Tcl3D demos at a glance

Document generated with Tcl 8.4.14 on 2007/02/24 00:00:36

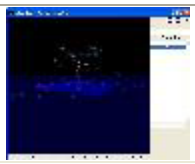
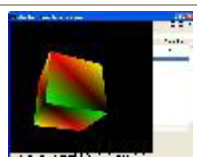
Overview	
Category	Type
LibrarySpecificDemos	tcl3dCg
	tcl3dFTGL
	tcl3dGauges
	tcl3dOde
	tcl3dOgl
	tcl3dOglExt
	tcl3dSDL
	tcl3dTogl
Tcl3DSpecificDemos	None
TutorialsAndBooks	CodeSampler
	GameProgrammer
	NeHe
	RedBook

Category:	**LibrarySpecificDemos**
Root:	Contents
Available types	
tcl3dCg	
tcl3dFTGL	
tcl3dGauges	
tcl3dOde	
tcl3dOgl	
tcl3dOglExt	
tcl3dSDL	
tcl3dTogl	

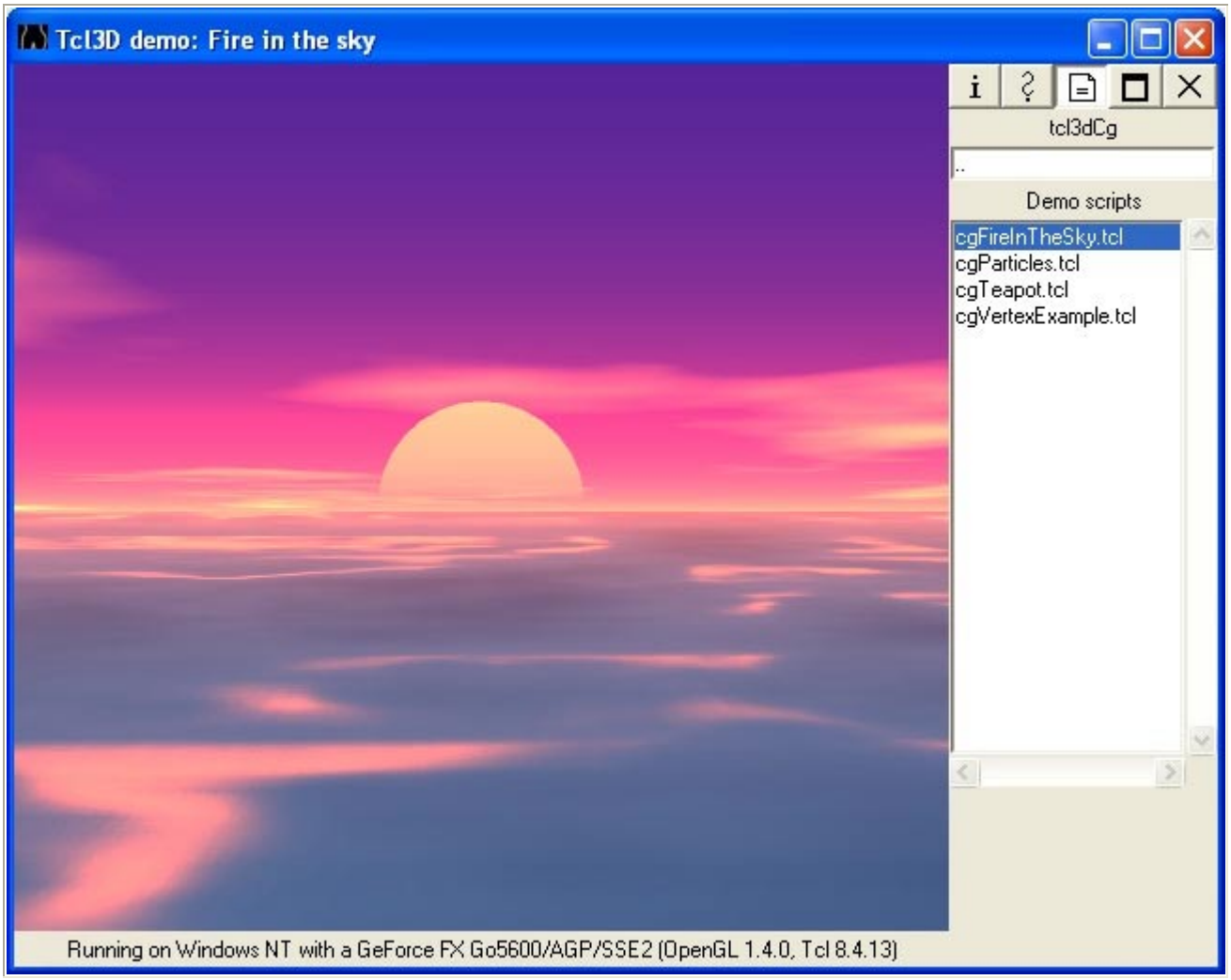
Type:	**tcl3dCg**
Category:	LibrarySpecificDemos
Root:	Contents

This section contains Cg demo applications from several resources, that have been ported to Tcl3D. The examples cover vertex and fragment shader programming in Cg.
Original sources from different sites. See the documentation for details.

Available demos

			
cgFireInTheSky	cgParticles	cgTeapot	cgVertexExample

Demo:	cgFireInTheSky
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents




```
cgFireInTheSky.tcl

Original files from: http://www.shadertech.com/shaders/FireInTheSky-src.zip

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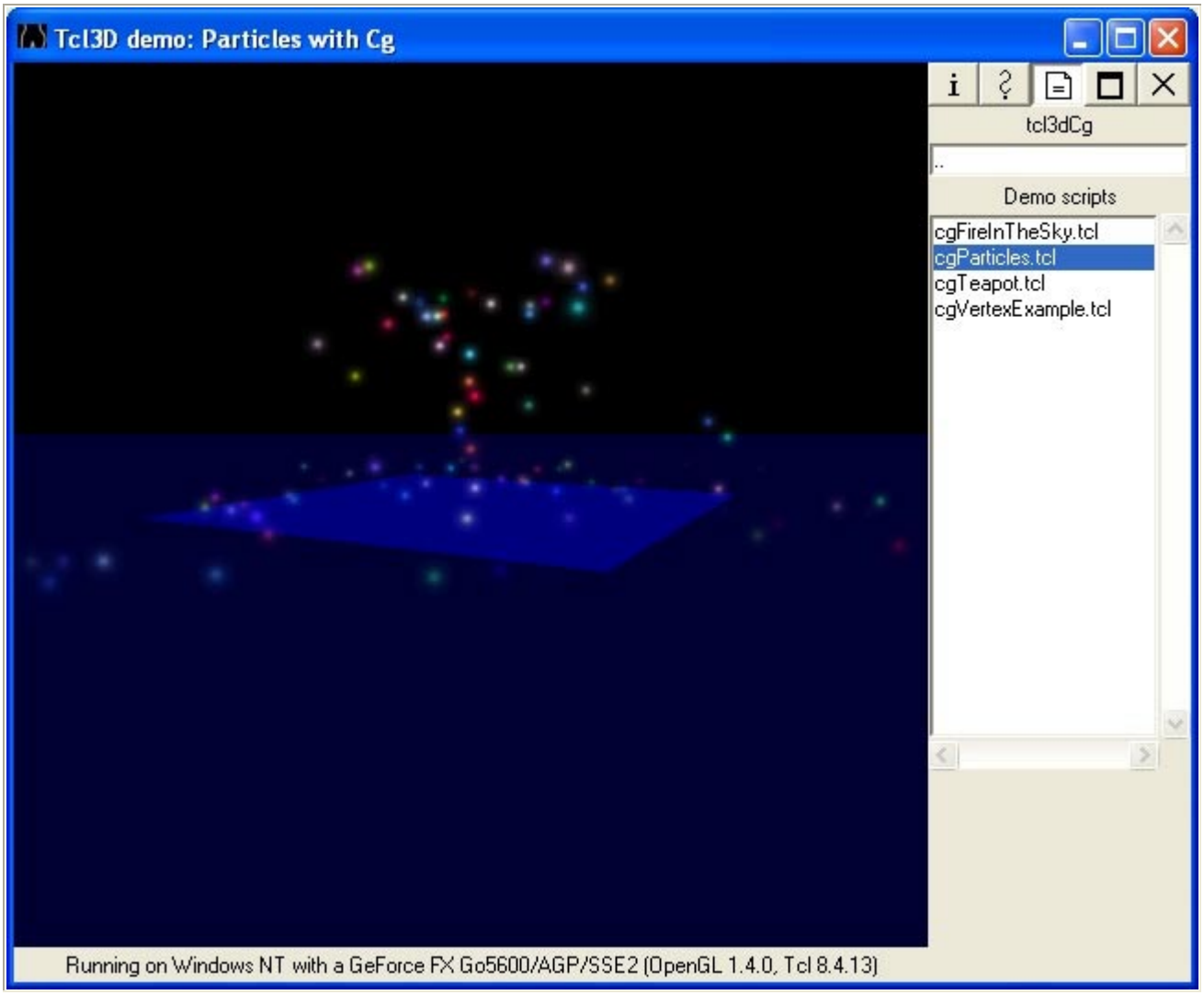
```

```
Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**cgParticles**
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents




```
cgParticles.tcl

Particle Effects using CG and OpenGL

Original files from: http://www.shadertech.com/shaders/ParticleSystem-src.zip

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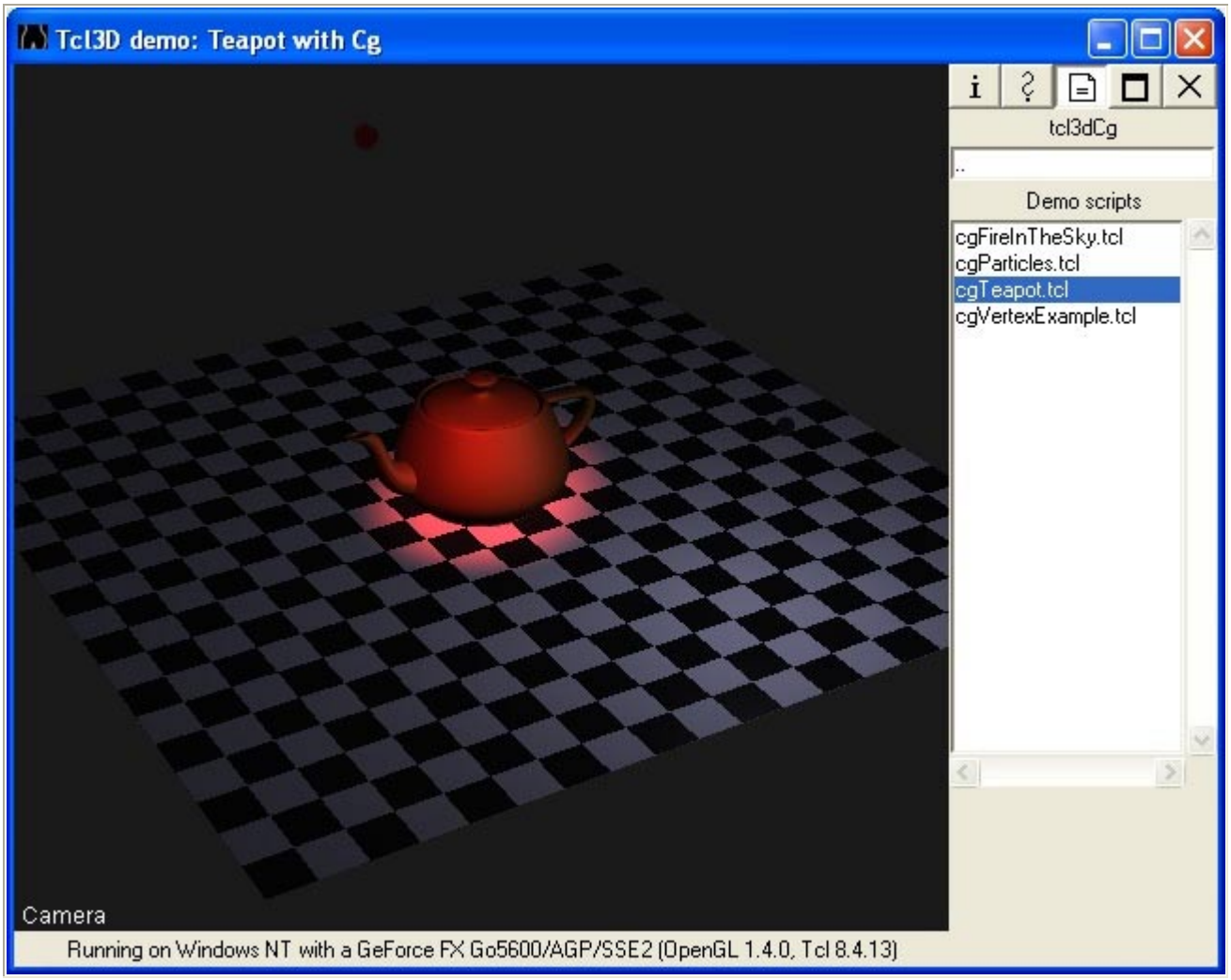
```

Demo:	**cgTeapot**
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents

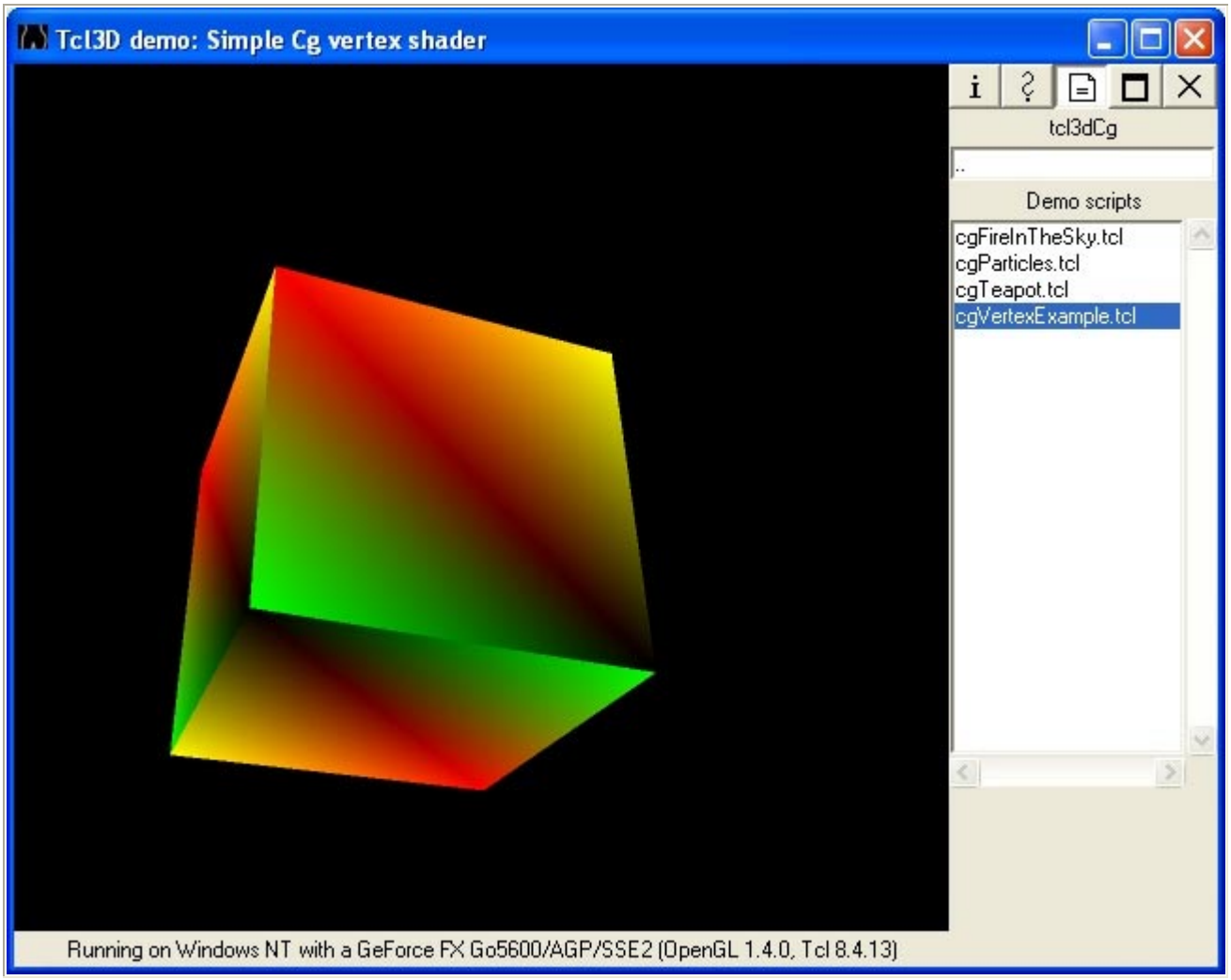



```
cgTeapot.tcl

Original files from: http://developer.nvidia.com/Cg
This is the example called interfaces_ogl as included in the Cg Toolkit.

Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.
```

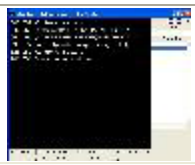
Demo:	**cgVertexExample**
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents



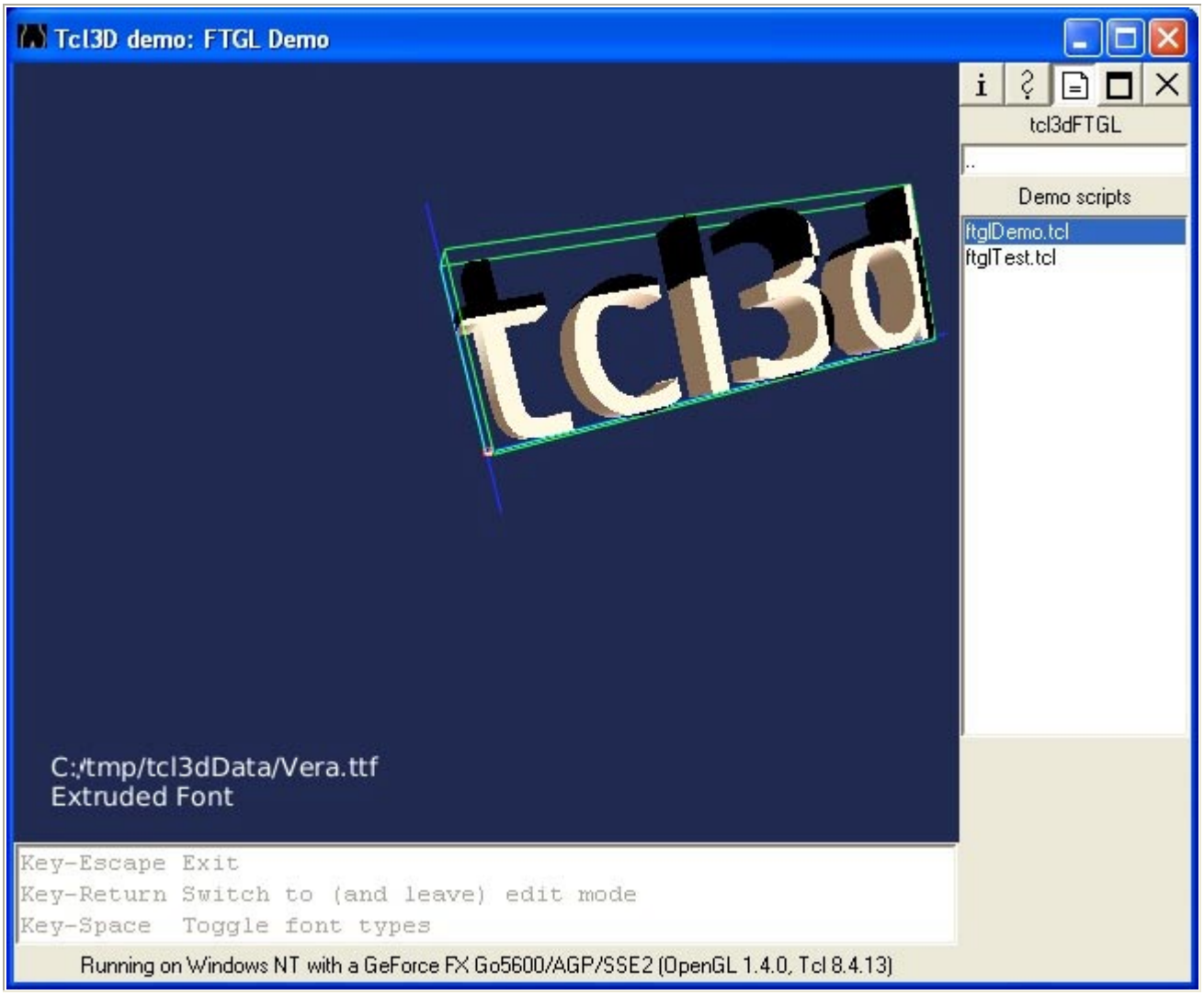

```
cgVertexExample.tcl

Original files from: http://developer.nvidia.com/Cg
This is the example called runtime_ogl as included in the Cg Toolkit.

Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.
```

Type:	**tcl3dFTGL**
Category:	LibrarySpecificDemos
Root:	Contents
This section contains FTGL demo applications written in Tcl3D. The examples cover the demo applications distributed with FTGL.	
Available demos	
	
ftglDemo	ftglTest

Demo:	**ftglDemo**
Type:	tcl3dFTGL
Category:	LibrarySpecificDemos
Root:	Contents




```
ftglDemo.tcl

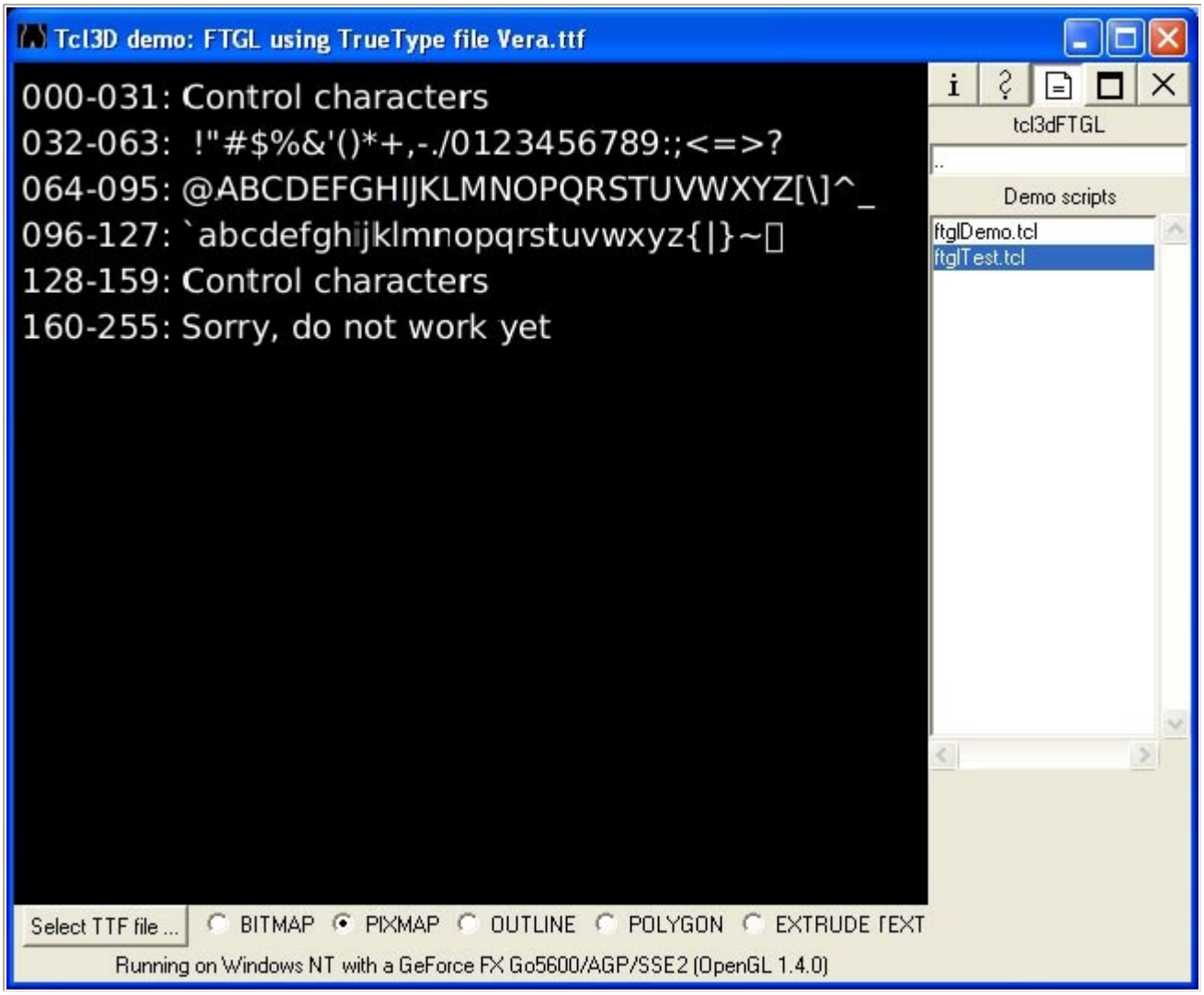
This demo demonstrates the different rendering styles available with FTGL.
Press <spacebar> to change the font rendering style.
Press <enter> to enable edit mode.

Please contact me if you have any suggestions, feature requests, or problems.

Henry Maddocks
henryj@paradise.net.nz
http://homepages.paradise.net.nz/henryj/

Modified for Tcl3D by Paul Obermeier 2006/01/18
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**ftglTest**
Type:	tcl3dFTGL
Category:	LibrarySpecificDemos
Root:	Contents

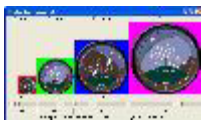



```
ftglTest.tcl

C++ source changed by mrn@paus.ch/ max rheiner
original source: henryj@paradise.net.nz

Modified for Tcl3D by Paul Obermeier 2006/01/18
See www.tcl3d.org for the Tcl3D extension.

A test program showing the 5 different font rendering types.
```

Type:	**tcl3dGauges**
Category:	LibrarySpecificDemos
Root:	Contents
This section contains demo applications written with Tcl3D extensions packages. The examples cover the tcl3dGauges package, which was supplied by Victor G. Bonilla.	
Available demos	
	
gaugedemo	gaugetest

Demo:	**gaugedemo**
Type:	tcl3dGauges
Category:	LibrarySpecificDemos
Root:	Contents


```
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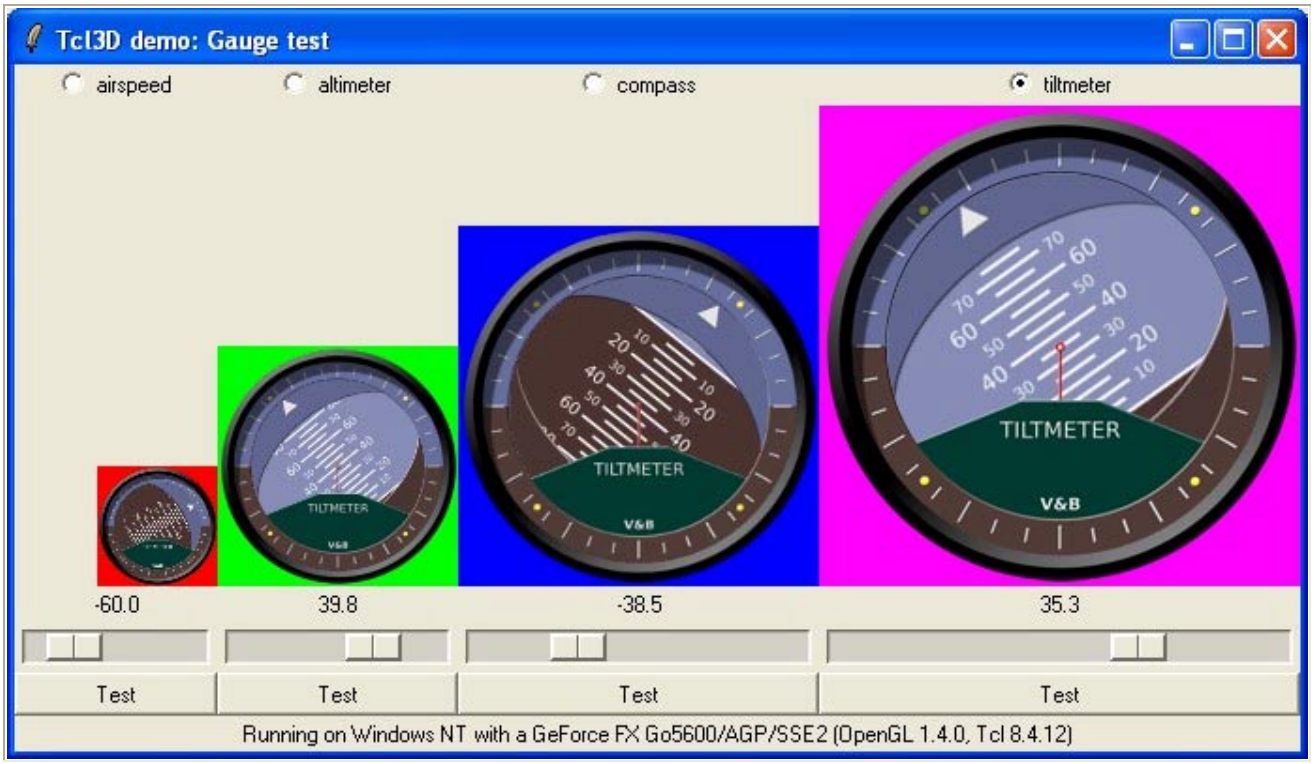
Module:         Tcl3D -> tcl3dGauges
Filename:       gaugedemo.tcl

Author:         Paul Obermeier

Description:    Demo program showing the use of the Tcl3D extension
                package gauge.
```

Demo:	**gaugetest**
Type:	tcl3dGauges
Category:	LibrarySpecificDemos
Root:	Contents

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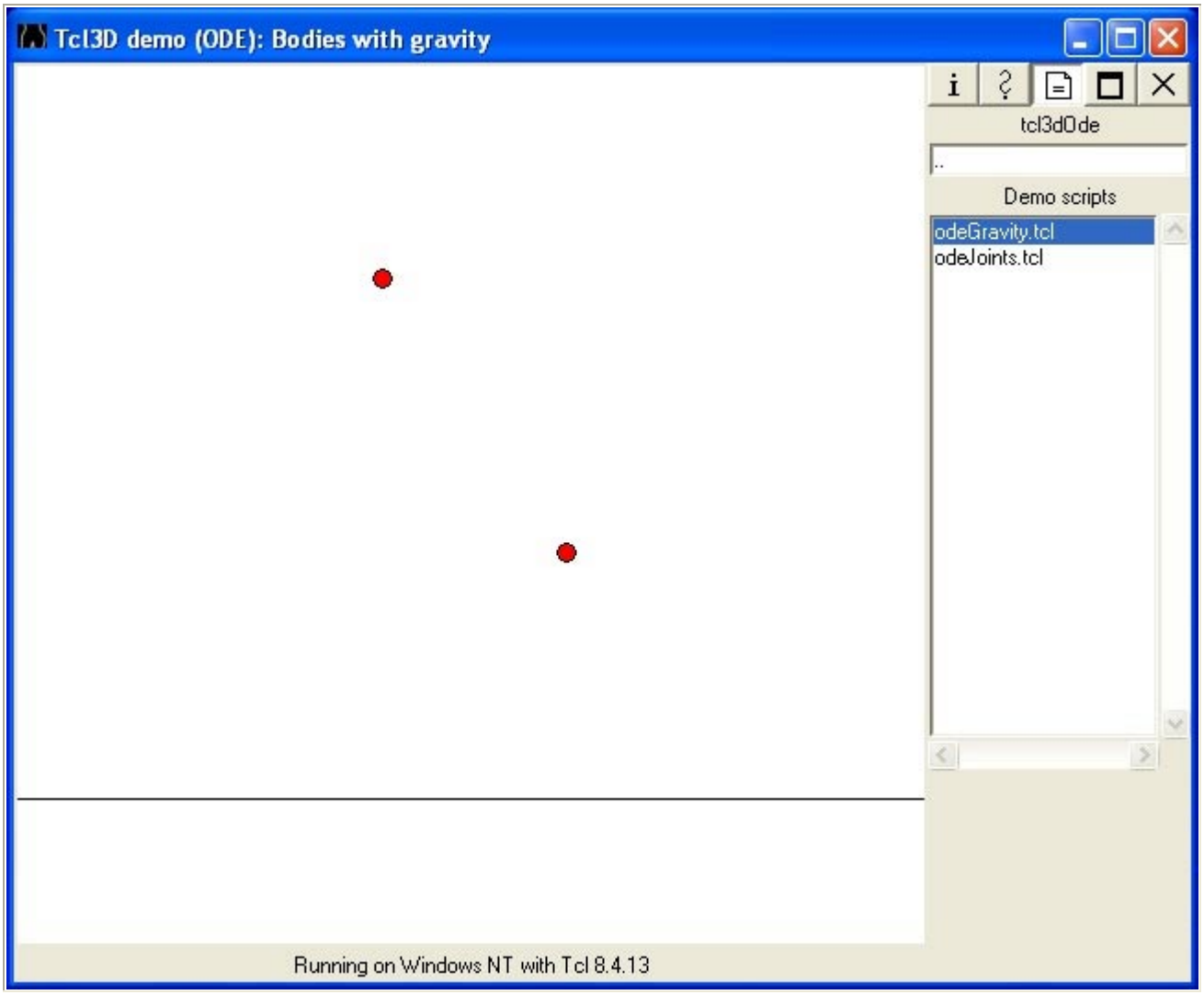
Module:         Tcl3D -> tcl3dGauges
Filename:       gaugetest.tcl

Author:         Paul Obermeier

Description:    Test program for the Tcl3D extension package gauge.
                The program allows to show the 4 gauges at different sizes.
```

Type:	**tcl3dOde**
Category:	LibrarySpecificDemos
Root:	Contents
This section contains ODE demo applications written in Tcl3D. The examples cover some demo applications distributed with PyOde.	
Available demos	
	
odeGravity	odeJoints

Demo:	**odeGravity**
Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents

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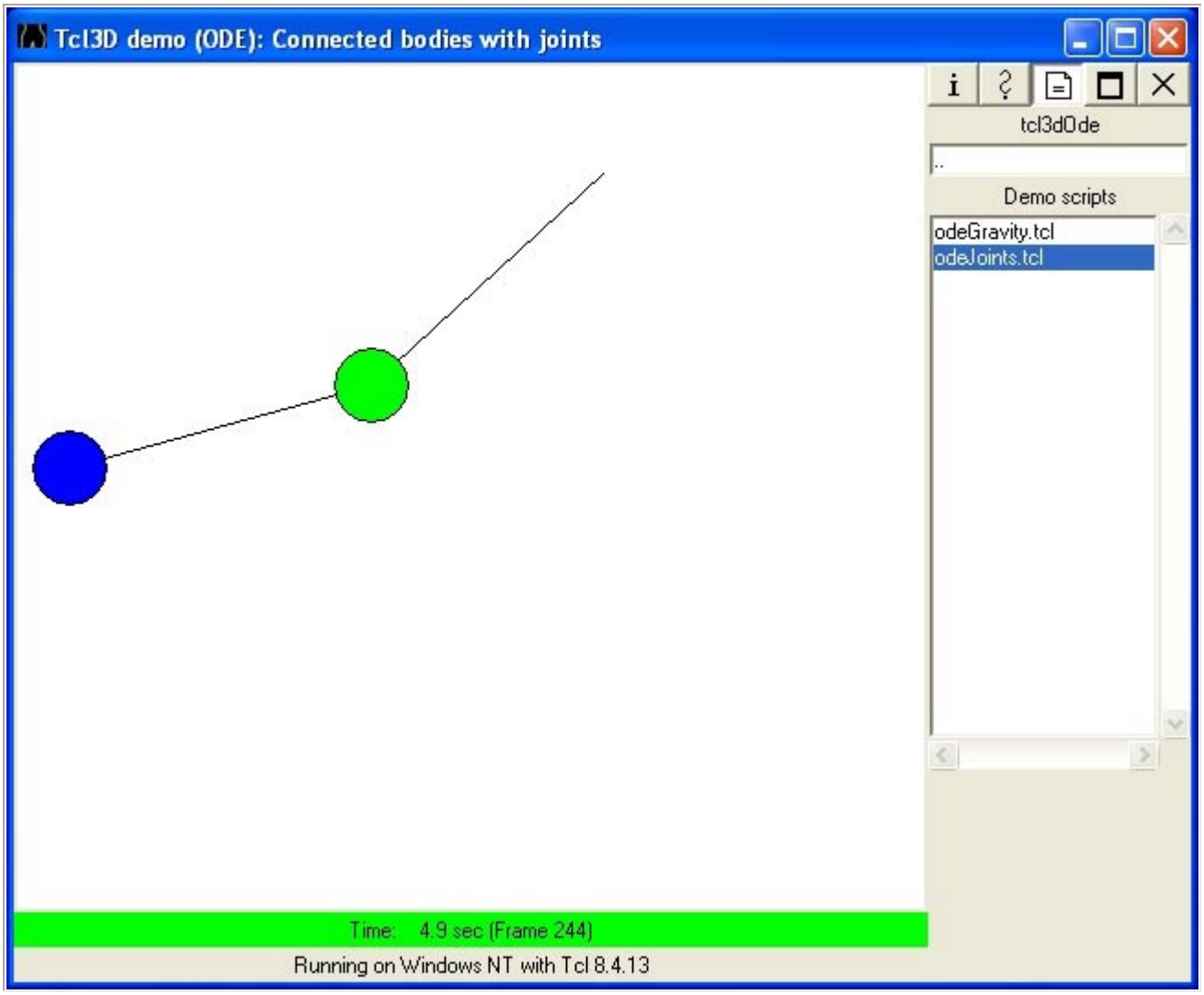
Module:         Tcl3D -> tcl3dOde
Filename:       odeGravity.tcl

Author:         Paul Obermeier

Description:    Tcl3D Ode example: Bodies influenced by gravity.
                Based on PyODE Tutorial 1 By Matthias Baas.
```

Demo:	**odeJoints**
Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents




```
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Module:         Tcl3D -> tcl3dOde
Filename:       odeJoints.tcl

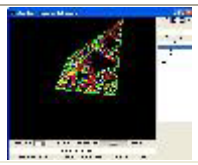
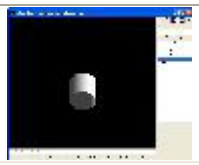
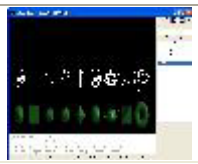
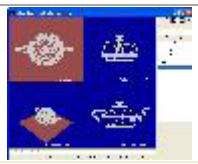
Author:         Paul Obermeier

Description:    Tcl3D Ode example: Connected bodies with joints
                Based on PyODE Tutorial 2 By Matthias Baas.
```

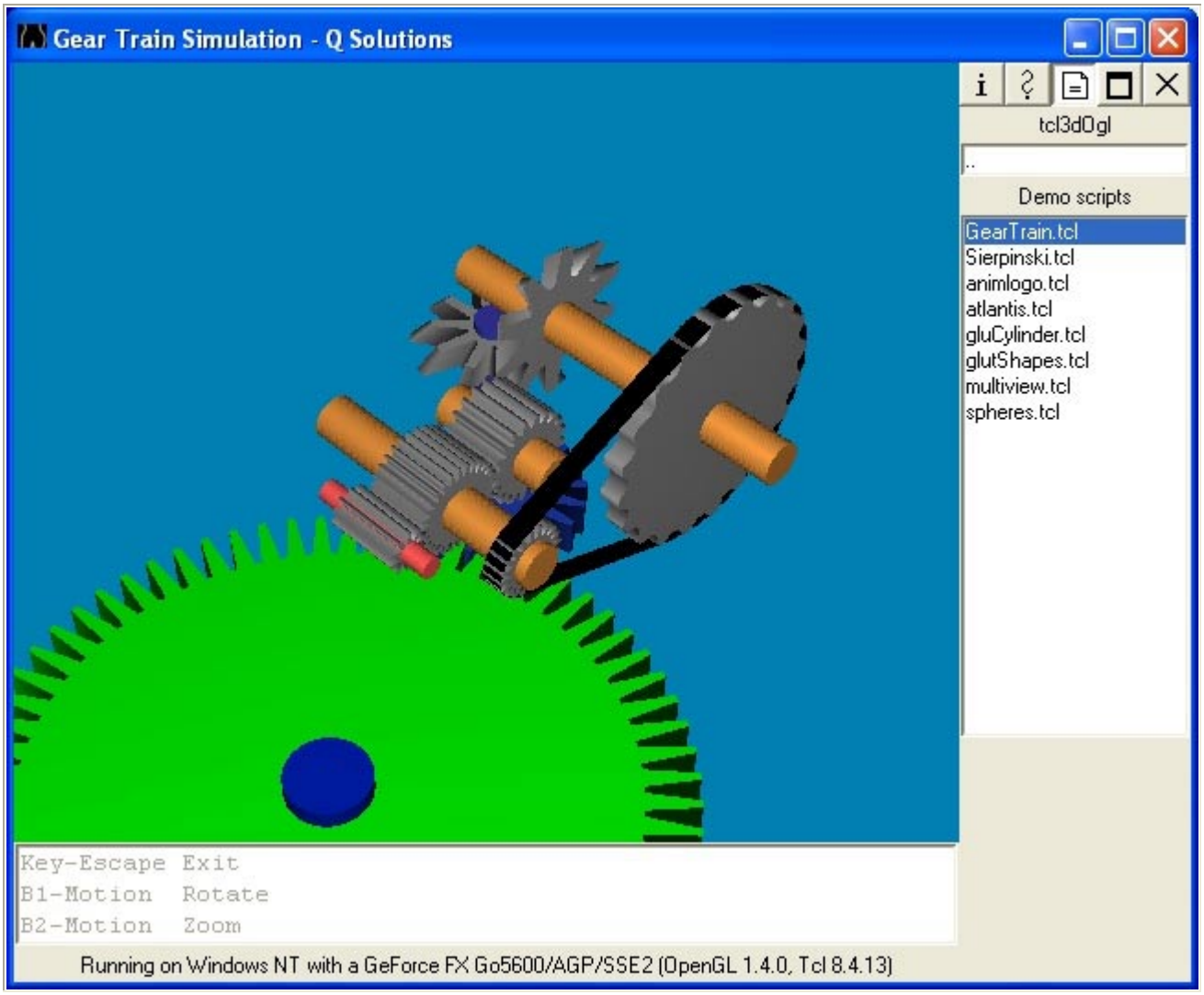
Type:	**tcl3dOgl**
Category:	LibrarySpecificDemos
Root:	Contents

This section contains OpenGL demo applications from several resources, that have been ported to Tcl3D. The examples cover basic OpenGL programming.
Original sources from different sites. See the documentation for details.

