

Computer Graphics – Exam

Exam consist of 15 multichoice tasks, each chaving three questions with answers **Yes** or **No**. For each correct answer you get 1 point and for three correct answers within one task there is 1 bonus point. Thus, for each task it is possible to get **0, 1, 2, or 4 points**. To pass the exam it is necessary to get at least **30 points** (half of all points).

Time: **60 minutes**. *Good luck!*

Task 1. *Complementary color to (1,1,0) in RGB model is*

☒ (0,0,1)

☐ (1,1,1)

☐ (0,0,0)

Task 2. *The following is true*

☒ *In RGB model if we add a color with its complementary color we get white color*

☐ *If (s,m,y) represents a color in CMY model, then (y,m,s) represents this color in RGB model*

☐ *A gray color in RGB model has all components: red, green and blue of the same amount*

Task 3. *The following is true*

☐ *Depth sort is an algorithm with image precision*

☐ *In backface removal algorithm if the angle between the normal vector to a face of an object and the vector to the viewer is between 0 and 90 degrees, then we do not remove this face*

☐ *In object precision algorithms we compare objects with themselves*

Task 4. *Point (1, -2, 4) has the same homogeneous coordinates as a point*

☒ (3, -6, 12)

☐ (-1, 2, -4)

☐ (2, -1, 5)

Task 5. *In homogeneous coordinates:*

☐ *translation is a linear transformation*

☒ *scaling is not a linear transformation*

☐ *perspective projection is a linear transformation*

Task 6. *Consider the following lines in the program:*

```
x+=3*cos(a);  
y+=3*sin(a);
```

where (x,y) is a position and a some fixed angle. Then

☒ *equations define the move along a circle*

☐ *the distance between current and the next position is 9 is 3*

☐ *if a = 0, then the position does not change False*

Task 7. *The following is true Ninguna*

☐ *There are two types of lights in computer graphics: ambient and diffuse False*

☐ Ambient light has its source at $(0,0,0)$

☐ Diffuse light is sourceless

Task 8. The normal vector to a face is necessary

☐ to compute angle of incidence and reflection of a light

☐ to use shading algorithms

☐ to distinguish between front and the back of a face

☒ **Task 9.** To draw a triangle in OpenGL 2.1 we may use

☒ GL_TRIANGLES

☐ GL_QUADS

☒ GL_POLYGON

☒ **Task 10.** If $p = (1, 2, 3)$ and we apply transformation `glTranslatef(-1, -1, 2)` to p , then

☐ the new position of p is $(0, 1, 1)$

☒ the new position of p is $(0, 1, 5)$

☐ the distance between new and old positions of p is $\sqrt{15}$

Task 11. The following is true

☐ we use orthographic projection mainly for 3D graphics

☐ we use perspective projection mainly for 2D graphics

☐ orthographic projection may project cube to a rectangle

Task 12. Consider the following list of vertices: $v_1 (0,0,0)$; $v_2 (1,0,0)$; $v_3 (0,1,0)$; $v_4 (0,0,1)$. Then

☐ the following list of faces: $f_1 1\ 2\ 3$; $f_2 1\ 2\ 4$; $f_3 1\ 3\ 4$; $f_4 2\ 3\ 4$; represents tetrahedron

☐ The list: $f\ 1\ 3\ 4$ made of one face represents a triangle

☐ The following list of lines: $l_1 1\ 2$; $l_2 1\ 3$; $l_3 1\ 4$; represents edges of a triangle

Task 13. Let T be a translation by a nonzero vector and R a rotation by an angle 30° around some vector. Then

☐ $TR = RT$

☐ the inverse transformation T^{-1} is a translation

☐ the inverse transformation R^{-1} is a rotation

Task 14. If `DrawCube()` is a function drawing a cube centered at $(1, 1, 1)$, then

☐ `glTranslatef(-1, 0, 2); DrawCube();` draws a cube centered at $(0, 1, 3)$

☐ `glRotatef(30, 0, 1, 1); DrawCube();` draws a cube centered at $(0, 0, 0)$

☐ `glScalef(2, 2, 2); DrawCube();` draws a cube centered at $(1, 1, 1)$

Task 15. The following is true

☐ In raster graphics image is made of rectangular pixels

☐ Scaling changes the quality of an image in vector graphics

☒ Rotation may change the quality of an object in raster graphics