

# Assignment no. 3

7 – 21 April 2020

1. **4pts** What is the color of the pixel (6, 7) (red square), if the object in the figure is obtained by rasterization of a pyramid given by vertices

$$V_0 = (0, 0, 0), V_1 = (1, 0, 0), V_2 = (0, 1, 0), V_3 = (1, 1, 0), V_4 = \left(\frac{1}{2}, \frac{1}{2}, 2\right).$$

The Phong illumination and the Phong shading is used. Assume, that vectors  $\vec{l}, \vec{v}$  have values  $\vec{l} = \left(\frac{7}{4}, \frac{5}{4}, 1\right)$  and  $\vec{v} = \left(\frac{7}{4}, \frac{9}{4}, 0\right)$ , and the pyramid is made of nephrite, i.e.  $k_a = (0.135, 0.223, 0.158), k_d = (0.54, 0.89, 0.63), k_s = (0.316, 0.316, 0.316), n_s = 12.8$  and the RGB color of the light source is (0, 1.0, 0.66) and has the ambient coefficient equal to 5%.

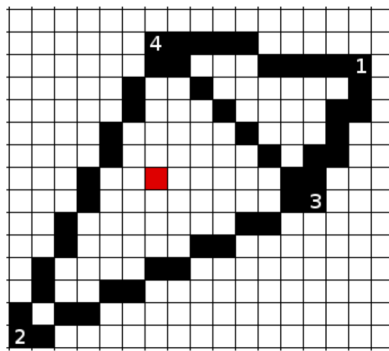


Fig. 1: The numbers determine the indices of the corresponding vertices.

## Instructions on the assignment

To obtain maximum points, include all your computations, comment them richly and illustrate them with pictures, where necessary.

To get the correct answers you may need to use the calculator or the computational software. Round the numbers to **three** decimal places throughout your computations.

Your solution is submitted by the form on the website. You may submit it as a set of photographs of sufficient resolution and sharpness (it needs to be easy to read), or you may write your solutions in LaTeX.