Available demos

				
GearTrain	Sierpinski	animlogo	atlantis	gluCylinder
				
glutShapes	multiview	spheres		

Demo:	GearTrain
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents




```
GearTrain.tcl

GearTrain Simulator * Version:  1.00

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<skdutta@del3.vsnl.net.in>

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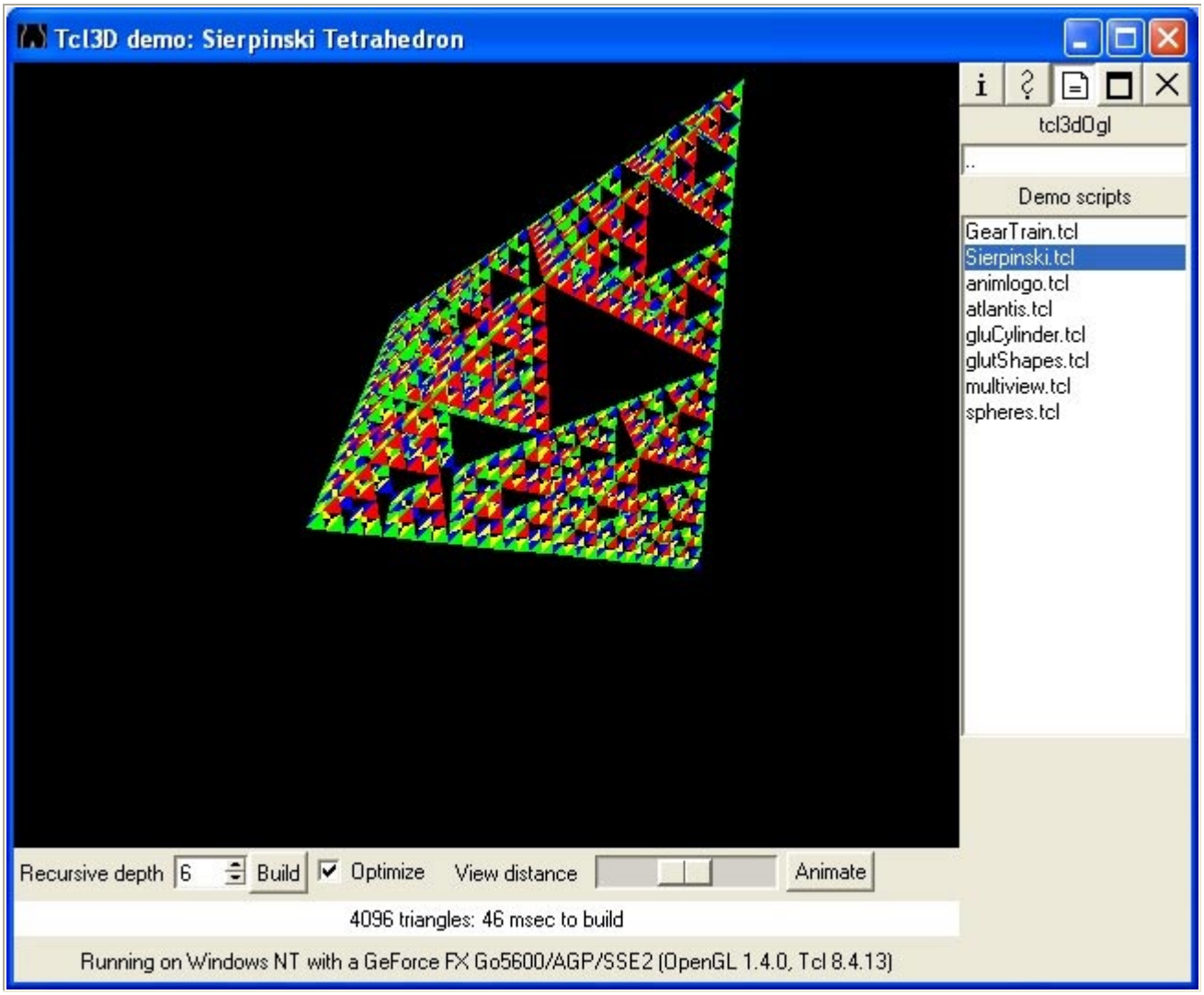
```

Demo:	**Sierpinski**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

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Module:         Tcl3D -> tcl3dOgl
Filename:       Sierpinski.tcl

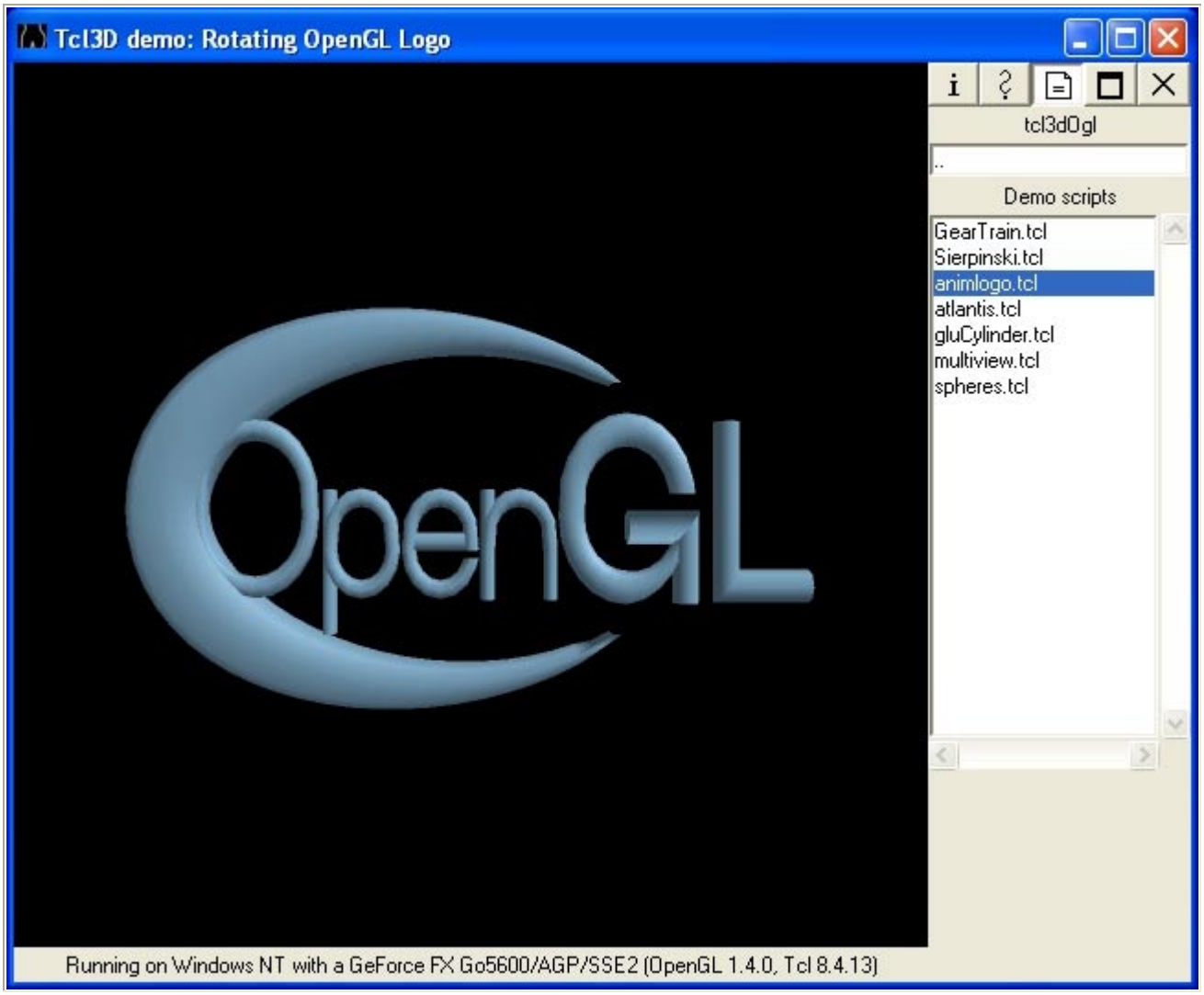
Author:         Paul Obermeier

Description:    Tcl3D demo displaying a 3D Sierpinski Tetrahedron.

                Derived from a demo by Gerard Sookahet (tetra-3dc.tcl),
                which used the 3dcanvas package.
                The original version is at: http://wiki.tcl.tk/11832.

                Incorporates optimization functions by Philip Quaife.
                See the Tcl'ers Wiki http://wiki.tcl.tk/14820 for a
                description of his optimizations.
```

Demo:	**animlogo**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents




```
animlogo.tcl

The animated OpenGL logo

This file is part of the openGL-logo demo.
(c) Henk Kok (kok@wins.uva.nl)

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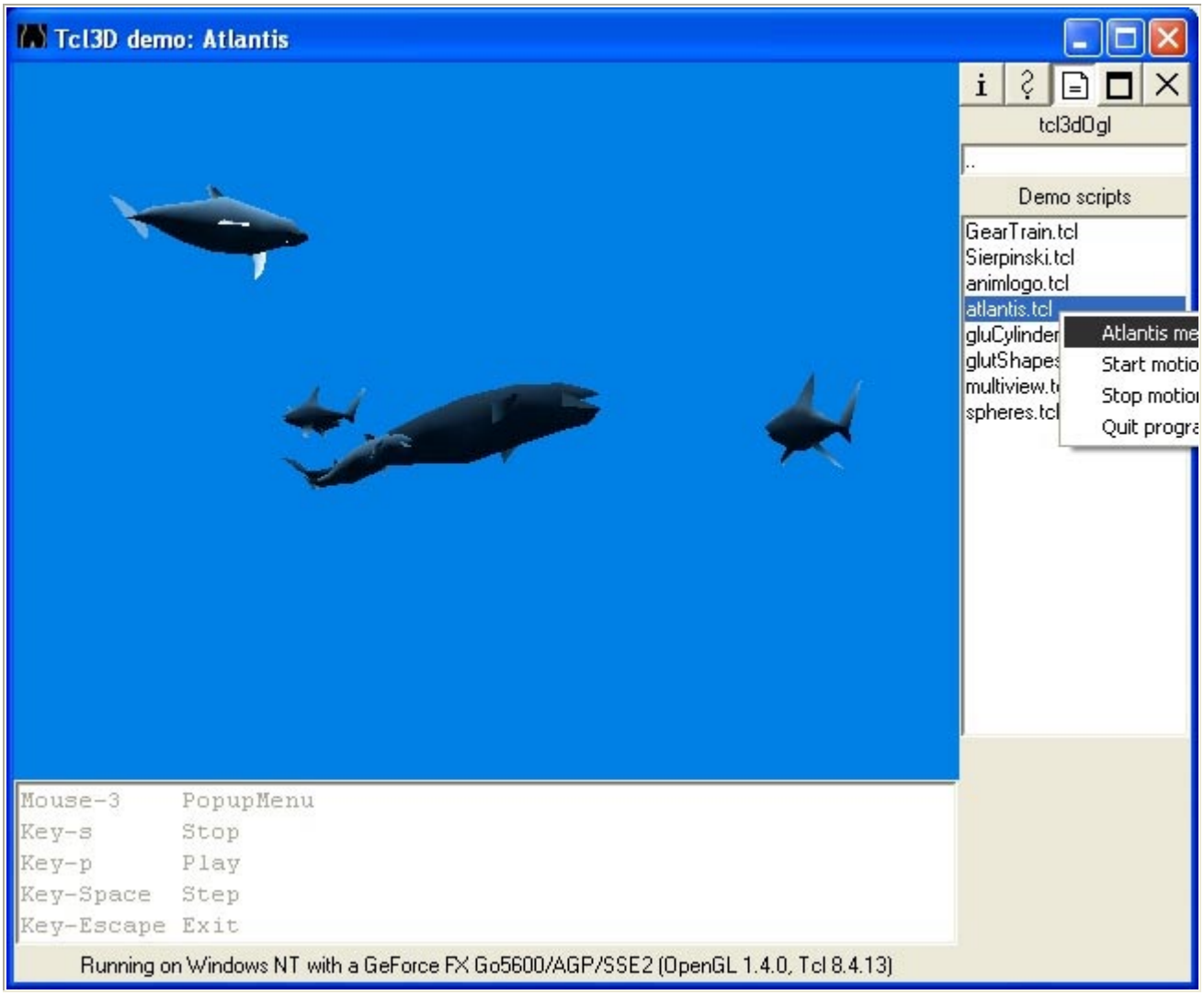
Original sources available at:
http://www.opengl.org/resources/code/samples/glut_examples/demos/demos.html

Modified for Tcl3D by Paul Obermeier 2006/08/02
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**atlantis**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents




```
atlantis.tcl

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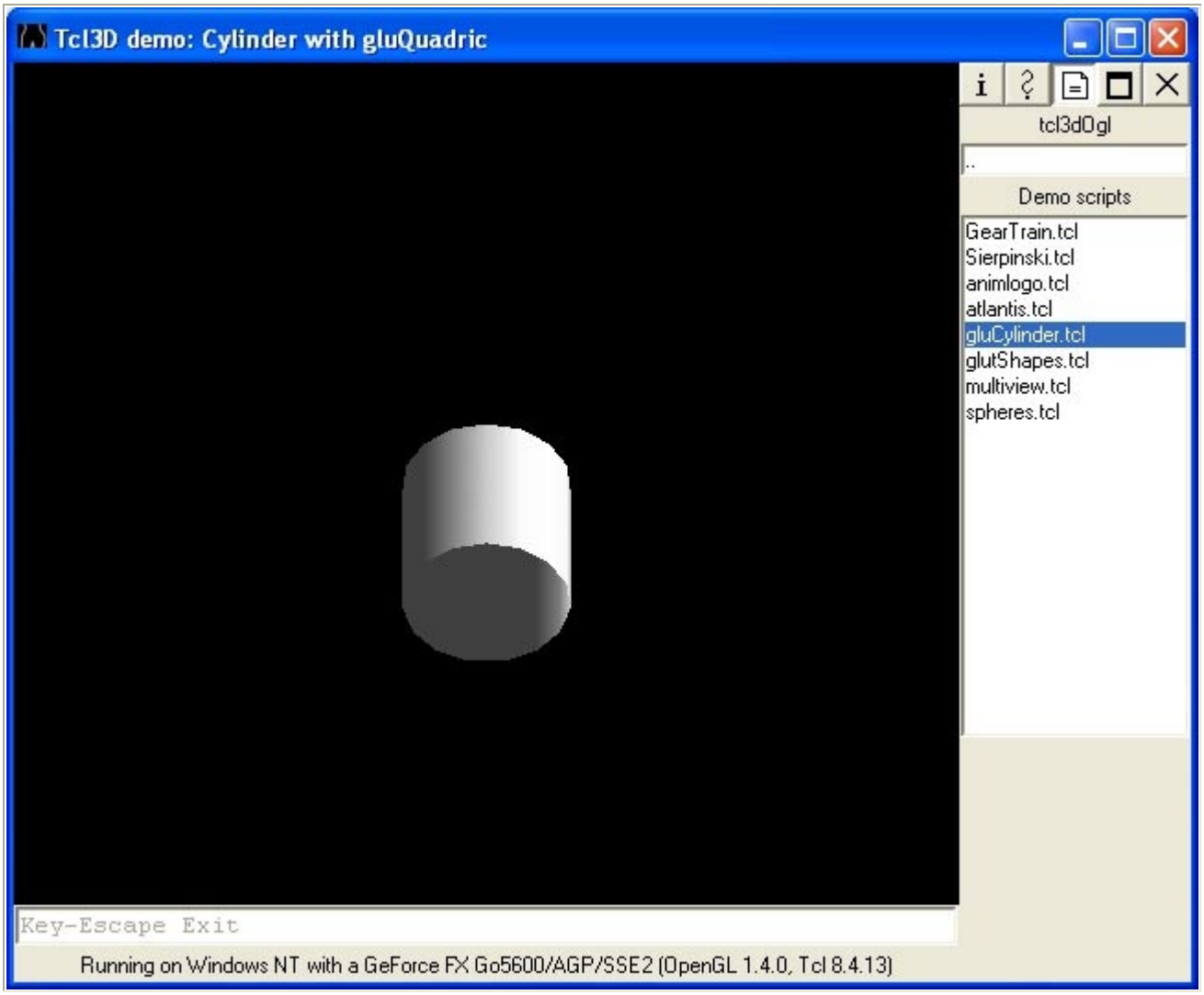
Original sources available at:
http://www.opengl.org/resources/code/samples/glut_examples/demos/demos.html

Modified for Tcl3D by Paul Obermeier 2005/08/14
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**gluCylinder**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents




```
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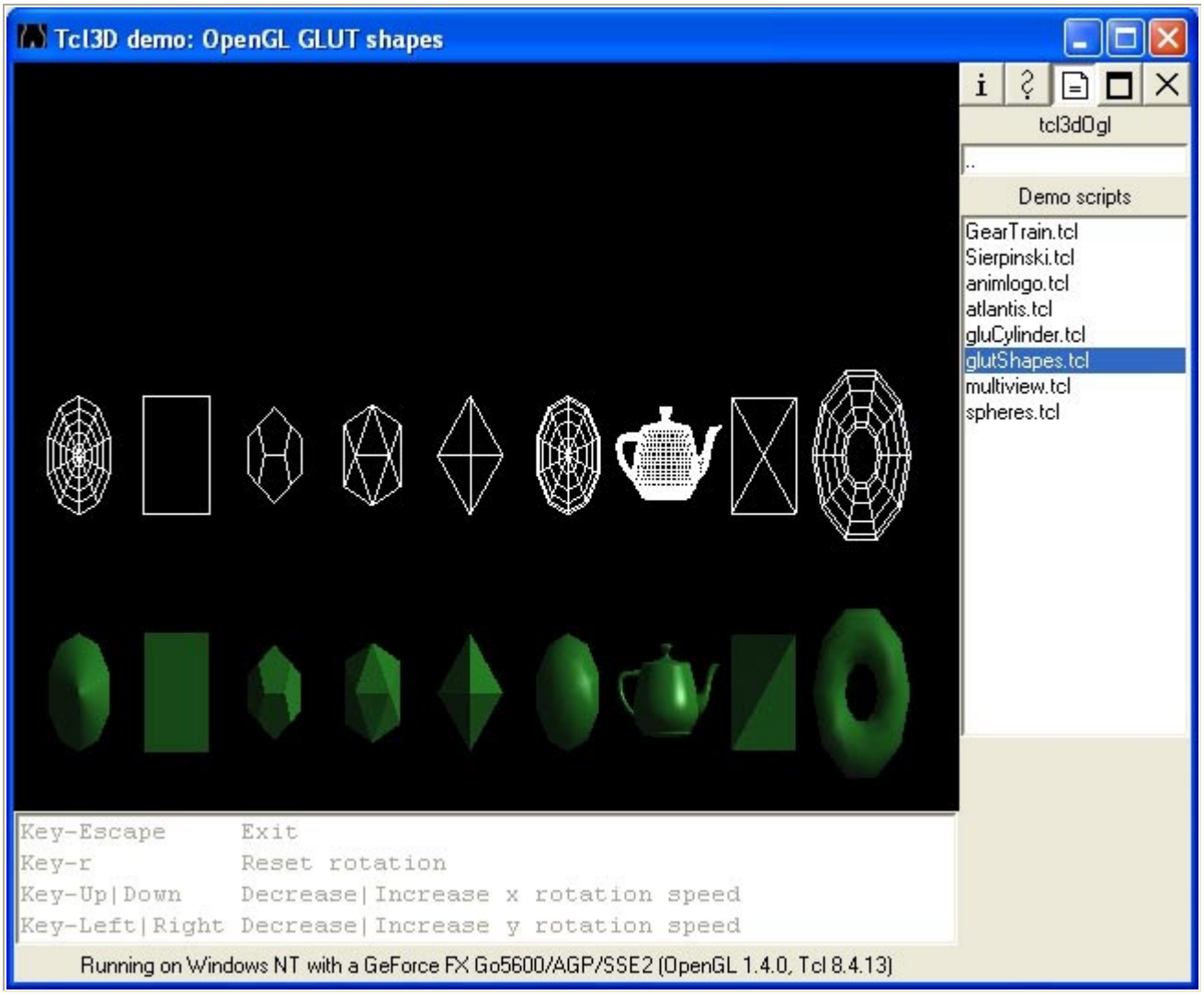
Module:         Tcl3D -> tcl3dOgl
Filename:       gluCylinder.tcl

Author:         Paul Obermeier

Description:    Tcl3D demo showing the use of gluQuadric routines
                to draw a cylinder.
```

Demo:	**glutShapes**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

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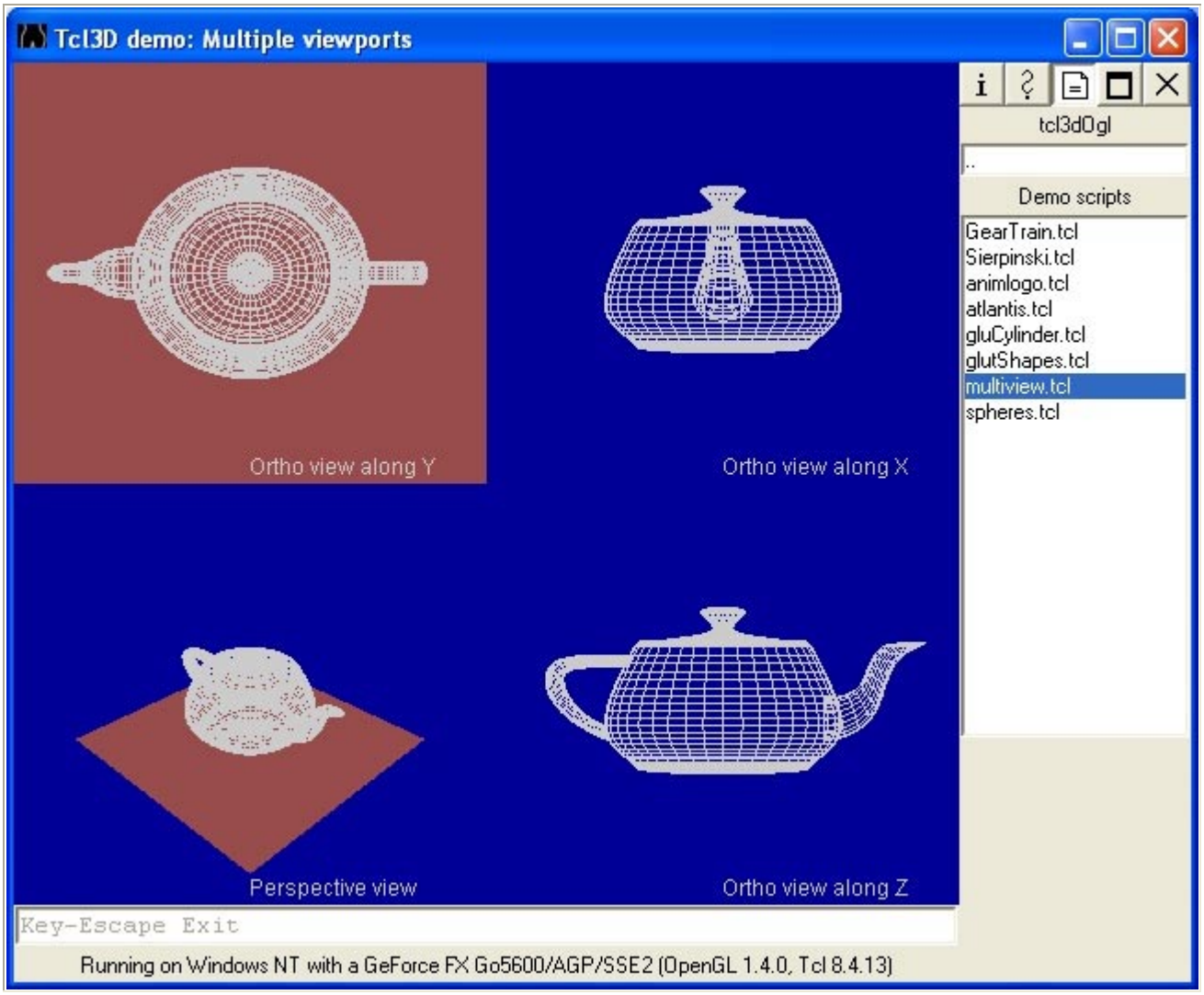
Module:         Tcl3D -> tcl3dOgl
Filename:       glutShapes.tcl

Author:         Paul Obermeier
Date:           2006-12-01

Description:    Tcl3D demo showing all supported GLUT shapes.
```

Demo:	**multiview**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

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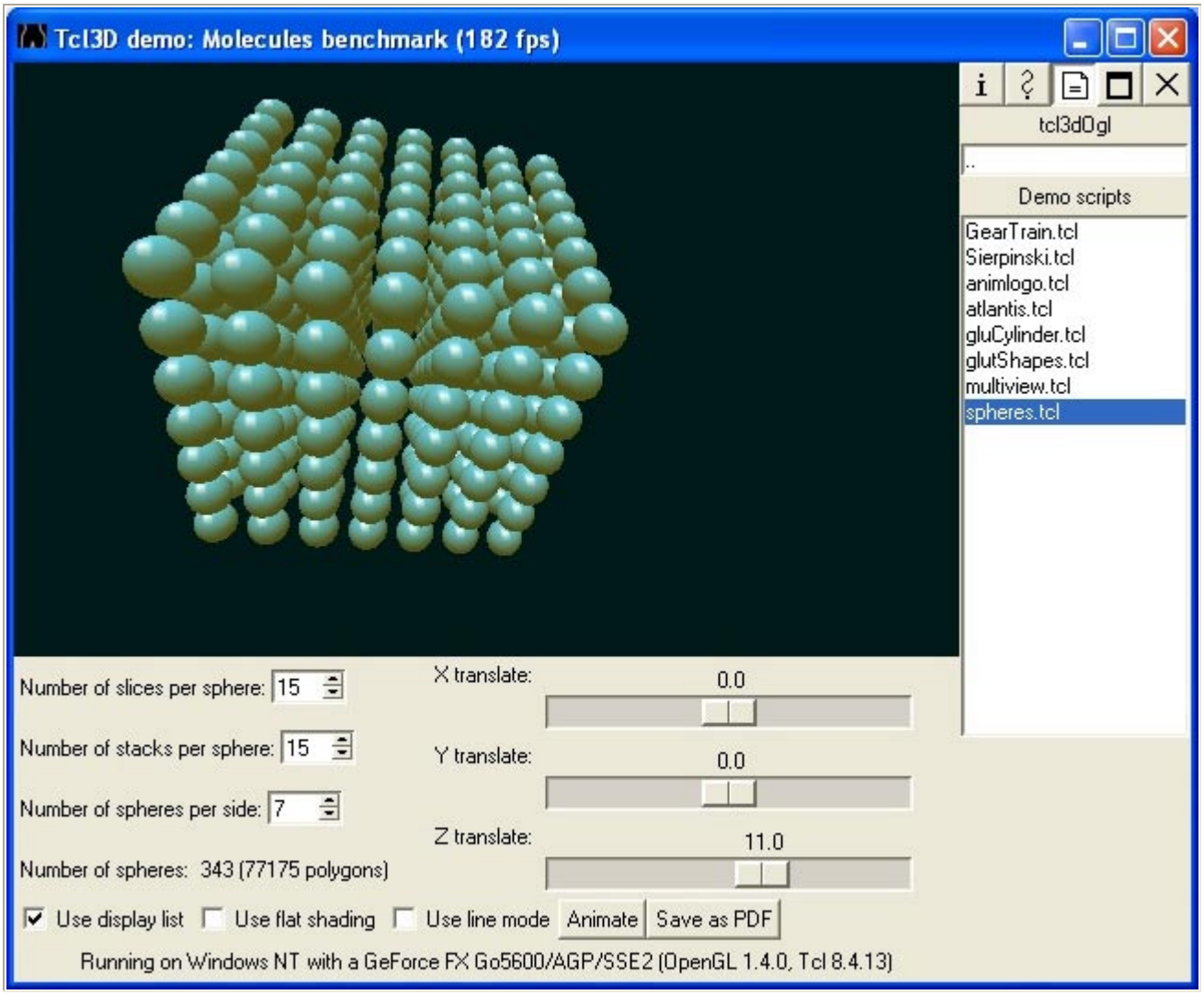
Module:         Tcl3D -> tcl3dOgl
Filename:       multiview.tcl

Author:         Paul Obermeier

Description:    Tcl3D demo showing the famous teapot in 4 different
                viewports on a single togl widget.
```

Demo:	**spheres**
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents




```
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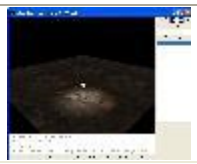
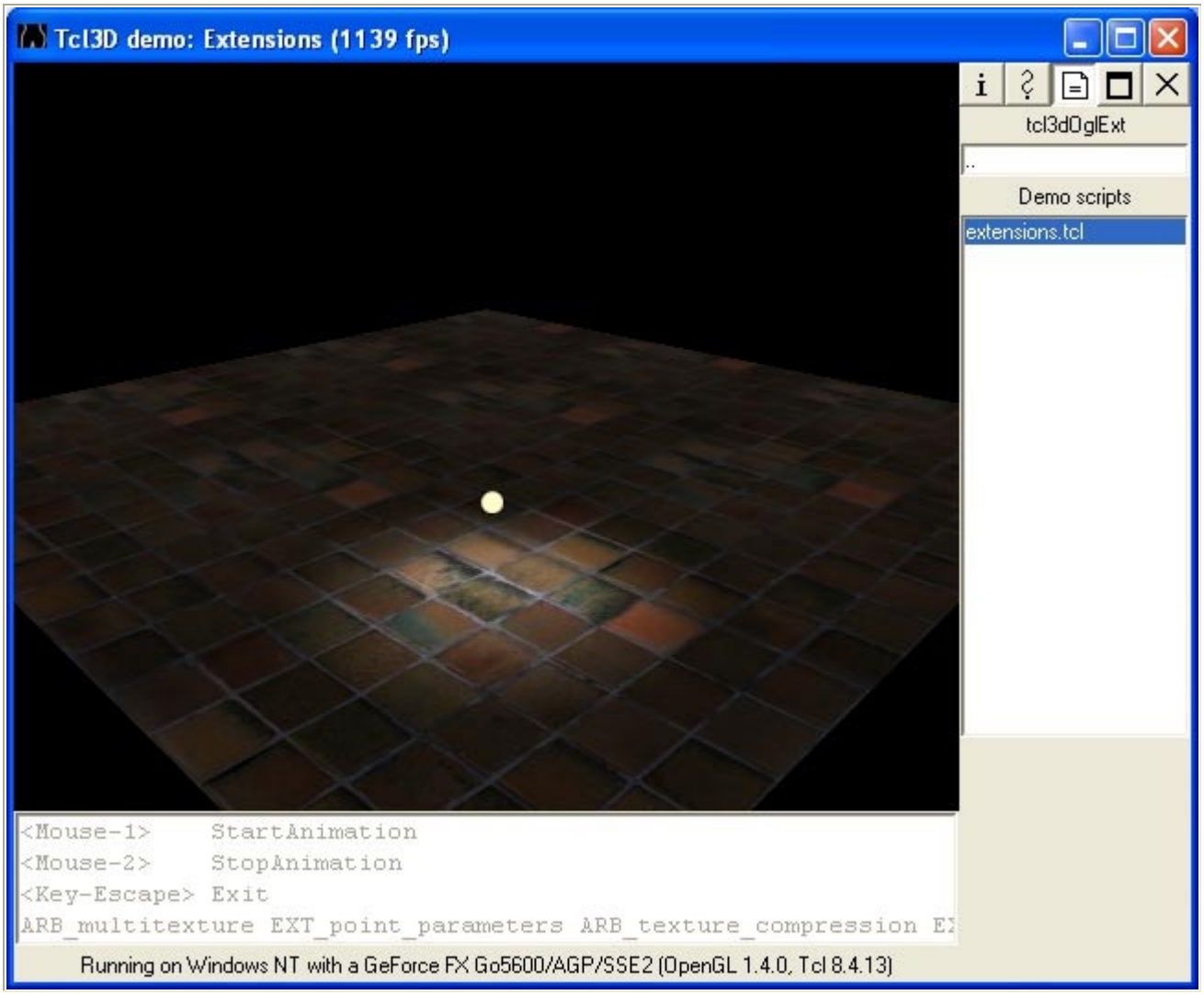
Module:         Tcl3D -> tcl3dOgl
Filename:       spheres.tcl

Author:         Paul Obermeier

Description:    Tcl3D demo displaying spheres in various modes.
```

Type:	**tcl3dOglExt**
Category:	LibrarySpecificDemos
Root:	Contents
This section contains OpenGL demo applications from several resources, that have been ported to Tcl3D. The examples cover OpenGL extension programming. Original sources from different sites. See the documentation for details.	
Available demos	
	
extensions	

Demo:	**extensions**
Type:	tcl3dOglExt
Category:	LibrarySpecificDemos
Root:	Contents




```
 extensions.tcl

 Program to demonstrate the use of extensions.
 Extensions used:
   GL_ARB_multitexture
   GL_EXT_point_parameters
   GL_ARB_texture_compression
   GL_EXT_texture_edge_clamp

 Original C++ code by Dave Astle 2/1/2002
 Original                                files                                from:
http://www.gamedev.net/reference/programming/features/oglext/demo.zip

 Modified for Tcl3D by Paul Obermeier 2005/09/05
 See www.tcl3d.org for the Tcl3D extension.
```

Type:	**tcl3dSDL**
Category:	LibrarySpecificDemos
Root:	Contents
This section contains SDL demo applications written in Tcl3D. The examples cover joystick and CD programming with the help of the SDL library.	
Available demos	
	
cdplayer	joysticktest

Demo:	**cdplayer**
Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents


```
Copyright:      2006 Paul Obermeier (obermeier@poSoft.de)

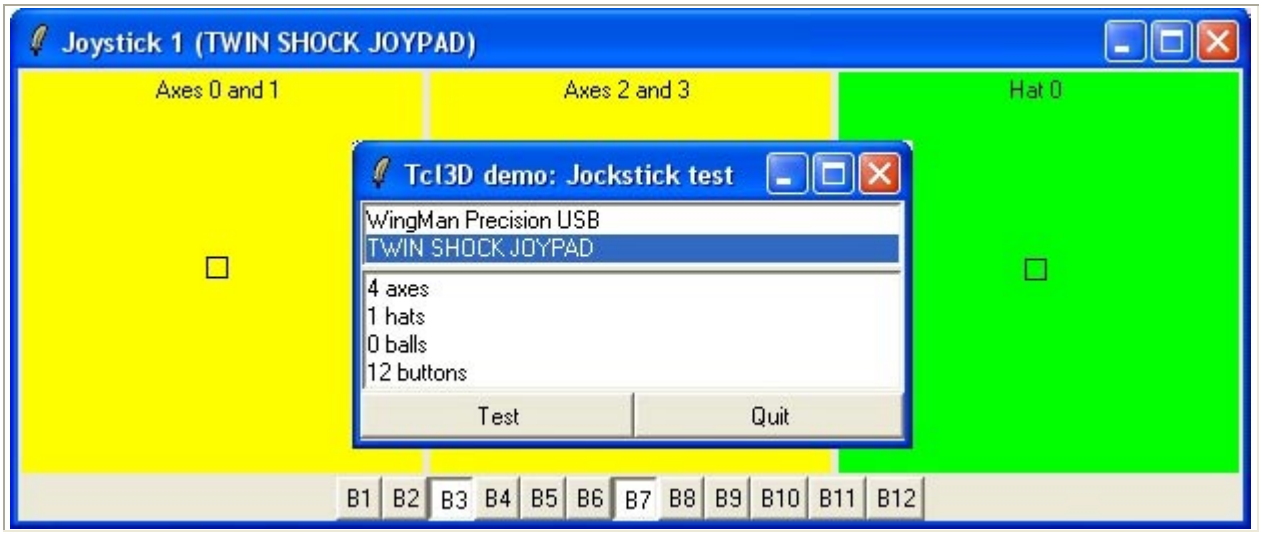
                See the file "Tcl3D_License.txt" for information on
                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

Module:         Tcl3D -> tcl3dSDL
Filename:       cdplayer.tcl

Author:         Paul Obermeier

Description:    Tcl script implementing a simple CD player to test the
                CD related functions (SDL_CD*) of the Tcl3D SDL wrapping.
```

Demo:	**joysticktest**
Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents




```
Copyright:      2005-2006 Paul Obermeier (obermeier@poSoft.de)

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                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

Module:         Tcl3D -> tcl3dSDL
Filename:       joysticktest.tcl

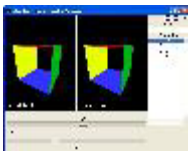
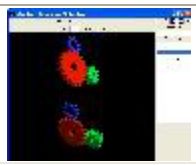
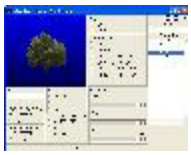
Author:         Paul Obermeier

