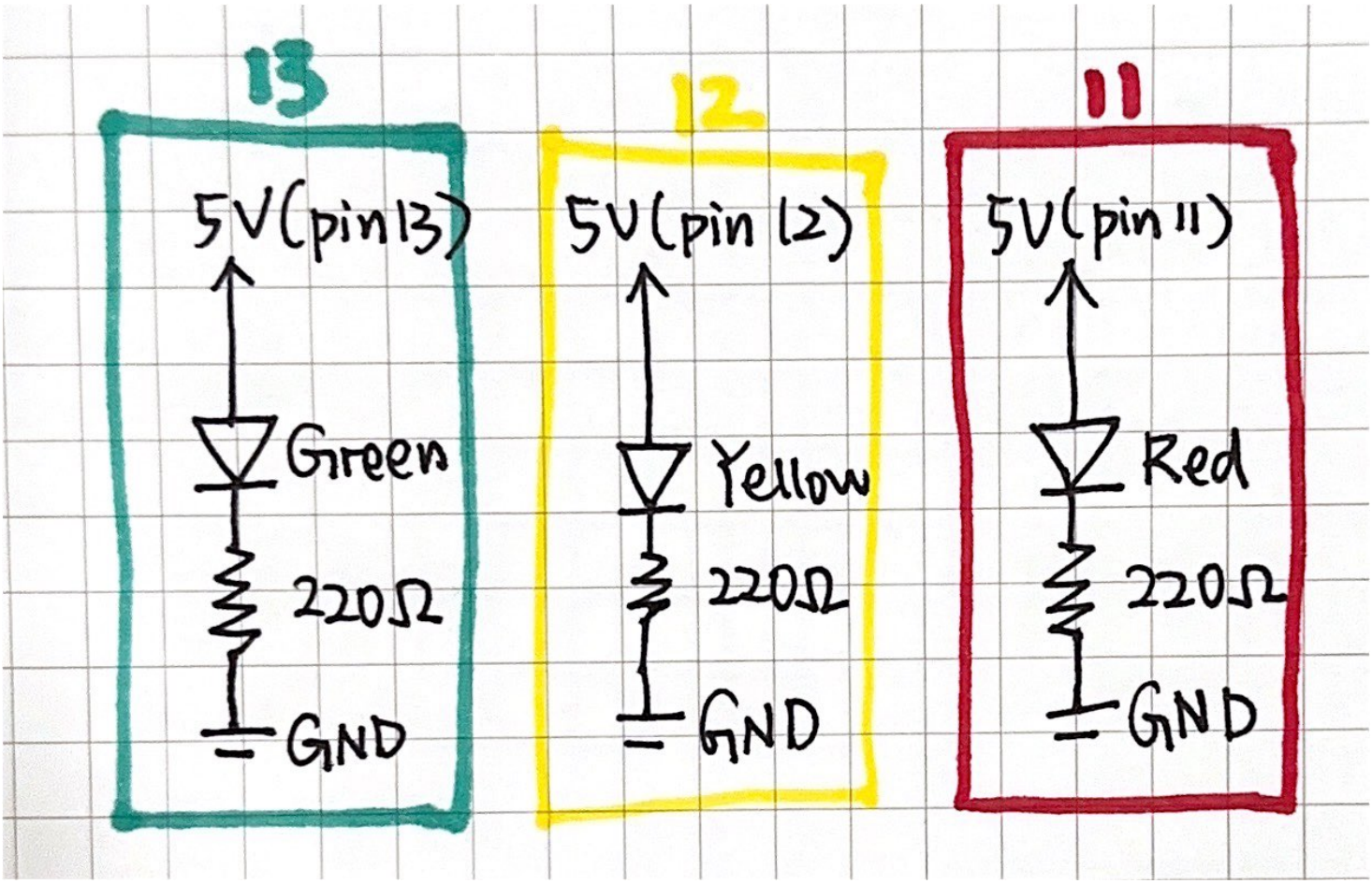
13
5V(pin13)
Green
220Ω
GND
12
5V(pin12)
Yellow
220Ω
GND
11
5V(pin11)
Red
220Ω
GND

This is the schematic for my blinking project. To make each LED blink independently, I chose to build 3 circuits.

Green, Yellow, Red LEDs all have roughly 1.8V voltage drop
To make my circuits safe and my LEDs bright, I need to calculate minimal resistance I'll need.

$V = 5V$
$V_{drop} = 1.8V$
$V_{circuit} = 5V - 1.8V = 3.2V$
$I = 20mA$ desired current
$I_{max} = 30mA$

$V = I \times R$
$3.2V = 0.02 \times R$
$R = 160\Omega$
desired
↑
closest to desired resistance,
I choose to use 220Ω
resistor for each circuit.

$V = I \times R$
$3.2V = 0.03 \times R$
$R = 107\Omega$
or above