

Exam i Computer Graphics

21 august 2008, 14-19

Electronic calculator NOT allowed

- Explain in words the vector operation *cross product*. (0.5)
 - Give a formula for the *projection* of a vector a with respect to another vector b . (0.5)
- Explain the concept of *texture mapping*. (0.7)
 - What is *image based lighting*. (0.3)
- Explain how *bilinear interpolation* is done. (0.6)
 - With Catmull-Rom-interpolation tangents are computed automatically. Explain how. (0.4)
- Give the formula for each of the terms in the Phong reflection model. (1.0).
- Describe what is displayed on the screen after a call to the function `draw()` below (0.8).

```
def draw():
    glColor(1,0,0)
    glPushMatrix()
    glTranslate(2,0,0)
    glRotate(180, 0,0,1)
    glScale(2,1,1)
    glPushMatrix()
    glTranslate(1,1,0)
    drawSquare()

    glColor(0,1,0)
    glPopMatrix()
    glRotate(90, 0,0,-1)
    glScale(2,2,1)
    glPushMatrix()
    glTranslate(0,1,0)
    drawSquare()

def drawSquare():
    glBegin(GL_QUADS)
    glVertex(0,0,0)
    glVertex(0,1,0)
    glVertex(1,1,0)
    glVertex(1,0,0)
    glEnd()
```

- What is a *display list* in OpenGL (0.2):
- Explain, as detailed as you can, the process of a rasterizing renderer when it creates an image from a scene description. (1.0).

THE END!