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SOAL 3. Index setiap pixel berdasar color pallette.

Pixel :

213, 80, 155	24, 60, 122	212, 9, 19
211, 200, 155	153, 155, 154	8, 8, 100
213, 222, 12	15, 25, 155	143, 100, 123

Color Pallette :

warna 0 : Hitam (RGB : 0,0,0)
 warna 1 : Merah (RGB : 255,0,0)
 warna 2 : Hijau (RGB : 0,255,0)
 warna 3 : Biru (RGB : 0,0,255)

Rumus jarak Euclidean

$$\text{Jarak} = \sqrt{(R_1 - R_2)^2 + (G_1 - G_2)^2 + (B_1 - B_2)^2}$$

1. Pixel (1,1) = (213, 80, 155)

- Hitam = $\sqrt{(213-0)^2 + (80-0)^2 + (155-0)^2} = \sqrt{45369 + 6400 + 24025} = \sqrt{75794} = 275,24$
- Merah = $\sqrt{(213-255)^2 + (80-0)^2 + (155-0)^2} = \sqrt{1764 + 6400 + 24025} = \sqrt{32189} = 179,42$
- Hijau = $\sqrt{(213-0)^2 + (80-255)^2 + (155-0)^2} = \sqrt{45369 + 30625 + 24025} = \sqrt{100019} = 316,14$
- Biru = $\sqrt{(213-0)^2 + (80-0)^2 + (155-255)^2} = \sqrt{45369 + 6400 + 10000} = \sqrt{61769} = 248,54$

2. Pixel (1,2) = (24, 60, 122)

- Hitam = $\sqrt{(24-0)^2 + (60-0)^2 + (122-0)^2} = \sqrt{576 + 3600 + 14884} = \sqrt{19060} = 138,02$
- Merah = $\sqrt{(24-255)^2 + (60-0)^2 + (122-0)^2} = \sqrt{53361 + 3600 + 14884} = \sqrt{71845} = 268,03$
- Hijau = $\sqrt{(24-0)^2 + (60-255)^2 + (122-0)^2} = \sqrt{576 + 38025 + 14884} = \sqrt{53485} = 231,30$
- Biru = $\sqrt{(24-0)^2 + (60-0)^2 + (122-255)^2} = \sqrt{576 + 3600 + 17689} = \sqrt{21865} = 147,85$

3. Pixel (1,3) = (212, 9, 19)

- Hitam = $\sqrt{(212-0)^2 + (9-0)^2 + (19-0)^2} = \sqrt{44944 + 81 + 361} = \sqrt{45386} = 213,14$
- Merah = $\sqrt{(212-255)^2 + (9-0)^2 + (19-0)^2} = \sqrt{1849 + 81 + 361} = \sqrt{2291} = 47,87$
- Hijau = $\sqrt{(212-0)^2 + (9-255)^2 + (19-0)^2} = \sqrt{44944 + 60516 + 361} = \sqrt{105821} = 325,32$
- Biru = $\sqrt{(212-0)^2 + (9-0)^2 + (19-255)^2} = \sqrt{44944 + 81 + 55696} = \sqrt{100721} = 317,47$

4. Pixel (2,1) = (211, 200, 155)

- Hitam = $\sqrt{(211-0)^2 + (200-0)^2 + (155-0)^2} = \sqrt{44521 + 40000 + 24025} = \sqrt{108546} = 329,48$
- Merah = $\sqrt{(211-255)^2 + (200-0)^2 + (155-0)^2} = \sqrt{1936 + 40000 + 24025} = \sqrt{65961} = 256,92$
- Hijau = $\sqrt{(211-0)^2 + (200-255)^2 + (155-0)^2} = \sqrt{44521 + 3025 + 24025} = \sqrt{71571} = 267,62$
- Biru = $\sqrt{(211-0)^2 + (200-0)^2 + (155-255)^2} = \sqrt{44521 + 40000 + 10000} = \sqrt{94521} = 307,44$

5. Pixel (2,2) = (153, 155, 154)

- Hitam = $\sqrt{(153-0)^2 + (155-0)^2 + (154-0)^2} = \sqrt{23409 + 24025 + 23716} = \sqrt{71150} = 266,88$
- Merah = $\sqrt{(153-255)^2 + (155-0)^2 + (154-0)^2} = \sqrt{10404 + 24025 + 23716} = \sqrt{58145} = 241,14$
- Hijau = $\sqrt{(153-0)^2 + (155-255)^2 + (154-0)^2} = \sqrt{23409 + 10000 + 23716} = \sqrt{57125} = 238,99$

$$\cdot \text{Biru} = \sqrt{(153-0)^2 + (155-0)^2 + (154-255)^2} = \sqrt{23409 + 24025 + 10201} = \sqrt{57635} = 240,07$$