Description:    Tcl script to test the joystick related functions of
                the Tcl3D SDL wrapping.
```

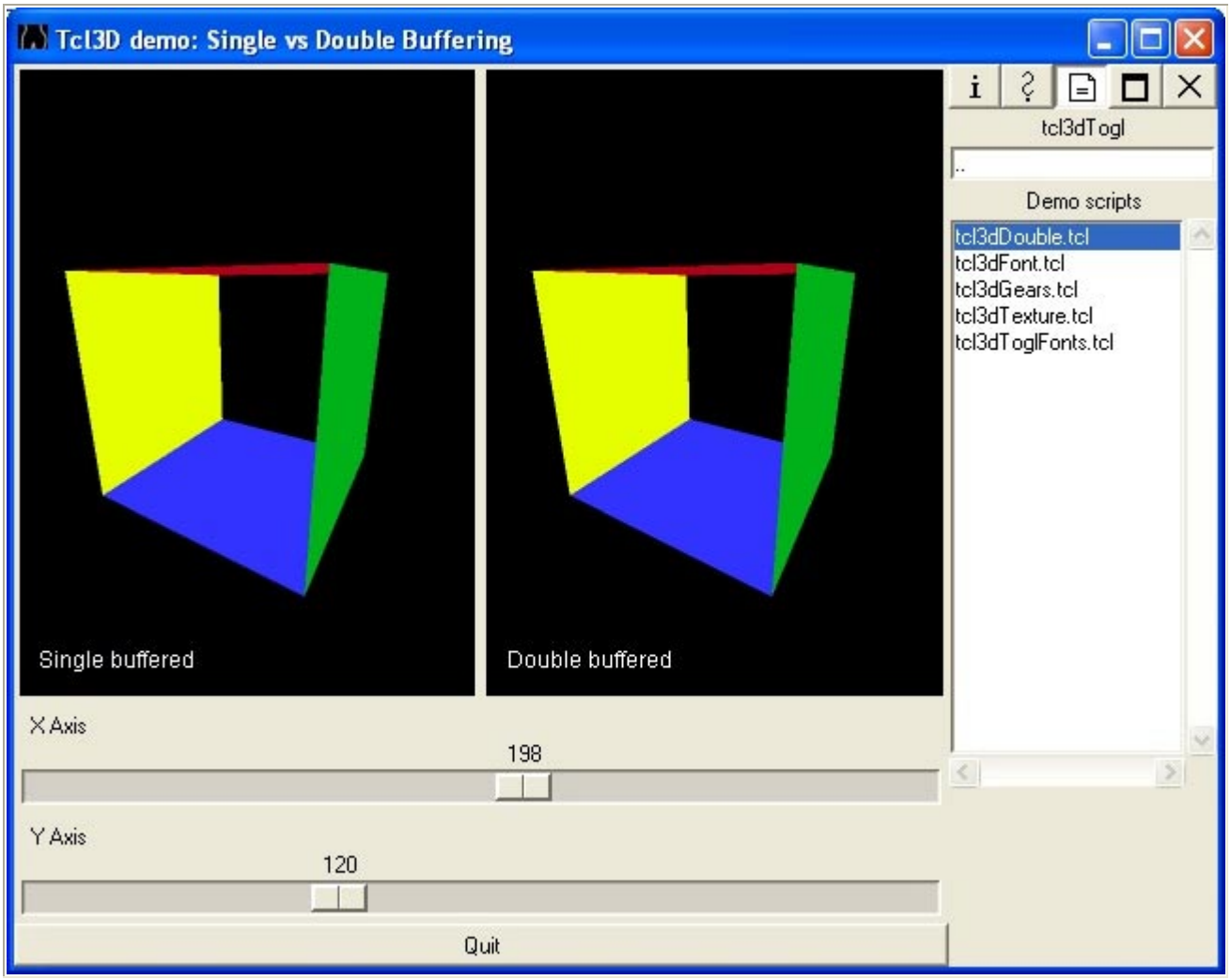
Type:	**tcl3dTogl**
Category:	LibrarySpecificDemos
Root:	Contents

The following demos from the Togl distribution have been ported to Tcl3D.
Original sources available at: http://sourceforge.net/projects/togl/

Available demos

				
tcl3dDouble	tcl3dFont	tcl3dGears	tcl3dTexture	tcl3dToglFonts

Demo:	**tcl3dDouble**
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents




```
tcl3dDouble.tcl

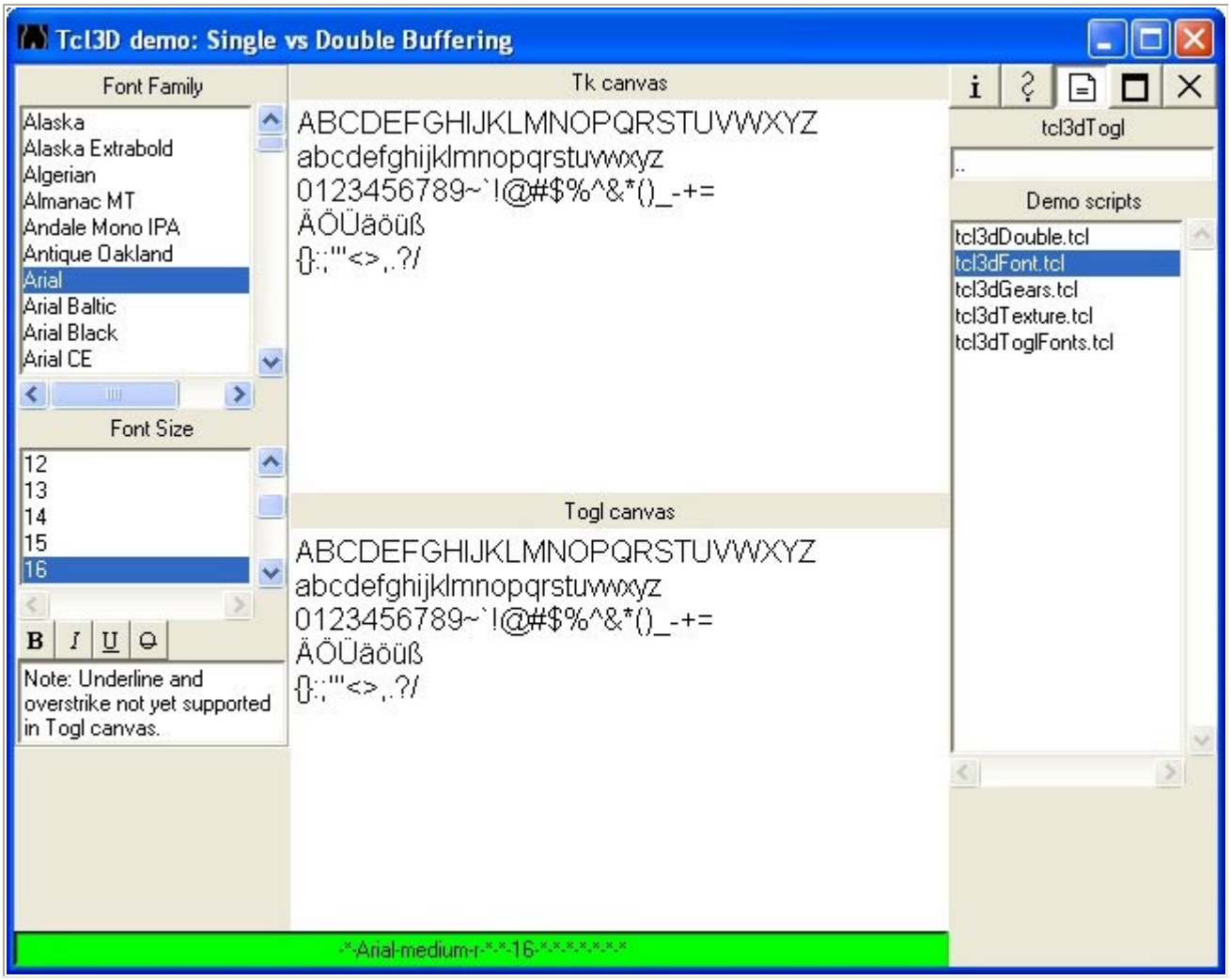
A Tcl3D widget demo with two windows, one single buffered and the
other double buffered.

This is a version of the original Togl double demo written entirely in Tcl
with the help of the Tcl3D package.

Copyright (C) 1996 Brian Paul and Ben Bederson (Original C/Tcl version)
Copyright (C) 2005 Paul Obermeier (Tcl3D version)
See the LICENSE file for copyright details.

Original sources available at: http://sourceforge.net/projects/togl/
```

Demo:	**tcl3dFont**
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents




```
Copyright:      2005-2006 Paul Obermeier (obermeier@poSoft.de)

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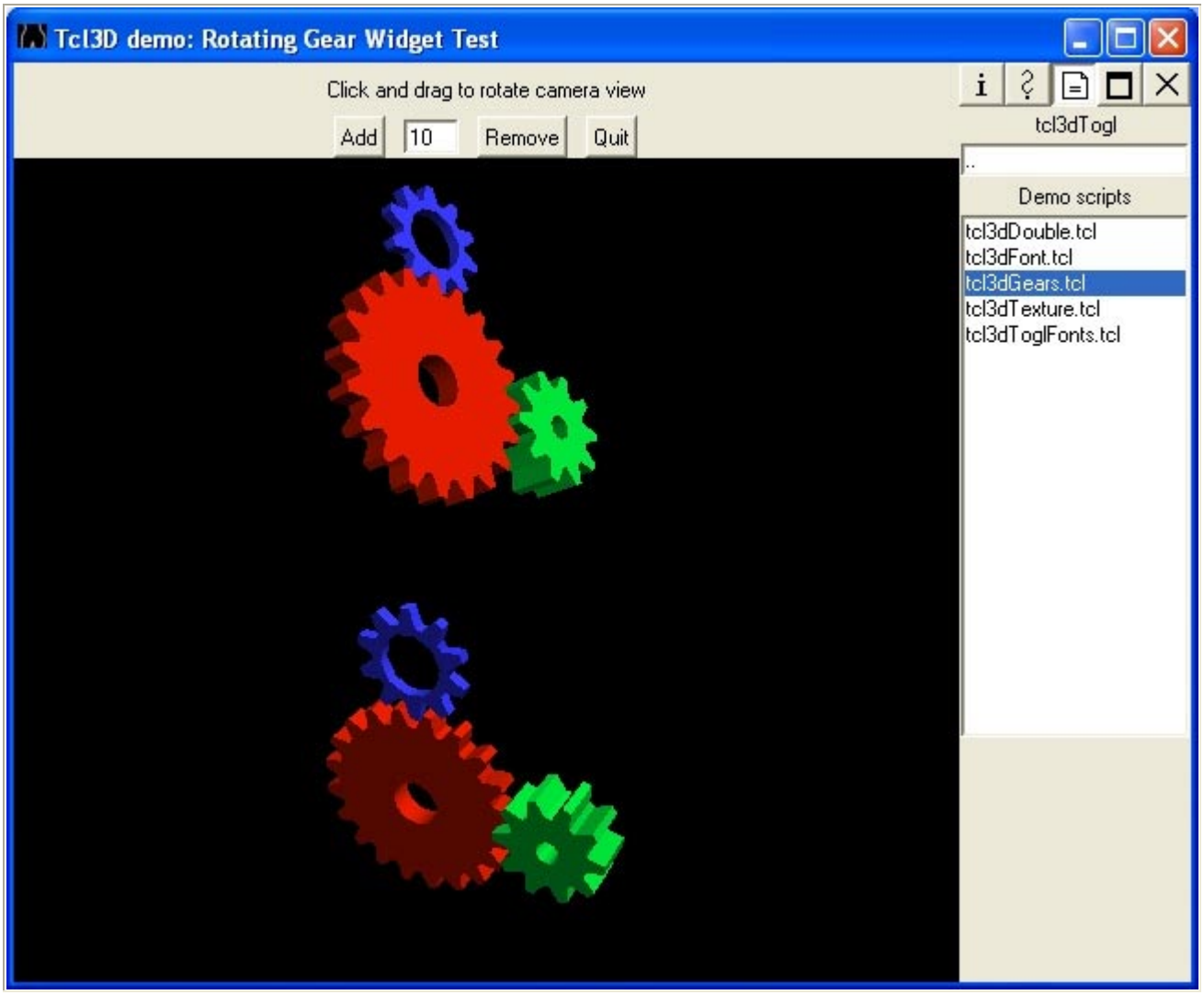
                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

Module:         Tcl3D -> tcl3dTogl
Filename:       tcl3dFont.tcl

Author:         Paul Obermeier

Description:    Tcl script to select a font. The font is displayed in
                a Tk widget as well as in an OpenGL window.
                The font name in XLFD notation is
                shown in a text widget for copy/paste.
                This demo shows the usage of the "loadbitmapfont"
                command built into the Togl widget.
                Note: The Tk font might look nicer, because font
                antialiasing is enabled. On Windows this can be toggled
                in the display property window (Appearance->Effects).
```

Demo:	**tcl3dGears**
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents




```
tcl3dGears.tcl

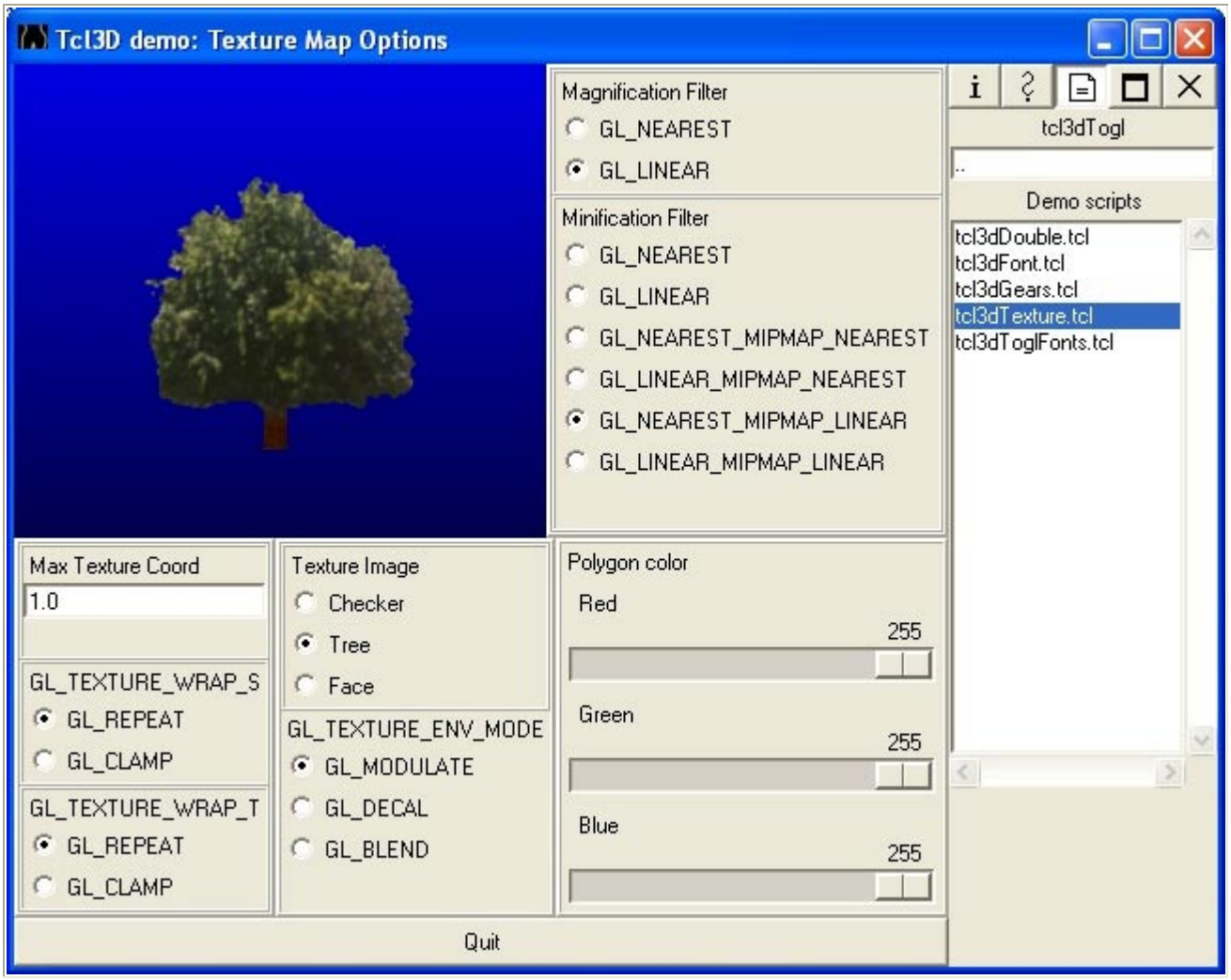
Test Togl using GL Gears Demo

This is a version of the original Togl gears demo written entirely in Tcl
with the help of the Tcl3D package.

Copyright (C) 1997 Philip Quaife (Original C/Tcl version)
Copyright (C) 2005 Paul Obermeier (Tcl3D version)
See the LICENSE file for copyright details.

Original sources available at: http://sourceforge.net/projects/togl/
```

Demo:	**tcl3dTexture**
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents




```
tcl3dTexture.tcl

Togl texture map demo

This is a version of the original Togl texture demo written entirely in Tcl
with the help of the Tcl3D package.

Copyright (C) 1996 Brian Paul and Ben Bederson (Original C/Tcl version)
Copyright (C) 2005 Paul Obermeier (Tcl3D version)
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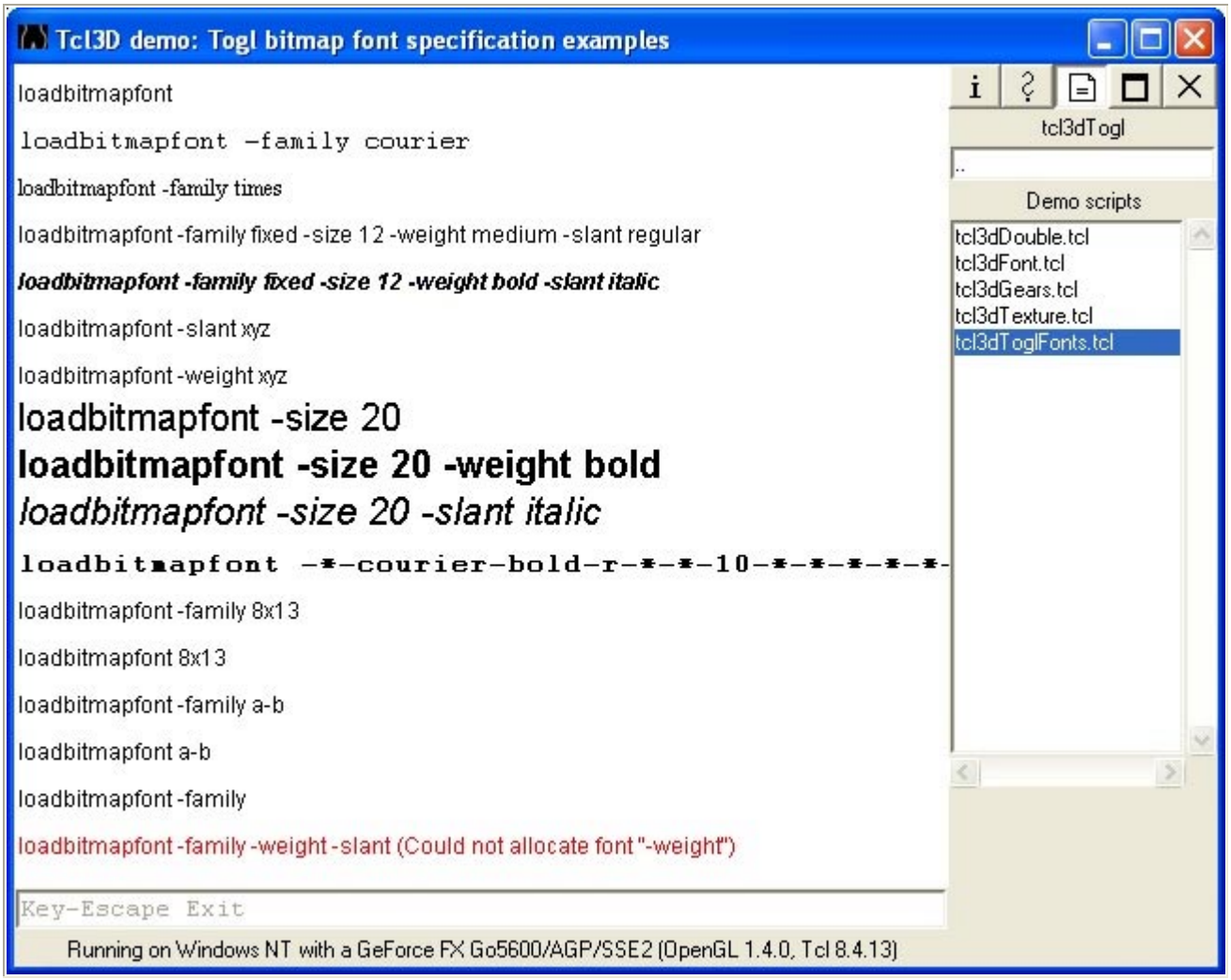
Original sources available at: http://sourceforge.net/projects/togl/
```

Demo:	**tcl3dToglFonts**
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents




```
Copyright:      2006 Paul Obermeier (obermeier@poSoft.de)

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                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

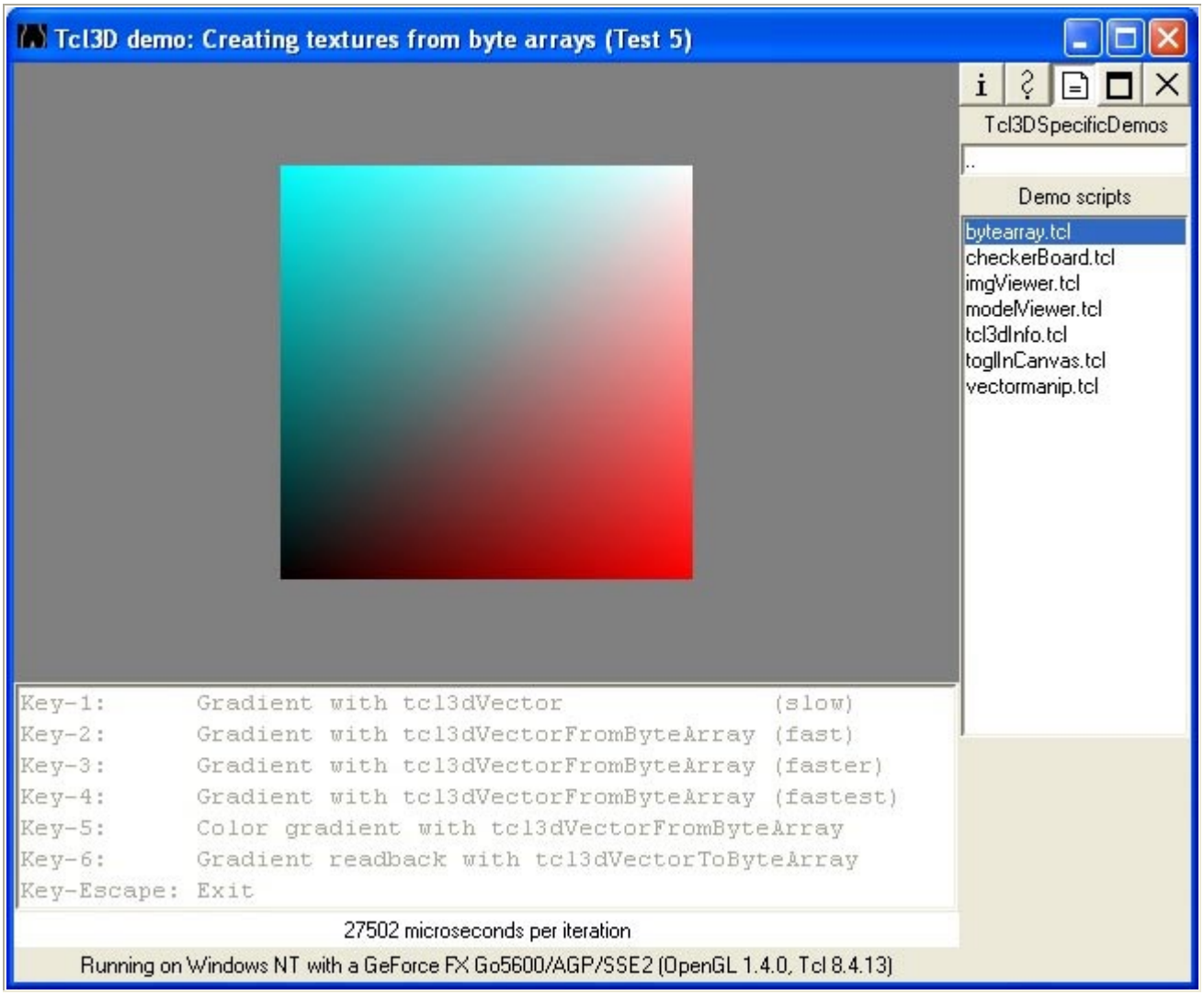
Module:         Tcl3D -> tcl3dTogl
Filename:       tcl3dToglFonts.tcl

Author:         Paul Obermeier

Description:    Program demonstrating and testing the different
                possibilities of specifing a bitmap font for the
                Togl widget.
```

Category:	**Tcl3DSpecificDemos**
Root:	Contents
Available types	

Demo:	**bytearray**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

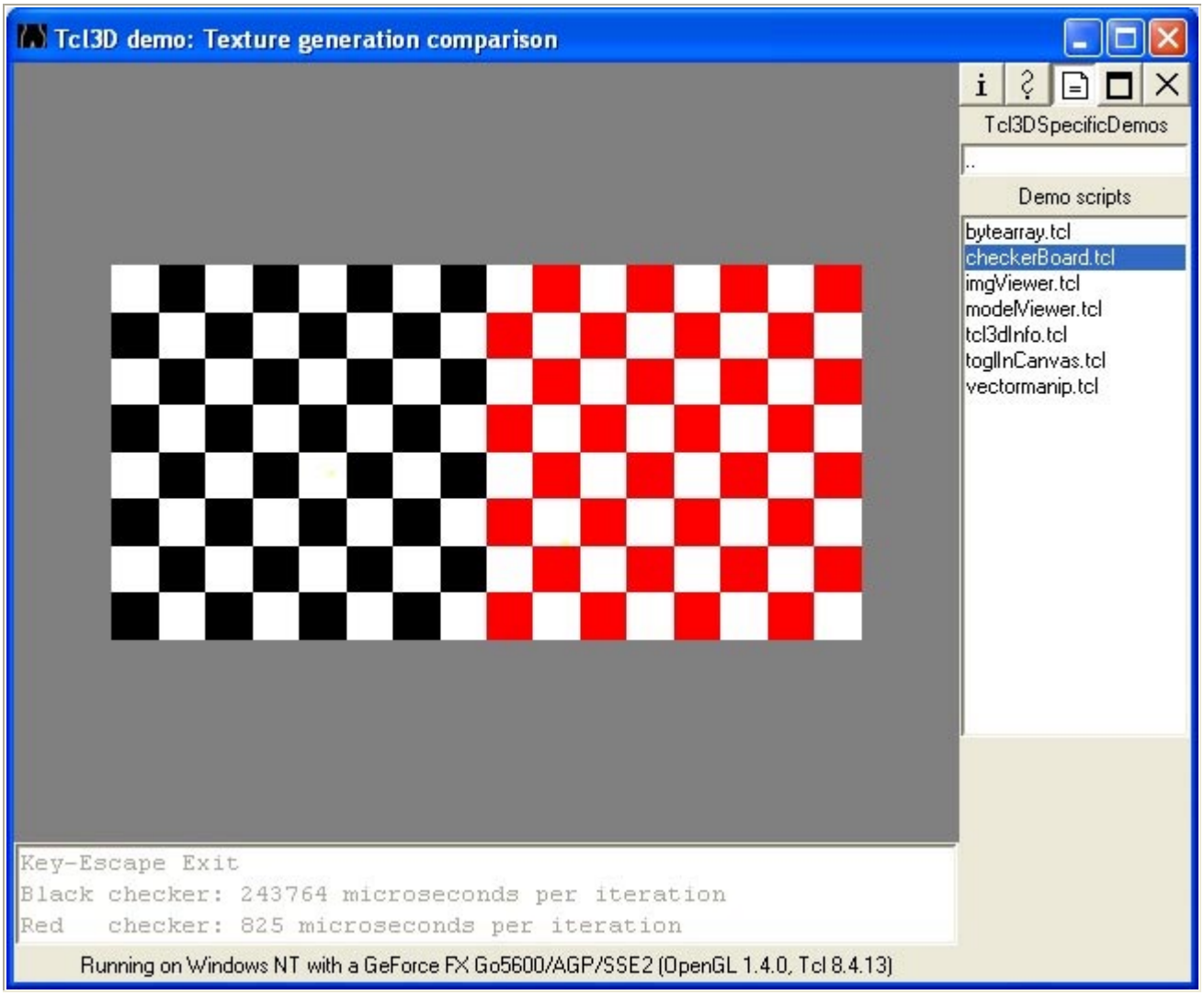



```
bytearray.tcl

Tcl3D demo showing the use of the tcl3dByteArray2Vector function,
introduced in Version 0.3.
The program texture maps an image generated with Tcl onto a quad.

Author: Paul Obermeier
Date: 2006-02-01
```

Demo:	**checkerBoard**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

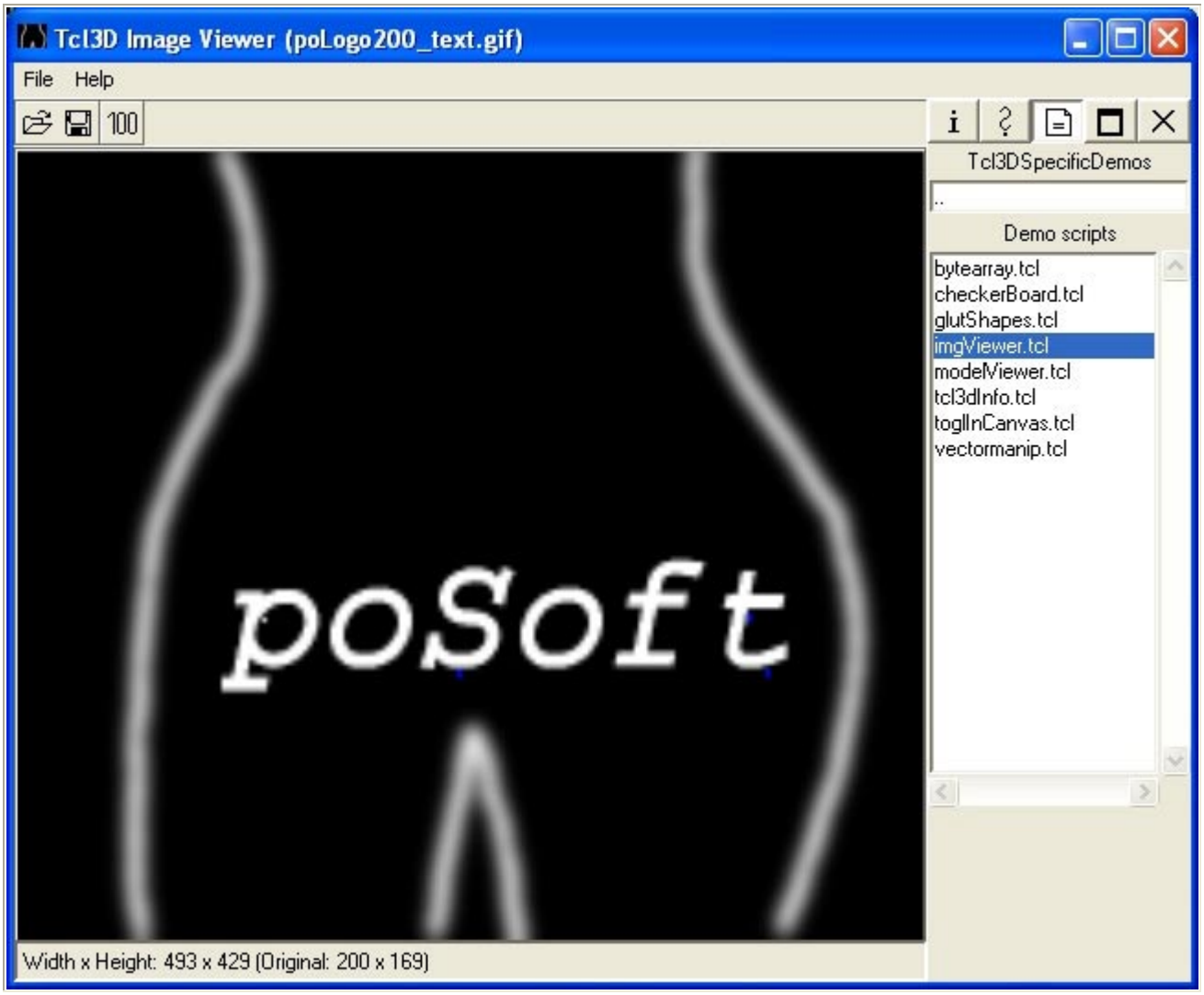



```
checkerBoard.tcl

This program creates a checkerboard image in two ways.
The first texture is created with an algorithm, as used in some of the
RedBook examples (ex. checker.tcl). This algorithm has been converted 1:1
from C to Tcl. Very slow.
The second image is created using the Img extension, which is essentially
faster.

Author: Paul Obermeier
Date: 2006-09-22
```

Demo:	**imgViewer**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents




```
Copyright:      2005-2006 Paul Obermeier (obermeier@poSoft.de)

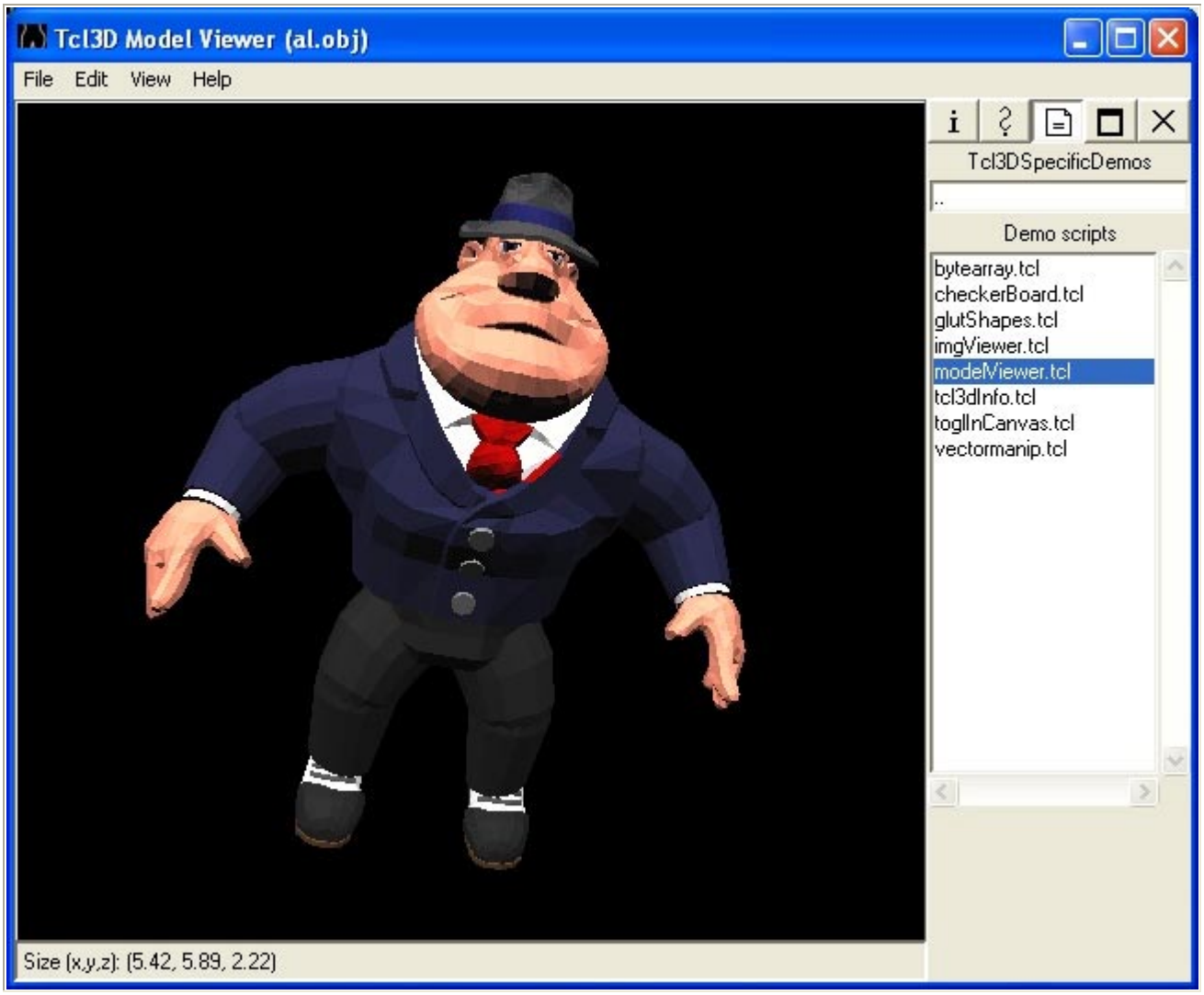
                See the file "Tcl3D_License.txt" for information on
                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

Module:         Tcl3D
Filename:       imgViewer.tcl

Author:         Paul Obermeier

Description:    Tcl program to display images and stretch them in
                realtime with the use of OpenGL textures.
                The images can be read from files in all formats supported by
                the Img extension. The stretched image may also be written
                out to an image file.
```

Demo:	**modelViewer**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents




```
Copyright:      2005-2006 Paul Obermeier (obermeier@poSoft.de)

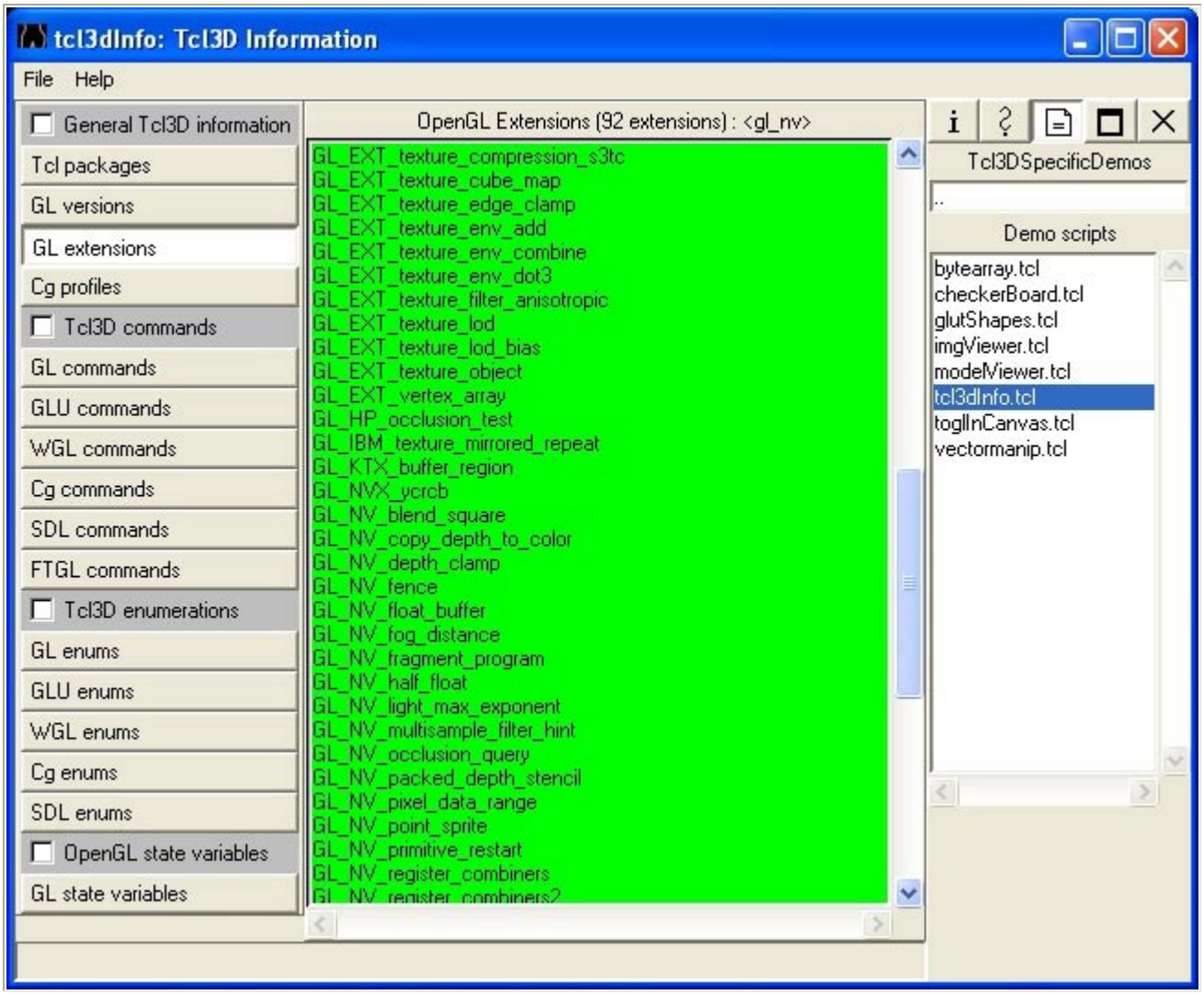
                See the file "Tcl3D_License.txt" for information on
                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

Module:         Tcl3D
Filename:       modelViewer.tcl

Author:         Paul Obermeier

Description:    Tcl program to display 3D model files in all formats supported
                by the Tcl3D extension.
```

Demo:	**tcl3dInfo**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents




```
Copyright:      2005-2006 Paul Obermeier (obermeier@poSoft.de)

                See the file "Tcl3D_License.txt" for information on
                usage and redistribution of this file, and for a
                DISCLAIMER OF ALL WARRANTIES.

