WATER LEVEL INDICATOR

1. Introduction

The Water Level Indicator Circuit is designed to monitor and indicate the water level in a tank using LEDs and a buzzer. The system provides visual and auditory alerts based on the water level, ensuring efficient water management and preventing overflow or dry run situations.

2. Components List

The circuit comprises various components as detailed below:

ID	Name	Quantity	Description
1	YS-MBZ12095C05R42K2400	1	Buzzer
2	APHM1608QBDZ1C/D-V(BLUE)	3	Blue LEDs
3	BC547B	4	NPN Transistors
4	1kΩ	3	Resistors
5	100Ω	3	Resistors
6	KF128R-7.5-2P	2	Connectors
7	KF128R-7.5-3P	1	Connector

3. Schematic Diagram

The schematic diagram of the Water Level Indicator Circuit is shown below:

4. Circuit Description

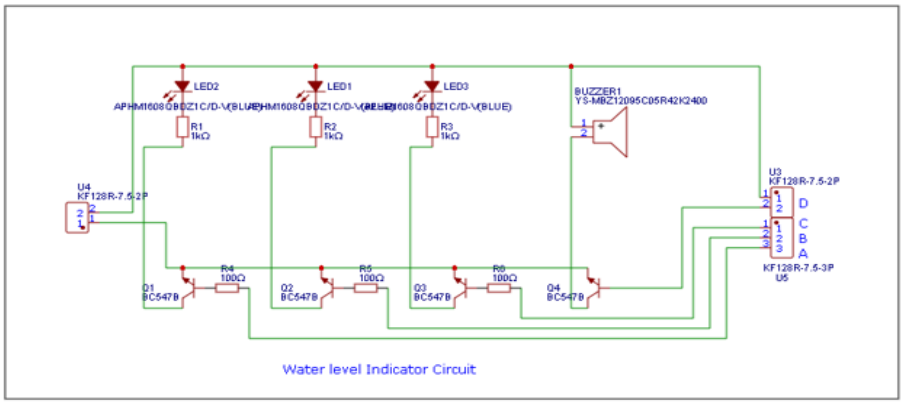
The circuit consists of the following sections:

- **Transistor Switches:** BC547B transistors (Q1, Q2, Q3, Q4) act as switches that control the LEDs and buzzer based on the water level.
- **LED Indicators:** Blue LEDs (LED1, LED2, LED3) indicate different water levels in the tank.
- **Buzzer Alert:** The buzzer (BUZZER1) provides an auditory alert when the water reaches a certain level.
- **Resistors:** Resistors (R1, R2, R3 - 1kΩ and R4, R5, R6 - 100Ω) are used to limit the current to the LEDs and transistors.
- **Connectors:** KF128R connectors (U3, U4, U5) are used for interfacing with the water level probes and power supply.

5. Working Principle

1. **Low Water Level:**
   - When the water level is low, none of the probes (A, B, C, D) are in contact with water.
   - The base of all transistors is at a low potential, keeping them in the cutoff state.
   - LEDs and buzzer remain off.
2. **Medium Water Level:**
   - When the water level rises and contacts probe A, the base of Q1 receives a voltage.
   - Q1 turns on, lighting up LED1 indicating the first water level.
   - Similarly, when the water level contacts probes B and C, Q2 and Q3 turn on, lighting up LED2 and LED3, respectively.
3. **High Water Level:**
   - When the water level reaches probe D, Q4 turns on, activating the buzzer.
   - This indicates that the water level has reached its maximum and may require intervention to prevent overflow.

