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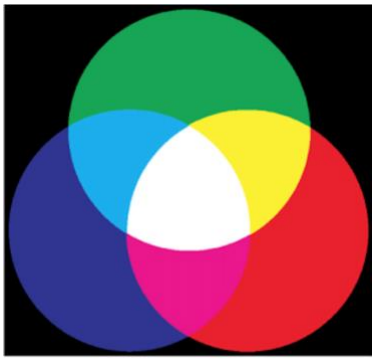
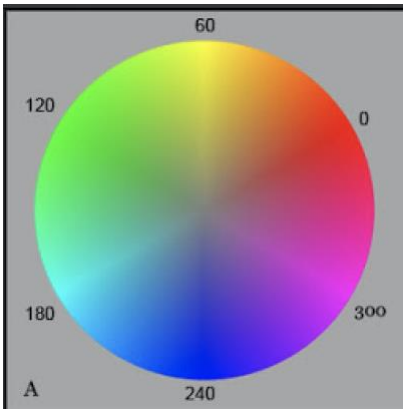
Theory HW Assignment 3

Q1. From the 3 graphs we can conclude that Green has higher intensity level. So the final color will be a shade of green color.

Q2. i)



Referring to RGB color model, we want to find gray level for blue, magenta, white and black regions.



Blue has an angle of 240 and Magenta has angle of 300.

So, Blue will have the following hue value: 240/360 * 255 = 170.

Similarly, Magenta has following hue value: 300/360 * 255 = 212.5

Now, white has equal amounts of red, blue and green values. So, hue is 0.

Similarly, Black has no amount of red, blue and green values. So, hue is 0.

ii) Saturation Component:

Center region is white, so its value is 0.

All other regions have a value of 255.

iii) Intensity Component:

The darker gray region has one color. So, all 3 will have intensity as 85.

The lighter gray region has 2 colors. So, all 3 will have intensity as 85 x 2 = 170.

The center region has 3 colors. So, Intensity is 85 x 3 = 255.

Black region has intensity 0.

Q3.

i) Saturation is 1 for each square since it is given that each square is fully saturated.

Hue is 0 for red, 0.33 for green and 0.66 for blue.

Intensity is 1/3 for each square.

ii) The saturation component does not change on applying mask because it is constant.

iii) Hue component will vary from 0 to 0.33 when mask is applied at red and green border.

Hue component will vary from 0.33 to 0.66 when mask is applied at green and blue border.

Q4.

16x16 DCT will have greater compression as compared to 8x8 DCT as it has smaller coefficients.