3). Buat index setiap pixel berdasarkan color pallete

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 Pallete :

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)

Jawab :

Rumus jarak Euclidean : Jarak = $\sqrt{(R_1-R_2)^2 + (G_1-G_2)^2 + (B_1-B_2)^2}$

1. Pixel (0,0) = (213, 80, 155)
   - Warna 0 = $\sqrt{(213-0)^2+(80-0)^2+(155-0)^2} = \sqrt{45369+6400+24025}$
     $= \sqrt{75794} = 275,30$
   - Warna 1 = $\sqrt{(213-255)^2+(80-0)^2+(155-0)^2} = \sqrt{1764+6400+24025} = \sqrt{32189}$
     $= 179,41$
   - Warna 2 = $\sqrt{(213-0)^2+(80-255)^2+(155-0)^2} = \sqrt{45369+30625+24025}$
     $= \sqrt{100019} = 316,25$
   - Warna 3 = $\sqrt{(213-0)^2+(80-0)^2+(155-255)^2} = \sqrt{45369+6400+10000}$
     $= \sqrt{61769} = 248,53$

2. Pixel (0,1) = (24, 60, 122)
   - Warna 0 = $\sqrt{(24-0)^2+(60-0)^2+(122-0)^2} = \sqrt{576+3600+14884}$
     $= \sqrt{19060} = 138,05$
   - Warna 1 = $\sqrt{(24-255)^2+(60-0)^2+(122-0)^2} = \sqrt{53361+3600+14884}$
     $= \sqrt{71845} = 268,03$
   - Warna 2 = $\sqrt{(24-0)^2+(60-255)^2+(122-0)^2} = \sqrt{576+38025+14884}$
     $= \sqrt{53485} = 231,26$
   - Warna 3 = $\sqrt{(24-0)^2+(60-0)^2+(122-255)^2} = \sqrt{576+3600+17689}$
     $= \sqrt{21862} = 147,85$

3. Pixel (0,2) = (212, 9, 19)
   - Warna 0 = $\sqrt{(212-0)^2+(9-0)^2+(19-0)^2} = \sqrt{44944+81+361}$
     $= \sqrt{45386} = 213,03$
   - Warna 1 = $\sqrt{(212-255)^2+(9-0)^2+(19-0)^2} = \sqrt{1849+81+361}$
     $= \sqrt{2291} = 47,86$
   - Warna 2 = $\sqrt{(212-0)^2+(9-255)^2+(19-0)^2} = \sqrt{44944+60516+361}$
     $= \sqrt{105821} = 325,30$

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• Warna 3 = $\sqrt{(212-0)^2 + (9-0)^2 + (19-255)^2} = \sqrt{44944 + 81 + 55696}$
= $\sqrt{100721} = 317,36$

4. Pixel (1,0) = 211, 200, 155
• Warna 0 = $\sqrt{(211-0)^2 + (200-0)^2 + (155-0)^2} = \sqrt{44521 + 40000 + 24025}$
= $\sqrt{108546} = 329,46$
• Warna 1 = $\sqrt{(211-255)^2 + (200-0)^2 + (155-0)^2} = \sqrt{1936 + 40000 + 24025}$
= $\sqrt{65961} = 256,82$
• Warna 2 = $\sqrt{(211-0)^2 + (200-255)^2 + (155-0)^2} = \sqrt{44521 + 3025 + 24025}$
= $\sqrt{71571} = 267,52$
• Warna 3 = $\sqrt{(211-0)^2 + (200-0)^2 + (155-255)^2} = \sqrt{44521 + 40000 + 10000}$
= $\sqrt{94521} = 307,44$

