# WATER LEVEL INDICATOR.

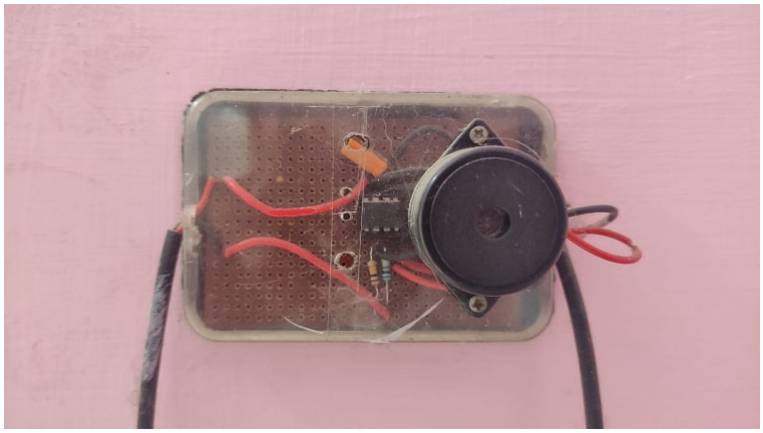
A **Water Level Indicator/Alarm** is a system designed to monitor the water level in tanks, reservoirs, or any water storage unit and provide an alert when the water reaches a specific level, either too high or too low. The alarm feature ensures timely action to avoid issues like overflows or water shortages.

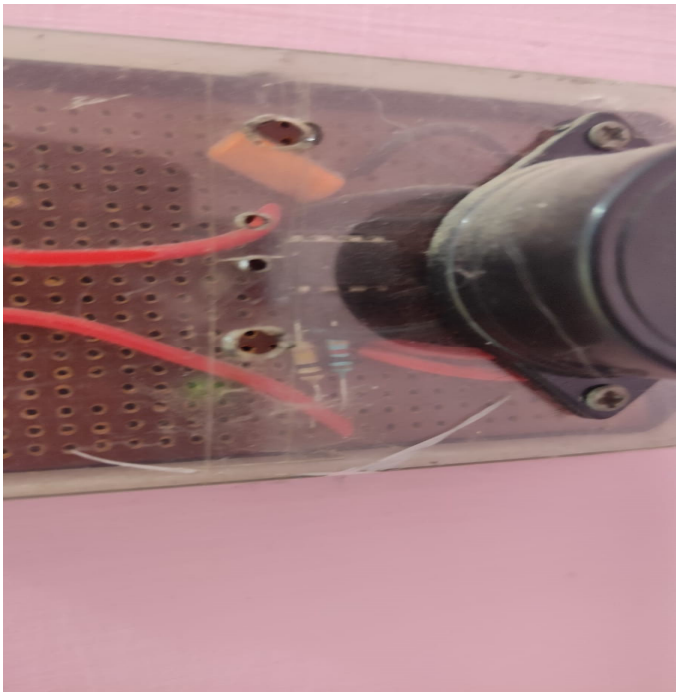
**Main Principle:** The sensors used by the system are ultrasound, sensitive, and float indicators that are positioned at various levels within the tank. These sensors determine if there is water present or not. The sensor alerts the control unit to the presence of water at a preset level (minimum or maximum), at which point the control unit sounds or illuminates the alarm. Users are cautioned to act by stopping or starting the water pump, for example.

