K. J. Somaiya College of Engineering, Vidyavihar, Mumbai 400077.

(A Constituent College of Somaiya Vidyavihar University.)

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WATER LEVEL INDICATOR

Submitted as a part of PCB Workshop by First Year Students of B. Tech

Computer Engineering

ROLL NO	NAME
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16010121028	Aditya Patil
16010121029	Neil Carnac
16010121030	Atharv Chandane
16010121032	Kunal Chaturvedi
16010121034	Sahil Chauhan
16010121035	Vedant Chavan
16010121041	Dhruv Dedhia
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Under guidance of

PROF.(Ms.) Savita Raut.

PROJECT GUIDE :-

EXAMINER:-

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INTRODUCTION

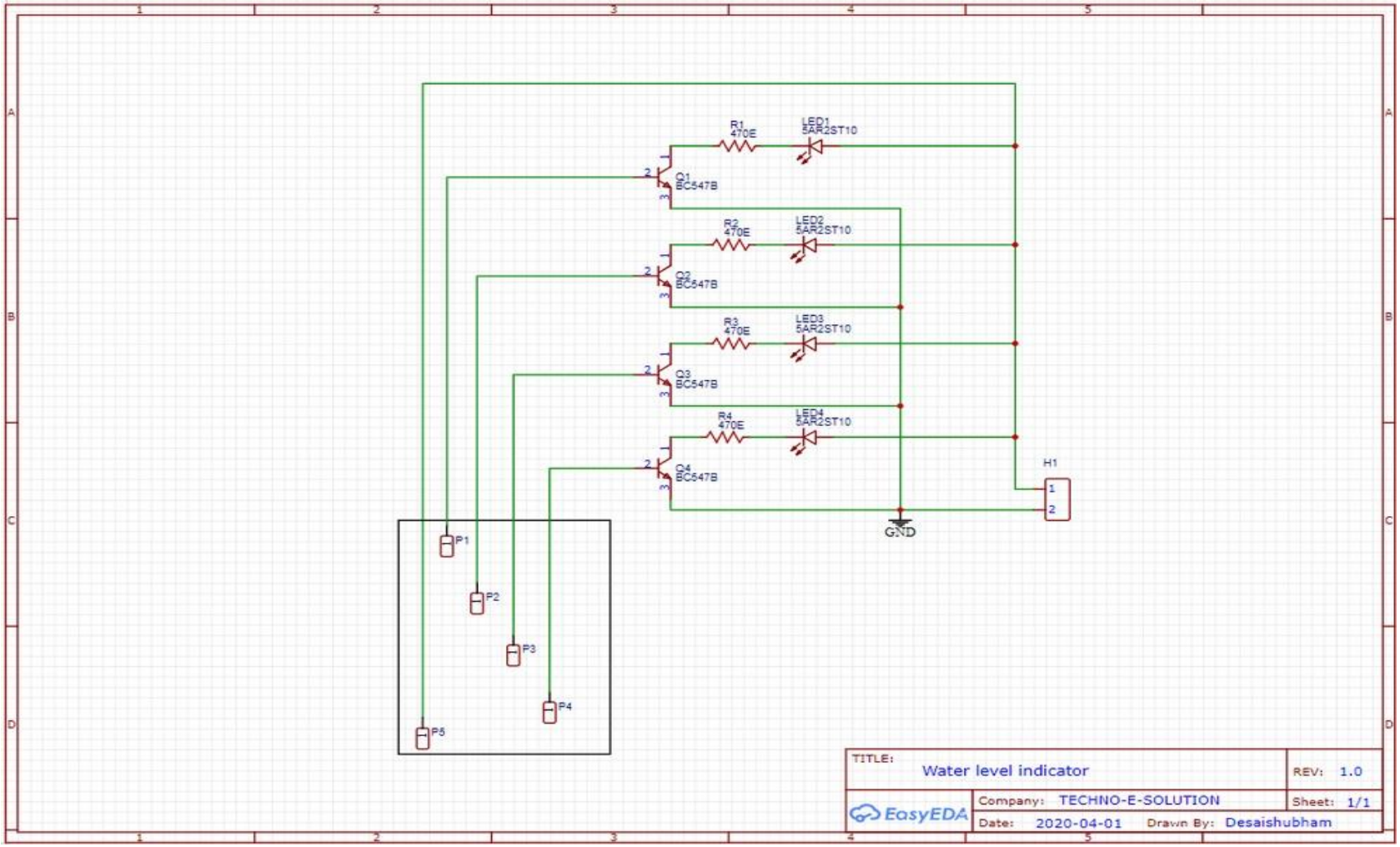
A water level indicator is a system that relays information about how high or low the level of water is in a particular water body. It can also be programmed to automatically turn on a water pump once levels get too low and refill the water back to adequate level