Module:         Tcl3D
Filename:       tcl3dInfo.tcl

Author:         Paul Obermeier

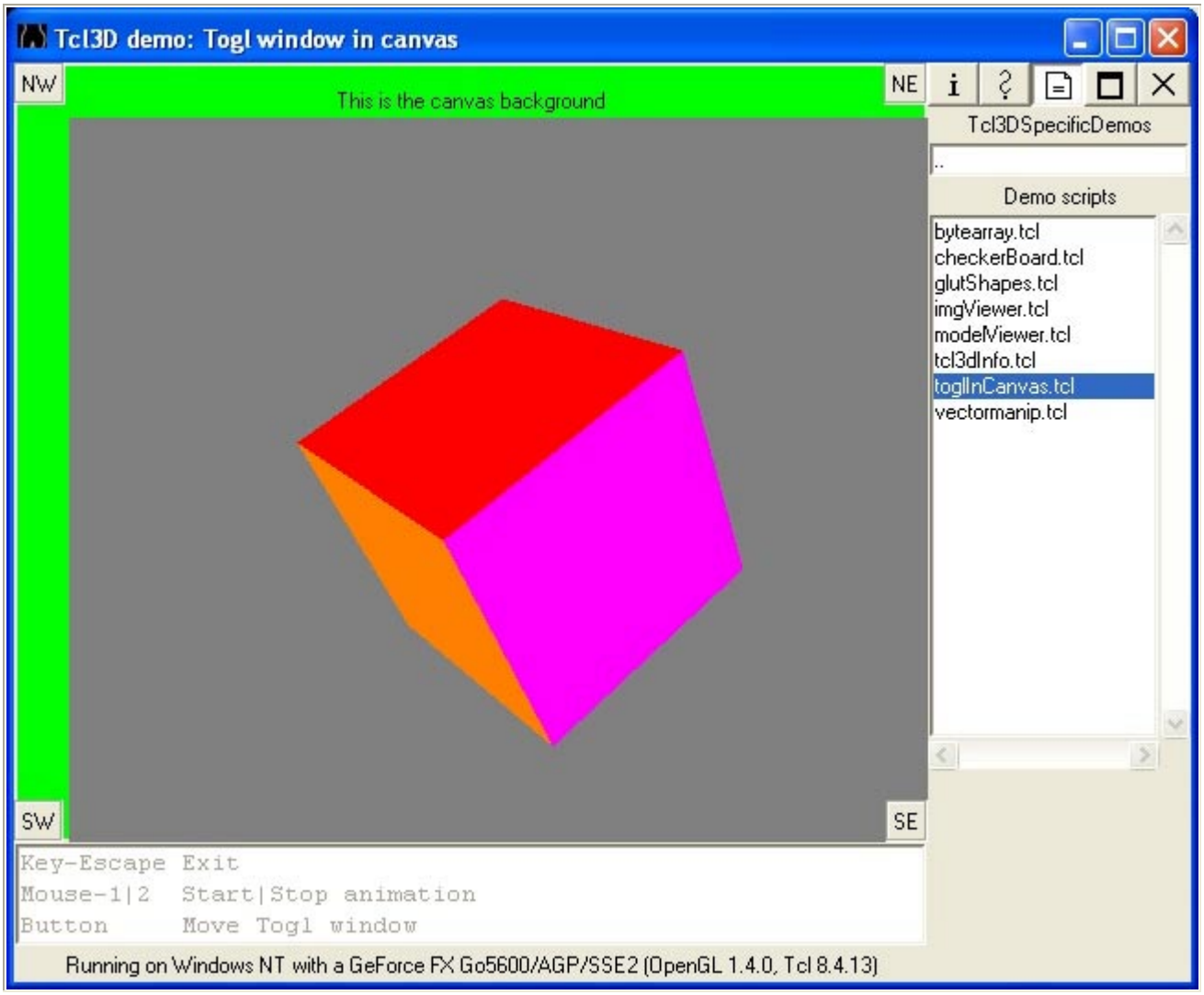
Description:    Tcl script to display OpenGL related information.
                When called without arguments, a window is opened with
                buttons to display OpenGL information for the following
                categories:
                - General information                           (-info)
                - Available OpenGL commands in Tcl              (-cmd)
                - Available OpenGL enumerations in Tcl          (-enum)
                - Current values of OpenGL state variables      (-state)

                The information texts can also be printed to stdout
                whithout opening a GUI, if calling this Tcl script
```

```
with any of the above listed command line options.
To display all four categories, the option "-all"
can be used.

Note: To retrieve all necessary information, an OpenGL
      context has to be established. So the batch mode
      needs a DISPLAY, too.
```

Demo:	**toglInCanvas**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

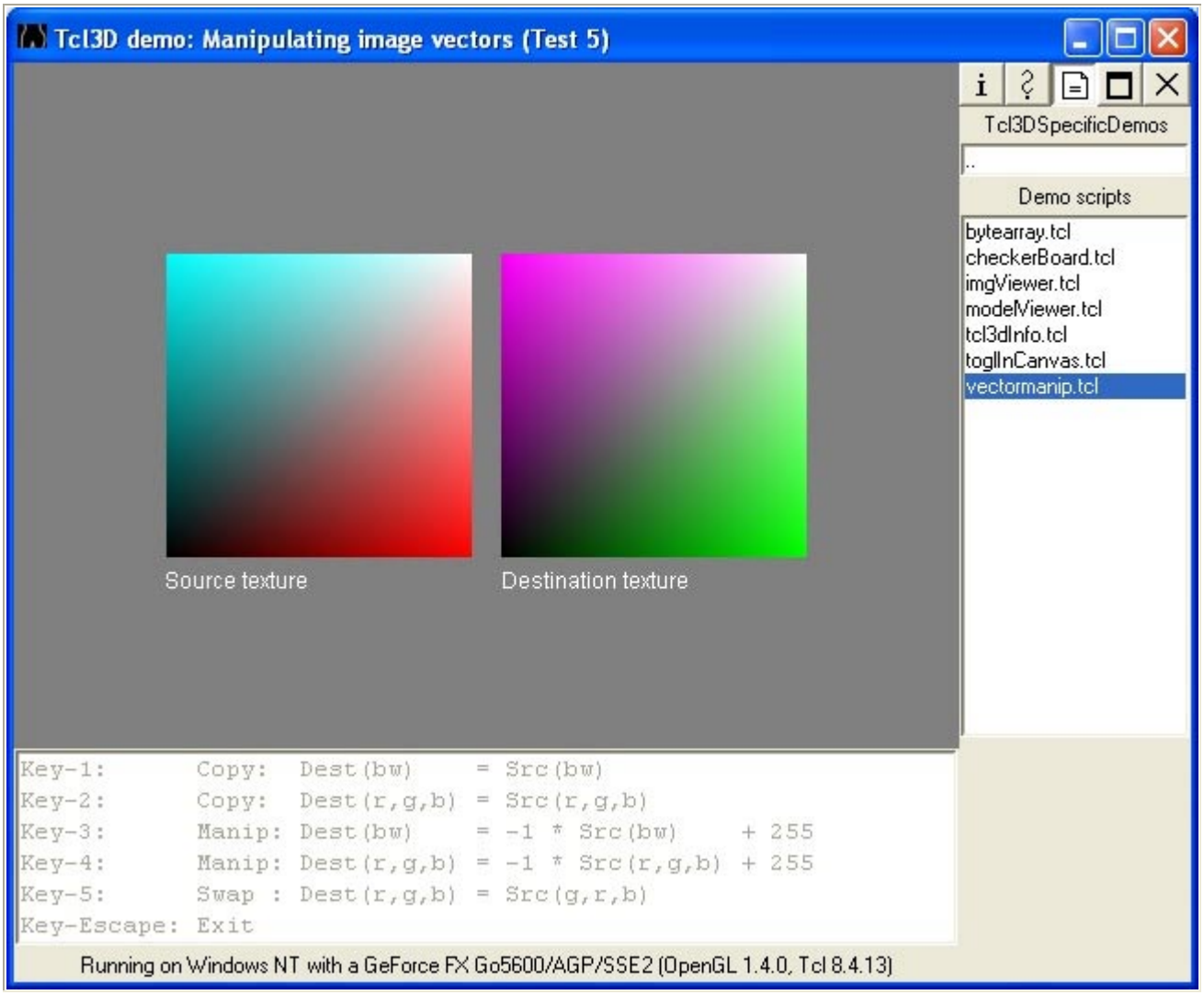



```
toglInCanvas.tcl

Tcl3D demo using a Togl window and some button widgets inserted into a canvas.

Author: Paul Obermeier
Date: 2006-12-08
```

Demo:	**vectormanip**
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents




```
vectormanip.tcl

Tcl3D demo showing the use of the Vector manipulation functions,
introduced in Version 0.3.2.
The program texture maps an image generated with Tcl (the source) onto the
left quad. The source texture is manipulated with the vector functions
according to the choosen method and mapped onto the right quad.
See functions execMethod? below.

Author: Paul Obermeier
Date: 2006-08-15
```

Category:	**TutorialsAndBooks**
Root:	Contents
Available types	
CodeSampler	
GameProgrammer	
NeHe	
RedBook	

Type:	**CodeSampler**
Category:	TutorialsAndBooks
Root:	Contents

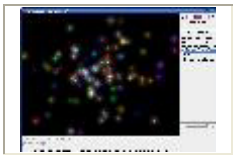
Several demo applications from Kevin Harris' page have been ported to Tcl3D. The examples cover Cg, GLSL and OpenGL extension programming.
Original sources available at: http://www.codesampler.com/oglsrc.htm

Available demos

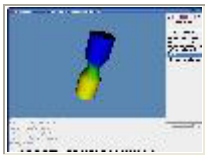
ogl_benchmark_sphere

ogl_fps_controls

ogl_glslang_simple_vs2ps



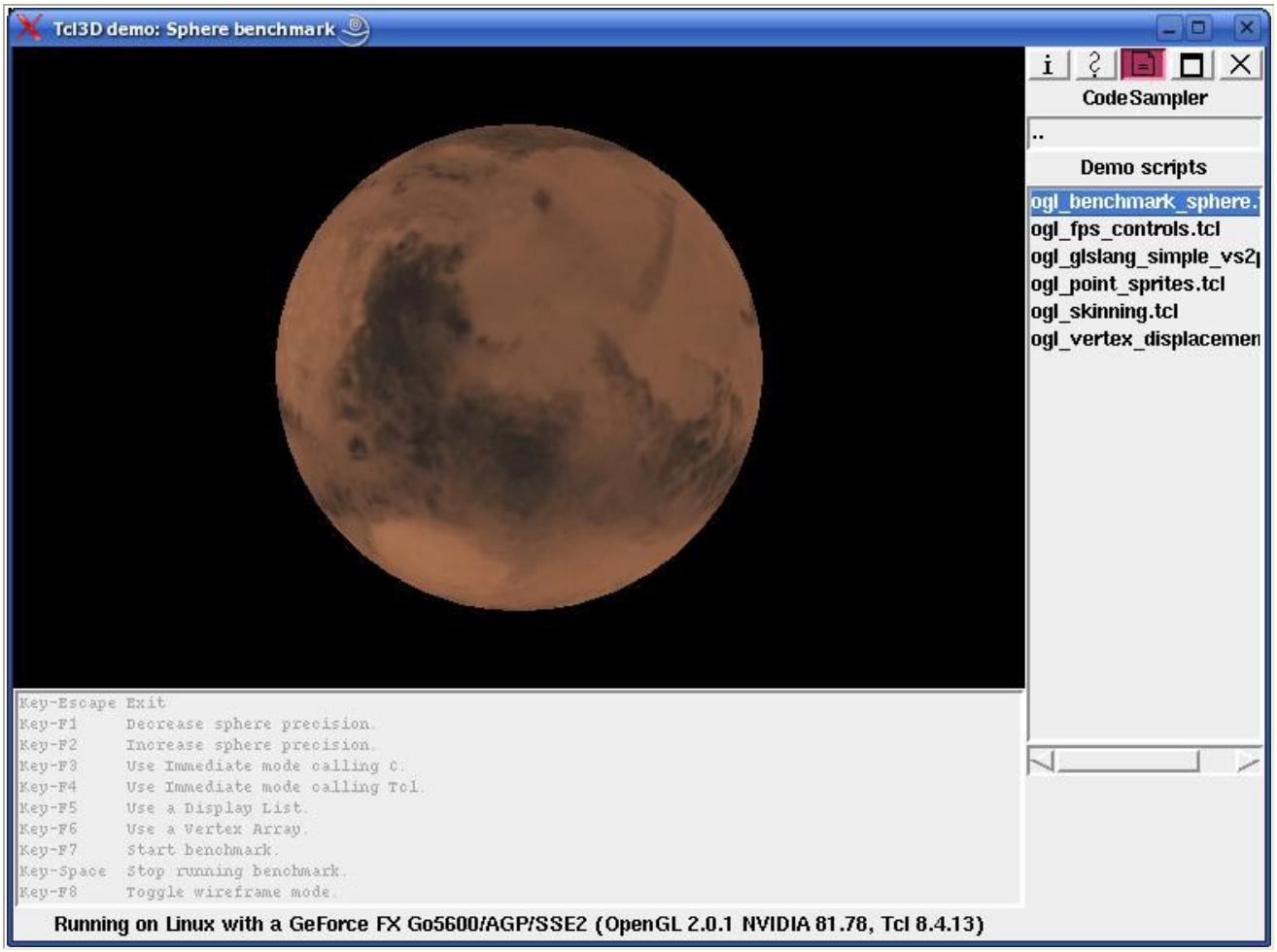
ogl_point_sprites



ogl_skinning

ogl_vertex_displacement

Demo:	**ogl_benchmark_sphere**
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



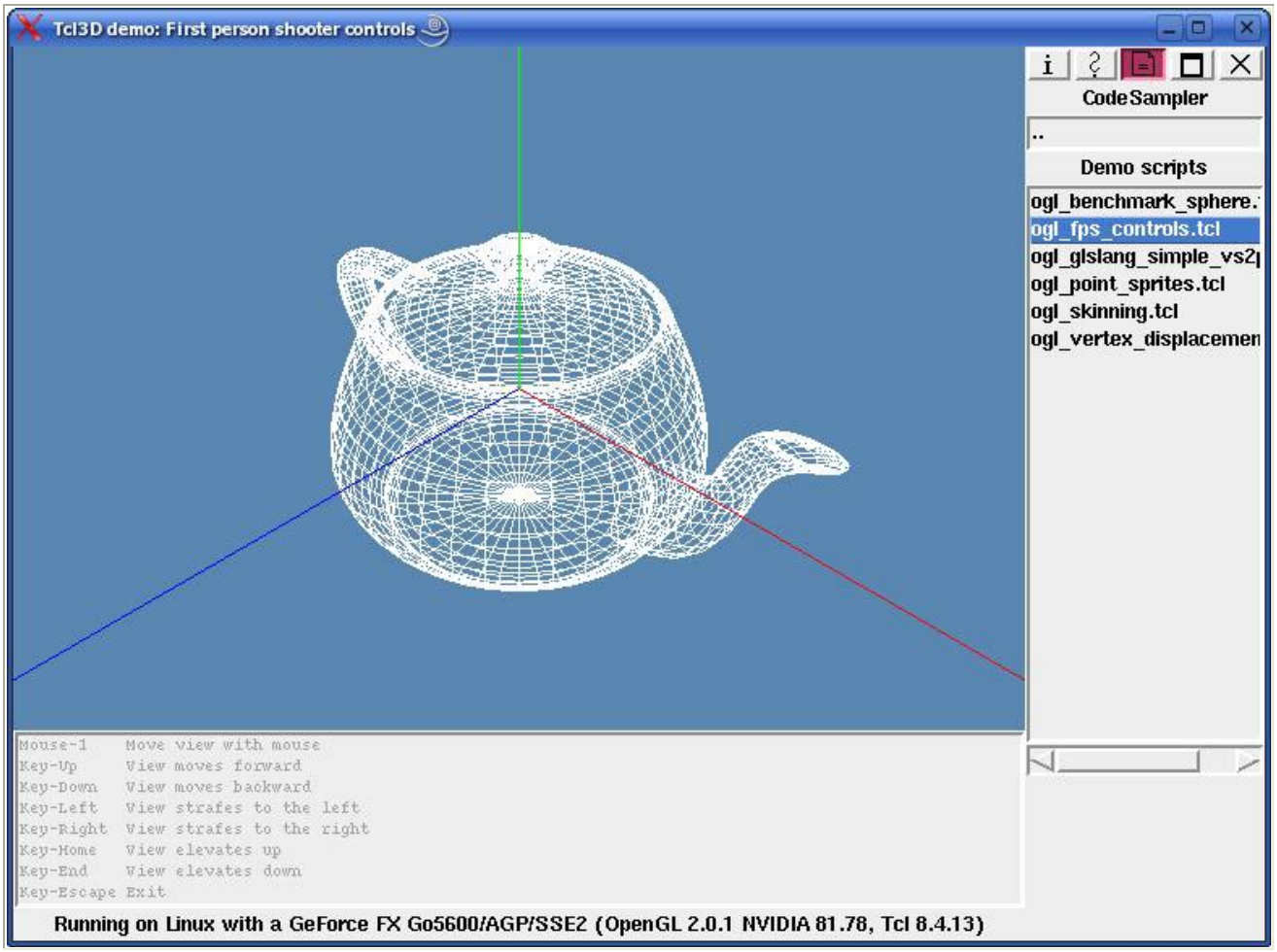

```
ogl_benchmark_sphere.tcl

Renders a textured sphere using either Immediate Mode calls,
Immediate Mode calls cached in a Display List, or as a
collection of geometric data stored in an interleaved
fashion within a Vertex Array.

Original C++ code by Kevin Harris (kevin@codesampler.com) 04/21/05
See www.codesampler.com for the original files
OpenGL samples page 9: Benchmarking Test App

Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**ogl_fps_controls**
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



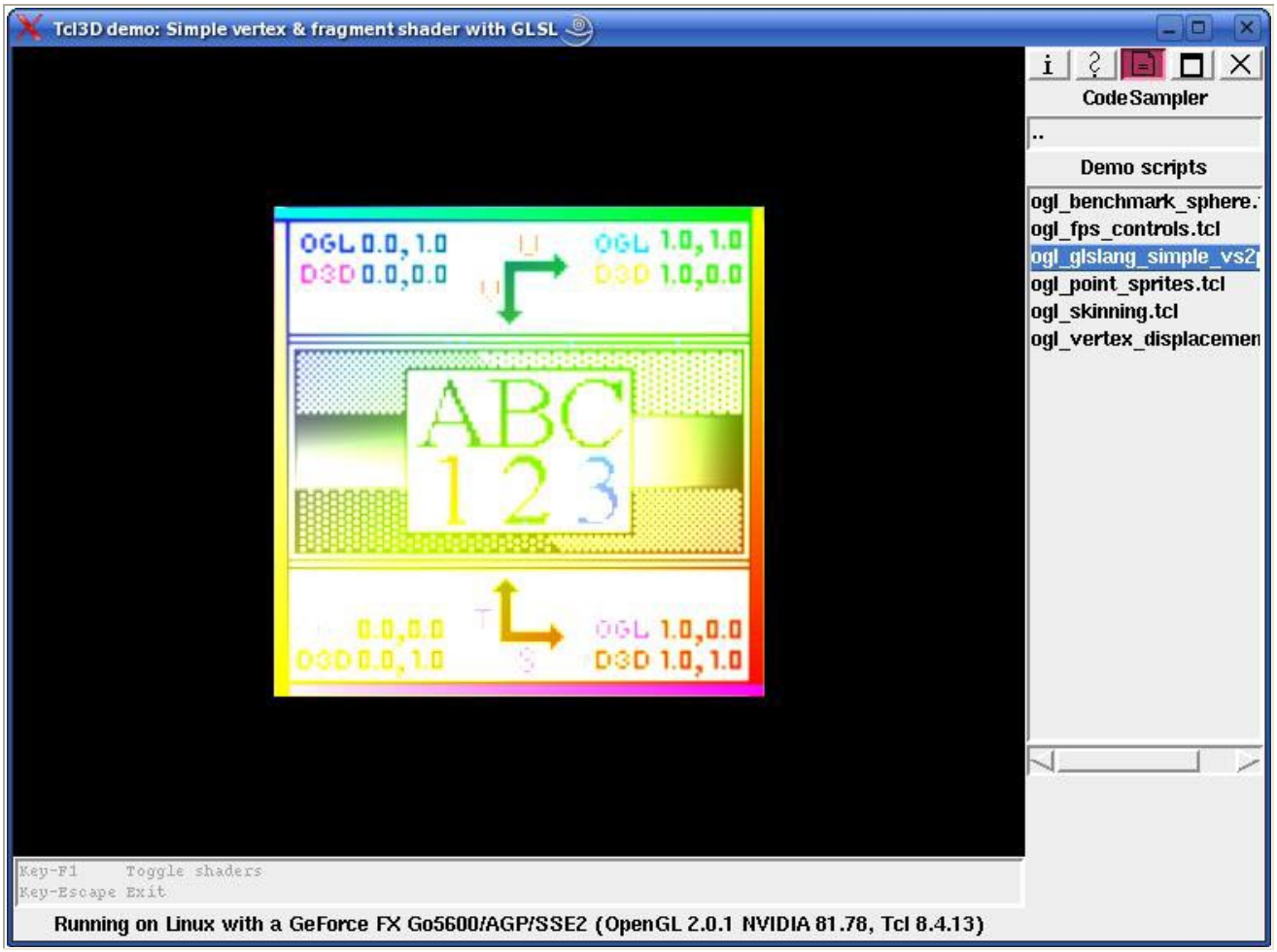

```
ogl_fps_controls.tcl

This sample demonstrates how to collect user input and
build a custom view matrix for First Person Shooter style controls.

Original C++ code by Kevin Harris (kevin@codesampler.com) 02/01/05
See www.codesampler.com for the original files
OpenGL samples page 5: First Person Shooter Controls

Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**ogl_glslang_simple_vs2ps**
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents




```
ogl_glslang_simple_vs2ps.tcl

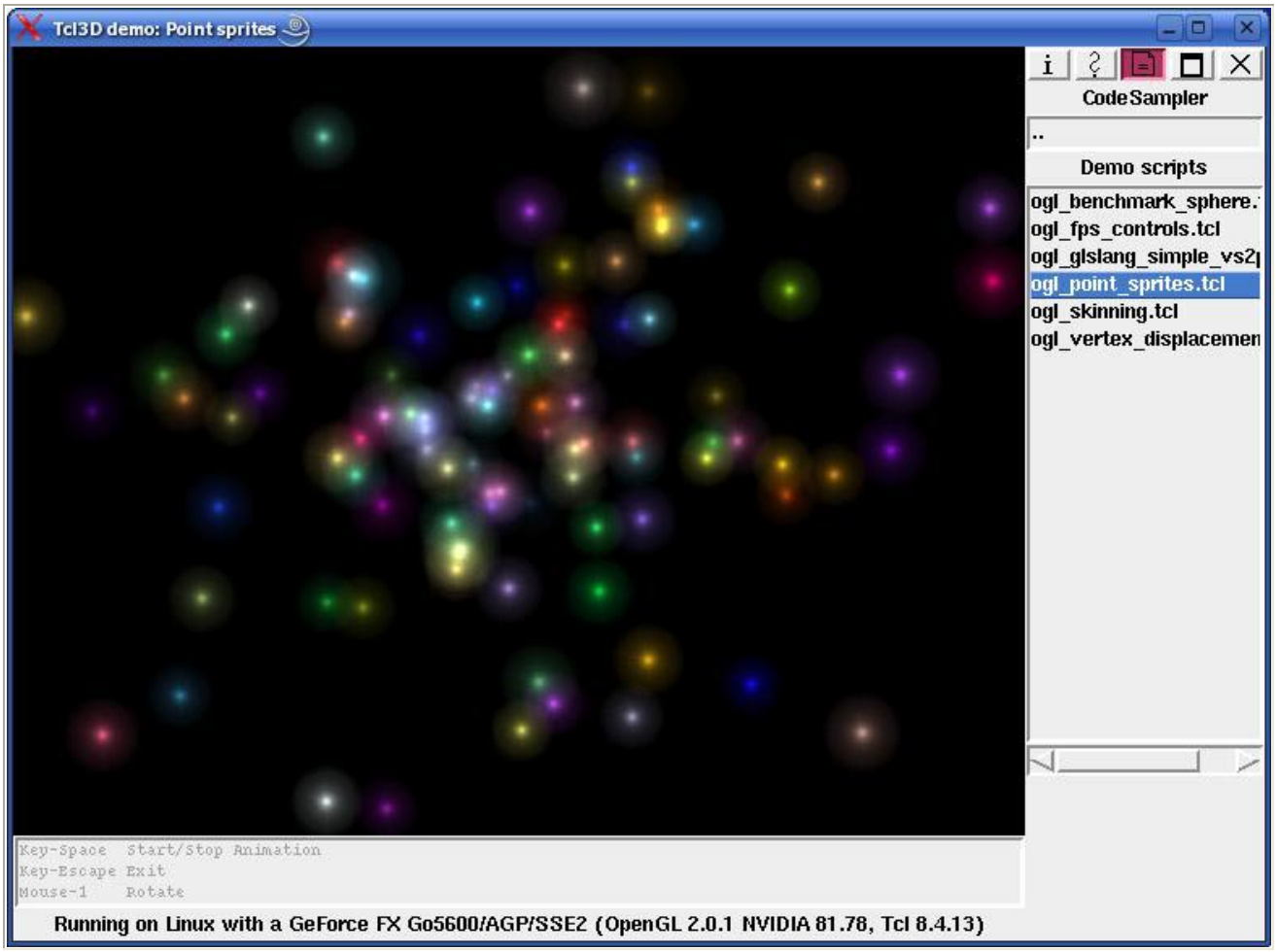
This sample demonstrates how to write vertex and fragment
shaders using OpenGL's new high-level shading language GLslang.

Original C++ code by Kevin Harris (kevin@codesampler.com) 04/21/05
See www.codesampler.com for the original files
OpenGL samples page 10: Simple Vertex & Fragment Shader (GLslang)

Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.

Note: The fragment shader has been changed slightly from what the
      fixed-function pipeline does by default so you can see a noticeable
      change when toggling the shaders on and off. Instead of modulating
      the vertex color with the texture's texel, the fragment shader adds
      the two together, which causes the fragment shader to produce a
      brighter, washed-out image. This modification can be switched back in
      the fragment shader file.
```

Demo:	**ogl_point_sprites**
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



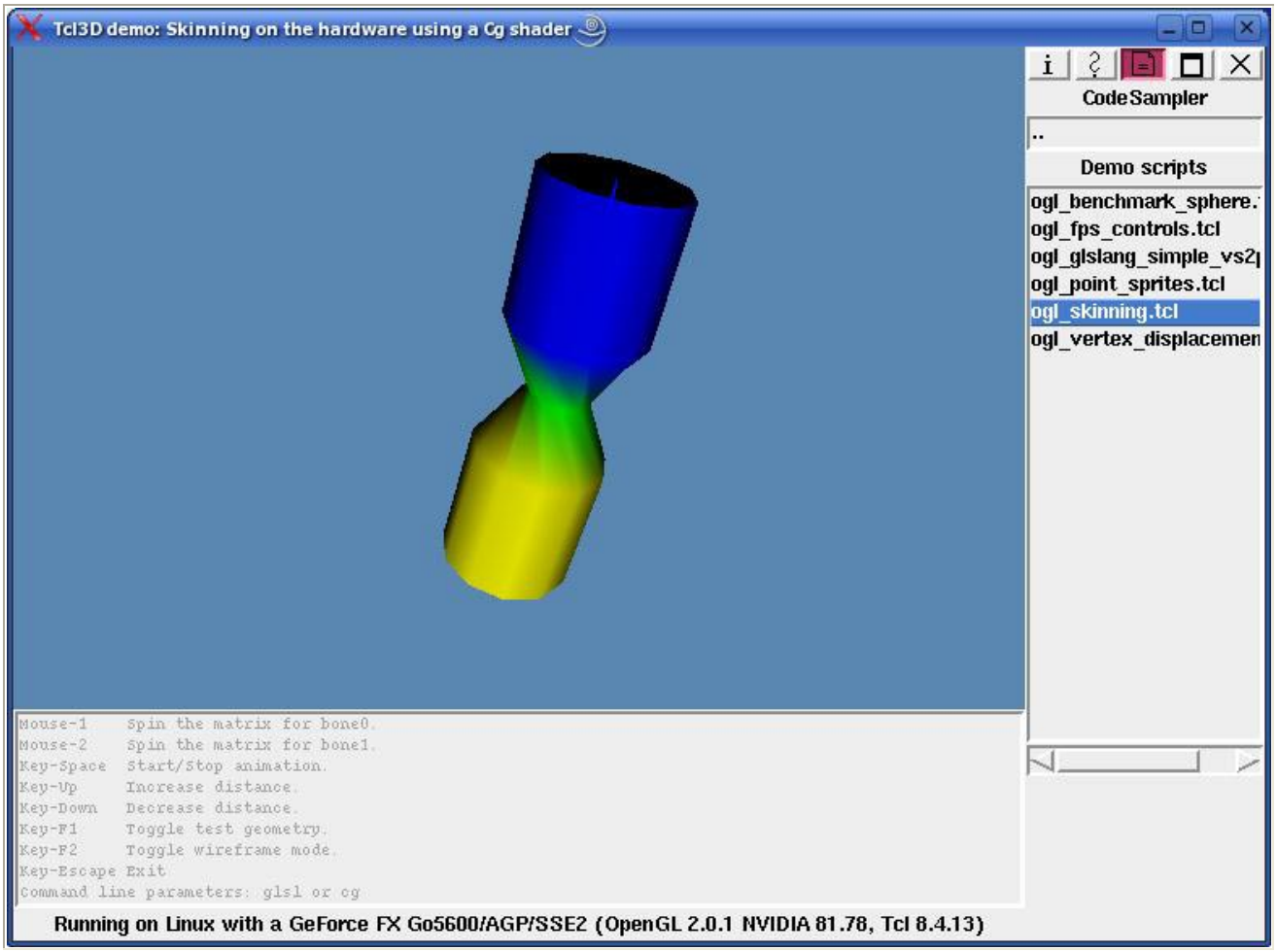

```
ogl_point_sprites.tcl

This sample demonstrates how to create point sprites
using OpenGL's GL_ARB_point_sprite extension, which
can be used to create point-rotated billboards on the GPU.

Original C++ code by Kevin Harris (kevin@codesampler.com) 02/01/05
See www.codesampler.com for the original files
OpenGL samples page 6: Point Sprites

Modified for Tcl3D by Paul Obermeier 2005/11/08
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**ogl_skinning**
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents




```
ogl_skinning.tcl

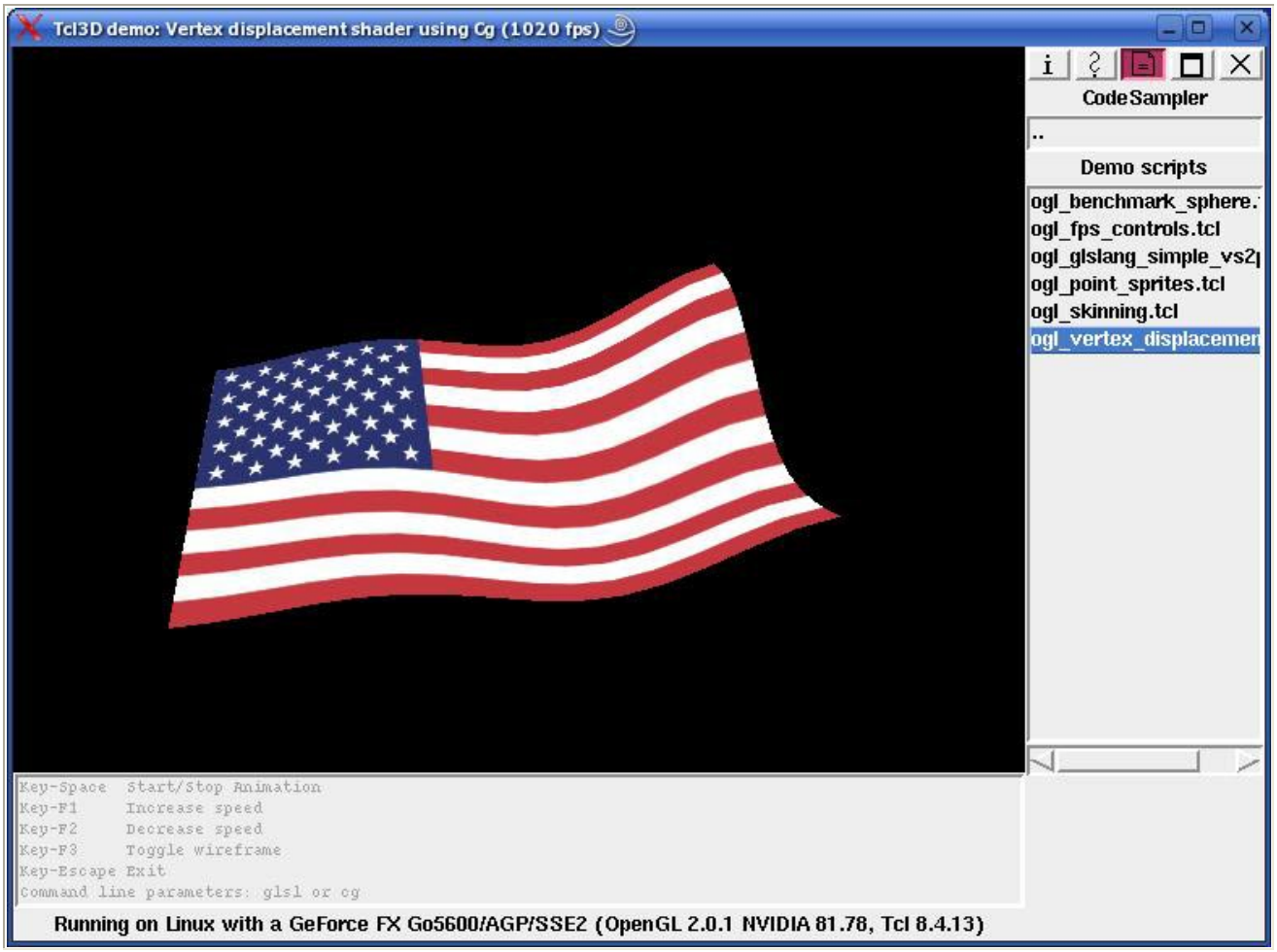
This sample demonstrates how to skin a mesh on the hardware
using a Cg or GLSL shader. To keep things simple, the skeletal
system used in this sample is very simple and only consists
of two bones or bone matrices.

Original C++ code by Kevin Harris (kevin@codesampler.com) 04/28/05
See www.codesampler.com for the original files
OpenGL samples page 11: Matrix Palette Skinning on the Hardware

Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.

This sample integrates the Cg and GLSL code into one file.
If called with no command line arguments, it uses the Cg shader.
Use "glsl" as parameter to use the GLSL shader.
```

Demo:	**ogl_vertex_displacement**
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents




```
ogl_vertex_displacement.tcl

This sample demonstrates how to perform mesh deformation or
vertex displacement with OpenGL using a Cg and GLSL shader.

Original C++ code by Kevin Harris (kevin@codesampler.com) 04/21/05
See www.codesampler.com for the original files
OpenGL samples page 11: Vertex Displacement or Mesh Deformation Shader

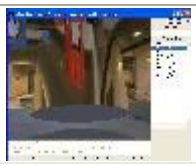
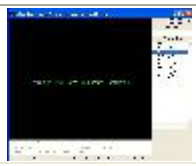
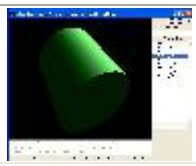
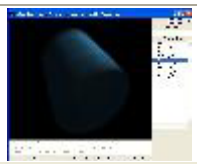
Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.

This sample integrates the Cg and GLSL code into one file.
If called with no command line arguments, it uses the Cg shader.
Use "glsl" as parameter to use the GLSL shader.
```

Type:	**GameProgrammer**
Category:	TutorialsAndBooks
Root:	Contents

Several demo applications from Vahid Kazemi's page have been ported to Tcl3D.
Original sources available at: http://www.GameProgrammer.org

Available demos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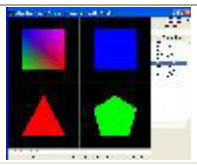
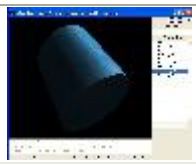
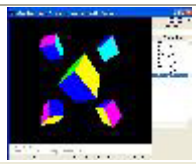
				
