effectiveness by repeating the chime strike for as long as the pushbutton remains depressed. The circuit controls both front and rear chimes. The heart of the circuit is timer IC2, which you configure as an astable multivibrator. The timing components, R1, R2, R3, and C3, provide the required pulse widths. Design by Dennis Eichenberg, Parma Heights, OH Simple Circuit Siren - This project is built on the third section of the PC board, identified by "SIREN" and "Project 5. " You will notice the similarity between this circuit and the LED FLASHER circuit from project 2. The only differences are the LED has been removed and the 22R resistor has been replaced by a mini speaker __ Contact: Collin Mitchell Siren (page 84) - This circuit was requested by several correspondents. Its purpose was to obtain more power than the siren circuit already available on __ Contact: Flavio Dellepiane, fladello @ tin.it Siren 100dB - This is a very loud siren and if two or more piezo's are located in a room, the burglar does not know where the sound is coming from. __ 555-Timer Siren Driver - Zetex Semiconductors have a siren driver IC Type ZSD100 available that is suitable for use in alarm systems for cars and model craft. With the addition of only a few components as shown in the diagram, the device produces an ear-splitting sound of 120 dB. The IC contains an a. f. rectangular-wave generator that is driven by a __ Designed by Popescu Marian Siren Simulator - This siren circuit simulates police, fire or other emergency sirens that produce an up and down wail. __ Contact: Charles Wenzel of Wenzel Associates, Inc. Snow Depth Alarm - The design of this system alerts a snowplow driver when the snow depth has exceeded four inches. A visible red LED packaged in a 10mm package is pulsed at a rate of about 50Hz with 10uS pulses. Twenty four inches away a phototransistor detects the light from the LED. The LED and the phototransistor are housed in a section of inch PVC pipe, forming a waterproof seal. . . . Hobby Circuit designed by David A. Johnson P.E.-July, 2006 Sound Generator-Clicking - Often in computer controlled systems, you would like to generate a click sound whenever a button is pressed. This provides the user with audible feedback that the pushbutton press has been acknowledged. The two circuits below generate such a sound. A click sound is generated each time the logic input swings from a logic low to high condition . . . Hobby Circuit designed by David Johnson P.E.-January, 2009 Star Trek Doorbell - In the Star Trek Next Generation TV series, the doorbell outside the private quarters of a crew member makes a particular beep-boop sound. The 3v battery powered circuit below tries to simulate this sound. The circuit uses one 74HCT74 dual D flip/flop. . . Circuit by David A. Johnson P.E.-October, 2001 Star-Trek Next-Generation Doorbell - In the Star Trek Next Generation TV series, the doorbell outside the private quarters of a crew member makes a particular beep-boop sound. The 3v battery powered circuit below tries to simulate this sound. The circuit uses one 74HCT74 dual D flip/flop . . . Hobby Circuit designed by David Johnson P.E.-October, 2001 Still Another Very Loud piezo Alarm Beeper - This is yet another beeper circuit that really draws attention. It sweeps the drive frequency slightly to produce a very annoying sound. It uses a transformer to increase the drive voltage across the piezo device to more than 200 volts peak to peak . . . Hobby Circuit designed by David A. Johnson P.E.-June, 2000 Sweeping Siren Alarm-3 volts - A while back I was challenged by a visitor to the website. He needed a very loud sweeping siren type audio sound generator powered by 3v. He tried some of the commercial sirens but they were not very loud when powered by 3v. He also said that those . . . Hobby Circuit designed by Dave Johnson P.E.-June, 2008 Switch activated by Piezo Vibration - An inexpensive piezo wafer is used to detect vibration and when the vibration is sufficient a switch is activated . . . Hobby Circuit designed by David A. Johnson P.E.-July, 2006If you are already using a micro-controller (e.g. Arduino) in your project, this Instructables is not for you, since the micro-controller can replace the 555 timer's function. If you are using an Arduino, check out Instructables explores how 555 timers can used with piezo-electric buzzers, so there is no need for software or programming. The frequency or pitch of sound can be changed by adjusting the capacitor and resistor values attached to the 555 timer. Thus, this project offers a very different learning experience to using a micro-controller.A single tone or frequency of sound can be quite boring. To spice things up, this project's circuit produces a 500 Hz tone for a second then a 1 kHz tone for another second, as can be heard in the video above. In this project, I made a PCB, but you can do the same on a breadboard. The Altium PCB files are on 555 timers2X piezo buzzers (I got mine from 3X 10 to 100nF capacitors3X capacitor (values depending on the sound frequencies and duration you want, see Step 3)6X resistors (values depending on the sound frequencies and duration you want, see Step 3)Breadboard or PCB (see Step 4 to see how you can design the PCB)4.5 to 9 volts DC power source (e.g. batteries)Tools (if using PCB):Soldering iron and solderWire cutterThe schematic above shows that the circuit consists of three 555 timer circuits (labelled A, B and C and are represented by the green boxes). More details on the 555 time is in Step 2. Circuit B produces the 1 kHz sound, while A produces the 500 Hz.Circuit C selects/alternates between Circuit A and B. When C output high (which is +5 volts), B is activated, but A is deactivated (since both its POS and NEG terminals are at +5 volts, meaning the