Our project thus consists of this simple water level indicator system which denotes the water level through LEDs.

PROJECT OVERVIEW

A water level indicator consists of circuit made of 4 LEDs to denote 4 different levels of water. The circuit is designed to indicate 4 levels of water in a tank or in any reservoir, when there is no or very less water in the tank no led is on which indicates the low level of water and when there is overflow or very high level of water the RED LED gets activated denoting very high or overflow of water. This device is very helpful and has a use in wide range use of industry-based application such as monitoring a sump pit (to control pump activation), rainfall detection, and leakage detection.

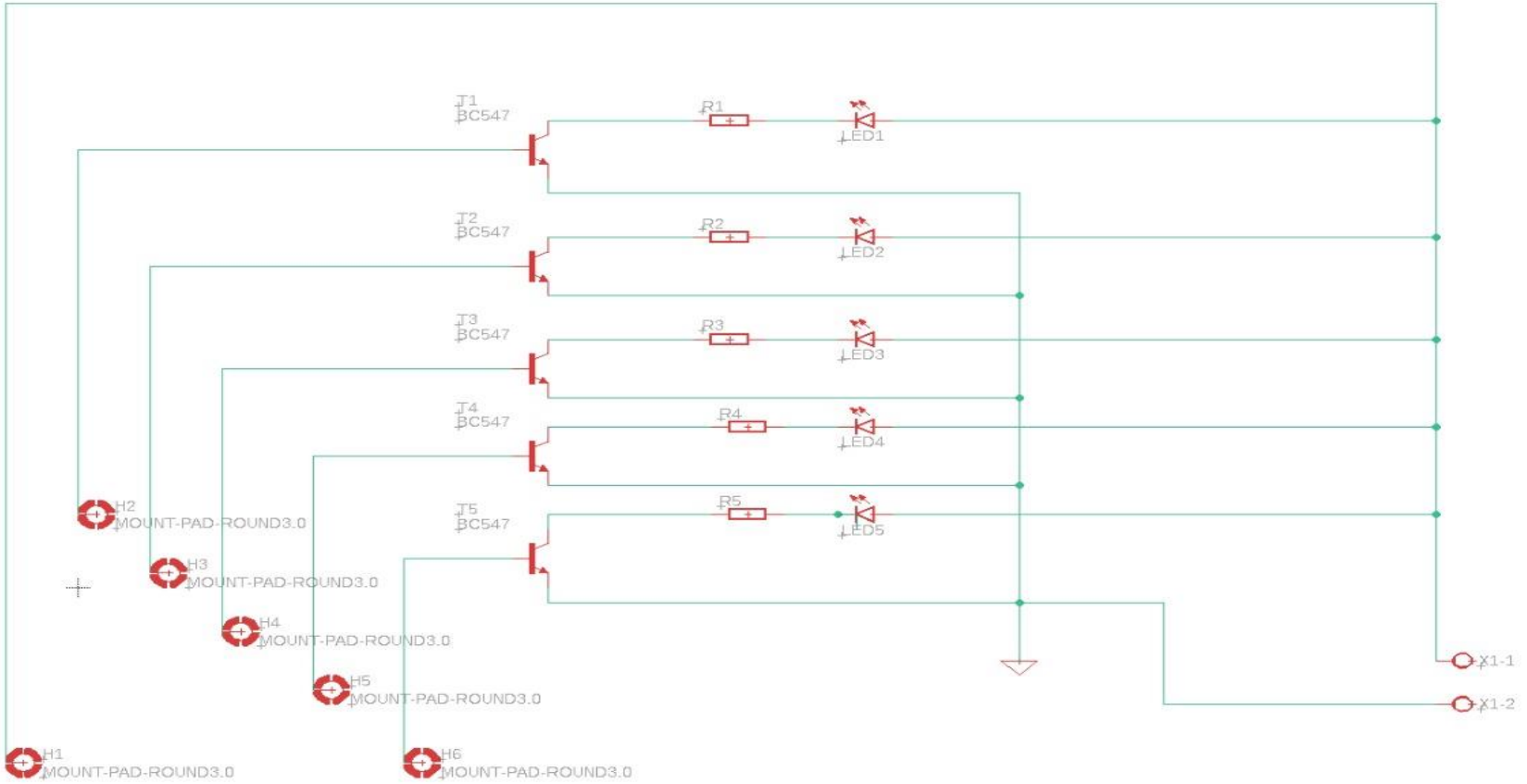
CIRCUIT DIAGRAM



TECHNICAL DESCRIPTION

- The working of the circuit is very simple
- The 5 mounted pads are which are connected to the leds through transistors are placed inside the tank and the 6th mounted pad is directly connected to the output source.
- When the water level hits one of the particular mount pad the along with the mount pad connecting the battery the circuit gets complete and the led starts glowing.
- As we increase the water level gradually the different mount pads comes in contact with the water and thus different LED glows.
- The circuit uses 5 BC547 transistors (J1, J2, J3, J4, J5) which is a NPN transistor. The base of the transistor is connected to the the mount pad and the collector is connected to the resistor which is connected directly to the DIODES
  And the emitter is connected to the GROUND.
- The circuit uses 5 470E resistors (R1, R2, R3, R4, R5) connected directly to the leds (LED1, LED2, LED3, LED4, LED5)