GL_Primitives	GL_Shadow	GL_Texturing	GL_Viewing	

Demo:	**GL_Blending**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents

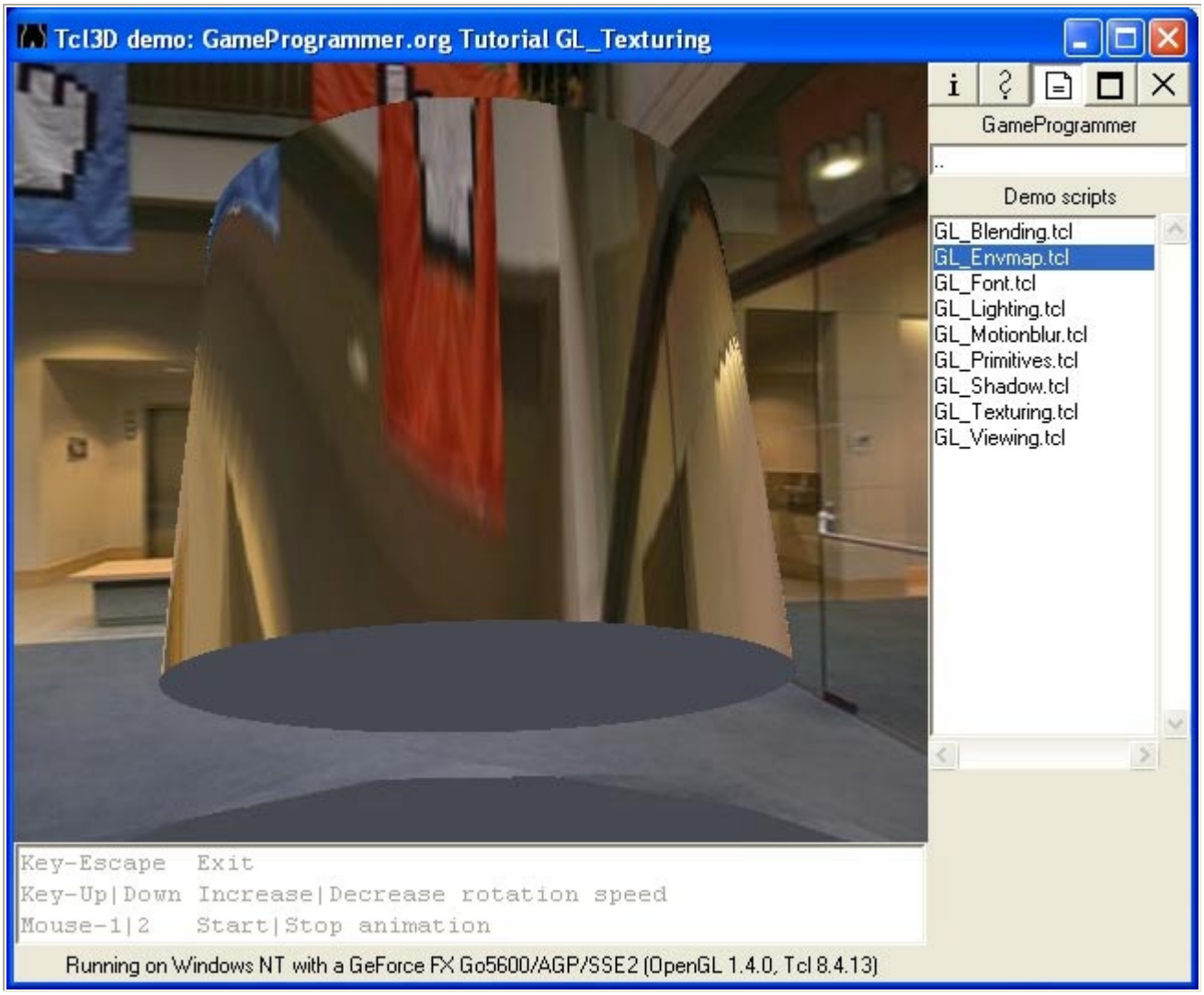

```
GL_Blending.tcl

Tutorial from www.GameProgrammer.org
Blending demo

Original code Copyright 2005 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/12
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Envmap**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



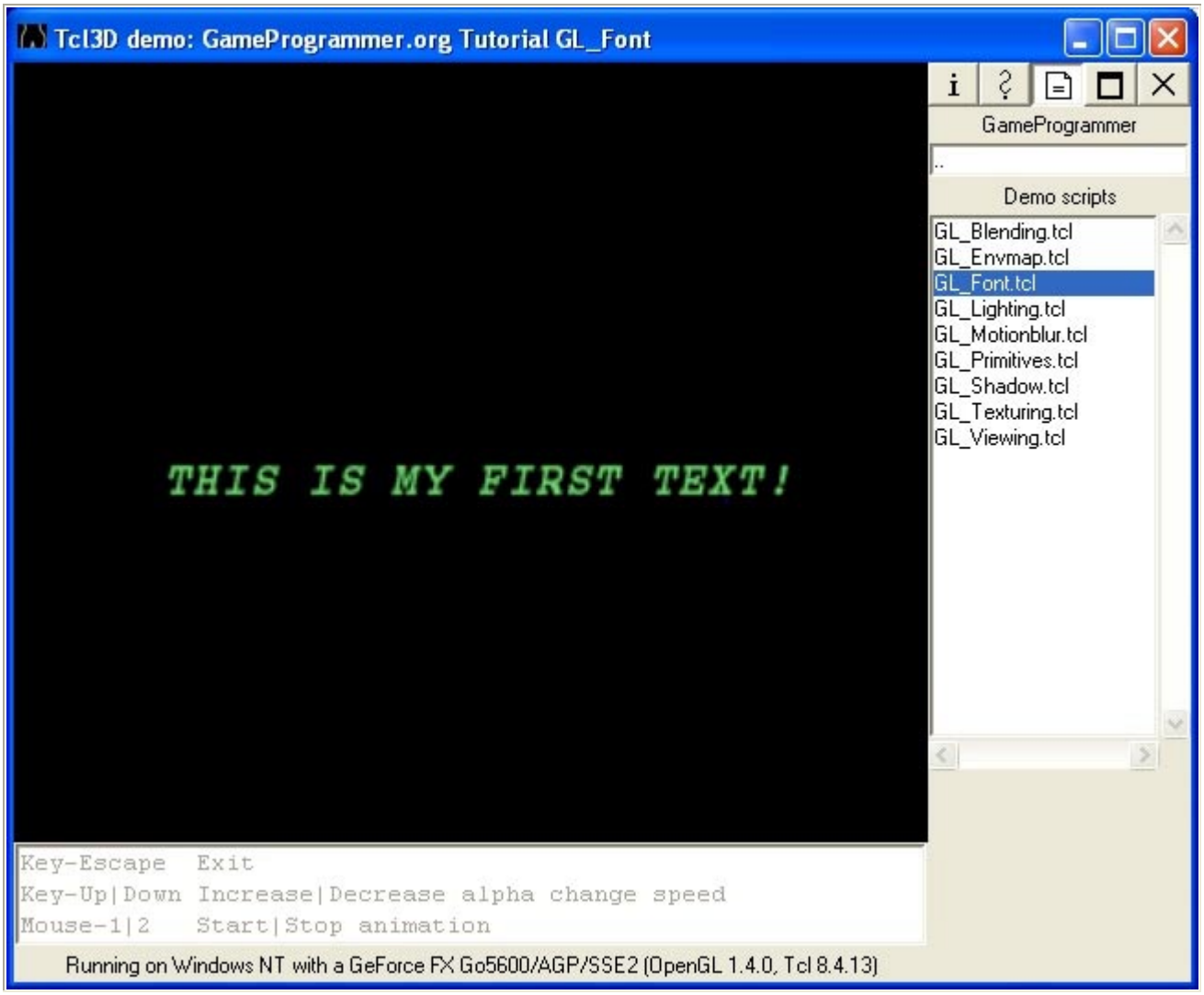

```
GL_Texturing.tcl

Tutorial from www.GameProgrammer.org
Using Textures

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/12
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Font**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



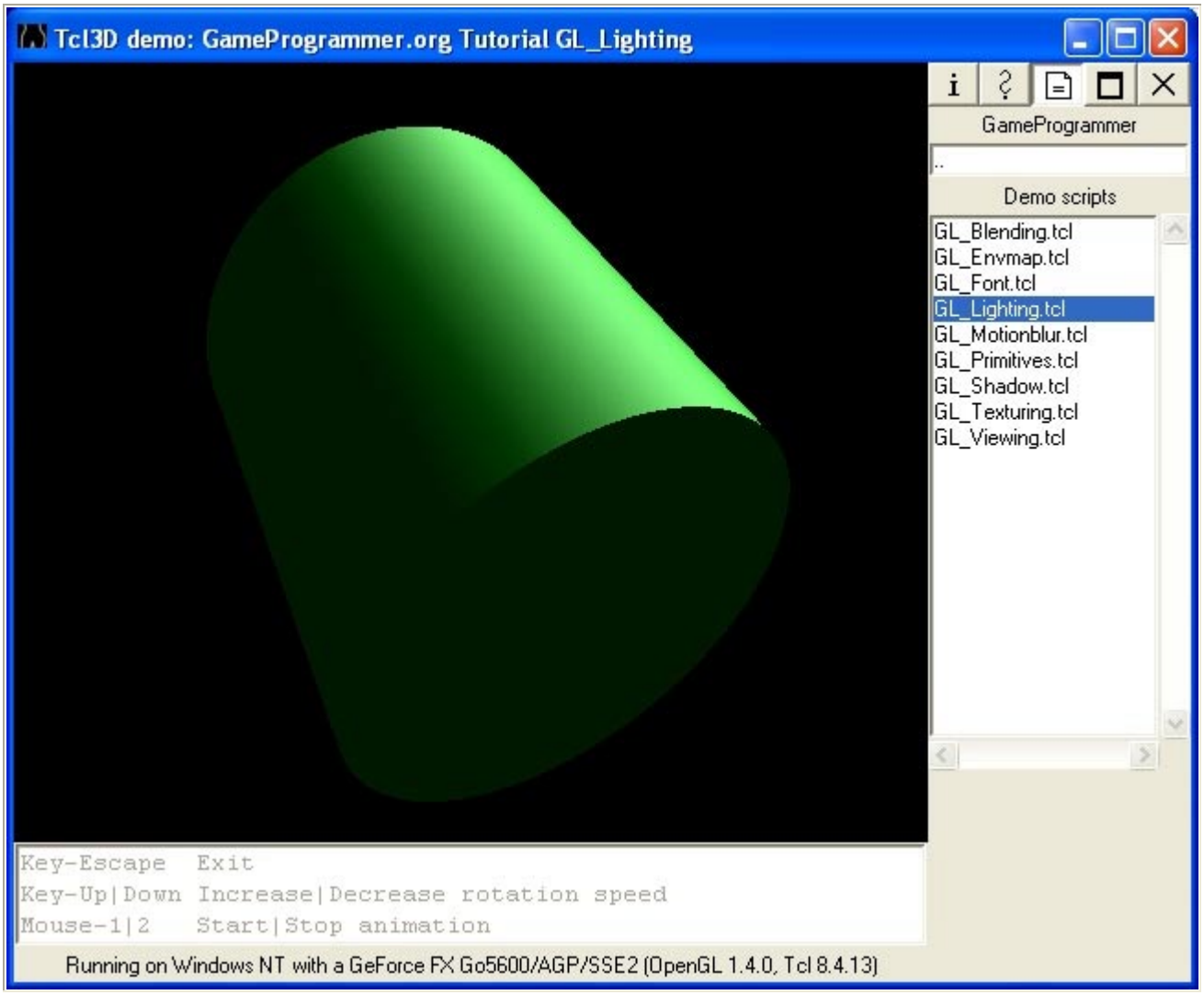

```
GL_Font.tcl

Tutorial from www.GameProgrammer.org
Bitmap fonts

Original code Copyright 2005 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/15
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Lighting**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



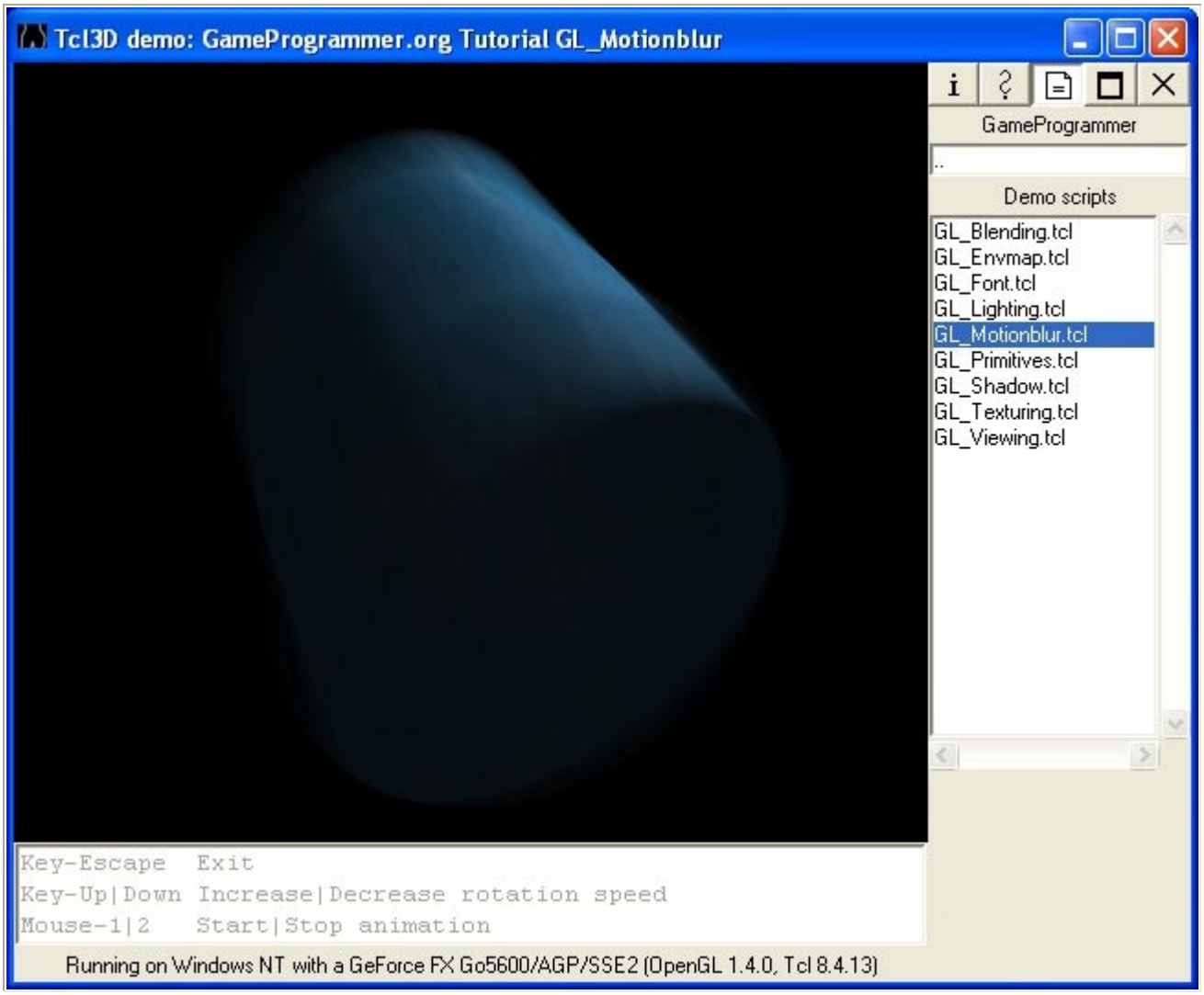

```
GL_Lighting.tcl

Tutorial from www.GameProgrammer.org
Turn the lights on!

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/11
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Motionblur**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents




```
GL_Motionblur.tcl

Tutorial from www.GameProgrammer.org
Using Textures

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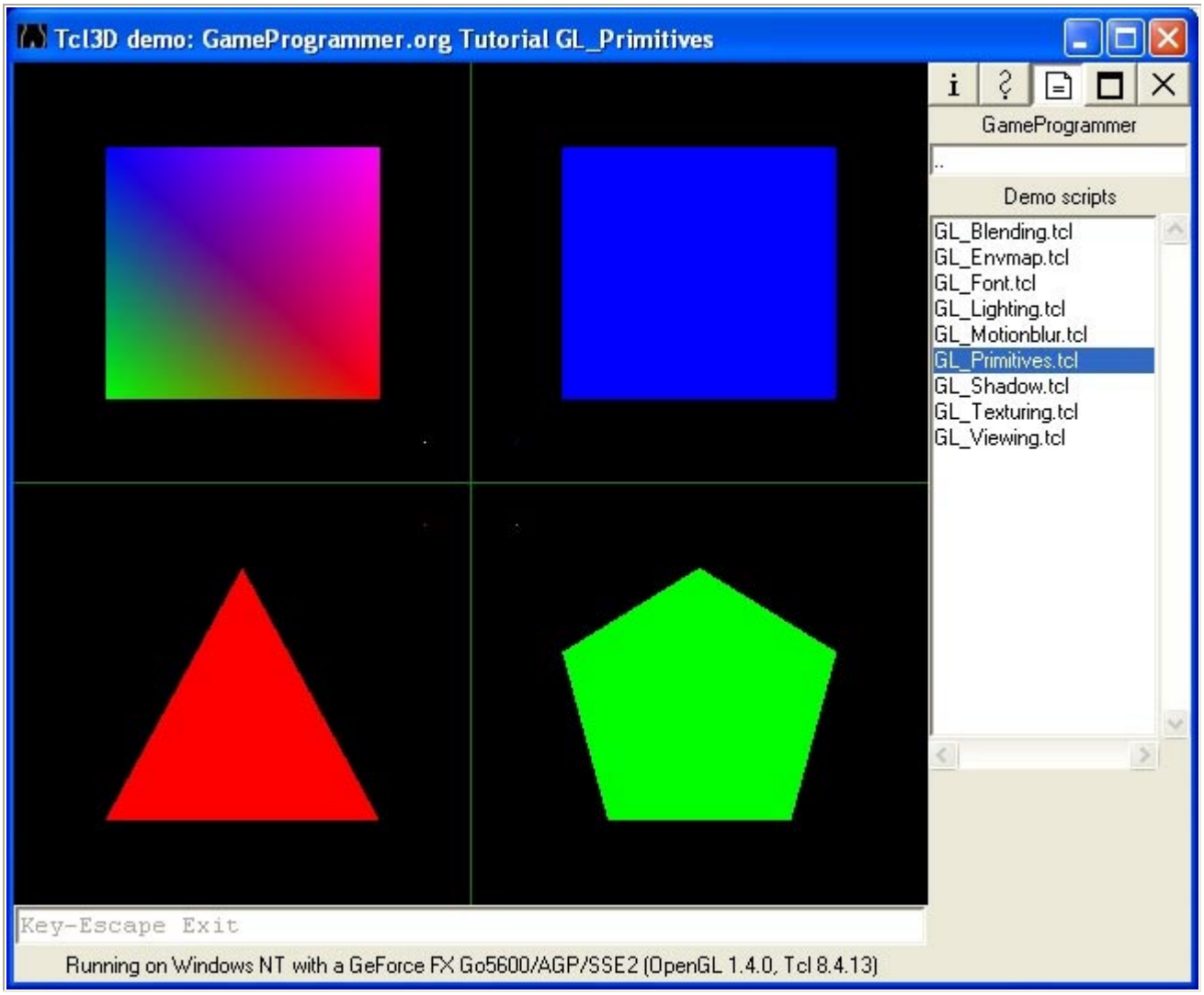
Modified for Tcl3D by Paul Obermeier 2006/09/14
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Primitives**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



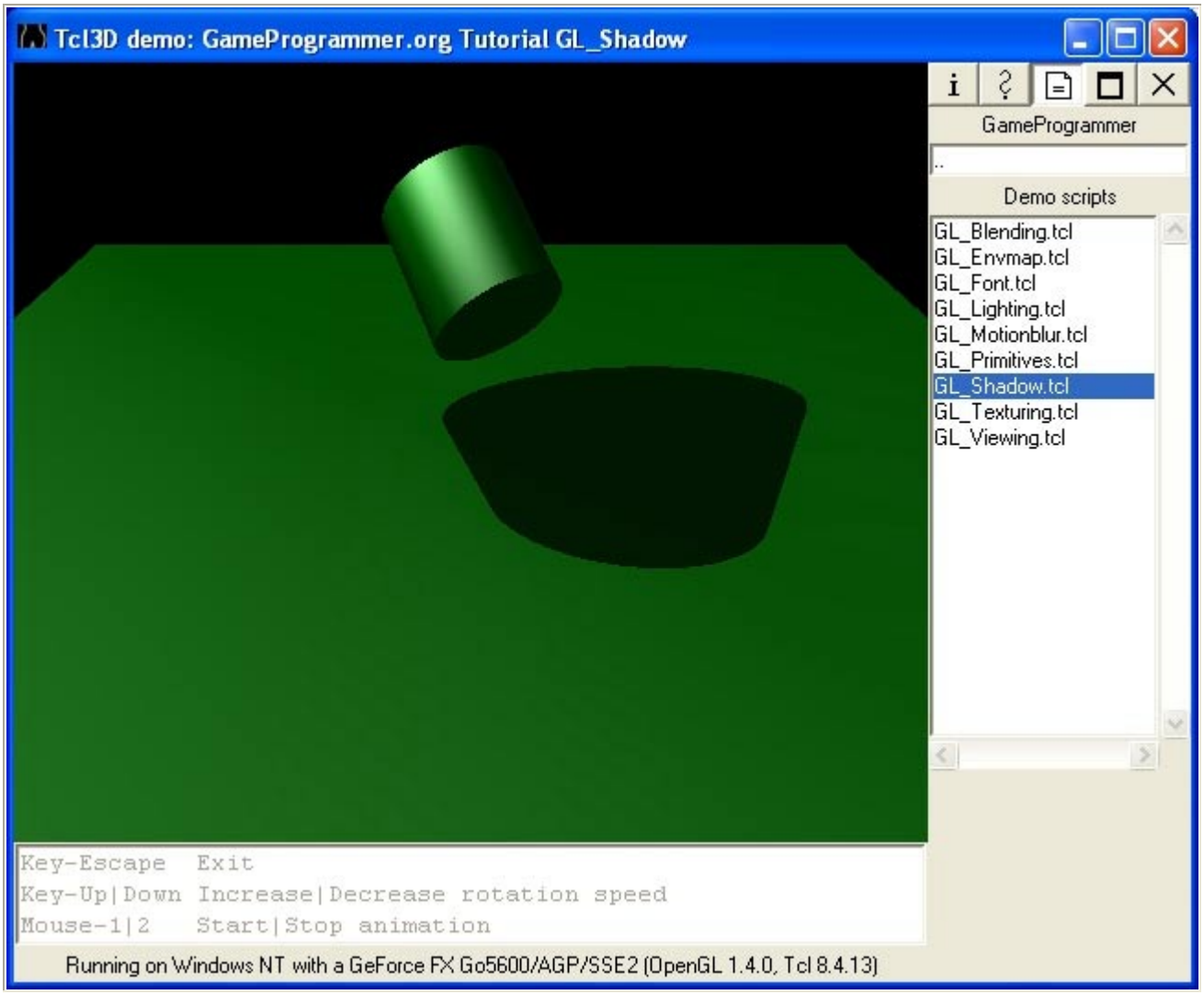

```
GL_Primitives.tcl

Tutorial from www.GameProgrammer.org
OpenGL Primitives.

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/11
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Shadow**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



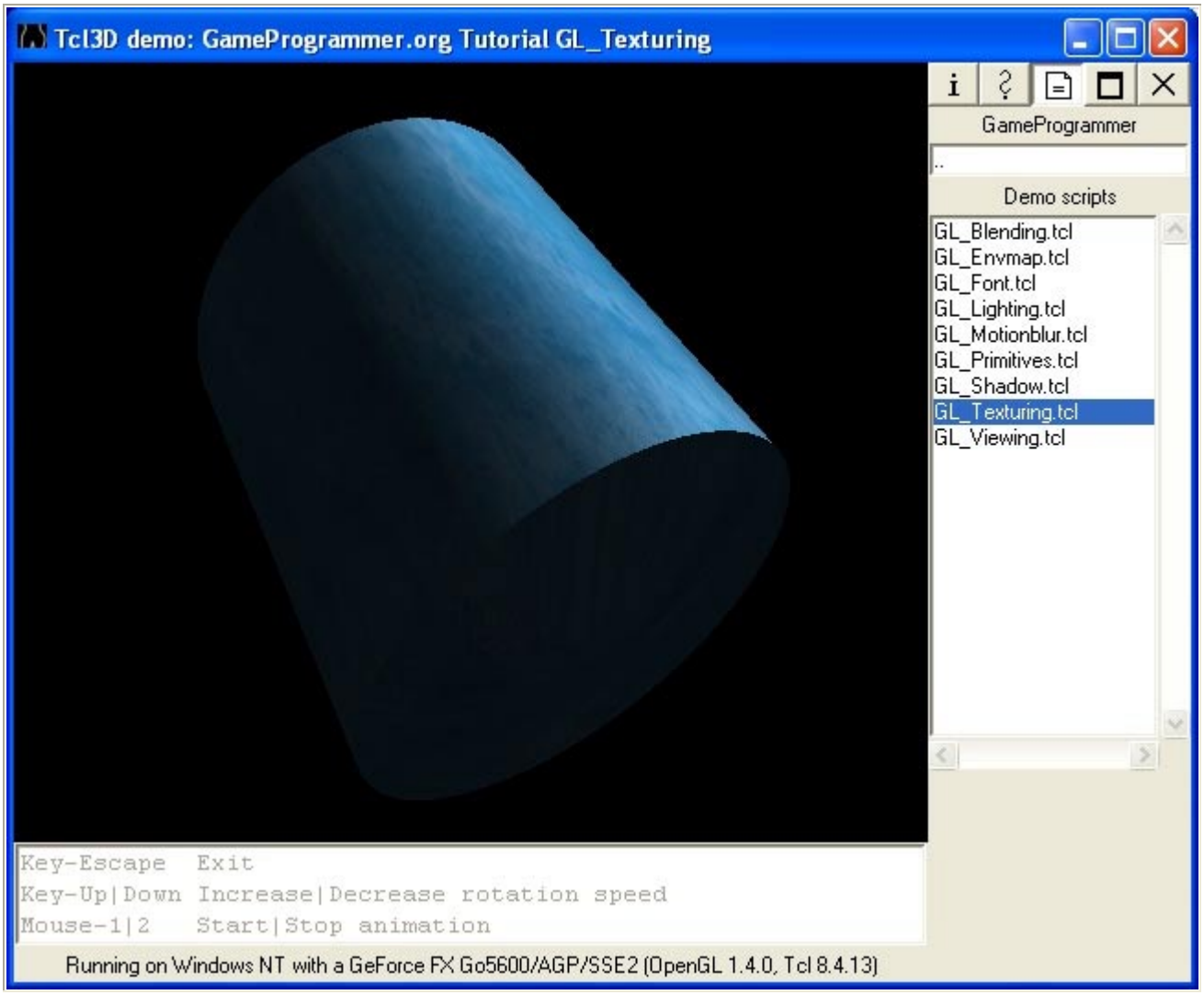

```
GL_Shadow.tcl

Tutorial from www.GameProgrammer.org
Stencil shadows.

Original code Copyright 2005 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/10
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Texturing**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



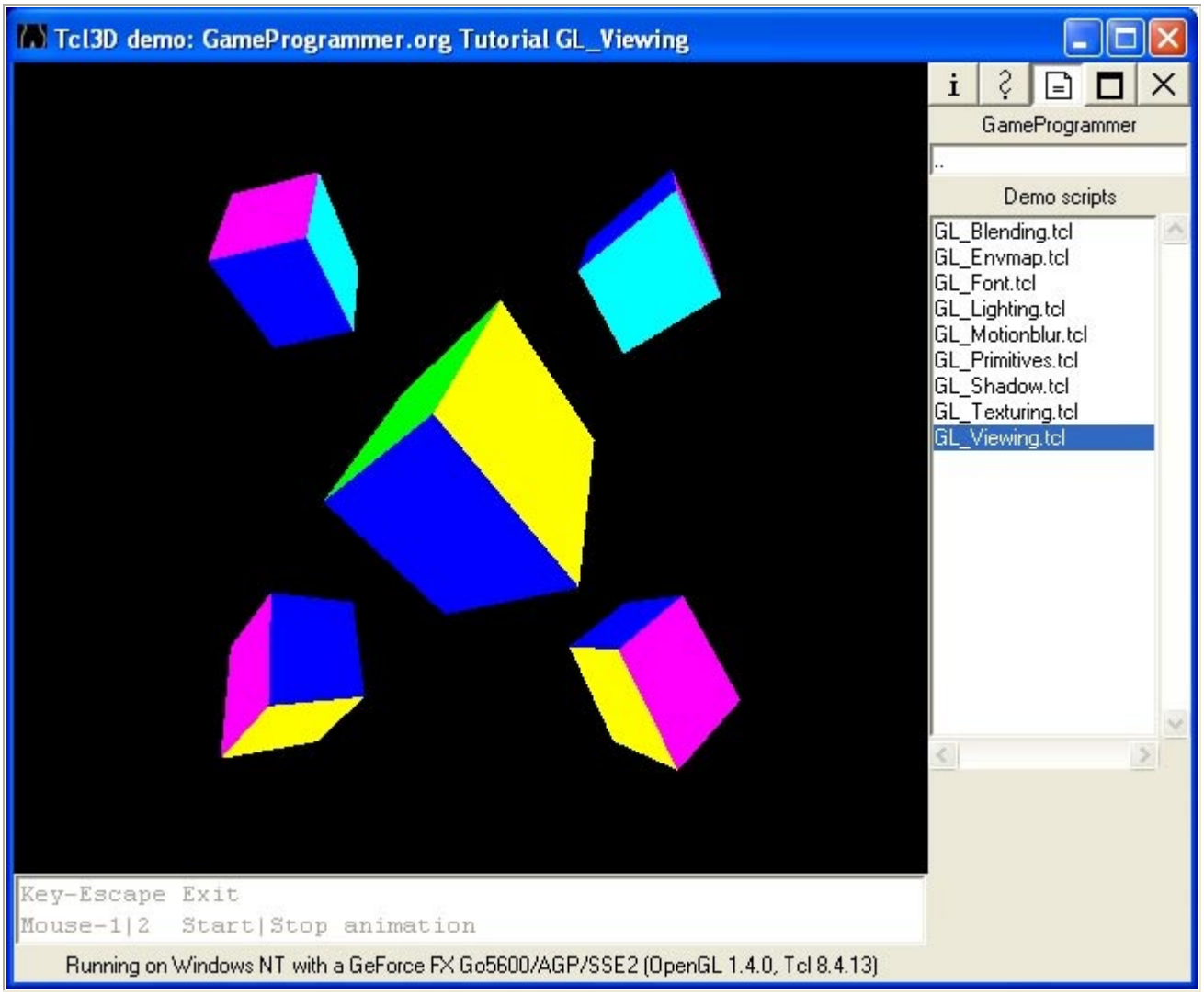

```
GL_Texturing.tcl

Tutorial from www.GameProgrammer.org
Using Textures

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/12
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**GL_Viewing**
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents




```
GL_Viewing.tcl

Tutorial from www.GameProgrammer.org
Viewing and Transformations.

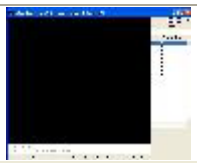
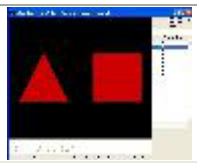
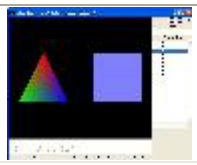
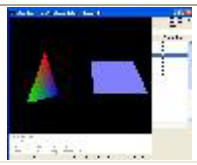
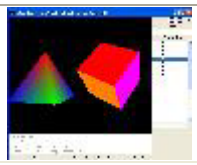
Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/11
See www.tcl3d.org for the Tcl3D extension.
```

Type:	**NeHe**
Category:	TutorialsAndBooks
Root:	Contents

Some of the NeHe OpenGL tutorials have been ported to run with Tcl3D. Currently 32 out of 48 lessons are available.
Original sources available at: http://nehe.gamedev.net/

Available demos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		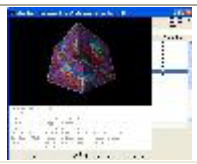	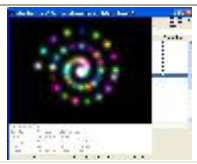	
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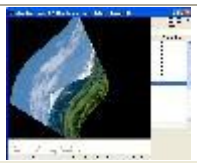	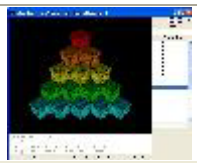	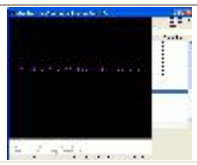		
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		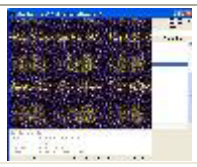		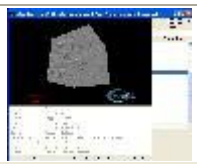
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			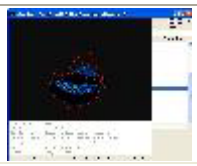	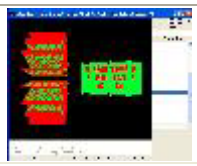
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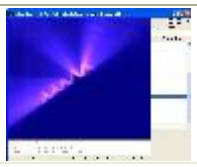			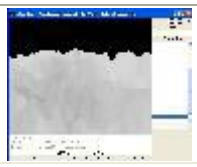	
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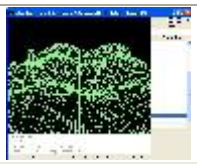				
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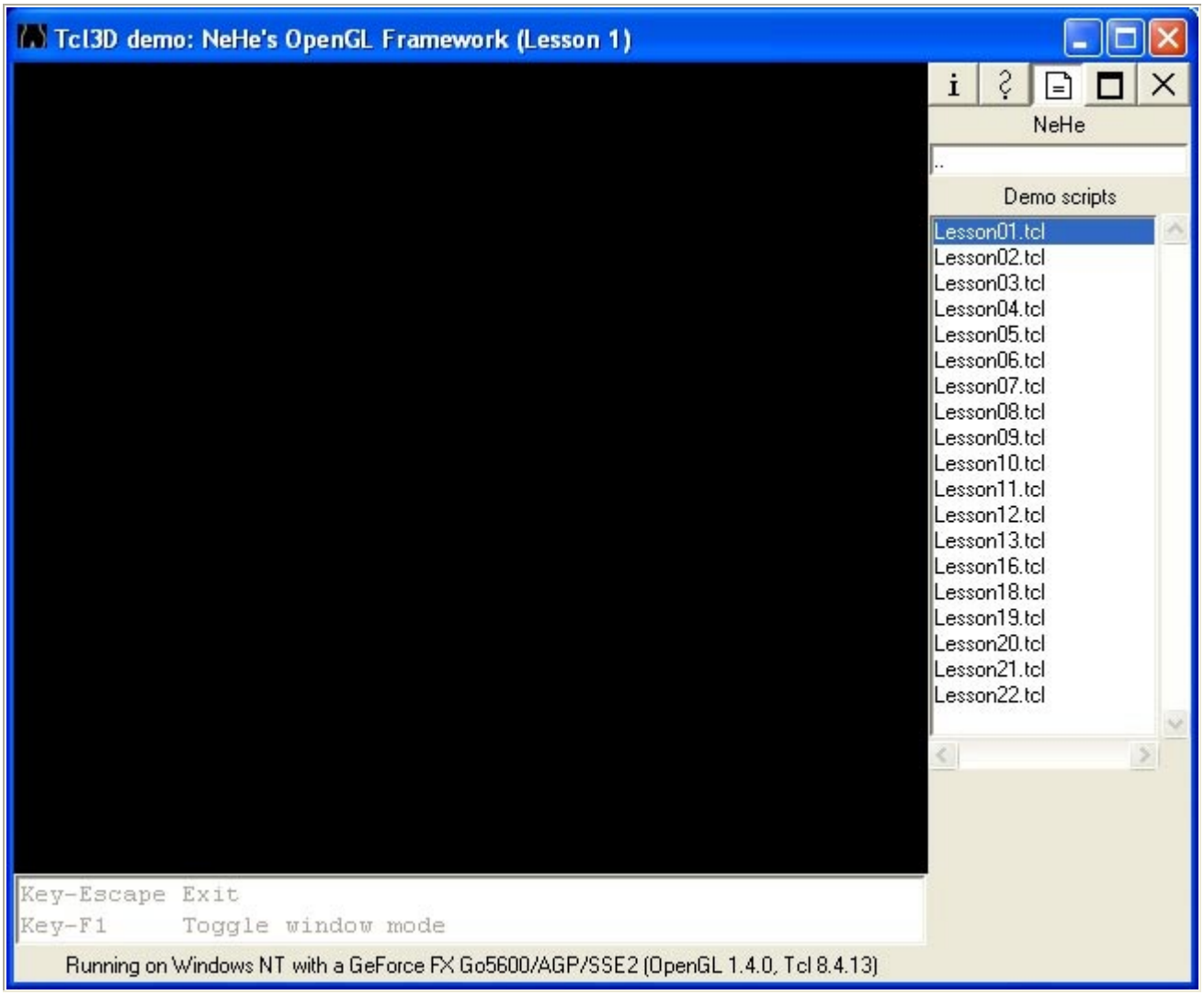
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson01.tcl

NeHe's OpenGL Framework

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A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
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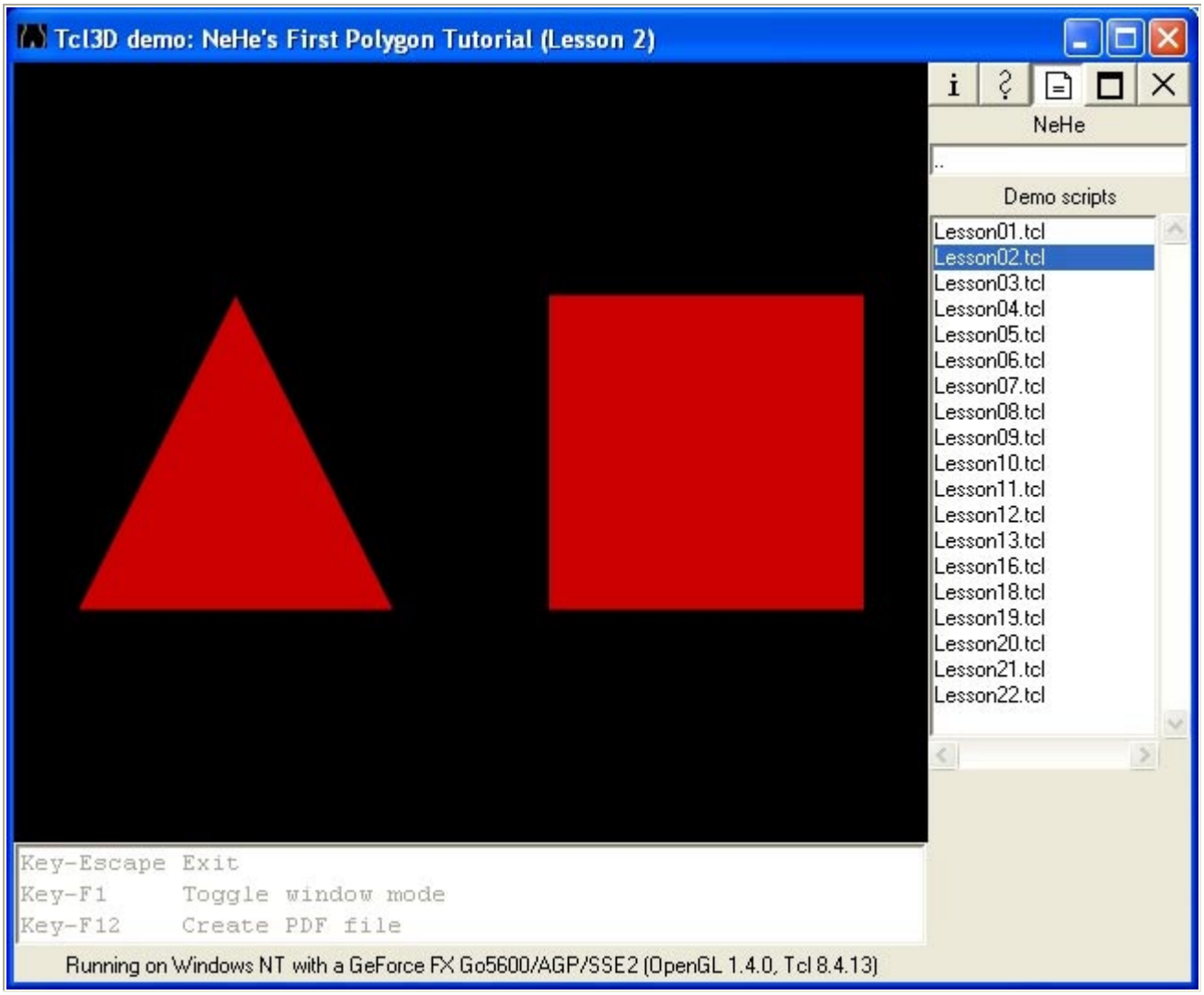
Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson02**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson02.tcl

