Part 2 (Atharva Sundar and I worked Together)

Justification

		Predicted Table			
Gummy Bears					
		Red	Green	Orange	Clear
	White	1	1	1	1
	Blue	0	0	0	1
	Yellow	1	1	1	1
	Red	1	0	1	1
LEDs	Green	0	1	1	1

We treat each gummy as a **subtractive color filter**. Each LED column is one wavelength band; a “1” means that LED’s light made it through the gummy to the sensor, a “0” means it was absorbed.

Red LED (R column):
White=1, Blue=0, Yellow=1, Red=1, Green=0.
Reason: Long-wavelength red passes through **red** and **yellow** dyes (they transmit warm colors) and through **white** (nearly clear). **Blue** and **green** dyes absorb red, so they read 0.

Green LED (G column):
White=1, Blue=0, Yellow=1, Red=0, Green=1.
Reason: Mid-band green passes through **green** and often **yellow** (yellow transmits red+green), and through **white**. **Blue** and **red** dyes absorb green, so 0.

Orange LED (O column):
White=1, Blue=0, Yellow=1, Red=1, Green=1.
Reason: Orange (between red and yellow) passes **yellow**, **red**, and often **green** (most green dyes leak some yellow/orange), and **white**. **Blue** dye strongly absorbs warm colors → 0.

Clear/White LED (C column):
White=1, Blue=1, Yellow=1, Red=1, Green=1.
Reason: A white LED is broadband. Every gummy transmits at least part of its spectrum above threshold, so all are 1 (the **blue** gummy passes the blue component, etc.).

How to read/classify from this table (logic rules):

- If **C=1** and **R=0, G=0, O=0** → **Blue** (only white passes because of its blue component).
- If **R=1, G=0, O=1, C=1** → **Red** (passes warm bands, blocks green).

- If **R=0, G=1, O=1, C=1 → Green** (passes green/yellowish, blocks red).
- If **R=1, G=1, O=1, C=1 → Yellow or White**. Distinguish by overall transparency: **White** is most transparent (higher analog readings on all LEDs); **Yellow** shows more **attenuation.**

Logic Table got through experimentation

		FInal Logic table after hands ON				
		Bears				
	R=220	Red	Green	Orange	Clear	
	White	0.09	0.08	0.08	0.07	
	Blue	2.43	4.17	2.36	0.13	Vref (high) = 1.94 V
	Yellow	0.65	0.2	0.16	0.16	Vref (low) = 1.16 V
	Red	0.09	0.13	0.1	0.07	
LEDs	Green	3.8	0.17	0.38	0.09	
	Red (R = 2.2k)	0.96	1.97	0.67	0.65	