5. Pixel (1,1) = 153, 155, 154
• Warna 0 = $\sqrt{(153-0)^2 + (155-0)^2 + (154-0)^2} = \sqrt{23409 + 24025 + 23716}$
= $\sqrt{71150} = 266,73$
• Warna 1 = $\sqrt{(153-255)^2 + (155-0)^2 + (154-0)^2} = \sqrt{10404 + 24025 + 23716}$
= $\sqrt{58145} = 241,1$
• Warna 2 = $\sqrt{(153-0)^2 + (155-255)^2 + (154-0)^2} = \sqrt{23409 + 10000 + 23716}$
= $\sqrt{57125} = 239,00$
• Warna 3 = $\sqrt{(153-0)^2 + (155-0)^2 + (154-255)^2} = \sqrt{23409 + 24025 + 10201}$
= $\sqrt{57635} = 240,07$

6. Pixel (1,2) = 8, 8, 100
• Warna 0 = $\sqrt{(8-0)^2 + (8-0)^2 + (100-0)^2} = \sqrt{64 + 64 + 10000}$
= $\sqrt{10128} = 100,63$
• Warna 1 = $\sqrt{(8-255)^2 + (8-0)^2 + (100-0)^2} = \sqrt{61009 + 64 + 10000}$
= $\sqrt{71073} = 266,59$
• Warna 2 = $\sqrt{(8-0)^2 + (8-255)^2 + (100-0)^2} = \sqrt{64 + 61009 + 10000}$
= $\sqrt{71073} = 266,59$
• Warna 3 = $\sqrt{(8-0)^2 + (8-0)^2 + (100-255)^2} = \sqrt{64 + 64 + 24025}$
= $\sqrt{24153} = 155,41$

7. Pixel (2,0) = 213, 222, 12
• Warna 0 = $\sqrt{(213-0)^2 + (222-0)^2 + (12-0)^2} = \sqrt{45369 + 49284 + 144}$
= $\sqrt{94797} = 307,89$
• Warna 1 = $\sqrt{(213-255)^2 + (222-0)^2 + (12-0)^2} = \sqrt{1764 + 49284 + 144}$
= $\sqrt{51192} = 226,25$

• Warna 2 : $\sqrt{(213-0)^2+(222-255)^2+(12-0)^2} = \sqrt{45369+1089+144}$
$= \sqrt{46602} = 215,87$

• Warna 3 : $\sqrt{(213-0)^2+(222-0)^2+(12-255)^2} = \sqrt{45369+49284+59049}$
$= \sqrt{153702} = 392,04$

8. Pixel (2,1) = 15, 25, 155

• Warna 0 : $\sqrt{(15-0)^2+(25-0)^2+(155-0)^2} = \sqrt{225+625+24025}$
$= \sqrt{24875} = 157,71$

• Warna 1 : $\sqrt{(15-255)^2+(25-0)^2+(155-0)^2} = \sqrt{57600+625+24025}$
$= \sqrt{82250} = 286,79$

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

• Warna 3 : $\sqrt{(15-0)^2+(25-0)^2+(155-255)^2} = \sqrt{225+625+10000}$
$= \sqrt{10850} = 104,16$

9. Pixel (2,2) = 143, 100, 123

• Warna 0 : $\sqrt{(143-0)^2+(100-0)^2+(123-0)^2} = \sqrt{20449+10000+15129}$
$= \sqrt{45578} = 213,49$

• Warna 1 : $\sqrt{(143-255)^2+(100-0)^2+(123-0)^2} = \sqrt{12544+10000+15129}$
$= \sqrt{37673} = 194,09$

• Warna 2 : $\sqrt{(143-0)^2+(100-255)^2+(123-0)^2} = \sqrt{20449+24025+15129}$
$= \sqrt{59603} = 244,13$

• Warna 3 : $\sqrt{(143-0)^2+(100-0)^2+(123-255)^2} = \sqrt{20449+10000+17424}$
$= \sqrt{47873} = 218,79$

Hasil akhir :

Merah	Hitam	Merah
Merah	Hijau	Hitam
Hijau	Biru	Merah

→

1	0	1
1	2	0
2	3	1

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