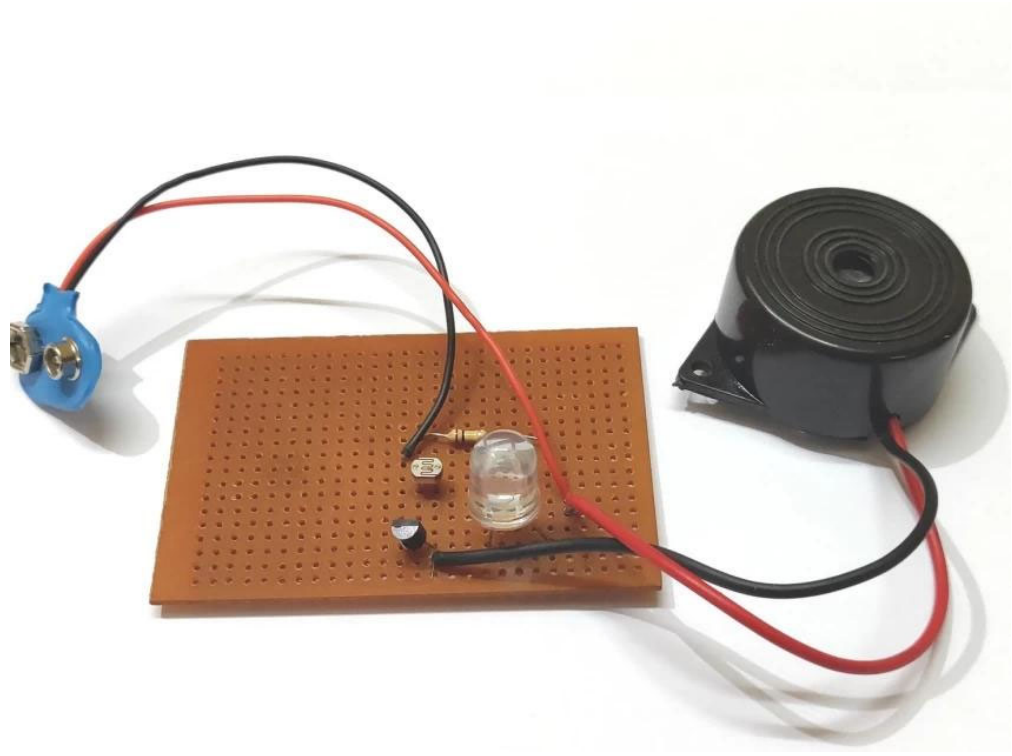
## Uses:

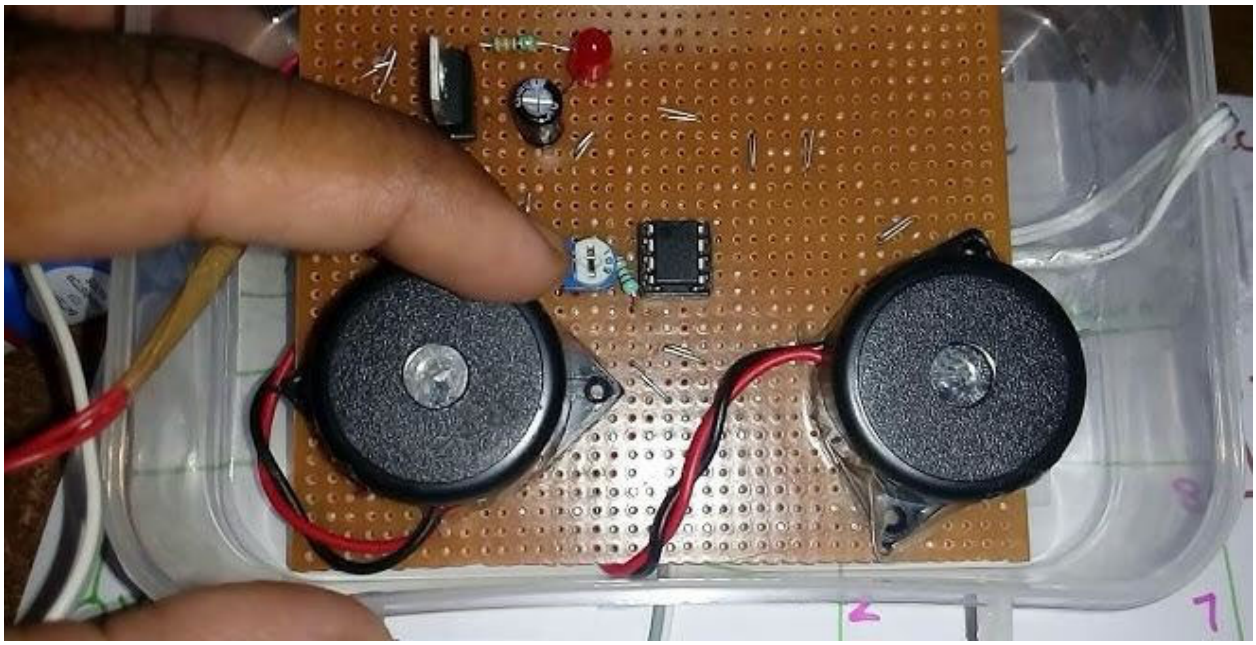
**1. Household water tanks**: To manage water effectively, alerts should be sent when tanks are almost empty or full.
**2. Industrial processes**: Prevents gear that depends on water levels from overflowing or operating without water.
**3. Agricultural systems**: These make sure that water levels are kept constant for irrigation systems in order to prevent water waste.
4. Aquatic systems: These aid in maintaining environmental stability by helping to monitor water levels in fish ponds and aquariums.
**5. Municipal water supply**: To improve regional water management, notifications regarding critical water levels in storage units are sent.