NeHe's First Polygon Tutorial

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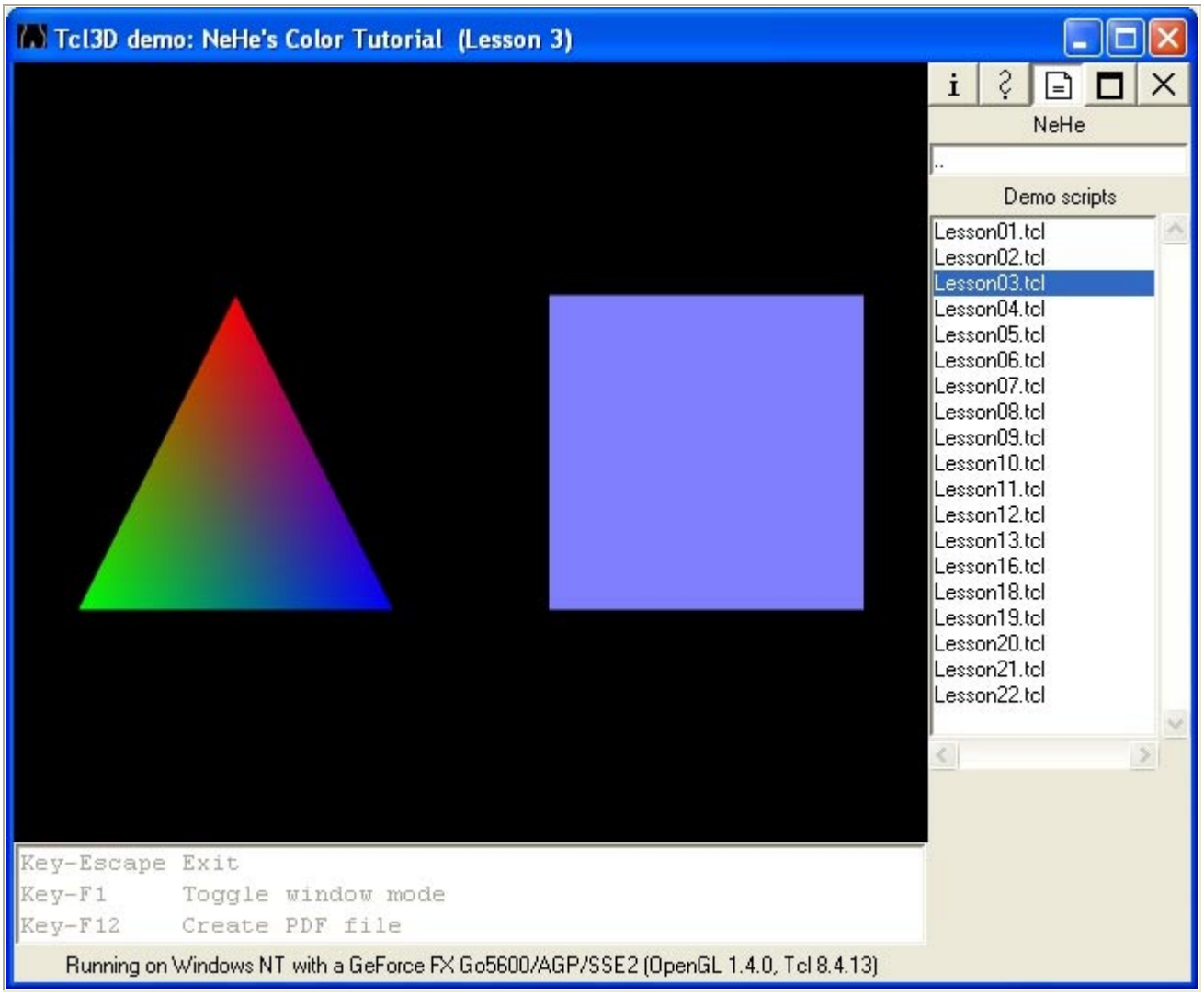
```

Demo:	**Lesson03**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson03.tcl

NeHe's Color Tutorial

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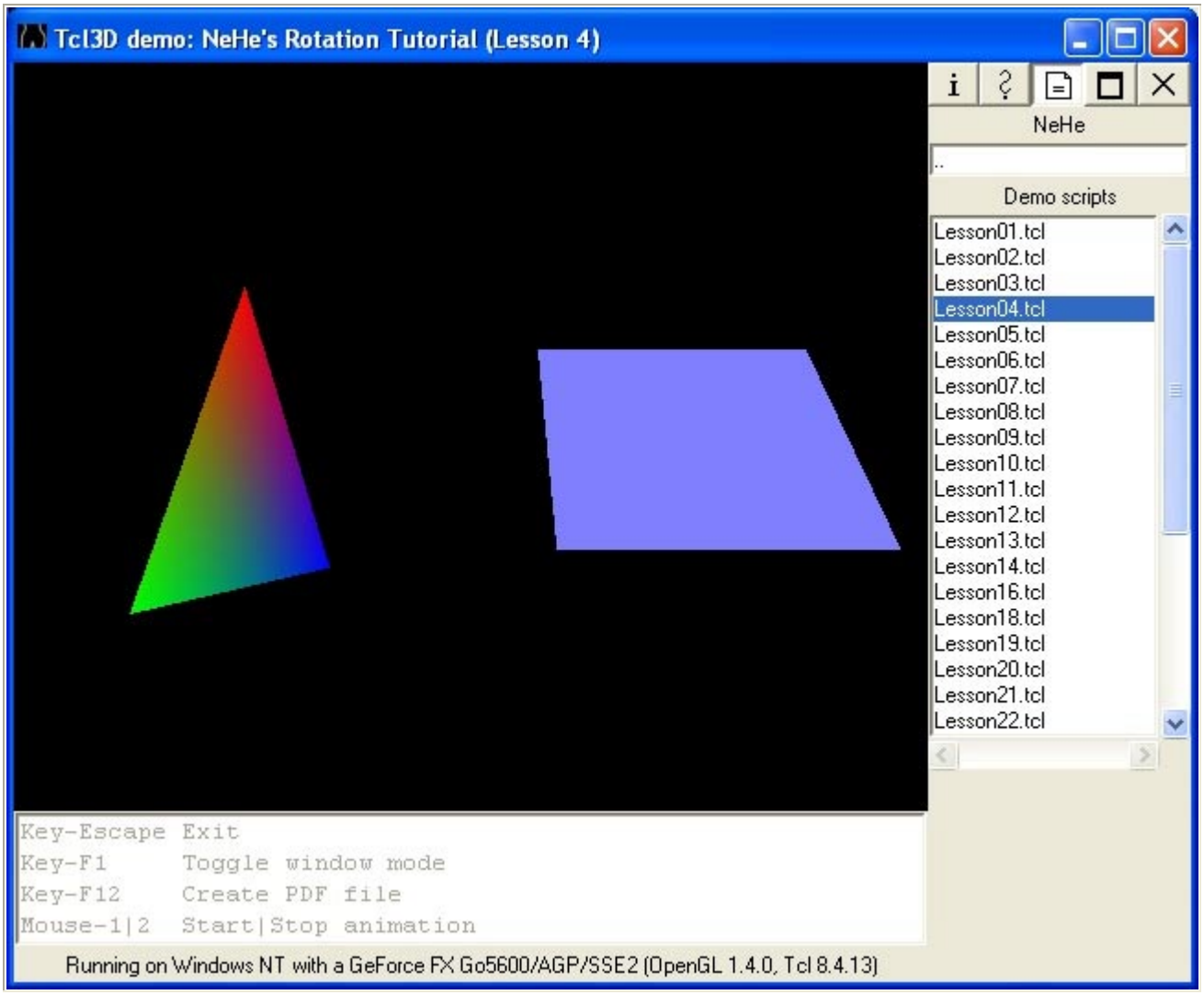
```

Demo:	**Lesson04**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson04.tcl

NeHe's Rotation Tutorial

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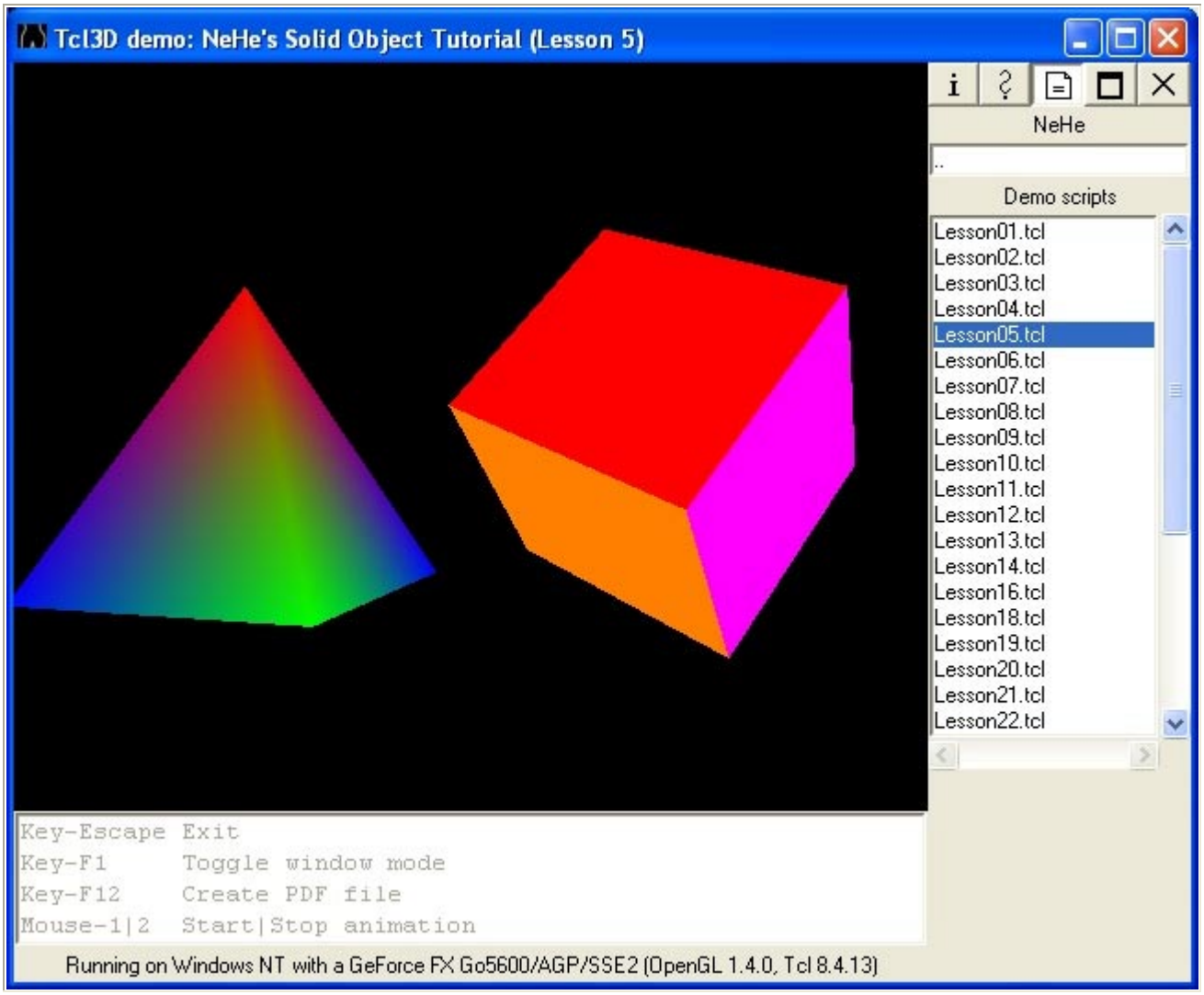
```

Demo:	**Lesson05**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson05.tcl

NeHe's Solid Object Tutorial

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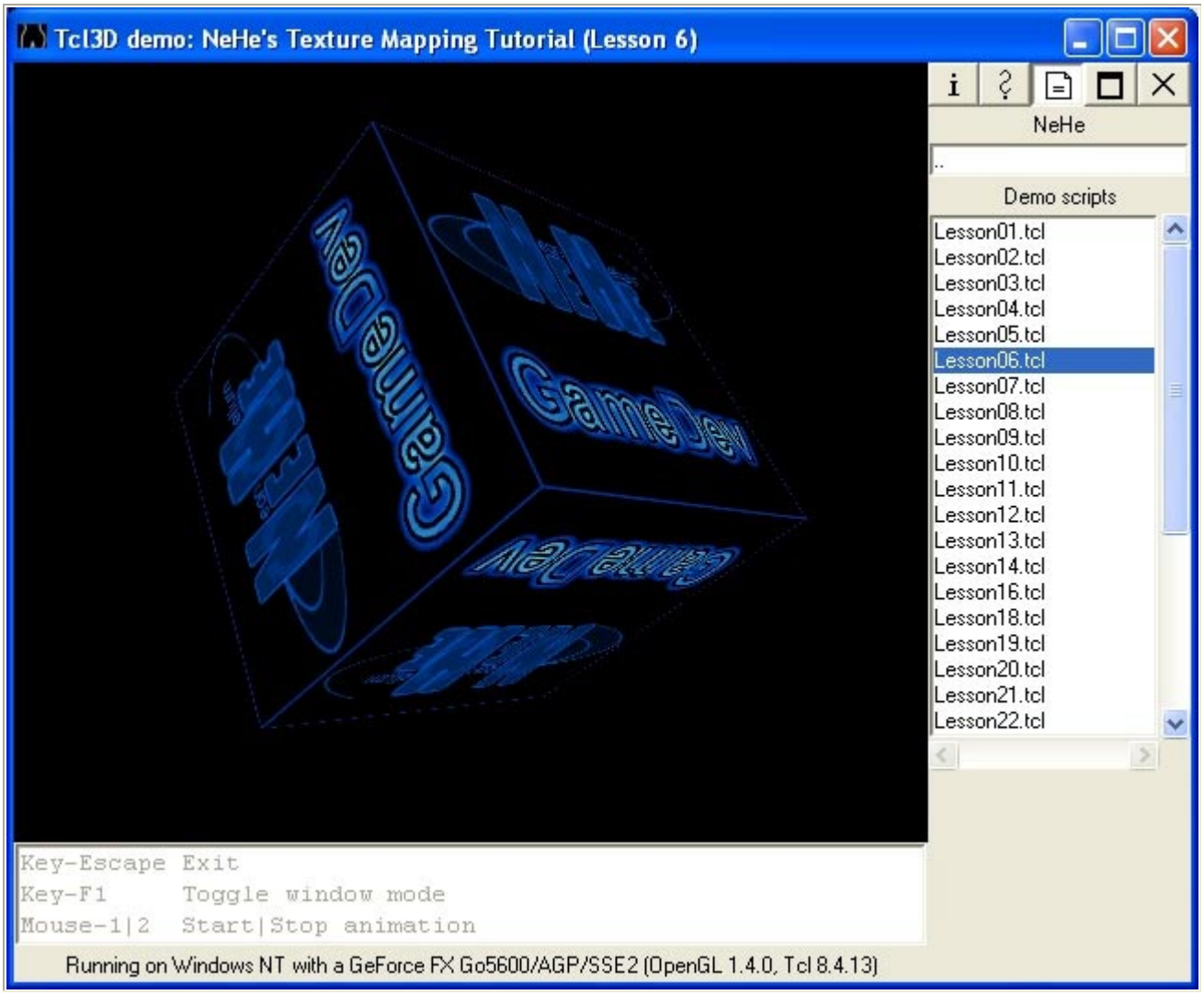
```

Demo:	**Lesson06**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson06.tcl

NeHe's Texture Mapping Tutorial

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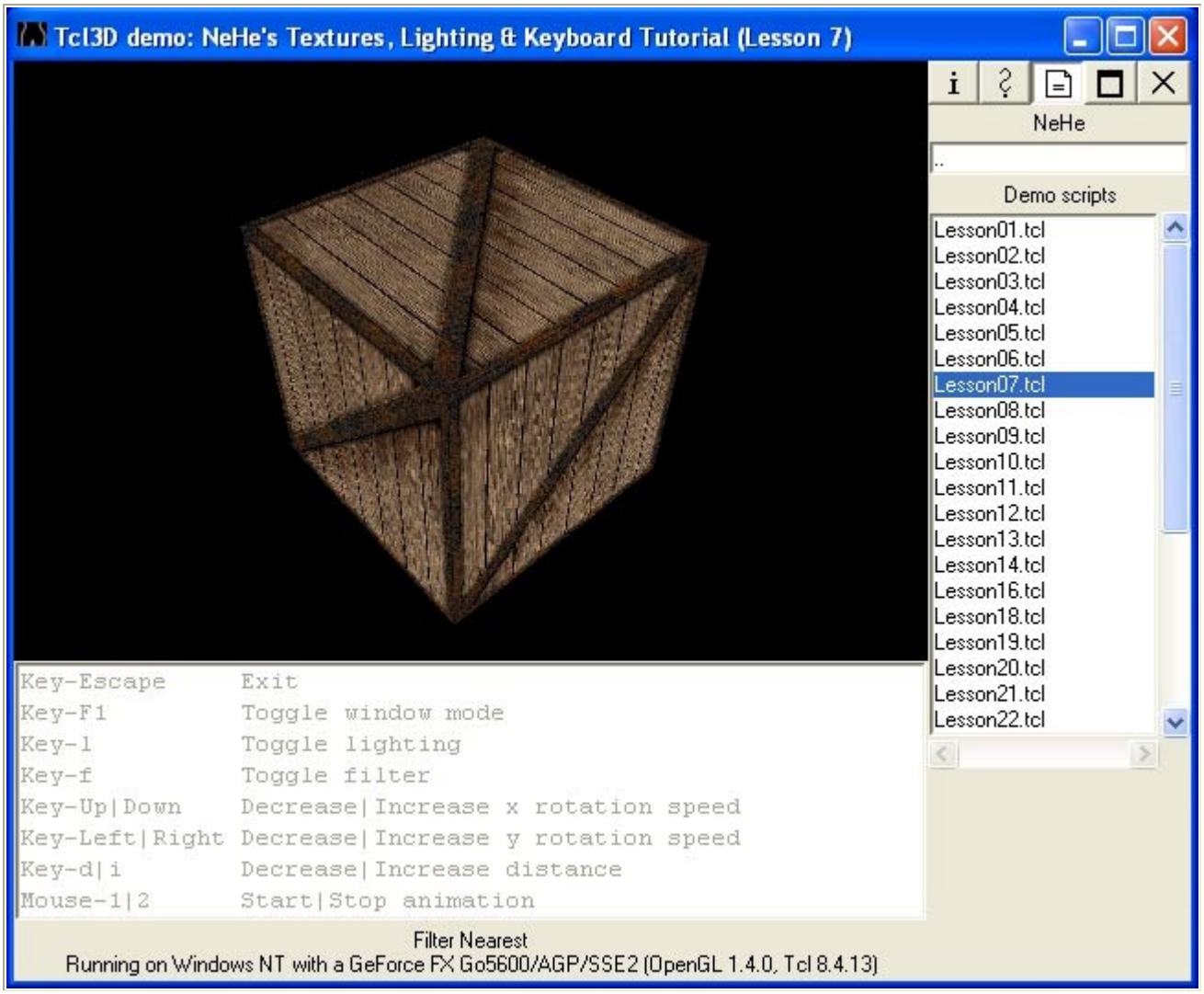
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson07**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson07.tcl

NeHe's Textures, Lighting & Keyboard Tutorial

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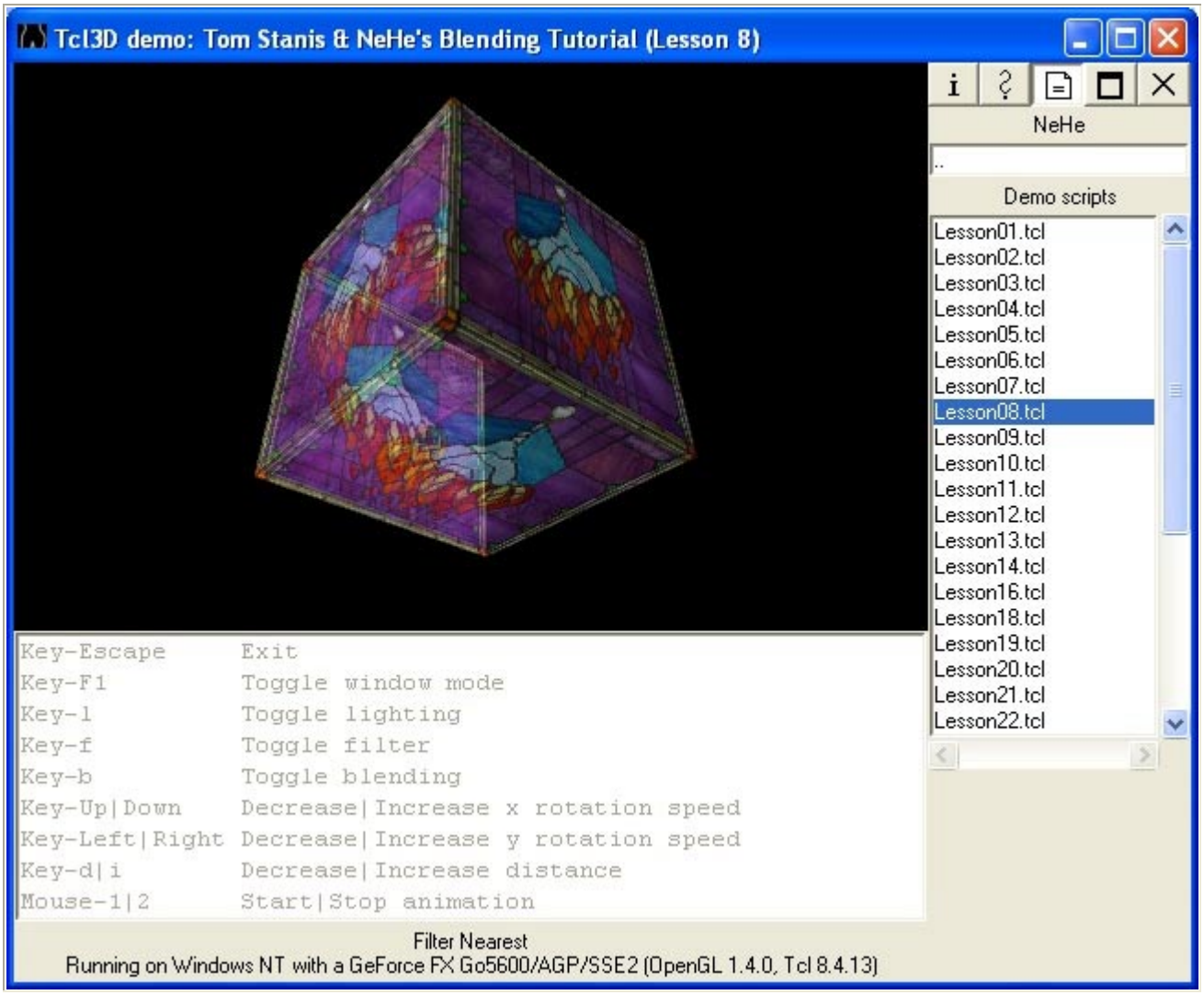
```

Demo:	**Lesson08**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson08.tcl

Tom Stanis & NeHe's Blending Tutorial

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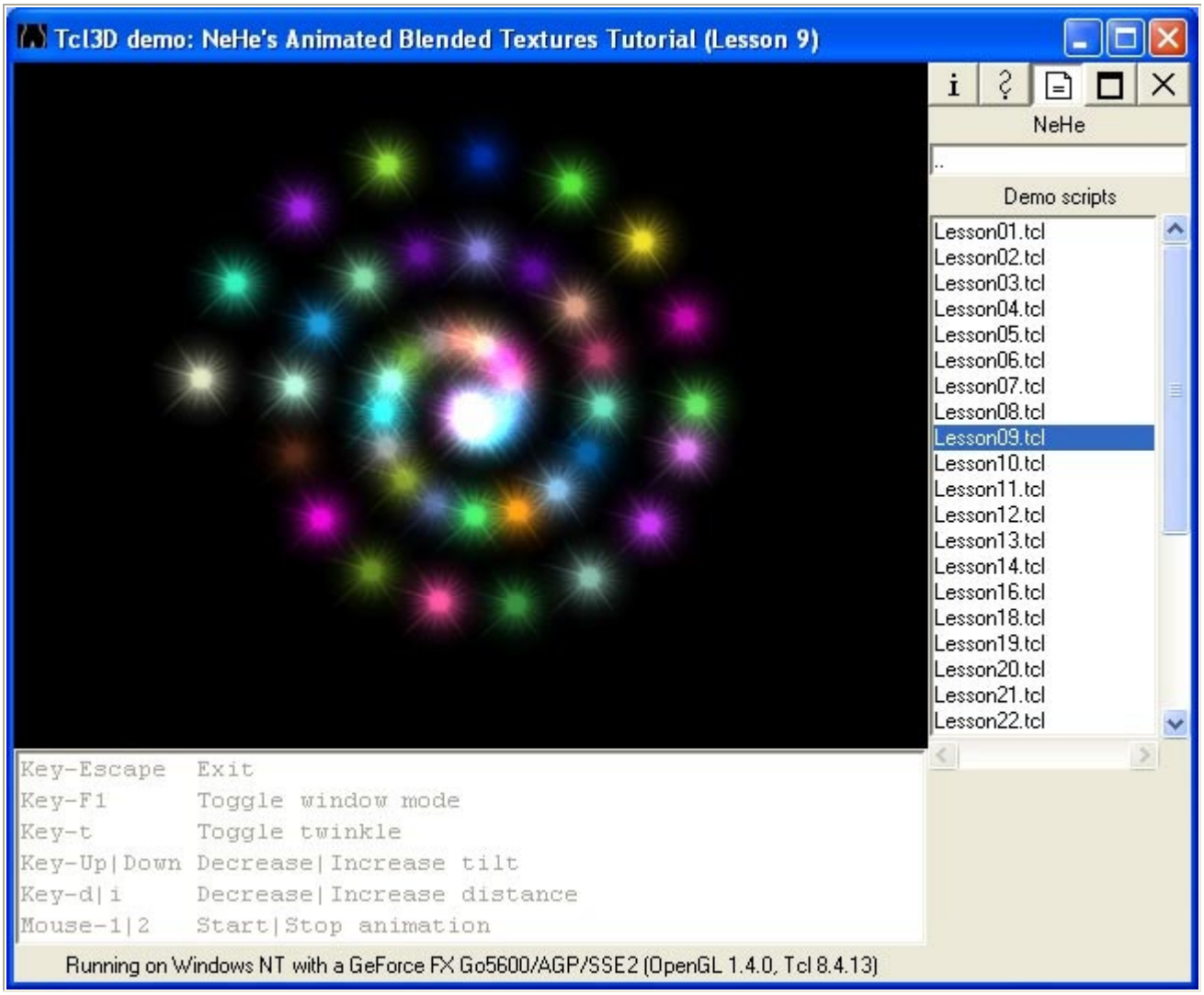
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson09**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson09.tcl

NeHe's Animated Blended Textures Tutorial

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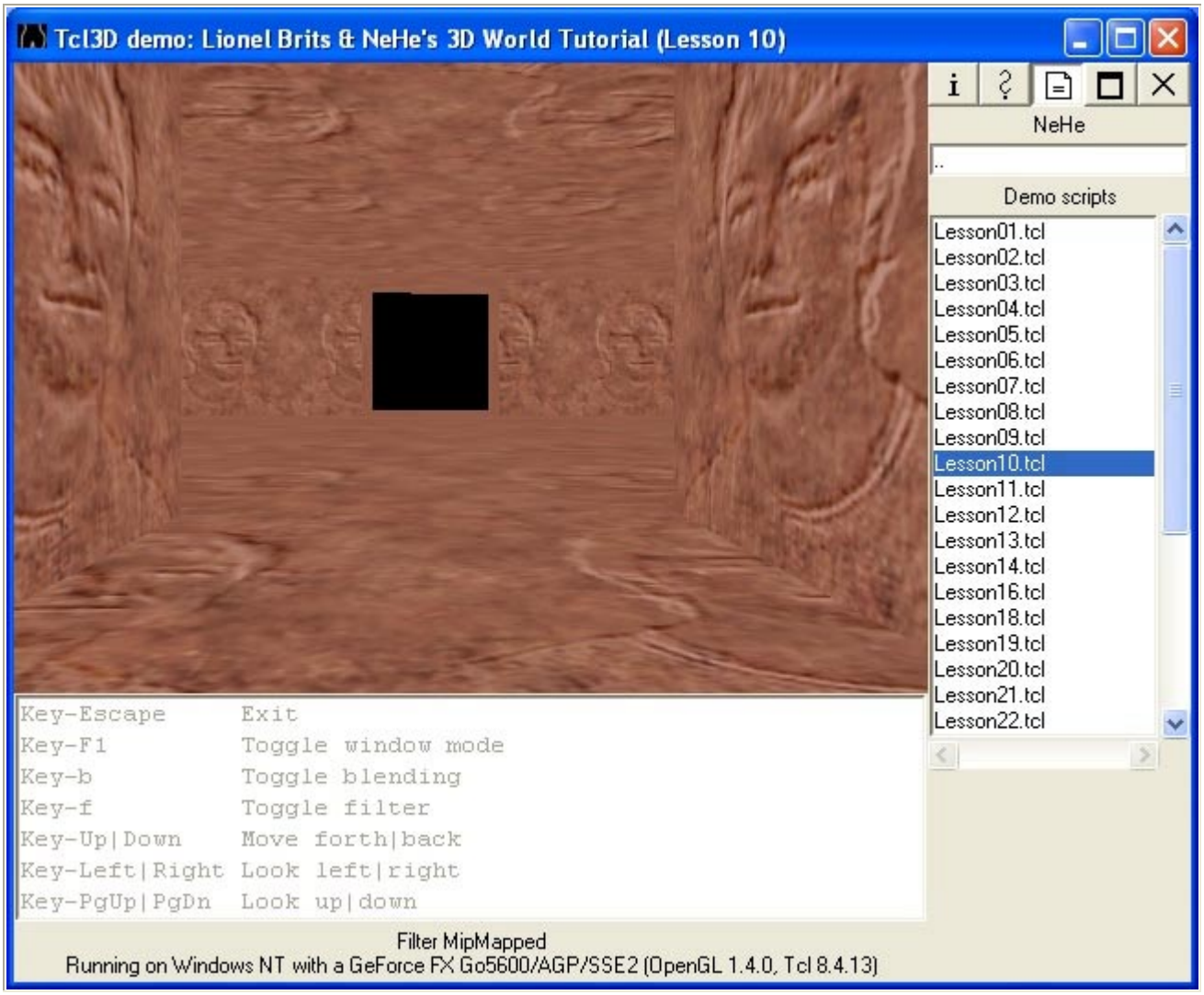
```

Demo:	**Lesson10**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



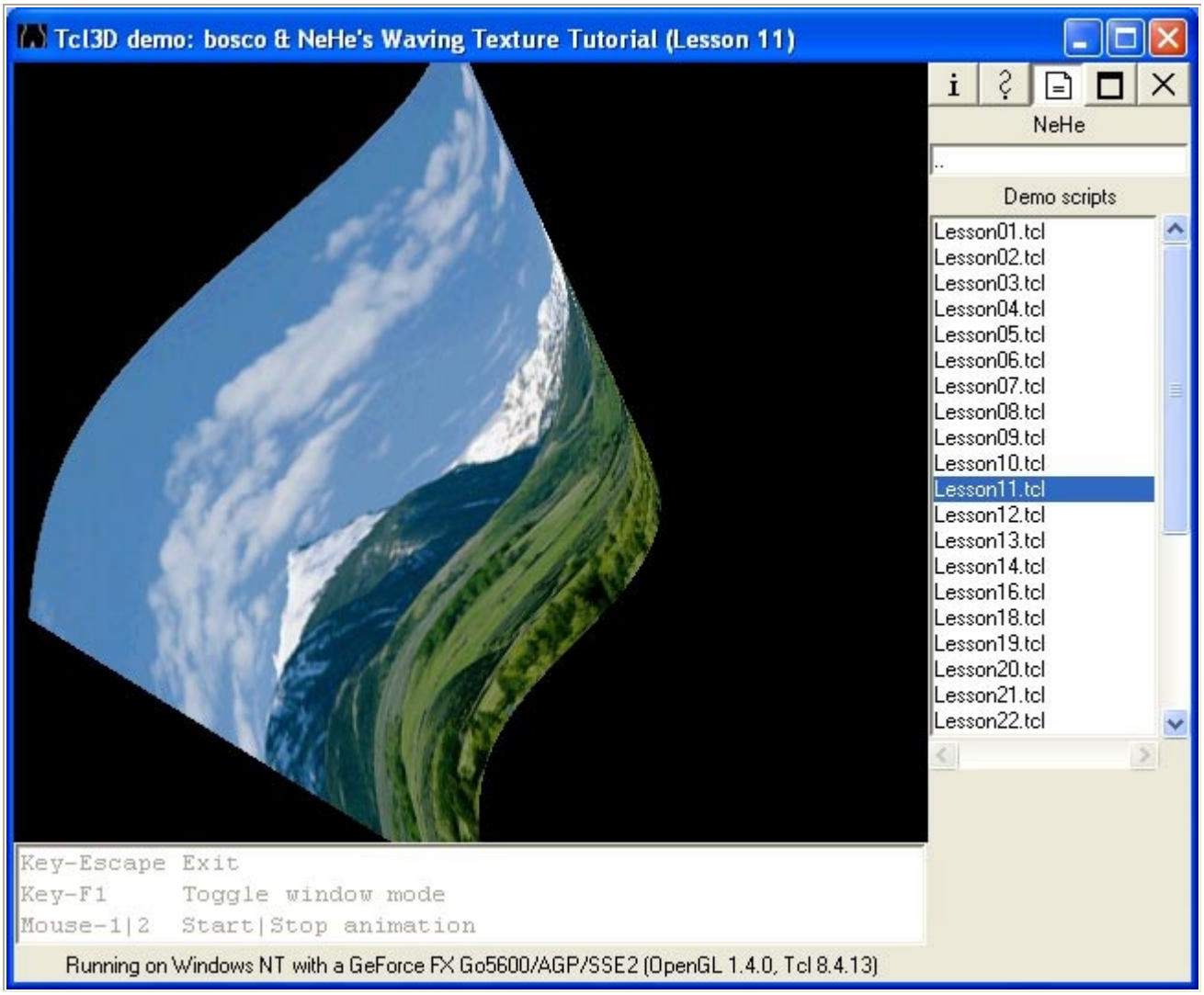

```
Lesson10.tcl

Lionel Brits & NeHe's 3D World Tutorial

This Code Was Created By Lionel Brits & Jeff Molofee 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson11**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



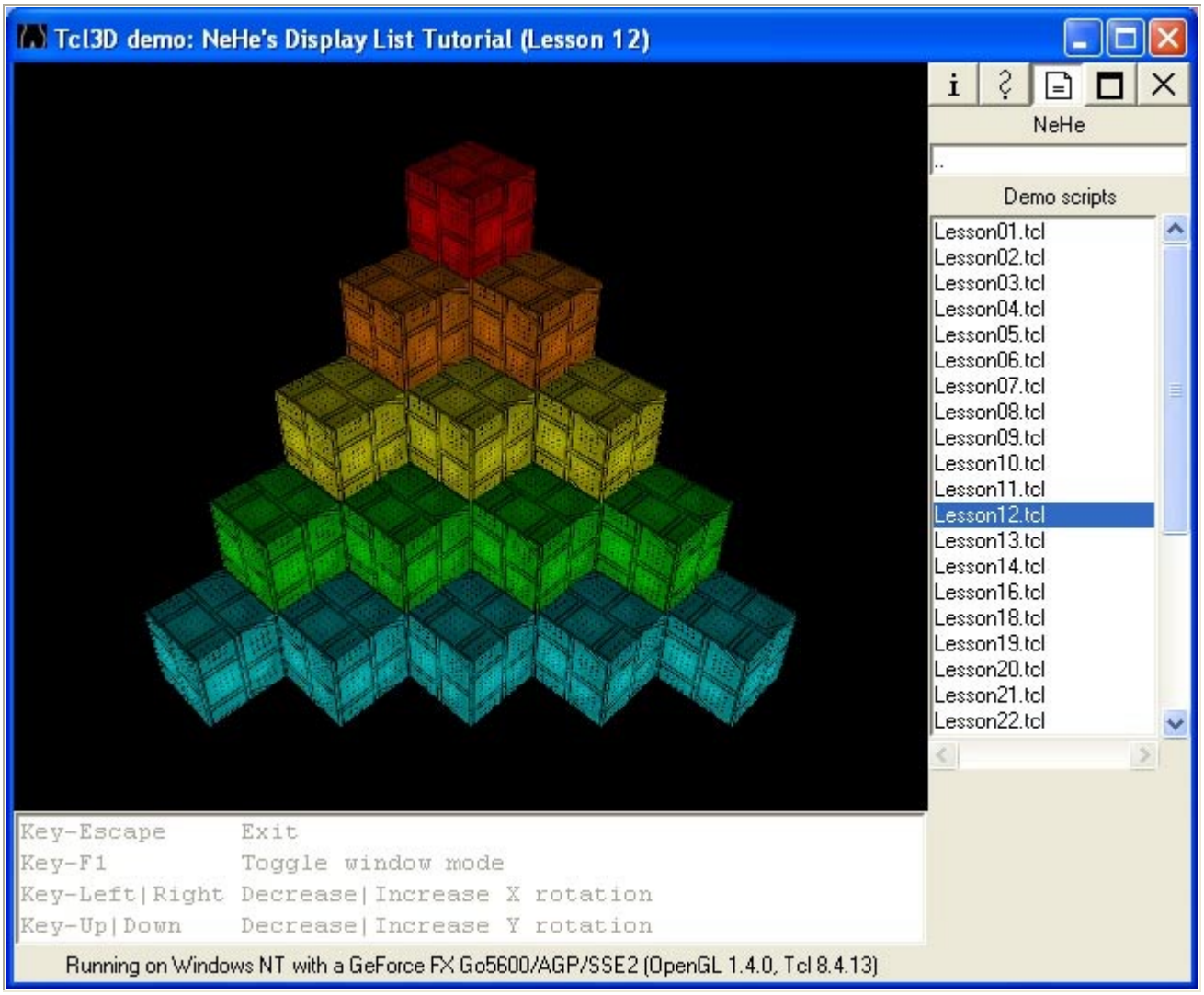

```
Lesson11.tcl

bosco & NeHe's Waving Texture Tutorial

This Code Was Created By bosco / Jeff Molofee 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson12**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



