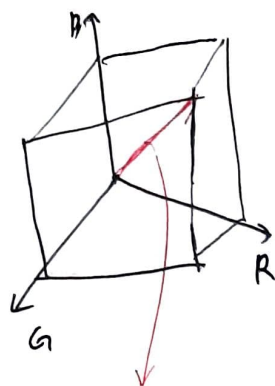


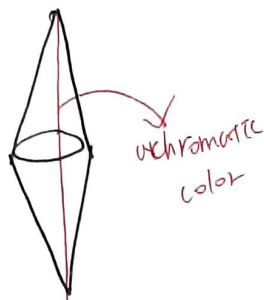
1. $8 \times 3 \times 1920 \times 1080 \times 30 \times 3600$

= 625. no GB

2.

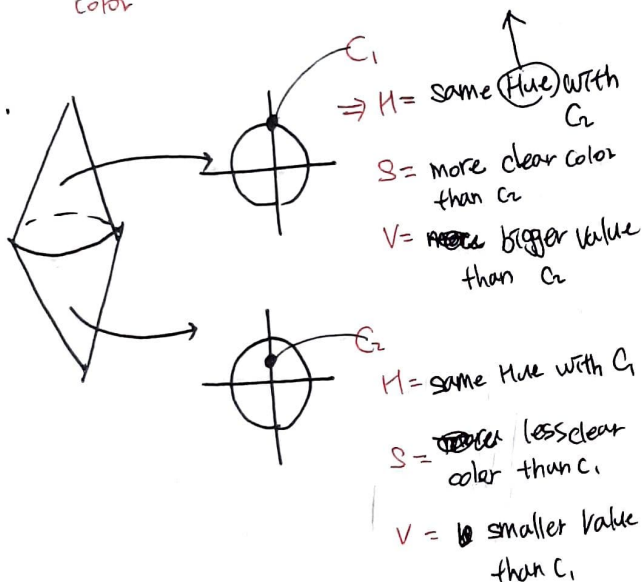


achromatic color



dominant wavelength

3.



$\Rightarrow H = \text{same}$
 $S = C_1$ is Larger
 $V = C_1$ is Larger

4. i) if gamma is below 1,

the range of dark pixels in an image ~~will~~ would be expanded

ii) if gamma is above 1,
 the range of bright pixels in an image would be expanded

5. ONPP

PP-2

negative

BP	B4	NP	N4
S4	S4	44	6P
4P	44	3P	34
14	1P	24	2P

6. Increase both value

7. decrease 5th parameter
 value

8. ①

```
int main()
{
    Mat src = imread("lena.png", 0);
    Mat yuvChannels[3]; ①
    split(src, yuvChannels);
}
```

int main()

```
{
    Mat src = imread("lena.png", 1);
```

BGR

change
 0 → 1

imshow("R", src[2]); (not yuv)

waitkey(0);

use BGR and

return 0;

R-channel is 2.

}

9. `waitkey(500/4ps);`
 Put this code below the
`"imshow(~)"`
 ↓
`while(1) {`
 `cap >> frame;`
 `imshow("Window", frame);`
 `waitkey(500/4ps);`
`}`

12. 3x3

40 →

40	20	40
40	40	40
40	40	40

→ change all value to 40
In the mesh

45 → change all value to 45
In the mesh

65 → change all value to 65
In the mesh

10. ON3, 8bin

ON3 : 1bin : $\frac{4}{48} \rightarrow 0.033333333$

4N4 : 2bin : $\frac{4}{48} \rightarrow 0.033333333$

8N11 : 3bin : $\frac{4}{48} \rightarrow 0.033333333$

12-15 : 4bin : $\frac{4}{48} \rightarrow 0.033333333$

16-19 : 5bin : $\frac{4}{48} \rightarrow 0.033333333$

20-23 : 6bin : $\frac{4}{48} \rightarrow 0.033333333$

24-27 : 7bin : $\frac{12}{48} \rightarrow 0.25$

28-31 : 8bin : $\frac{12}{48} \rightarrow 0.25$

10

no → change all value in the mesh to no.

13.

0	0	1	2	...
6	7	8	8	...
12	13	14	15	...
16	17	18	19	...
16	17	18	19	...

0.0333

11.

40 → 40

45 → 45

65 → 65

no → no

~~16~~ ~~16~~ ~~16~~ ← average gray = 1.23...
 ≈ 1.3

multiply this to Input

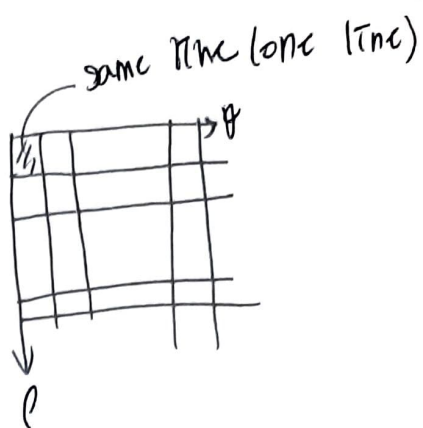
$\frac{16}{16.875} \approx 0.8$ multiply this to Input

11 ← mid
 $\frac{16}{\text{average}} \approx 0.8$

14.

15	15	15	15
15	0	0	15
0	0	0	15
15	15	0	15

16



15.

	5	10	30	40
	5	10	30	40
	5	5	25	40
	5	5	25	40

$$g_{\text{mean}} = \frac{1}{2 \times 2} \begin{bmatrix} 0 & 2 & 0 \\ 1 & 2 & 6 \\ 0 & 1 & 0 \end{bmatrix}$$

 $10 \rightarrow$

10	18	60
p	18	54
10	p	50

20

 $30 \rightarrow$

20	54	80
18	54	72
10	45	80

	6	
2	6	8
	5	

 $45 \rightarrow$

10	18	60
p	p	45
10	p	50

	2	
1	1	5
	1	

 $25 \rightarrow$

20	54	80
p	45	72
10	45	80

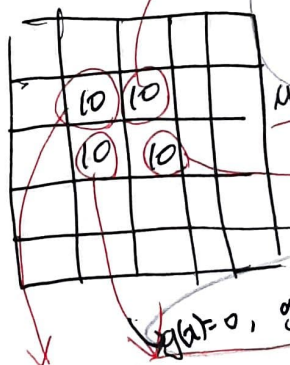
	6	
7	5	8
	5	

60-6

i) the number of pixels
on the line

ii) same with number of pixels
on image.

17.



$$g_x = (5 + 10 + 10) - (5 + 10 + 10) = 0$$

$$g_y = 40 - 20 - 20 = 0$$

$$\mu = \sqrt{0^2 + 0^2} = 0$$

$$\mu = 0$$

$$g_x = 0, g_y = 0 \Rightarrow 0 \quad \mu = 0$$

$$g_x = (5 + 20 + 10) - (50 + 20 + 10) = 0$$

$$g_y = (10 + 10 + 60) - (5 + 10 + 5) = 40 - 20 = 20$$

$$\mu(x, y) = \sqrt{0^2 + 20^2} = 20$$