6. Schematic and PCB Layout:-



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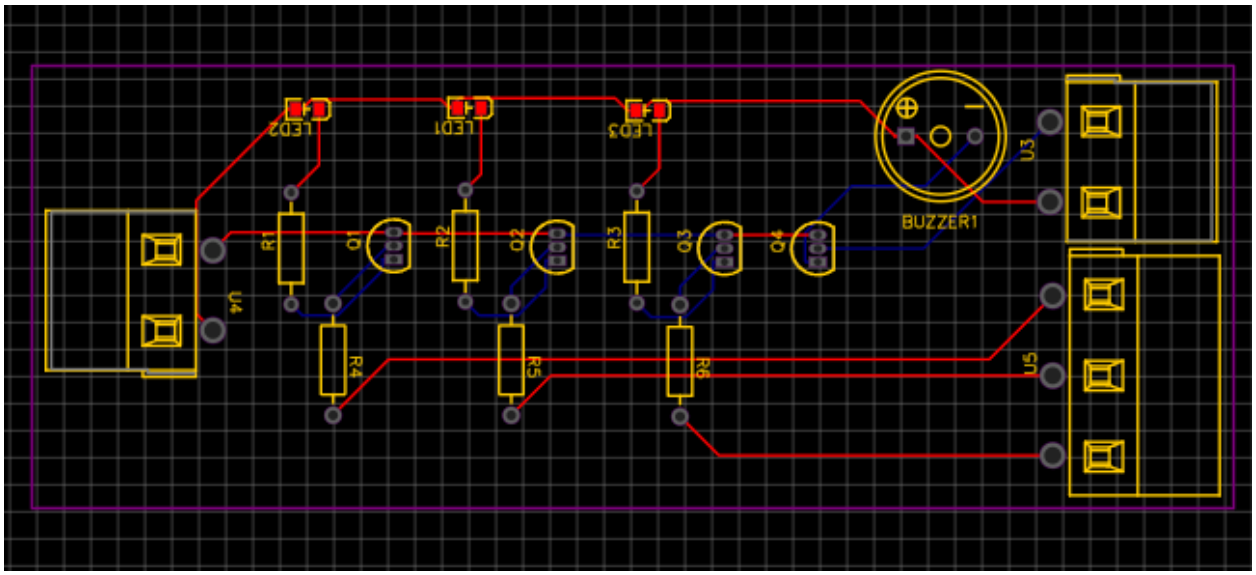

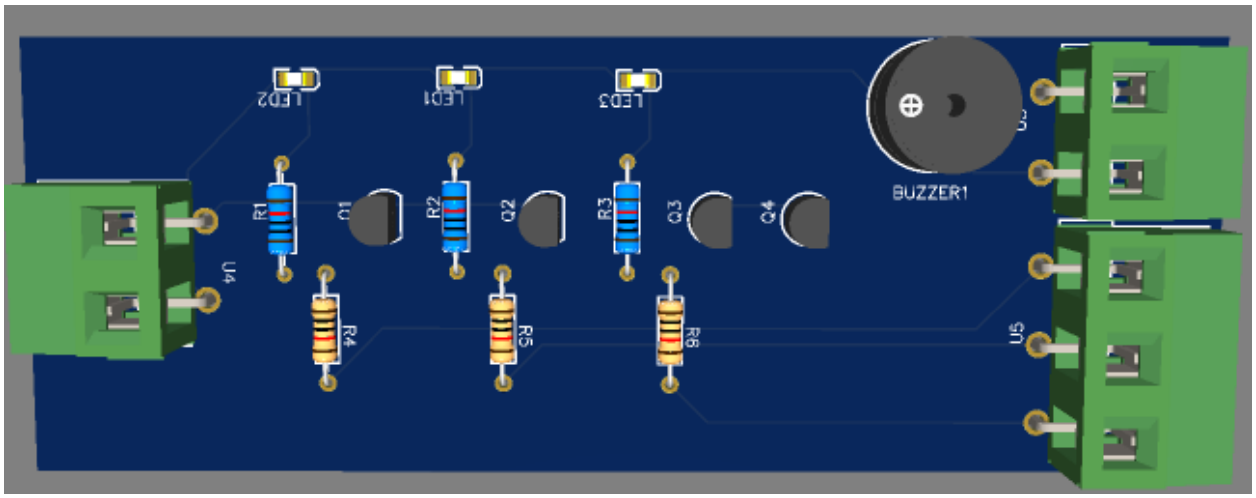

6. Applications

- **Household Water Tanks:** To monitor water levels in domestic water tanks and prevent overflow.
- **Industrial Tanks:** Used in industrial tanks for liquids to ensure efficient level management.
- **Aquariums:** Can be used in aquariums to maintain the water at the desired level.

7. Advantages

- **Cost-effective:** Utilizes readily available and inexpensive components.
- **Simple Design:** Easy to assemble and implement.
- **Reliable Operation:** Provides clear visual and auditory indicators for water levels.

8. Conclusion

The Water Level Indicator Circuit is a straightforward yet effective solution for monitoring and managing water levels in various applications. Its reliable operation and ease of use make it a valuable tool for preventing overflow and dry run conditions.