Problem 5: C++ and OpenGL

Familiarize yourself with the C++/OpenGL/SDL template given on the lecture webpage if you want to use C++ for this exercise. Recommended OpenGL functions for the given problems are: `glMultMatrix`, `gluLookAt`.

Problem 6: Quaternion Interpolation

Given the orientation and texture data provided on the lecture webpage, create a set of textured unit cubes on the x-y plane and rotate at least one of the objects around its local origin. Use SLERP (1) to obtain interpolated quaternions.

\[
slerp(Q_1, Q_2, t) = \frac{\sin((1-t)\alpha)}{\sin(\alpha)} \cdot Q_1 + \frac{\sin(t\alpha)}{\sin(\alpha)} \cdot Q_2 \tag{1}\n\]

Problem 7: Rotation with Quaternions

Position the camera at (6, 0, 7), pointing towards the origin. Use quaternion maths to rotate the camera around the global origin on a plane orthogonal to (7, 0, −6), while keeping it pointed towards the center. An example of a final scene composition is shown in Figure 1.

![Figure 1: Camera and cube rotation.](image)