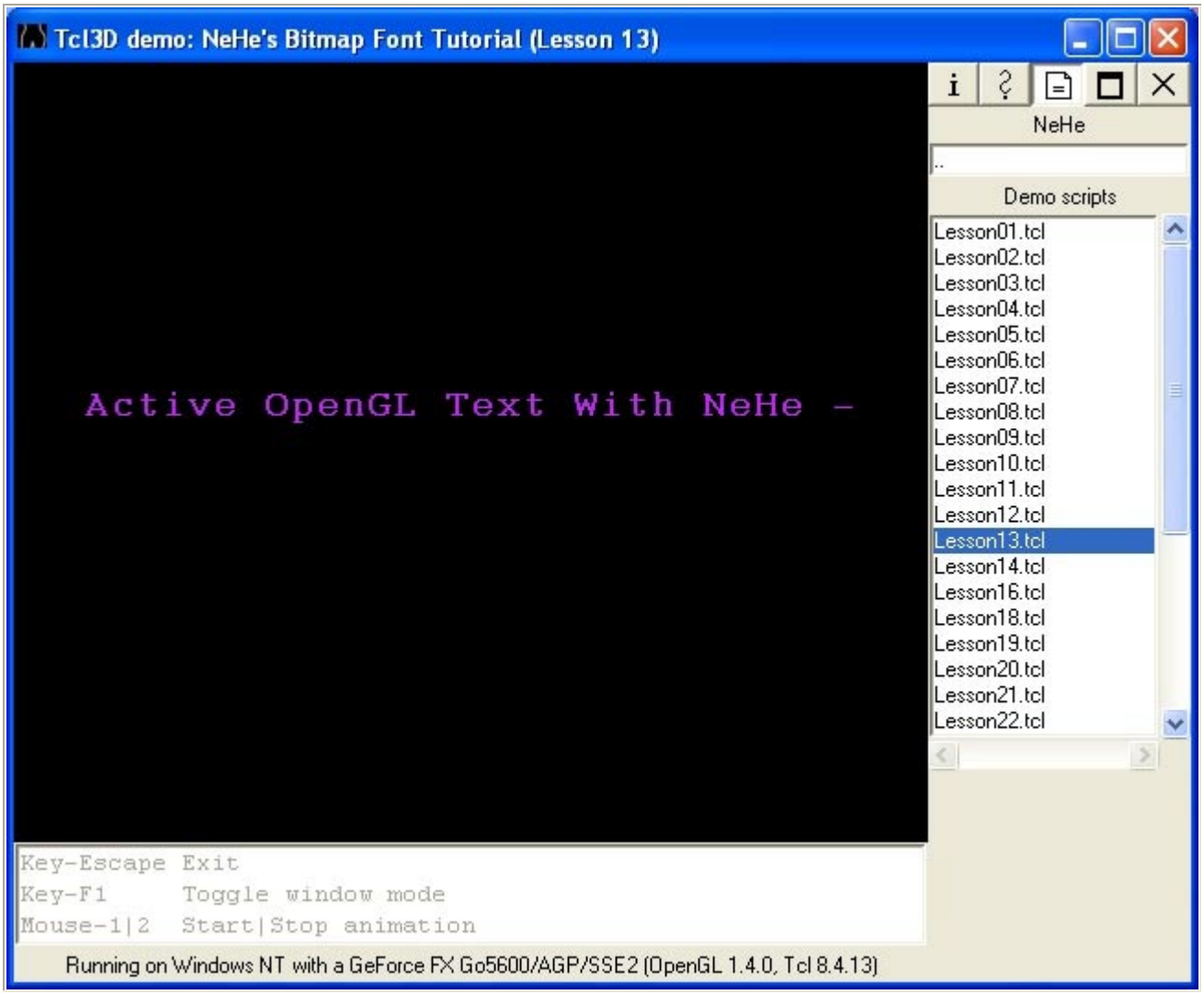

```
Lesson12.tcl

NeHe's Display List Tutorial

This Code Was Created By Jeff Molofee 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson13**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



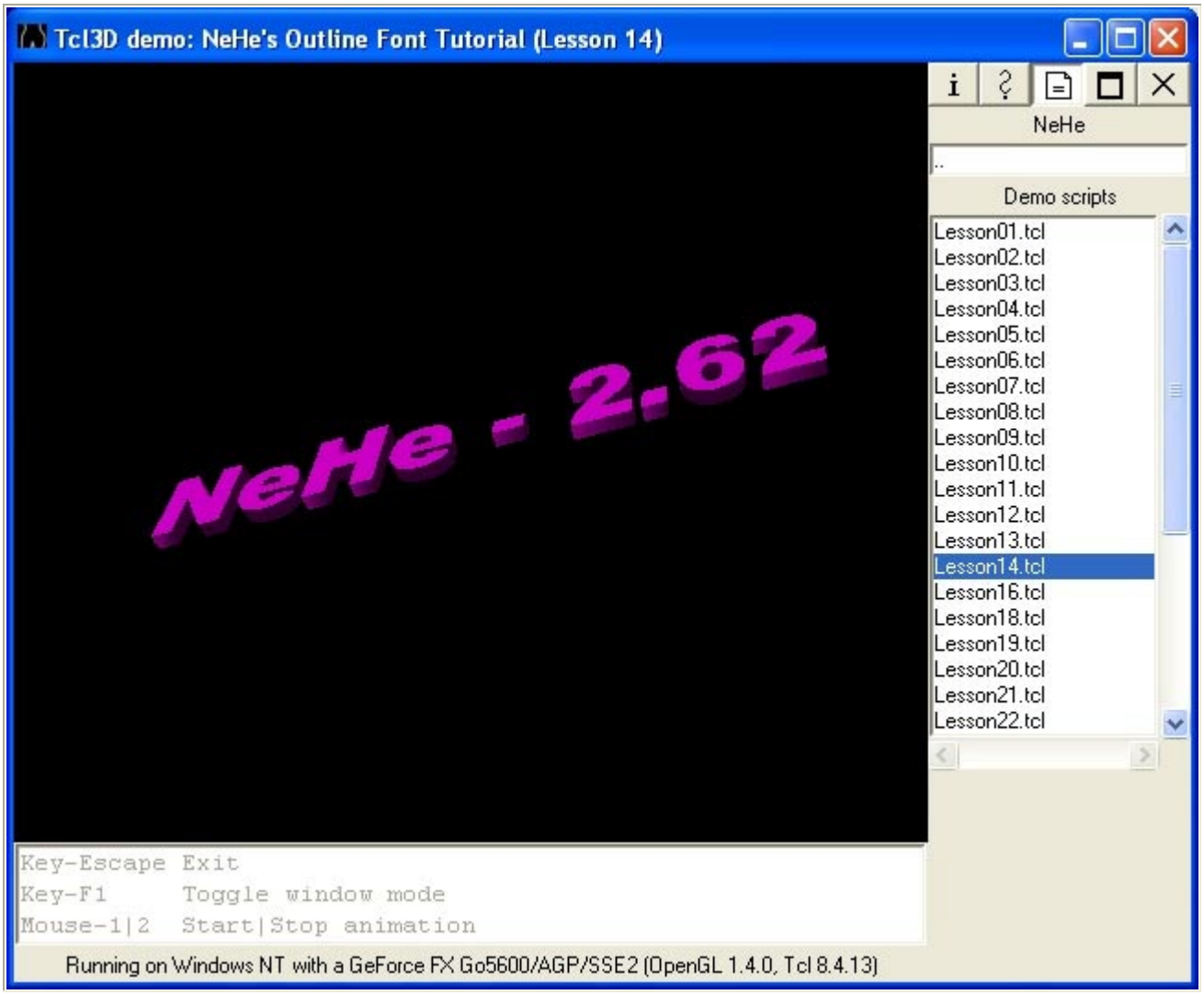

```
Lesson13.tcl

NeHe's Bitmap Font Tutorial

This Code Was Created By Jeff Molofee 2000
Modified by Shawn T. to handle (%3.2f, num) parameters.
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing The Base Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson14**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



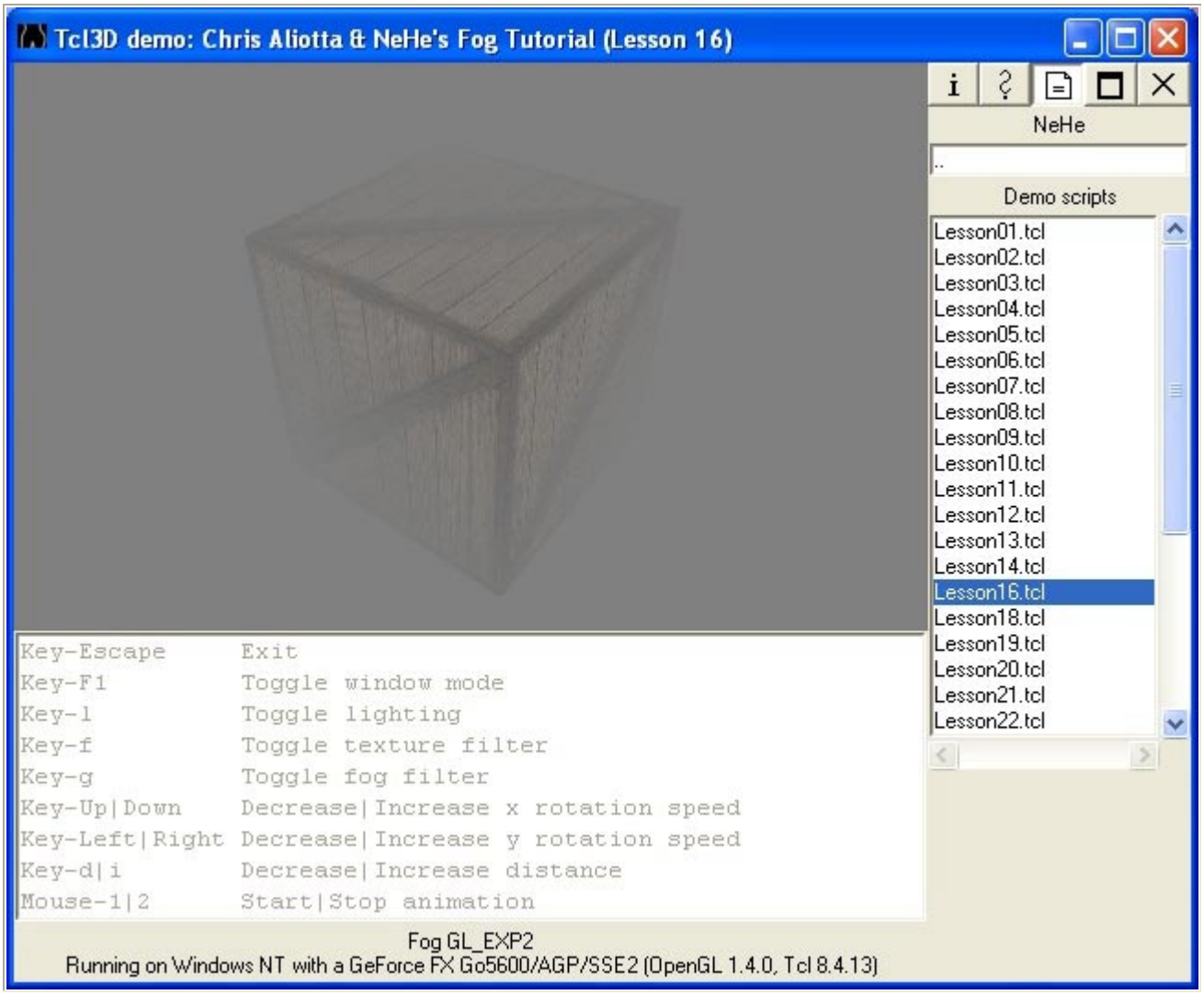

```
Lesson14.tcl

NeHe's Outline Font Tutorial

This Code Was Created By Jeff Molofee 2000
Modified by Shawn T. to handle (%3.2f, num) parameters.
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing The Base Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/26
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson16**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



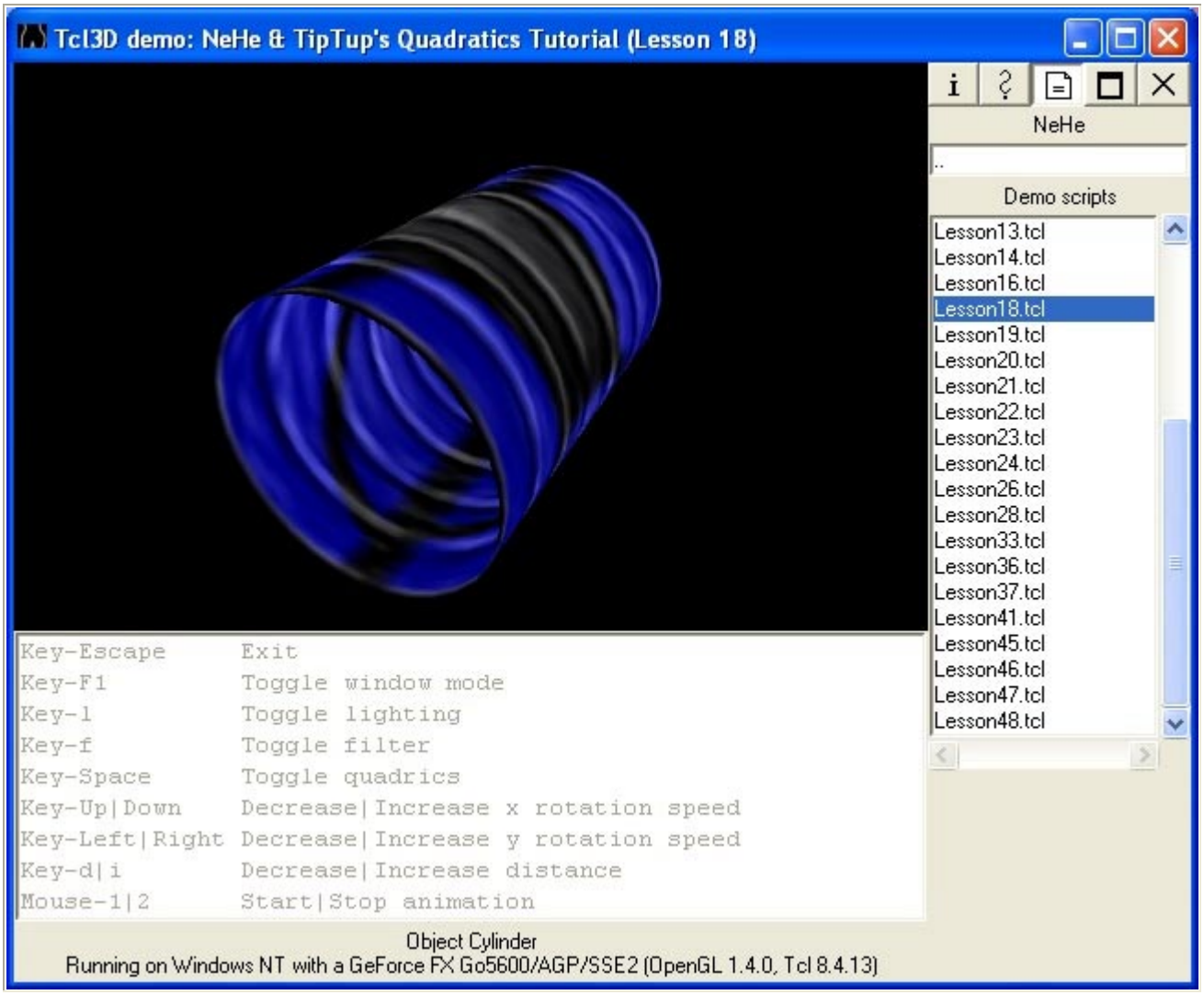

```
Lesson16.tcl

Chris Aliotta & NeHe's Fog Tutorial

This Code Was Created By Christopher Aliotta & Jeff Molofee 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson18**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



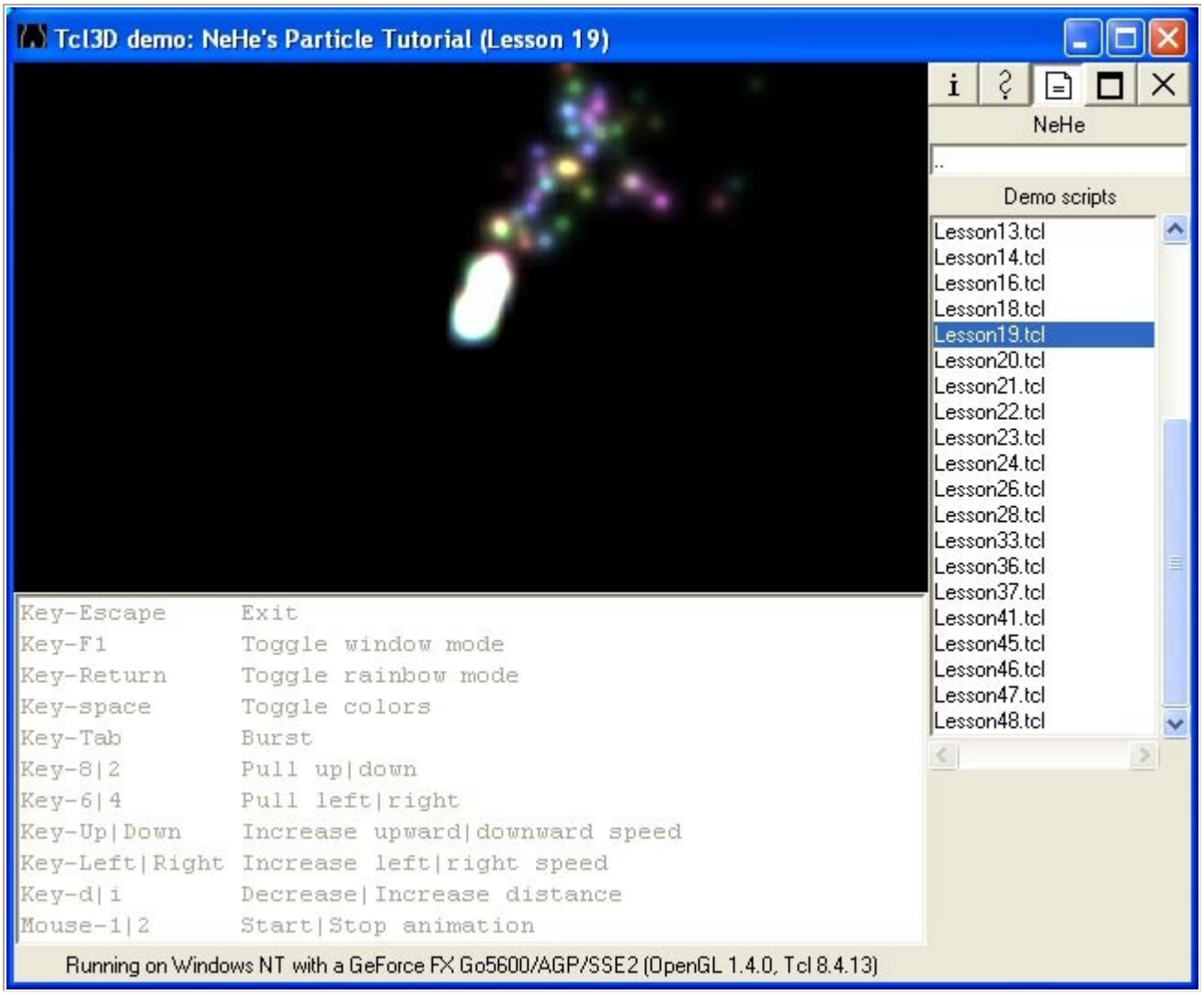

```
Lesson18.tcl

NeHe & TipTup's Quadratics Tutorial

This Code Was Created By Jeff Molofee and GB Schmick 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit Our Sites At www.tiptup.com and nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson19**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



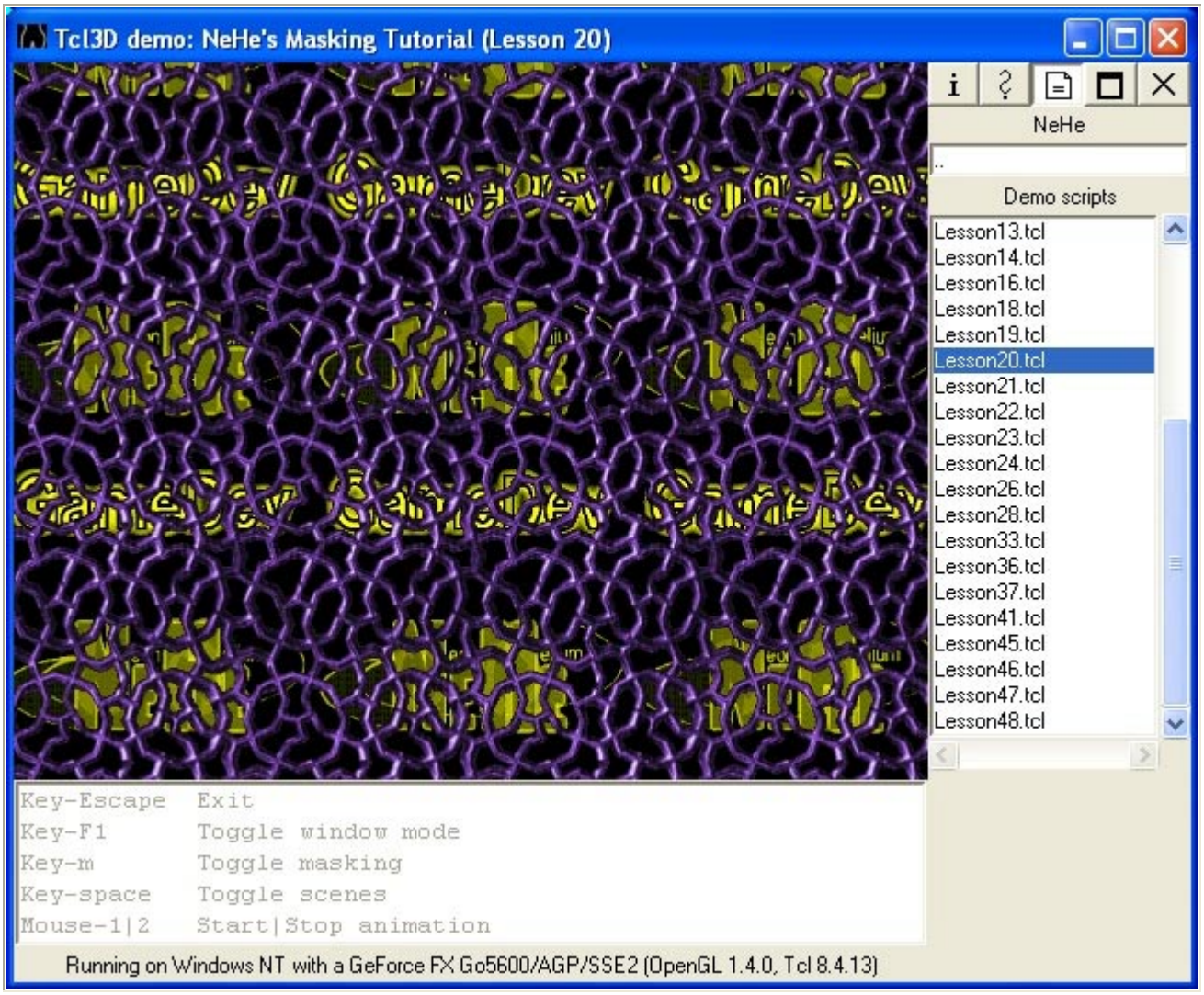

```
Lesson19.tcl

NeHe's Particle Tutorial

This Code Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/03/14
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson20**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson20.tcl

NeHe's Masking Tutorial

This Code Was Created By Jeff Molofee 2000
And Modified By Giuseppe D'Agata (waveform@tiscalinet.it)
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/03/14
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson21**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

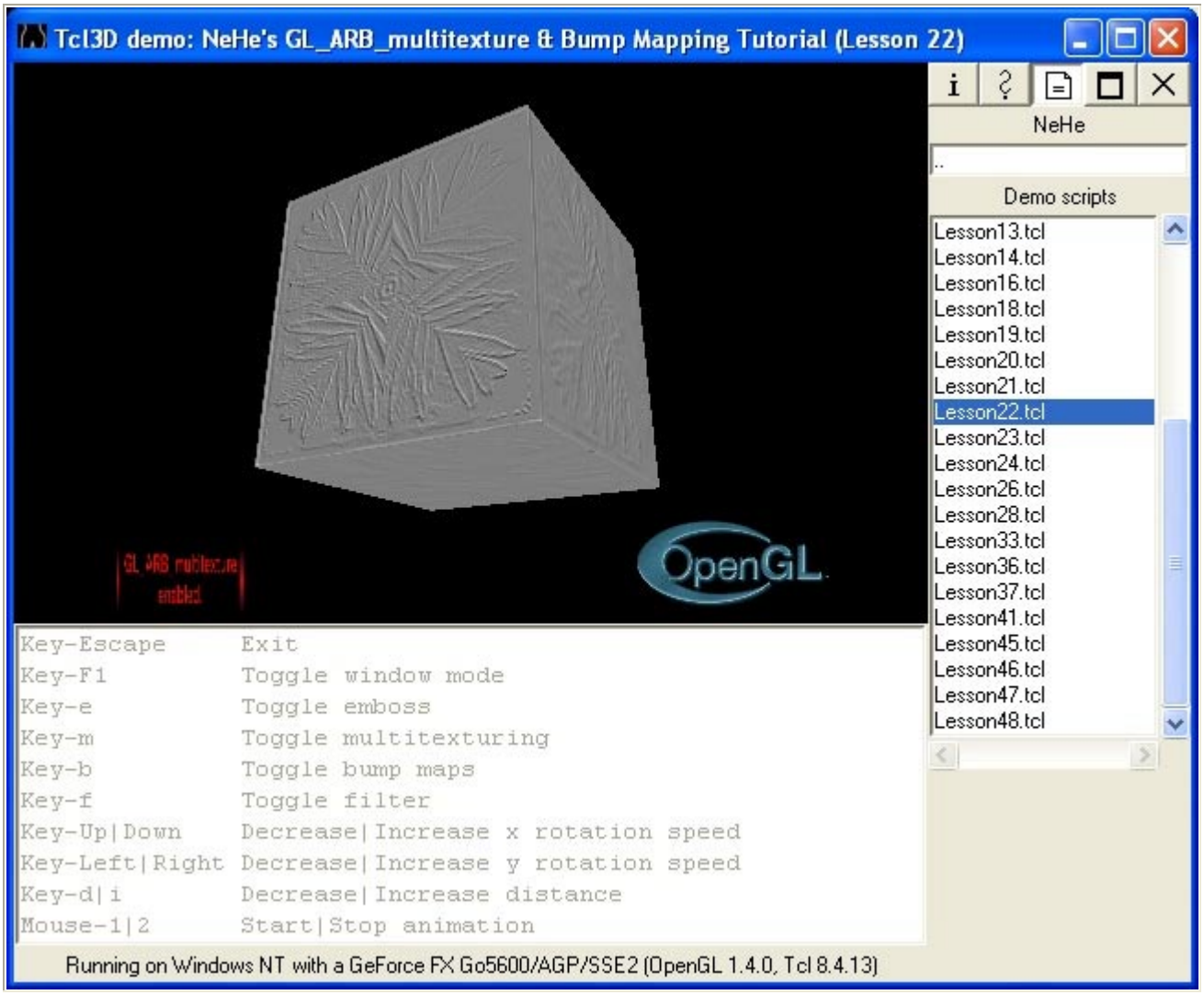

```
Lesson21.tcl

NeHe's Line Tutorial

This Code Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/03/14
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson22**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson22.tcl

NeHe's GL_ARB_multitexture & Bump Mapping Tutorial

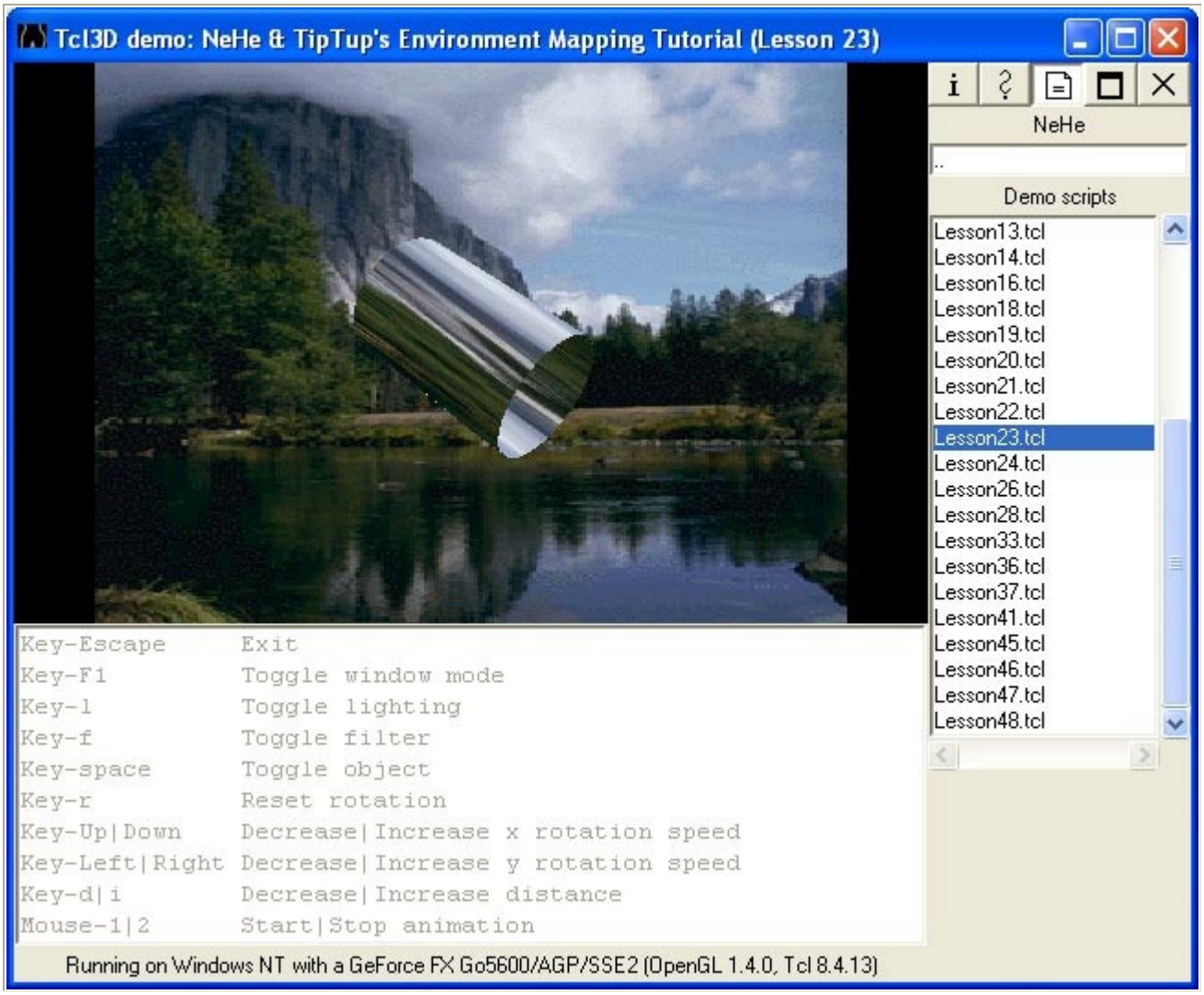
This Code Was Created by Jens Schneider (WizardSoft) 2000
Lesson22 to the series of OpenGL tutorials by NeHe-Production

This Code is loosely based upon Lesson06 by Jeff Molofee.
contact me at: schneide@pool.informatik.rwth-aachen.de

Basecode Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/16
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson23**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



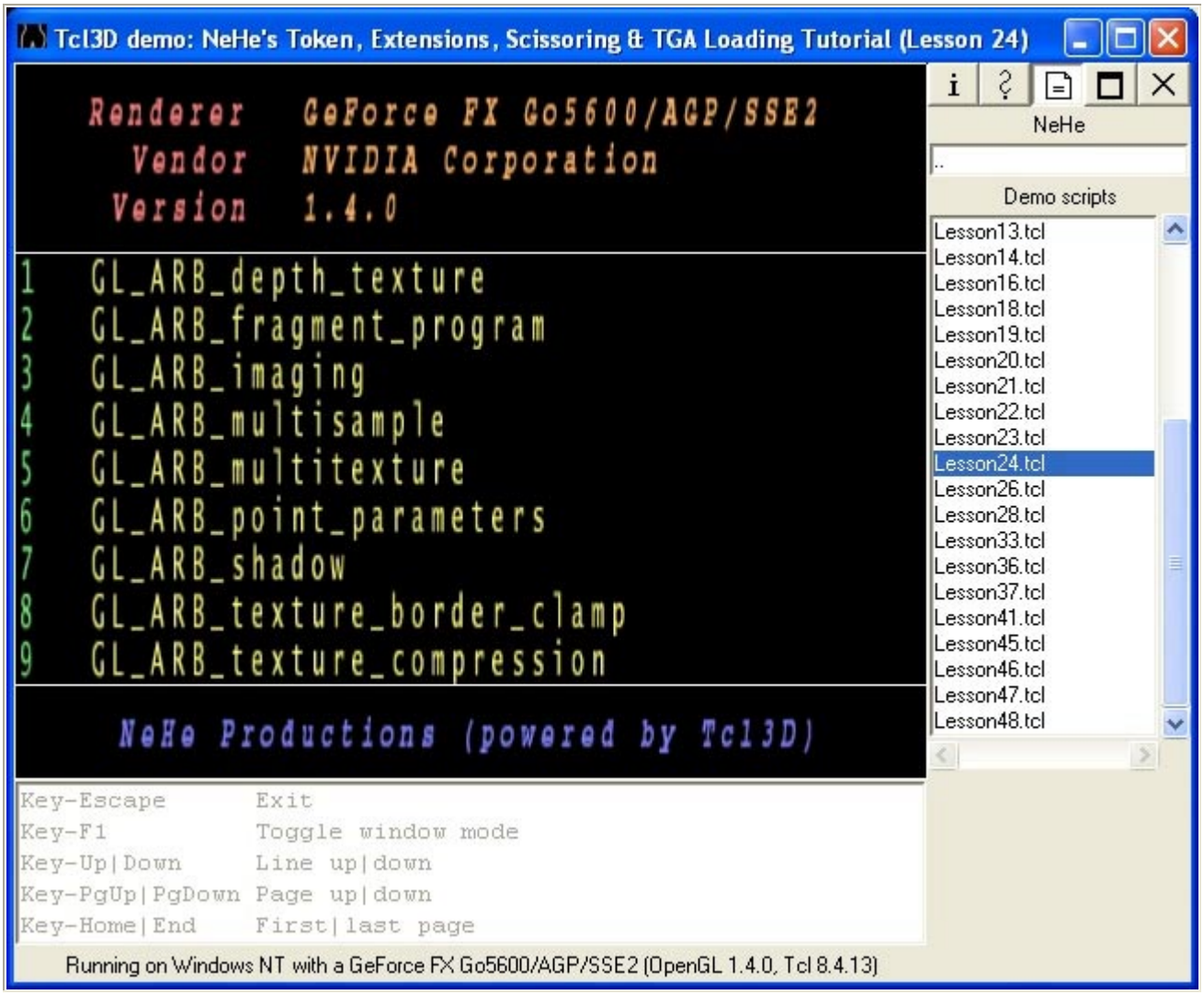

```
Lesson23.tcl

NeHe & TipTup's Environment Mapping Tutorial

This Code Was Created By Jeff Molofee and GB Schmick 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing The Base Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit Our Sites At www.tiptup.com and nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/27
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson24**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



