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Task2: hardware task

Problem 3

Problem given :

-12v LED

-R=3.3 ohm (high power)

-**Battery:** 80c / 11.1V / 5200 mAh

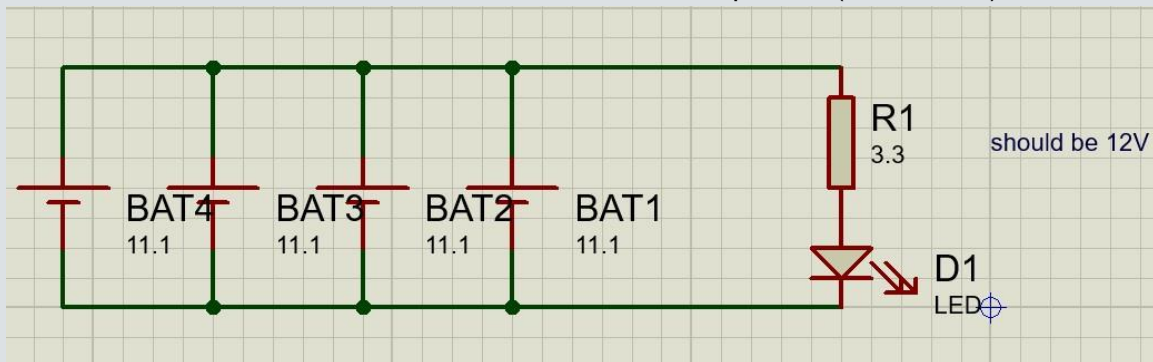
How the LED will stand for more than 5 hours :

$12/3.3=3.6363$ A (the elec current intensity that will pass in the LED)

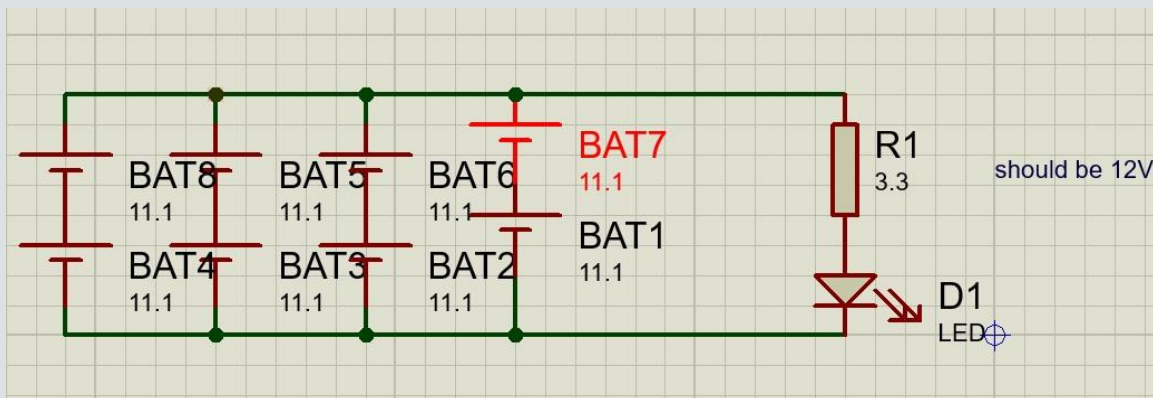
To let it stand for 5 hours so : $5 \times 3.6363 = 18.1818$ A

How many batteries ?

$18.1818/5.2=3.49$ for more than 5 hours =4 batteries in parallel (4 branches)



But ,, the battery voltage is 11.1V so we will put in each battery branch 2 batteries in series



Ideas for bonus question :

- 1) We can solve the problem manually by watching a voltmeter between the two batteries and when it's changed we can turn off the switch between the led and batteries till passive cell balancing happens
- 2) We can return the signal of the voltmeter ^ to a relay to open the switch automatic
- 3) We can use a regulator in case we use a high voltage battery so it doesn't matter our need to balance the batteries because the regulator will regulate the voltage
- 4) We can make it with a microcontroller that always compare the voltage across every battery and then if it isn't equal to 0 will open the circuit of LED

*I don't know if one of those solution is applicable but all what I think about is to isolate the LED branch from the circuit till the balancing happens :(*