SCHEMATIC DIAGRAM



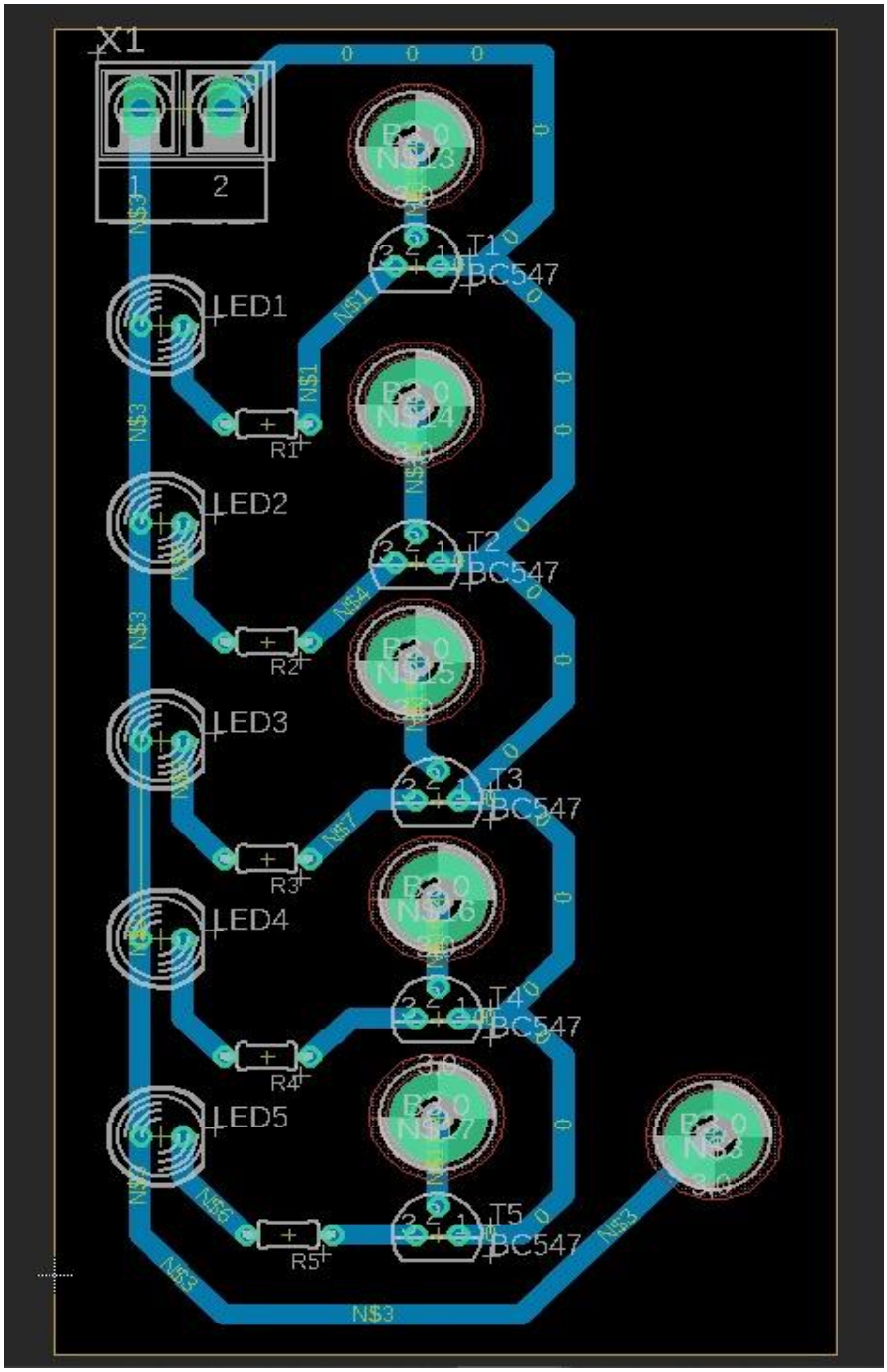
CIRCUIT EXPLAINATION

- We have used 6 mount pads. The first mount pad H1 is connected using a copper wire to output X1 which is nothing but terminal of battery 9V.
- Mount pad H2, H3 , H4, H5 and H6 are connected to the base pin of transistors J1, J2, J3, J4 ,J5 respectively.
- The collector pin of transistors are connected to 470 ohm resistors R1,R2, R3, R4, R5 respectively. The emitter pin of the transistors are connected to the ground and also to the output X2 at the junction
- The second point of resistors are connected to the positive terminal of LEDs(1, 2, 3, 4, 5).
- The negative terminal of the LEDs are connected to X1 output
- And thus the circuit is complete.

COMPONENT LIST

COMPONENT NAME	TYPE	RATING
BC547	Transistor	Max Current gain 800mA
Multicolour LED	LED	5mm
Battery	Battery	9V
R1,R2,R3,R4,R5	Resistors	470 ohm
Battery Cap	-	-
Insulated Copper Wire	Wire	Length-1mtr
PCB Board	-	-

PCB LAYOUT


X1
1
2
LED1
LED2
LED3
LED4
LED5
R1
R2
R3
R4
R5
T1
T2
T3
T4
T5
BC547
N$1
N$3
N$4
N$5
N$6
N$7
0

APPLICATIONS

Applications and uses of a water level indicator include:

- Hotels
- Home apartments
- Commercial complexes
- Factories
- Residential and commercial swimming pools
- Single phase motor
- Single phase submersibles
- Three phase motors

Advantages

- Easy to install
- Very little maintenance
- Compact design
- Automatic water level indicators ensure no overflows or running of dry pumps
- Saves money by using less water and electricity

REFERENCE

https://www.instructables.com/Water-Level-Indicator-With-Custom-PCB-Board/

https://www.seeedstudio.com/blog/2020/09/10/bc547-transistor-basic-knowledge-pinout-and-application/

https://waterlevelcontrols.com/water-level-indicator/

FEEDBACK

- First by the help of PCB shearing machine we cut the copper plate
- Then we clean the copper shaft by the help of steel wool
- Then we dip the copper plate in the photo resist dip coating machine
- Then we bake the plate at 200 degree Celsius for 5 minutes
- Then we expose the plate to UV exposure unit At 4 minutes
- Then we put the plate in the dye developer
- The we put the copper plate in the fecl3 solution until the 20-30 minutes depending upon the size of the PCB
- Then with the help of PCB drilling machine we make the necessary holes in the PCB
- We managed to get the components and then put them together in the PCB with the help of soldering machine