**Water level indicators with alarms enhance operational safety and prevent water wastage or damage to infrastructure.**



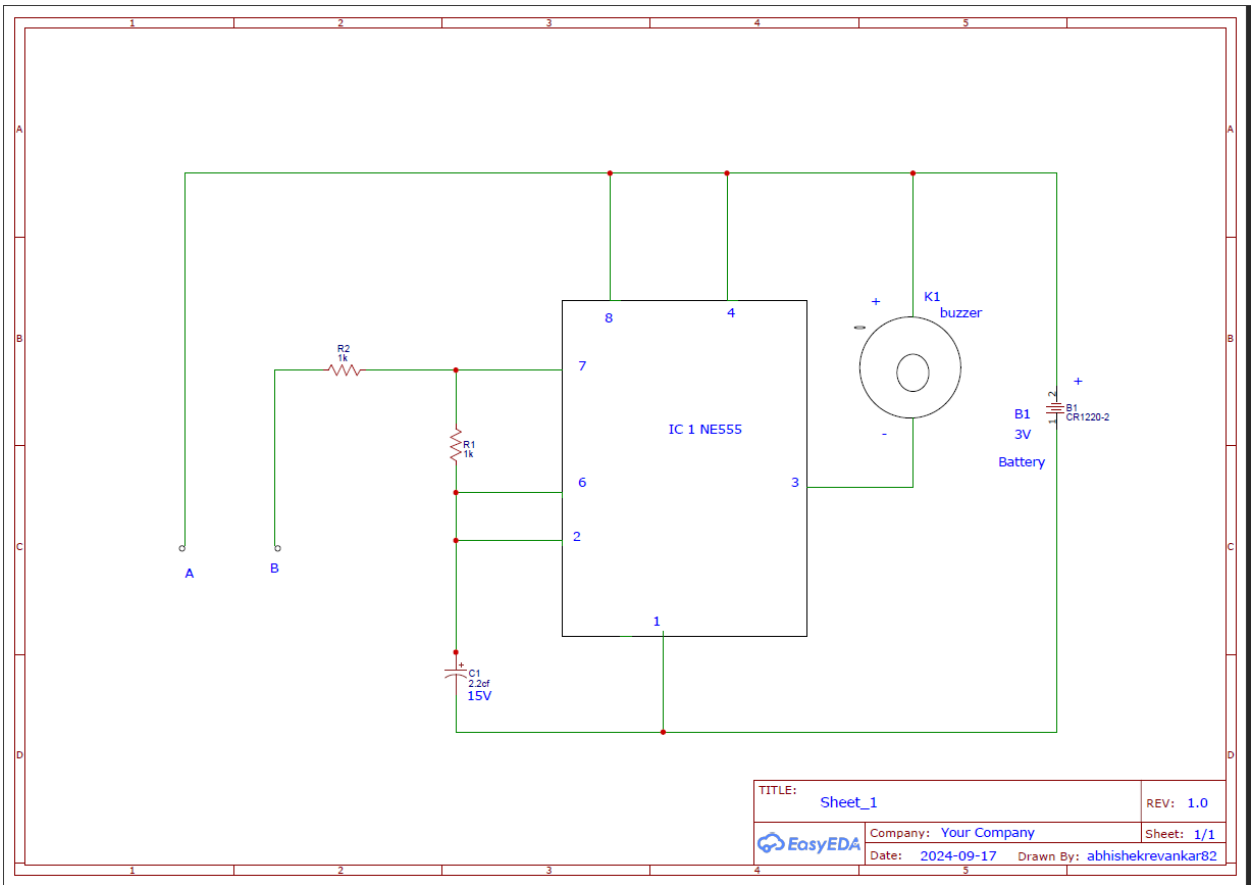






Components used: -

1. Perfboard: The base on which the components are mounted.
2. Buzzer: The large black component, likely responsible for producing sound.
3. Transistors: Small black components with three leads, used for amplification or switching.
4. Resistors: Components with colored bands, used to limit current flow.
5. Capacitors: Cylindrical or disc-shaped components, used to store electrical charge.
6. Diode: Small component with a single band, used to allow current flow in one direction.
7. Wires: Used to connect the components together.