voltage difference between them is 0). When C output low (which is GND or 0 volts), A is activated, but B is deactivated (since bother of its POS and NEG terminals are at 0 volts).Click on the pictures above to get a better view. A 555 timer turns a DC input into a square wave output. The schematics on the right is what is inside of each of the green boxes in Step 1's schematic. In the schematics, POS is input and VOUT is the output. The square wave voltage alternates between POS and NEG, as shown in the diagram on the left.NEG functions like the ground of this 555 timer circuit, but is not necessarily the ground in the larger schematics of Step 1. Step 1 shows that Circuit A's NEG is connected to Circuit C's VOUT, which alternates between ground voltage and +5 volts. Capacitance of C2 can be between 10 and 100nF (I used 100nF). Components labeled TP are just test points, which are optional.The 555 timer is a popular component, with a lot of supporting resources on the Internet. The datasheet is attached below.lm555 timer datasheet.pdfThe equations in the picture above are from the 555 timer datasheet (as attached under Step 2). In my design, I want the charge time to have (as close to) the same duration as discharge time, so I want resistance, Ra, to be as small as possible. I used the minimum recommended value for Ra, which is 1 k.In my design I want to produce 500 Hz and 1 kHz sounds. Each sound plays for 1 second, so the period of Circuit C is 2 seconds, meaning its frequency is 0.5 Hz. I set Rato 1 k. By substituting Ra and frequency into the fourth equation above, capacitance (C) and Rb are found.I listed the values of all the capacitors I have, substituted these values into the fourth equation to find the theoretical value for Rb. I picked the capacitor-resistor pair that has the theoretical value for Rb closest to the value of the resistor I have. These calculations can be repetitive, so I used Excel to automate the calculations, a bit like in: values I used for the capacitors and resistors are shown in the picture above.If you are using a breadboard, skip this step. Click on the pictures above to get a better view. The bottom-right screenshot above shows the wiring and layout of my PCB design. The Altium PCB files are on . I ordered my PCB from JLCPCB, but you can also order it from PCBWay or other manufacturers. For JLCPCB, the instructions for uploading the design is on: you are using a breadboard, skip this step. All components are through-hole technology, so it is quite easier to solder. As a tip, solder the tall components (the buzzers and the electrolytic capacitor) last, after all the shorter components are soldered.The test points (labeled TP...) remain empty even after all the components are soldered. The test points are for optional circuit testing purposes.This circuit can be powered by the 5V port on an Arduino, or any other DC voltage source between 4.5 and 9 volts*, with the optimal being 5 volts. Connect the negative power terminal to the hole labeled GND on the PCB, and positive terminal to +5V hole, as shown in the photo above. And listen...If you have any questions, feel free to leave a comment below.*the 555 timer is rated for 4.5 to 16 volts (as indicated by the datasheet attached under Step 2), but the capacitors and buzzer used may not be rated for 16 volts. Lower voltage uses less power and is less likely to damage components. Privacy PolicyCopyright 2013 CircuitDiagram.Org. All rights reserved.Here is a schematic of a beeper circuit. The circuit will generate a continuous beep-beep sound signal with flashing an LED. You can use this simple beeping circuit with any of your electronic project or appliance in which you want the beep-beep sound signal. The circuit is build around a 555 timer IC If you are already using a micro-controller (e.g. Arduino) in your project, this Instructables is not for you, since the micro-controller can replace the 555 timer's function. If you are using an Arduino, check out Instructables explores how 555 timers can used with piezo-electric buzzers, so there is no need for software or programming. The frequency or pitch of sound can be changed by adjusting the capacitor and resistor values attached to the 555 timer. Thus, this project offers a very different learning experience to using a micro-controller.A single tone or frequency of sound can be quite boring. 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I picked the capacitor-resistor pair that has the theoretical value for Rb closest to the value of the resistor I have. These calculations can be repetitive, so I used Excel to automate the calculations, a bit like in: values I used for the capacitors and resistors are shown in the picture above.If you are using a breadboard, skip this step. Click on the pictures above to get a better view. The bottom-right screenshot above shows the wiring and layout of my PCB design. The Altium PCB files are on . I ordered my PCB from JLCPCB, but you can also order it from PCBWay or other manufacturers. For JLCPCB, the instructions for uploading the design is on: you are using a breadboard, skip this step. All components are through-hole technology, so it is quite easier to solder. As a tip, solder the tall components (the buzzers and the electrolytic capacitor) last, after all the shorter components are soldered. 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You can operate the circuit with any voltage from 5 to 15 volt DC. If you are using the circuit with the voltage around 6 volts then use a lower value current limiting resistor with LED and change 470 Ohms resistor to 330 Ohms.

Piezo element buzzer. How does a piezo buzzer work. Piezo beeps. Piezo buzzer arduino code. Piezo circuit. Piezo buzzer circuit diagram. Piezo buzzer circuit. What is a piezo alarm.