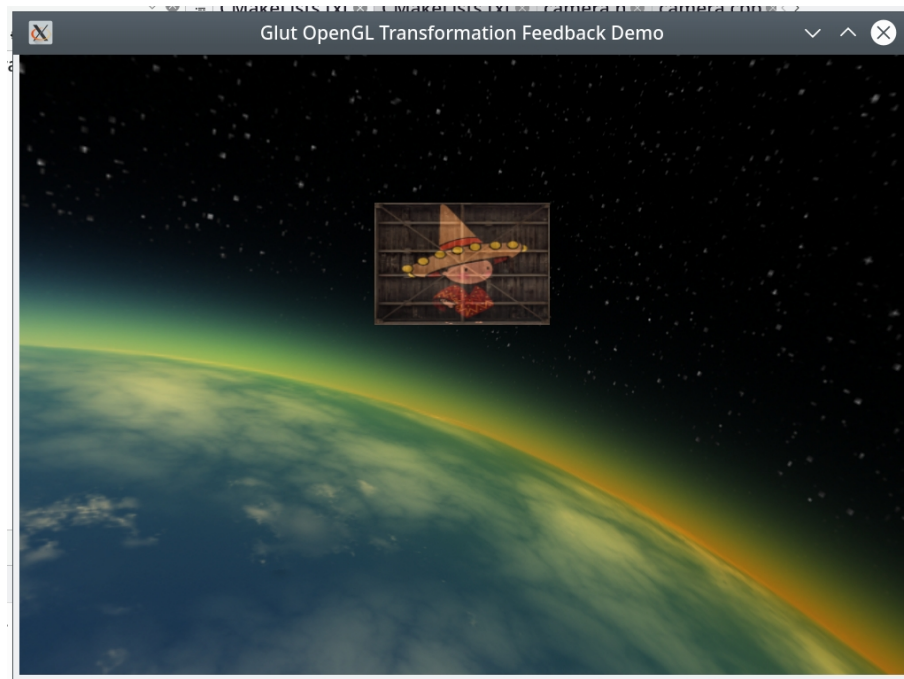
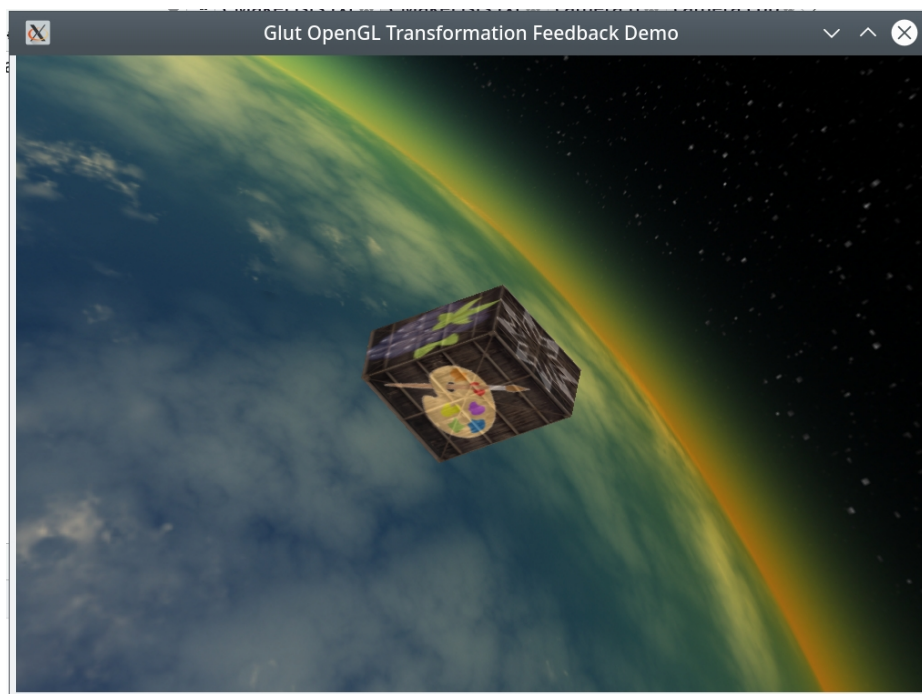


## GlutTransform – Transformation Feedback



Translation



Rotation

Transformation feedback is the process of taking a defined OpenGL object buffer altering it in a shader passing it to another buffer instead of writing the object to the framebuffer and then taking that result and drawing it using a simple drawing shader and, once again, passing it to the alteration shader. By incrementing the values in the alteration shader one can rotate, translate or scale the object, but because the values are incrementations of the previous values, rotation and scaling cannot be done at the same time. To demonstrate these two techniques combined with scaling, the program provides two separate drawings that one can view by clicking on the screen two switch between them. To move the object in rotation mode simply move the mouse. In translation mode, use the WASD keys and R for up and F for down. The program is documented and comes in under the Lesser GNU Public License as an open source program. The real use as I see it for this technique, is for stationary objects that spin and/or oscillate or perhaps have a dying motion coming to rest.

What follows is the contents of the README.txt file:

GlutTransform is a program that displays two examples of transformation feedback. One display is rotation and scaling of an object and the other is translation and scaling. You can cycle between the two displays by clicking on the window. The rotation display can be manipulated by moving the mouse. The translation display has a number of keys enabled.

The keys are as follows.

a right  
s back  
d left  
w forward  
r up  
f down

For both displays:

Escape ends the program  
Alt+Return sets full screen.

To compile the program you will need the following libraries:

FreeImage, SDL2, Boost, GLEW and pthreads.

You must also have cmake and doxygen.

The commands are:

mkdir build  
cd build  
cmake ..  
sudo make doc  
sudo make install

To run a program use:

gluttransform

The documentation is located in:

`/usr/share/doc/gluttransform-doc`

The sources I used to educate myself concerning OpenGL are as follows:

"OpenGL ES 3.0 Programming Guide Second Edition"  
by Dan Ginsburg and Budirijanto Purnomo published by Addison-Wesley 2014.  
[www.learnopengl.com](http://www.learnopengl.com). On pages 380-385 you will find the example this  
program was built from.  
GLEW <http://glew.sourceforge.net>, and  
CMAKE <http://www.cmake.org>.  
Doxygen <http://www.doxygen.nl>  
GraphViz <https://www.graphviz.org> for the "dot" program used by doxygen.  
SDL2 <https://wiki.libsdl.org/FrontPage>  
pthread <https://www.gnu.org/software/hurd/libpthread.html>  
OpenGL is generally available on any system as part  
of the underlying graphics subsystem and GLEW will  
get you access to it.

The program was written and compiled on debian linux available at: [www.debian.org](http://www.debian.org).

You can reach me at <[eberdeed@eberdeed.net](mailto:eberdeed@eberdeed.net)>.  
Updates will be available at [www.eberdeed.net](http://www.eberdeed.net).  
Edward Charles Eberle  
April 17th, 2020 San Diego, California United States of America

This program is licensed under the Lesser GNU Public license.  
It can be found in the LGPL directory  
and once installed it will be also found at  
`/usr/share/doc/gluttransform-doc/LGPL`. This  
program is given as an instructional aid for learning  
and using the libraries presented and is not to  
be considered fit for any particular use.