6. piksel (2,3) = (8,8,100)

$$\cdot \text{Hitam} = \sqrt{(8-0)^2 + (8-0)^2 + (100-0)^2} = \sqrt{64 + 64 + 10000} = \sqrt{10128} = 100,64$$

$$\cdot \text{Merah} = \sqrt{(8-255)^2 + (8-0)^2 + (100-0)^2} = \sqrt{61009 + 64 + 10000} = \sqrt{71073} = 266,61$$

$$\cdot \text{Hijau} = \sqrt{(8-0)^2 + (8-255)^2 + (100-0)^2} = \sqrt{64 + 61009 + 10000} = \sqrt{71073} = 266,61$$

$$\cdot \text{Biru} = \sqrt{(8-0)^2 + (8-0)^2 + (100-255)^2} = \sqrt{64 + 64 + 24025} = \sqrt{24153} = 155,47$$

7. piksel (3,1) = (213,222,12)

$$\cdot \text{Hitam} = \sqrt{(213-0)^2 + (222-0)^2 + (12-0)^2} = \sqrt{45369 + 49284 + 144} = \sqrt{94797} = 307,93$$

$$\cdot \text{Merah} = \sqrt{(213-255)^2 + (222-0)^2 + (12-0)^2} = \sqrt{1764 + 49284 + 144} = \sqrt{51252} = 226,48$$

$$\cdot \text{Hijau} = \sqrt{(213-0)^2 + (222-255)^2 + (12-0)^2} = \sqrt{45369 + 1089 + 144} = \sqrt{46602} = 215,96$$

$$\cdot \text{Biru} = \sqrt{(213-0)^2 + (222-0)^2 + (12-255)^2} = \sqrt{45369 + 49284 + 59049} = \sqrt{153702} = 392,03$$

8. piksel (3,2) = (15,25,155)

$$\cdot \text{Hitam} = \sqrt{(15-0)^2 + (25-0)^2 + (155-0)^2} = \sqrt{225 + 625 + 24025} = \sqrt{24875} = 157,76$$

$$\cdot \text{Merah} = \sqrt{(15-255)^2 + (25-0)^2 + (155-0)^2} = \sqrt{57600 + 625 + 24025} = \sqrt{82250} = 286,87$$

$$\cdot \text{Hijau} = \sqrt{(15-0)^2 + (25-255)^2 + (155-0)^2} = \sqrt{225 + 52900 + 24025} = \sqrt{77150} = 277,75$$

$$\cdot \text{Biru} = \sqrt{(15-0)^2 + (25-0)^2 + (155-255)^2} = \sqrt{225 + 625 + 10000} = \sqrt{10850} = 104,15$$

9. piksel (3,3) = (143,100,123)

$$\cdot \text{Hitam} = \sqrt{(143-0)^2 + (100-0)^2 + (123-0)^2} = \sqrt{20449 + 10000 + 15129} = \sqrt{45578} = 213,59$$

$$\cdot \text{Merah} = \sqrt{(143-255)^2 + (100-0)^2 + (123-0)^2} = \sqrt{12544 + 10000 + 15129} = \sqrt{37673} = 194,12$$

$$\cdot \text{Hijau} = \sqrt{(143-0)^2 + (100-255)^2 + (123-0)^2} = \sqrt{20449 + 24025 + 15129} = \sqrt{59503} = 243,97$$

$$\cdot \text{Biru} = \sqrt{(143-0)^2 + (100-0)^2 + (123-255)^2} = \sqrt{20449 + 10000 + 17424} = \sqrt{47873} = 218,78$$

Hasil Akhir :

Hasil pixel Citra Terindeks :

• piksel (1,1) = Merah

• piksel (1,2) = Hitam

• piksel (1,3) = Merah

• piksel (2,1) = Merah

• piksel (2,2) = Hijau

• piksel (2,3) = Hitam

• piksel (3,1) = Hijau

• piksel (3,2) = Biru

• piksel (3,3) = Merah

255,0,0	0,0,0	255,0,0
255,0,0	0,255,0	0,0,0
0,255,0	0,0,255	255,0,0