The circuit diagram you provided is for a water-level indicator. Below is a detailed explanation of the connections and workings of this circuit:

**Numbered Points (1, 2, 3, 4, 6, 7, 8):**

- **Point 1:** This is the connection point of R1 (1kΩ). It's probably a component of a circuit that divides voltage or sets a threshold.
- **Point 2:** This joins the buzzer (K1) and R2 (1kΩ). It might play a role in deciding when to sound the buzzer. This point is necessary to drive the circuit's output, which activates the buzzer when certain circumstances are met.
- **Point 3**: The IC1 (NE555 Timer) is connected to this. Here, the NE555 timer may be set to detect when the water level reaches a specific point in either a stable or monostable mode. Point 3 probably has to do with determining or modifying the timing behaviour.
- **Point 4:** This is where the battery (B1, 3V) is connected. The primary power source supplies the energy needed for

**Points 6, 7, and 8:** These connect other parts of the circuit, possibly for timing, control, or grounding. They may link other parts of the **NE555 timer** to complete the circuit or help regulate the voltage/current.

**Components:**

**1.Resistors (R1, R2):** These resistors (1kΩ each) are used to limit the current in the circuit to protect sensitive components.

**2.Capacitor (C1):** This capacitor (2.2µF) is used for timing or smoothing purposes, likely in conjunction with the IC.

**3.NE555 Timer IC (IC1):** This is the main component, responsible for generating the signal to trigger the indicator (buzzer). The 555 timer IC can be used in various modes like a stable or monostable, but in this case, it's most likely used in monostable mode to detect water level.

**4.Battery:** A 3V battery is used as the power source for the circuit.

5. Buzzer (K1): The buzzer is connected as the output device to indicate the water level when triggered.

**6.Power Supply (15V):** There seems to be another 15V supply, which could be part of the triggering mechanism for the NE555 IC.

**Working:**

**1.Power Supply:** The 3V battery (B1) powers the circuit, while the 15V power source is used for a separate function, possibly the NE555 timer or for switching purposes.

**2. Water Detection:** When the water reaches a certain level, it could close the circuit, triggering the NE555 timer (IC1).

**3.Timer Activation:** Once triggered by the water level, the NE555 IC outputs a high signal at its output pin (likely pin 3). This high signal powers the buzzer.

**4.Buzzer Activation**: When the high signal is received, the buzzer (K1) sounds, indicating that the water has reached the set level.

**5.Capacitor:** The capacitor connected to the IC1 stabilizes the voltage or could be part of a timing function, providing delay or smoothening the operation.

**6.Resistors (R1, R2):** These resistors control the current flowing through the circuit, ensuring that sensitive components like the NE555 and buzzer are not damaged by excess current.

In a household water tank, a Water Level Indicator/Alarm works based on a simple electrical circuit that utilizes probes, transistors, and a buzzer to monitor and signal water levels.

**1. Power Connection:** The circuit is connected to a power source, typically a low-voltage battery or direct mains supply, confirming continuous operation.

**2.Probes in Water**: Several conductive probes are inserted at different heights in the water tank, each corresponding to specific water levels (low, medium, high). When the water rises and hits a probe, it completes an electrical circuit between the probe and a common ground.

**3.Conductive channel Formation**: Water, being a conductor of electricity, generates a conductive channel between the probe and the ground when it reaches a specified level. This closes the circuit.

**4.Transistor Activation:** The completed circuit allows a small current to flow through the base of a transistor. Transistors act as switches; when the base current flows, the transistor gets activated and allows a larger current to flow from the collector to the emitter.

**5. Buzzer Activation**: The current flowing through the active transistor reaches the linked buzzer, causing it to emit an alarm. The buzzer tells the user when the water has reached a specified level in the tank.

**6.Multiple Water Levels:** Probes are placed at different levels in the tank. For example, the lowest probe activates an alarm when the tank is near empty, signifying that it's time to refill. As water rises and reaches the middle probe, it activates a separate transistor, signalling that the water is at a medium level. Similarly, when water reaches the uppermost probe, the circuit signals the tank is full, and the alarm sounds to prevent overfilling.