Computer Graphics
Assignment 1

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Question 1

Rotating a button and the whole calculator are different as their axis of rotation are different. The whole calculator goes rotating about the origin(center of the calculator), where as a specific button rotates about its own center.

We use glRotate(alpha, x, y, z) to rotate an object in the scene, where alpha in the angle of rotation and x y z specify the vector of rotation.

We can not rotate the specific button about its center in openGL, hence we have to translate it to the origin, rotate it there and translate it back to the original position.

Question 2

When we do a certain transformation, we multiply our matrix with a transformation matrix. Every transformation leads to a different matrix, hence to get back the matrix we just have to multiply the whole matrix with the inverse of all the transformation matrix combined.

Here we use an inverse projection matrix with the help of \\ GluUnproject() \\ to get the original coordinate system back.

Reference:

https://www.khronos.org/registry/OpenGL-Refpages/gl2.1/xhtml/glRotate.xml

https://www.khronos.org/registry/OpenGL-Refpages/gl2.1/xhtml/gluUnProject.xml