

CHAPTER:

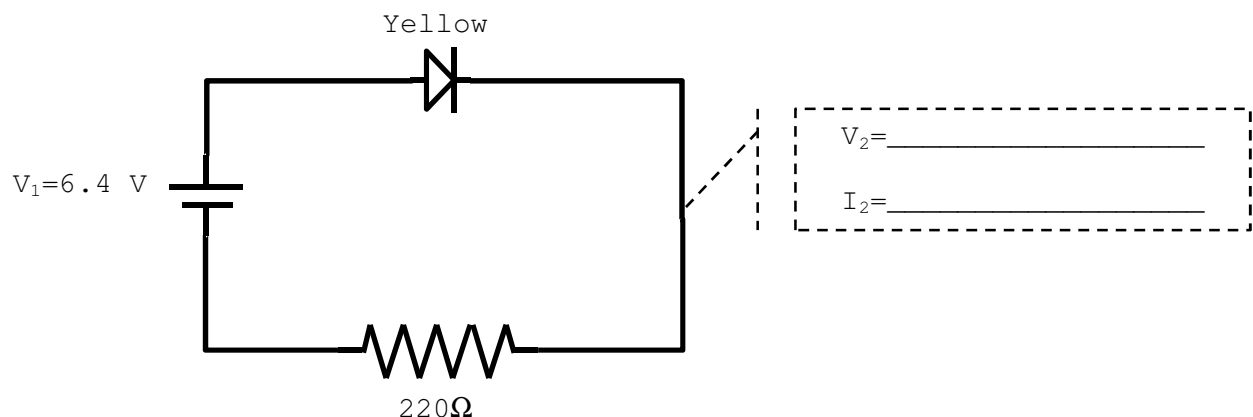
011: ELECTRONICS PROTOTYPING

Your Kit should include:

- One 4xAA battery holder
- One breadboard
- One set of “jumper wires” for making circuit connections
- One small bag with 10 LEDs (5 of each color) and 10 resistors (all 220Ω)
- Here are the “Forward Voltages” for each of the different colors of LED (approximate):
 - Red=2.1V
 - Green=3.3V
 - Yellow=2.2V
 - White=3.3V
 - Blue=3.3V

Basic circuit

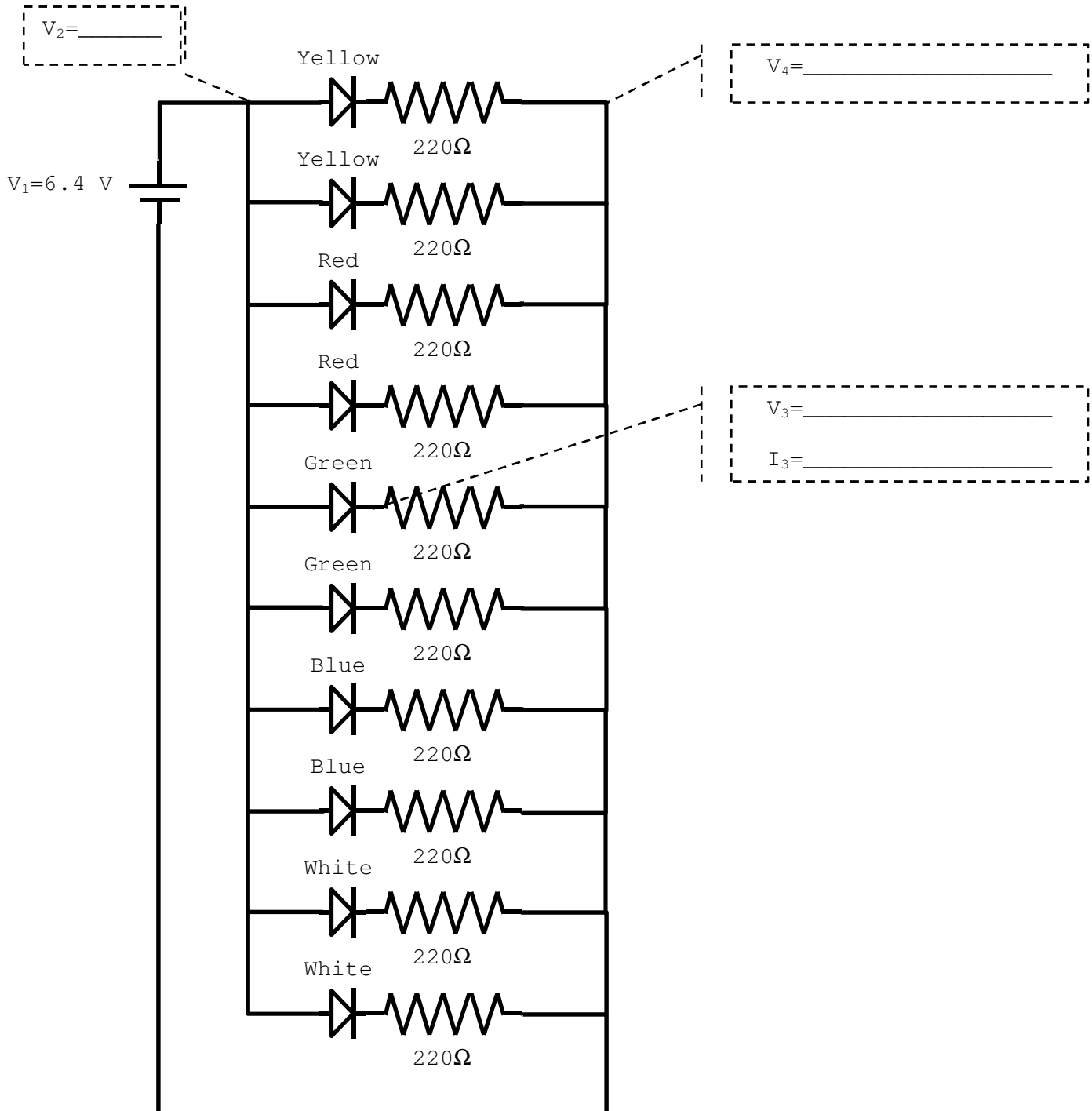
Build this circuit and enter your expected values in the blanks. Check your answer



After you have it working, flip the LED around and see if it works. Do the same for the resistor.

Bright circuit

Now build this circuit. Order the colors so you can keep track of which LED is which. Fill in the blanks for values in the space below.



Different forward voltages

Now try six different series circuits:

- | | |
|-----------------------------------|---------------------|
| 1. (+)->White LED->White LED->(-) | What happens? _____ |
| 2. (+)->Red LED->Red LED->(-) | What happens? _____ |
| 3. (+)->White->White->Blue->(-) | What happens? _____ |
| 4. (+)->White->White->Red->(-) | What happens? _____ |
| 5. (+)->White->Red->Red->(-) | What happens? _____ |
| 6. (+)->Yellow->Red->Red->(-) | What happens? _____ |

Why did some of these work and not the others?

Series and Parallel

Build the two circuits below and fill in the values based on what you know about Ohm's law and forward voltages.

