Brac University
Department of Computer Science and Engineering
CSE423: Computer Graphics
Assignment 03

1. As a digital artist preparing artwork for both print and web, you receive a color specified in the CMY model with Cyan = 0.40, Magenta = 0.10, and Yellow = 0.60 values. Since your editing software works best with HSV values for fine-tuning hues and brightness, you need to convert this CMY color into the HSV color model. What are the corresponding Hue (in degrees), Saturation, and Value for this color? [5]
2. You are analyzing a digital image pixel described as follows: its red component is exactly half the intensity of its green component, and its blue component is one quarter of the green component's intensity. The green intensity is 204 (on a scale from 0 to 255). Using these relationships, first determine the RGB values of the pixel. Then, convert this RGB color to the HLS color model, expressing Hue in degrees, Lightness and Saturation as values between 0 and 1. [5]
3. A 3D point $(180,-250,450)$ is to be projected onto a projection plane whose center lies at $(0,0,550)$. The Center of Projection (COP) lies somewhere on the line passing through points $(2,1,0)$ and $(14,7,6)$, exactly 25 units from the point $(2,1,0)$ along this line. Using this information, answer the following questions:
    a. The coordinates of the COP. [4]
    b. The coordinates of the projected point on the projection plane using a general-purpose perspective projection matrix. [4]
    c. The distance between the projection plane and the COP. [2]