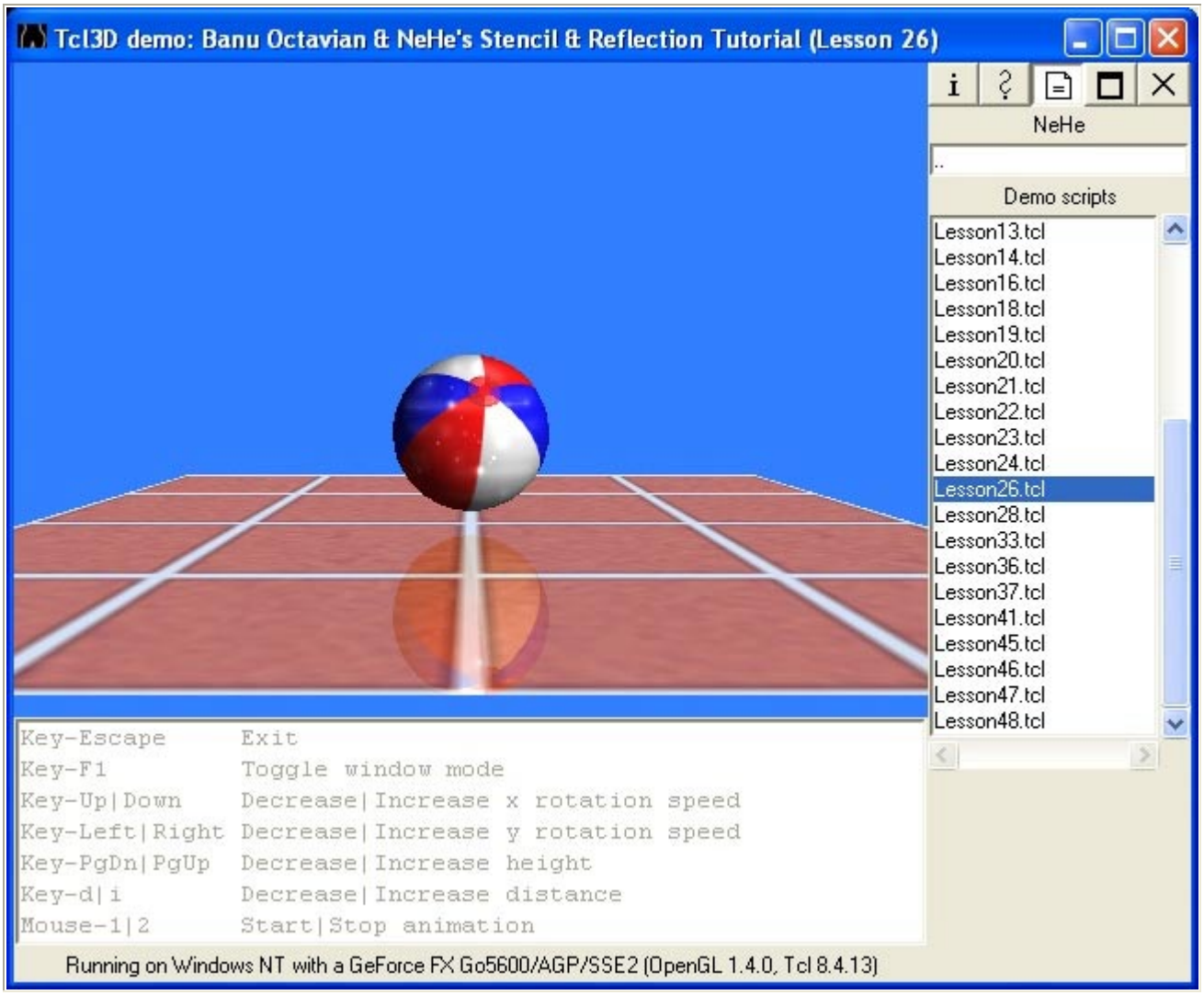

```
Lesson24.tcl

NeHe's Token, Extensions, Scissoring & TGA Loading Tutorial

This Code Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/25
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson26**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson26.tcl

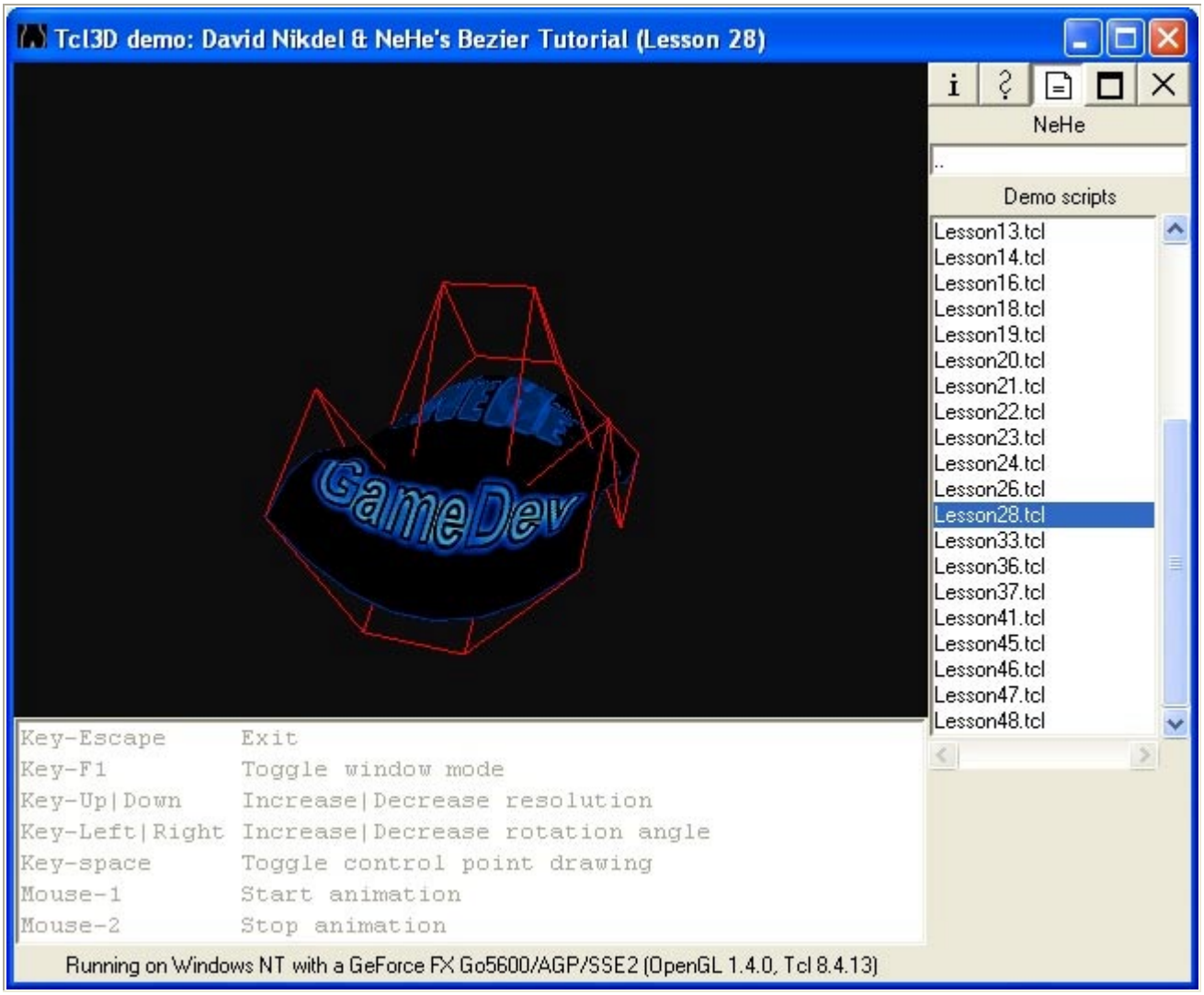
Banu Octavian & NeHe's Stencil & Reflection Tutorial

This code has been created by Banu Octavian aka Choko - 20 may 2000
and uses NeHe tutorials as a starting point (window initialization,
texture loading, GL initialization and code for keypresses) - very good
tutorials, Jeff. If anyone is interested about the presented algorithm
please e-mail me at boct@romwest.ro

Code Commmenting And Clean Up By Jeff Molofee ( NeHe )
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/16
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson28**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



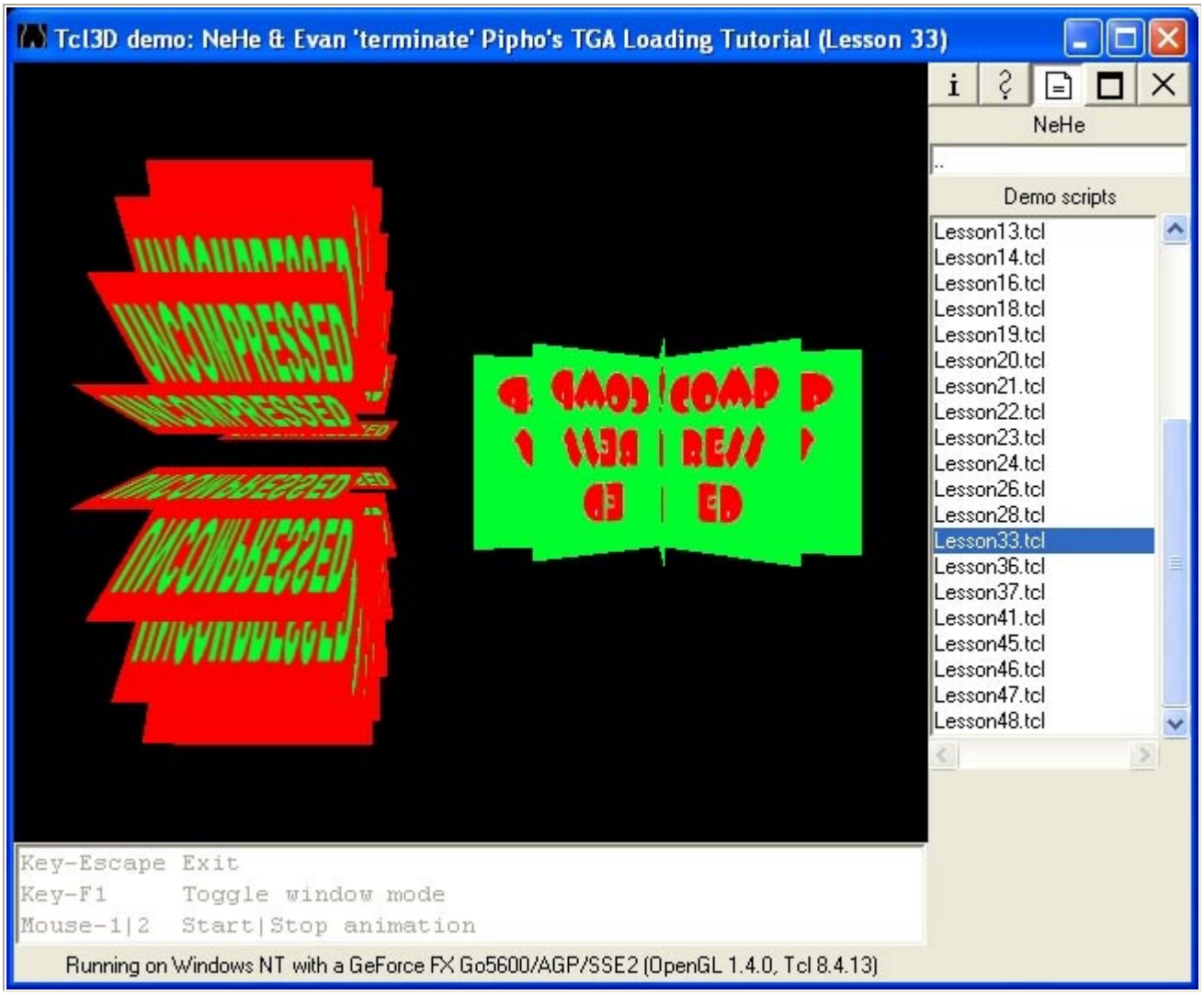

```
Lesson28.tcl

David Nikdel & NeHe's Bezier Tutorial

This Code Was Published By Jeff Molofee 2000
Code Was Created By David Nikdel For NeHe Productions
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/29
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson33**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson33.tcl

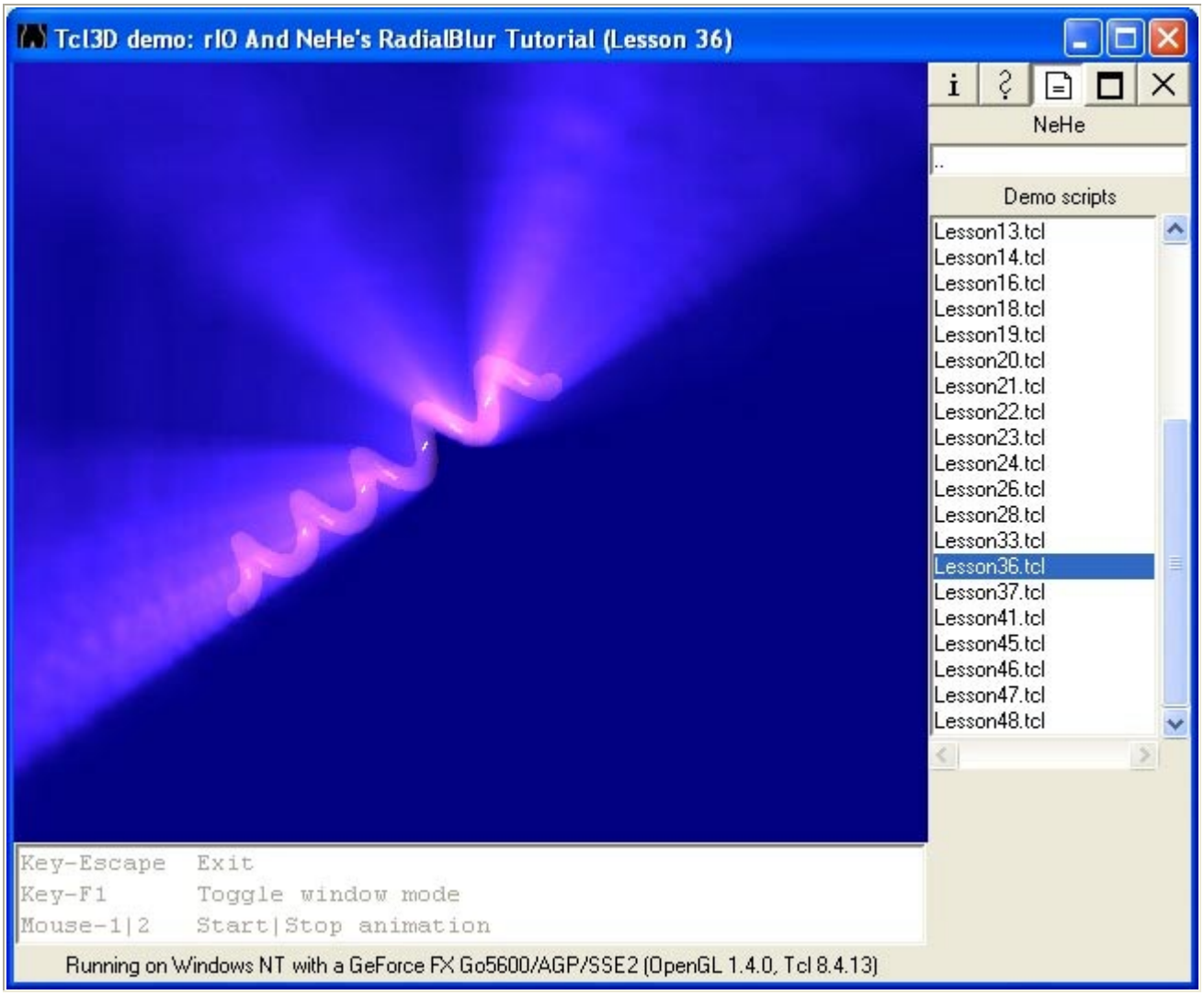
NeHe & Evan 'terminate' Pipho's TGA Loading Tutorial

Loading Uncompressed and Compressed .TGA Files with the Img extension.

This Code Was Created By Evan Pipho
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/16
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson36**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



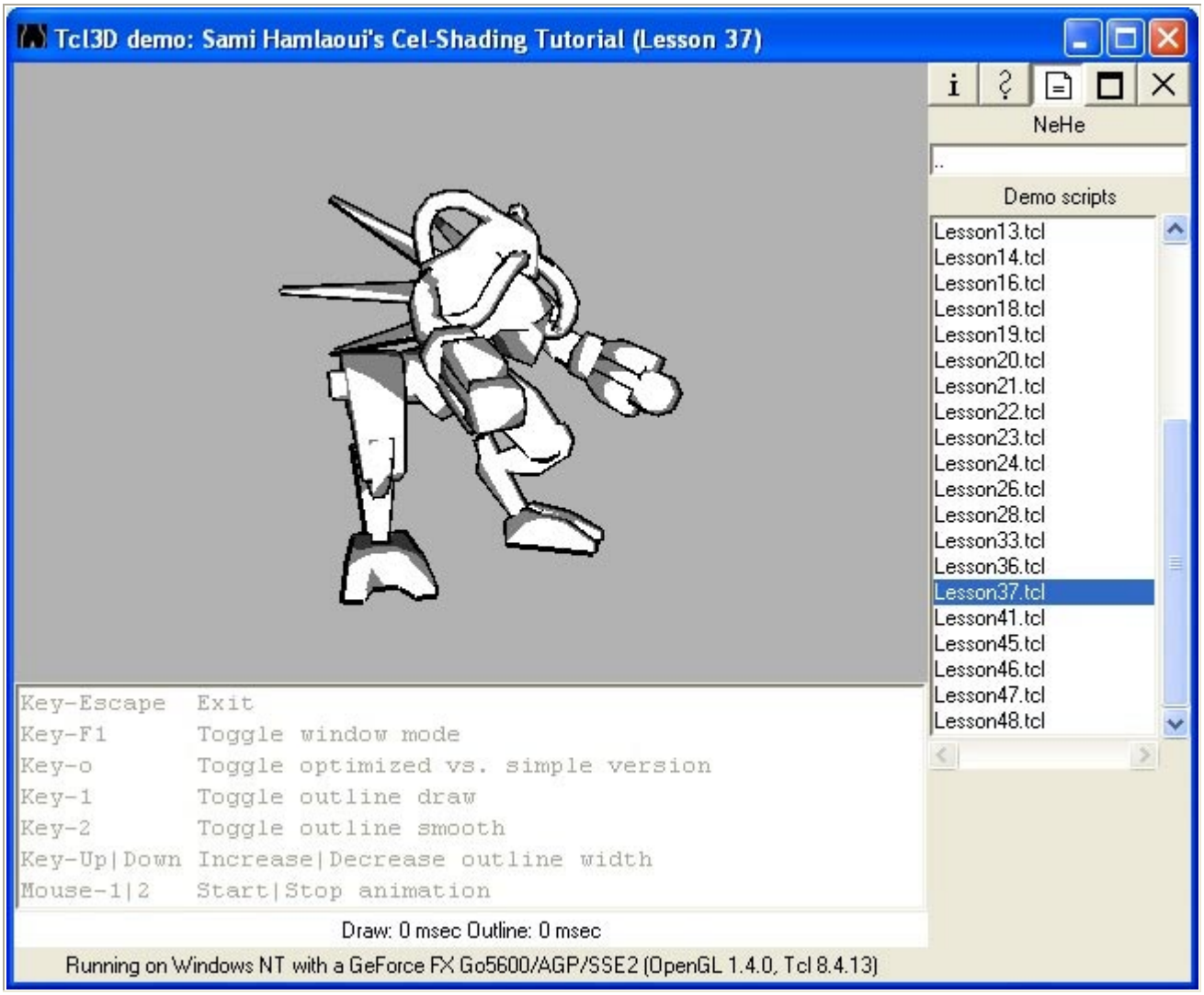

```
Lesson36.tcl

Dario Corno's Radial Blur & Rendering To A Texture Tutorial

If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/23
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson37**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson37.tcl

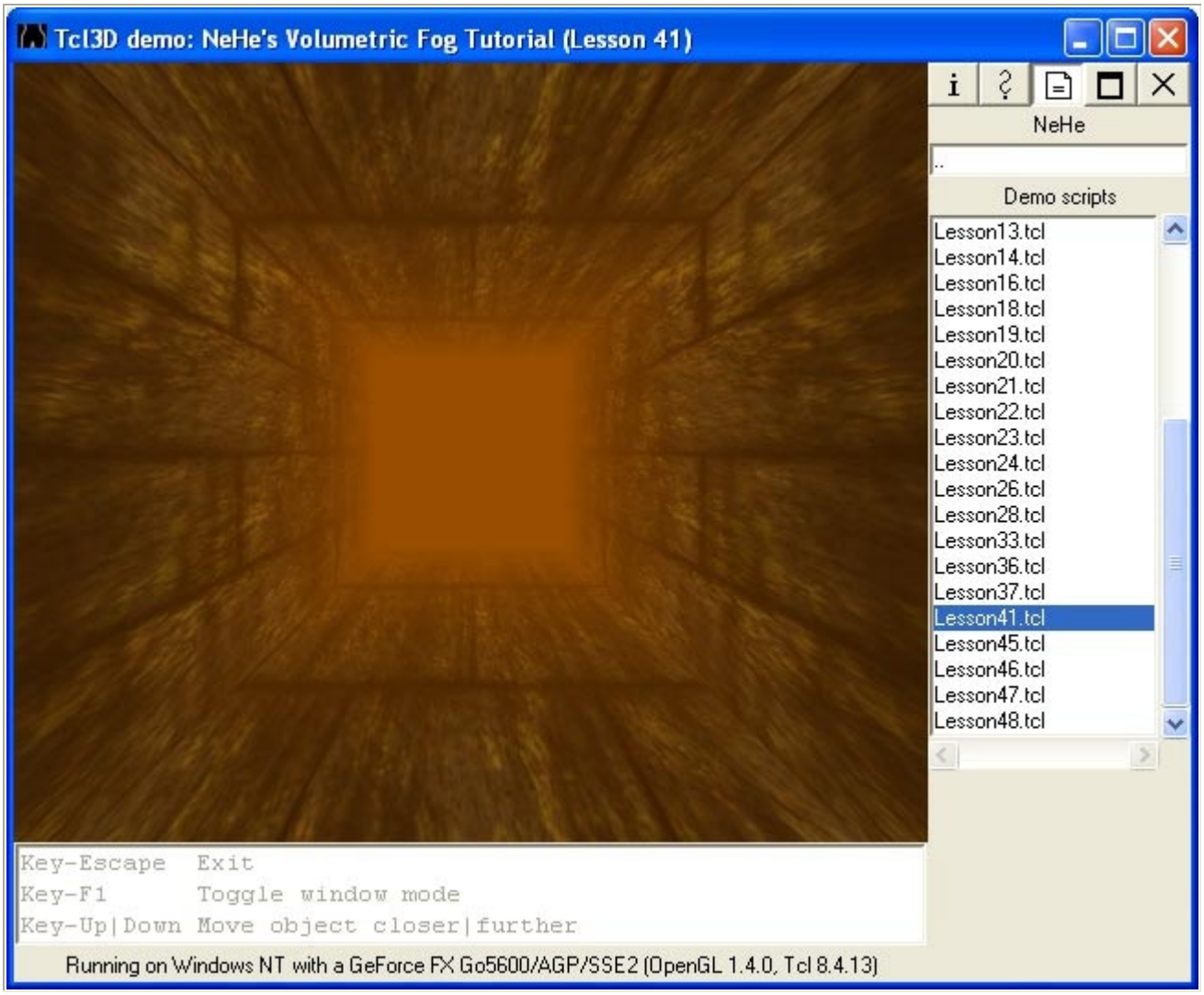
Sami Hamlaoui's Cel-Shading Code

Note: The original article for this code can be found at:
      http://www.gamedev.net/reference/programming/features/celshading

If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/22
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson41**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



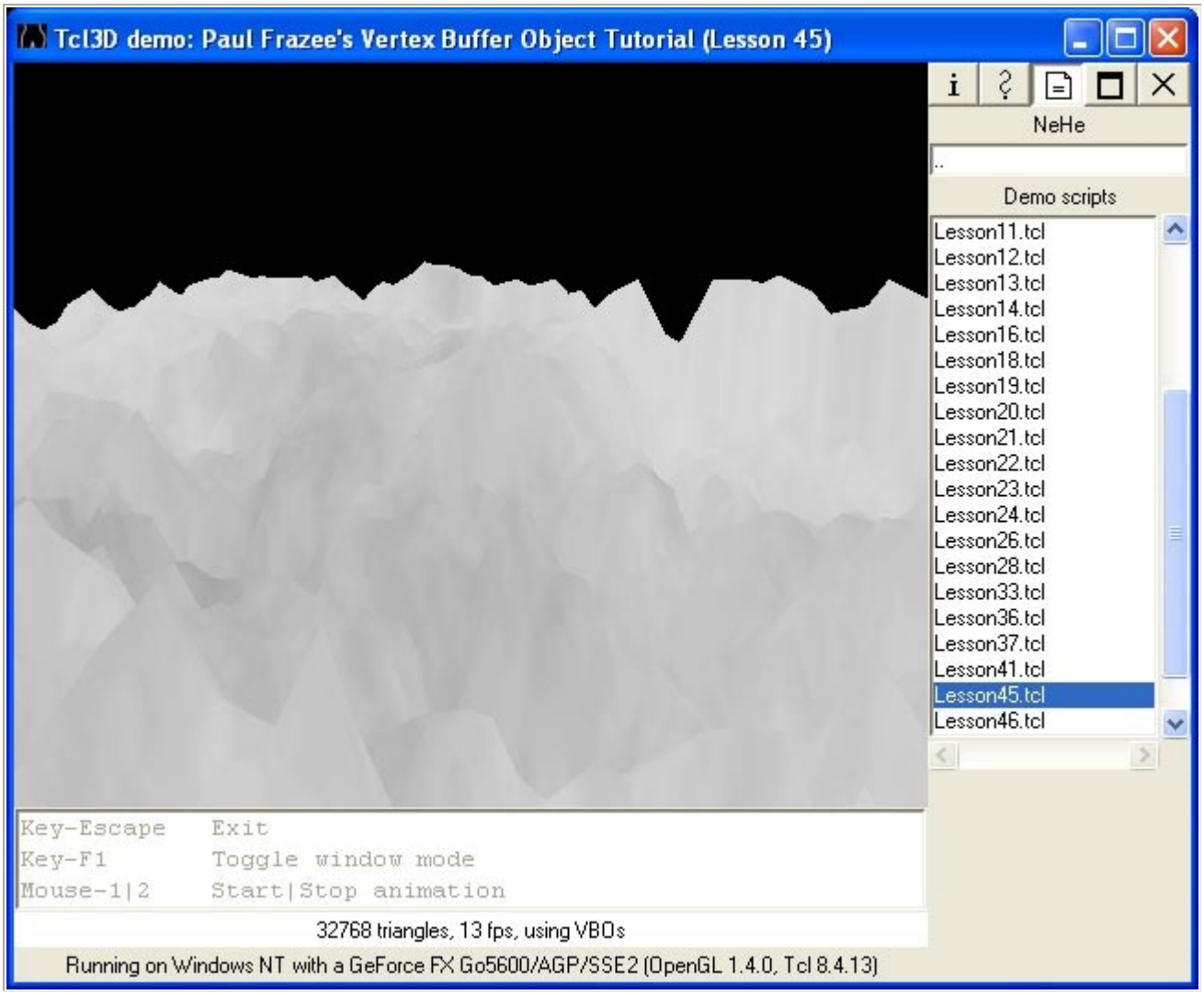

```
Lesson41.tcl

NeHe's Volumetric Fog Tutorial

This Code Was Created By Jeff Molofee 2003
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/27
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson45**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



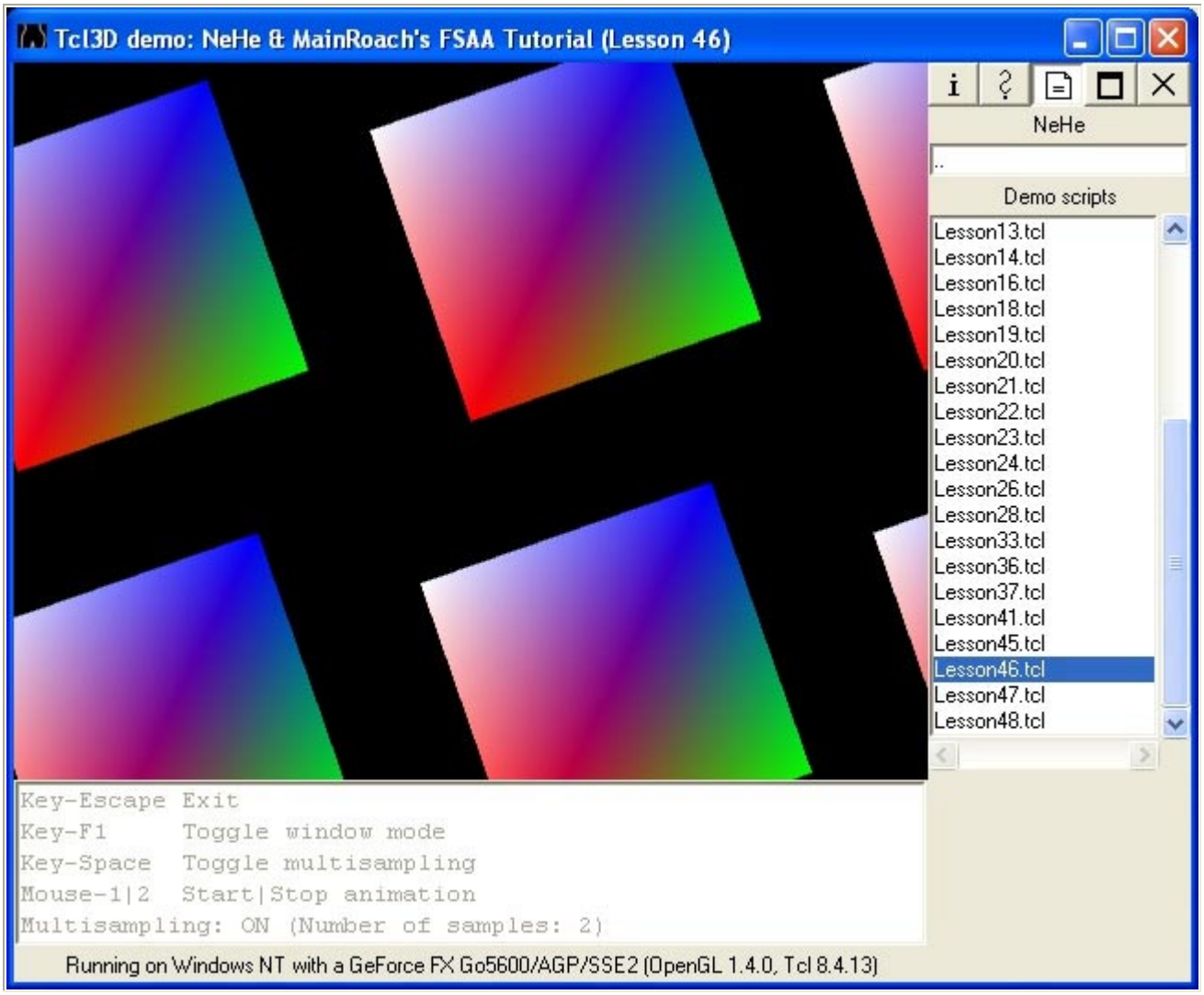

```
Lesson26.tcl

Paul Frazee's Vertex Buffer Object Tutorial

Code Commmenting And Clean Up By Jeff Molofee ( NeHe )
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/17
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson46**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson46.tcl

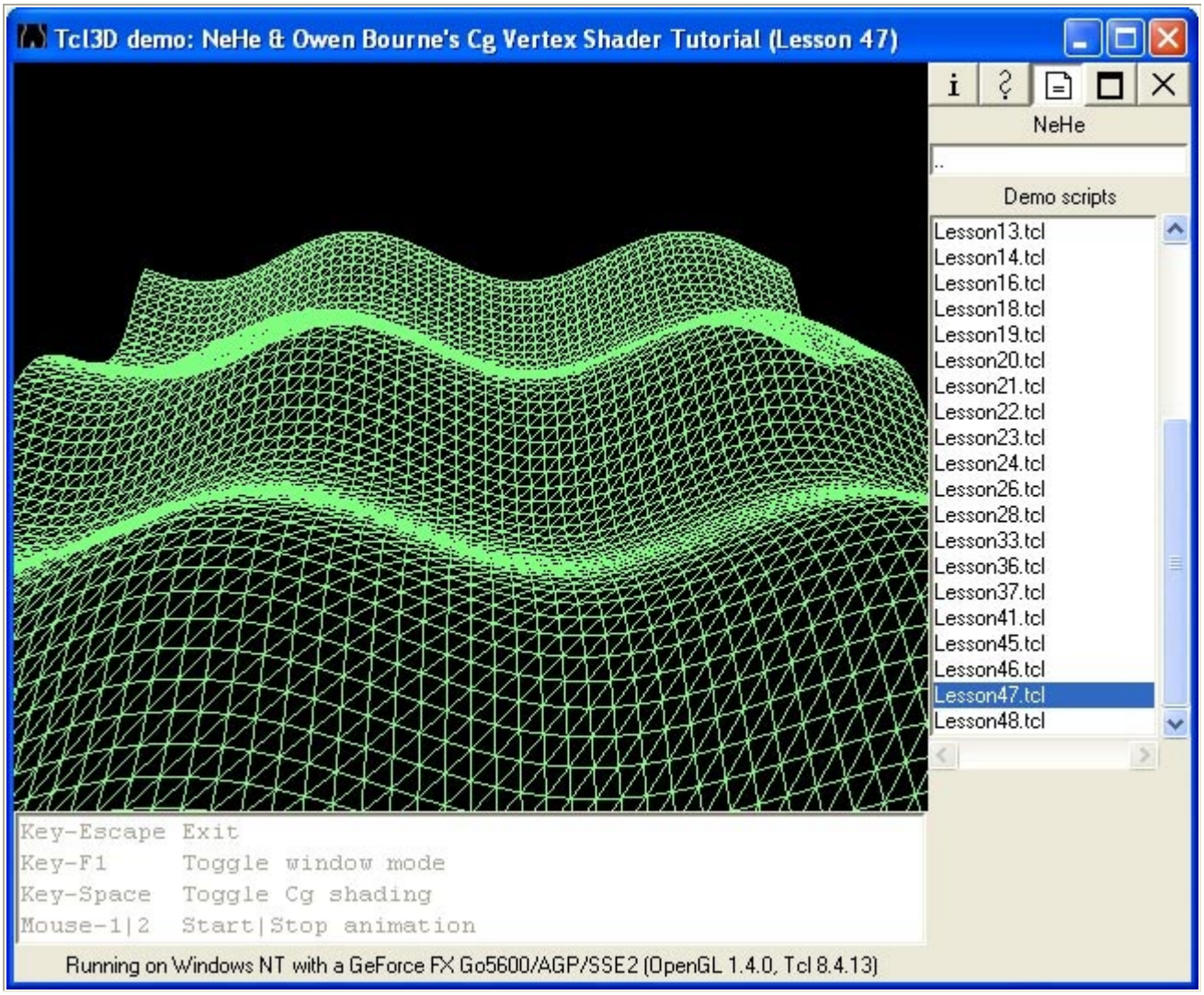
NeHe & MainRoach's FSAA Tutorial

This Code Was Created By Jeff Molofee 2001
and Colt McAnlis ( MainRoach ).
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/13
See www.tcl3d.org for the Tcl3D extension.

This demo uses the multisampling options built into tcl3dTogl starting
from version 0.3.2.
Another way to set the number of samples is via the driver specific GUI under
Windows, or by setting the environment variable __GL_FSAA_MODE under Linux.
```

Demo:	**Lesson47**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



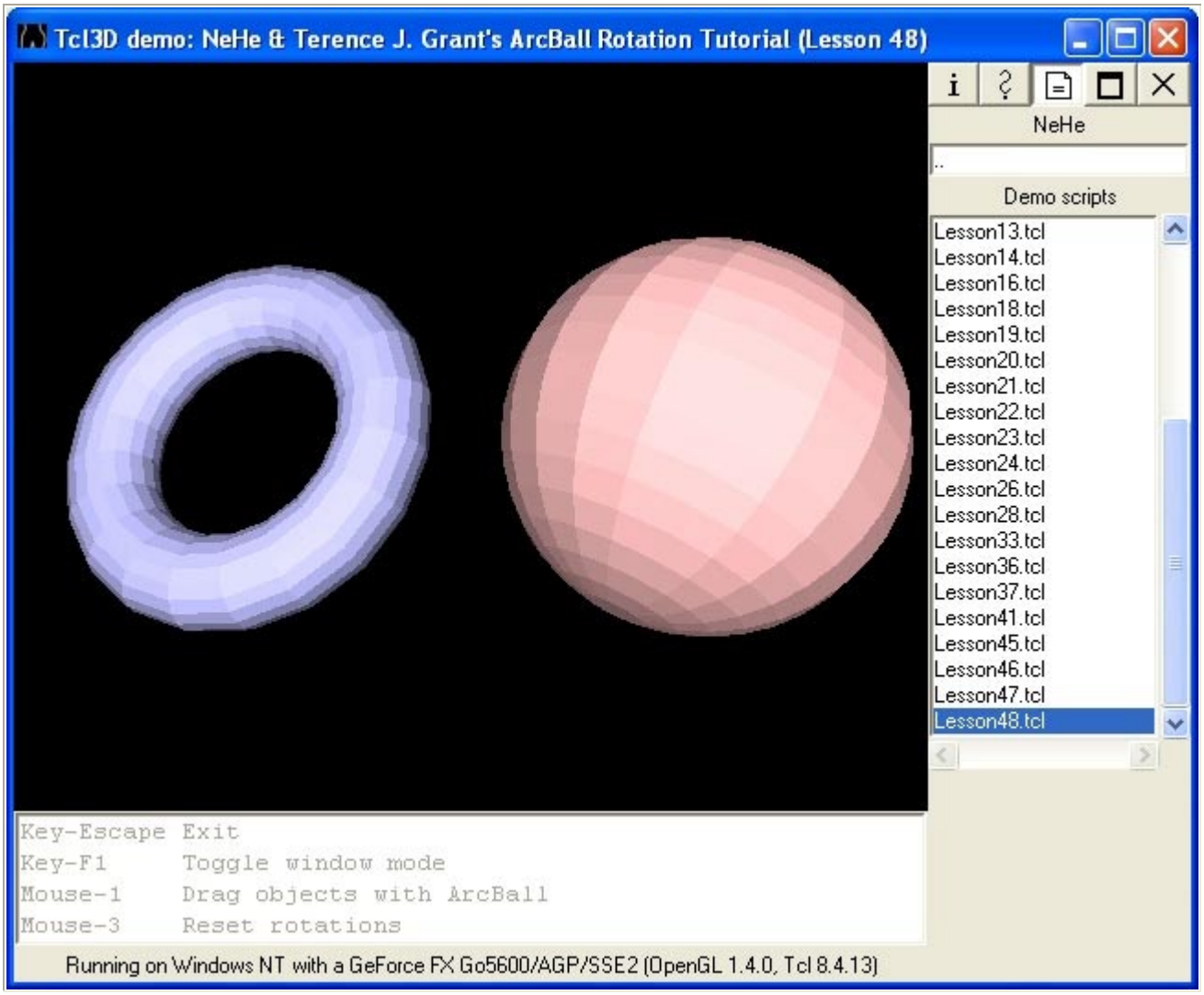

```
Lesson47.tcl

NeHe & Owen Bourne's Cg Vertex Shader Tutorial

If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/09/05
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	**Lesson48**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents




```
Lesson48.tcl

NeHe & Terence J. Grant's ArcBall Rotation Tutorial

Authors Name: Terence J. Grant

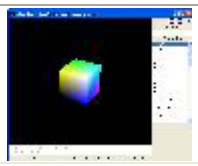
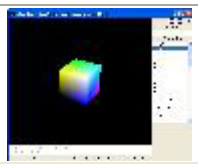
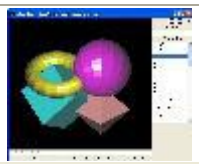
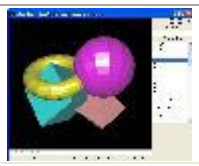
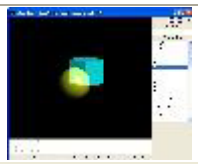
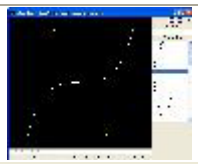
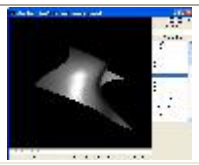
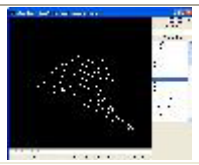
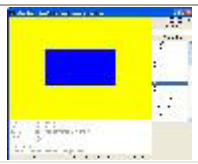
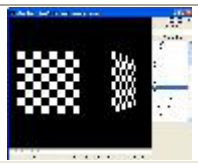
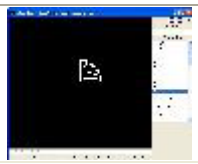
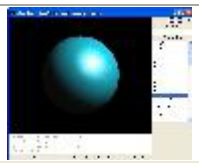
NeHe Productions 1997-2004
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/31
See www.tcl3d.org for the Tcl3D extension.
```

Type:	**RedBook**
Category:	TutorialsAndBooks
Root:	Contents

The Redbook describing OpenGL Version 1.4 contains 72 examples written in C. 67 of them have been successfully converted into equivalent Tcl3D scripts and the results compared on several operating systems and computers against the C version.
Three of the missing five examples (surfpoints, tess, tesswin) deal with tesselation, which is currently not supported. The other two test programs (aaindex, fogindex) not yet ported deal with color index mode, which is not yet implemented in the tcl3dTogl widget.
Original sources available at: http://www.opengl-redbook.com/source/

Available demos

				
aapoly	aapolyStride	aargb	accanti	accpersp
				
alpha	alpha3D	bezcurve	bezmesh	bezsurf
				
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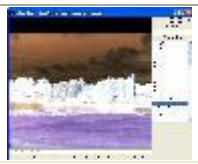	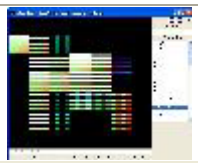	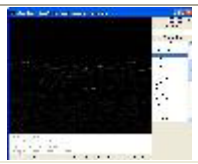	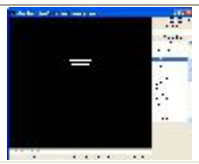	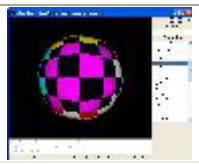
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	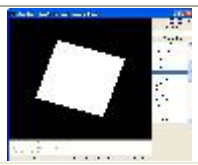	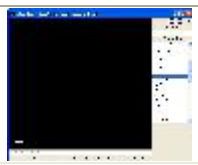		
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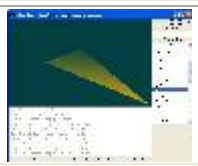	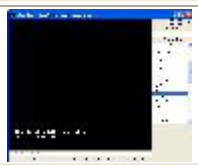			
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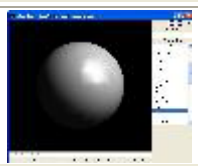	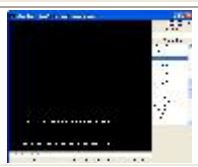	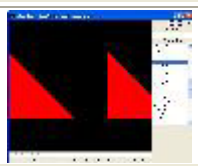	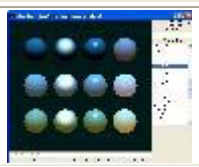	
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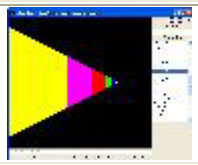	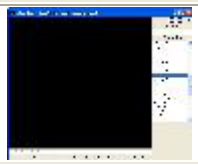	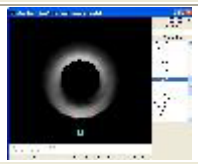	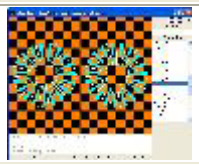	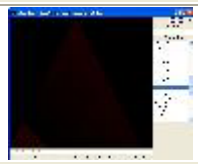
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	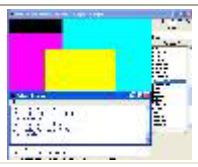	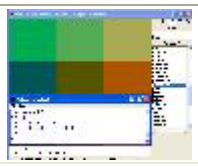	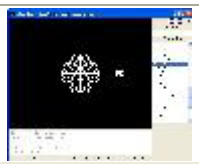	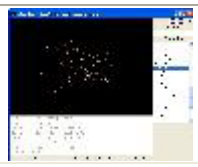
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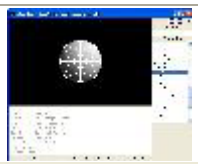		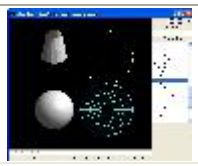		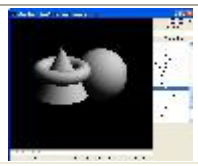
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	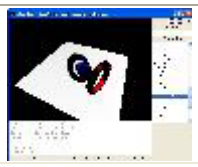	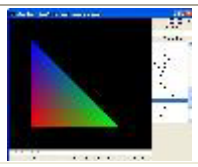	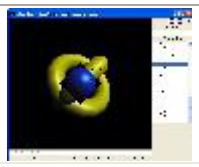	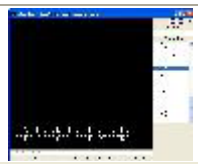
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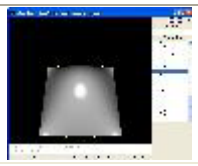			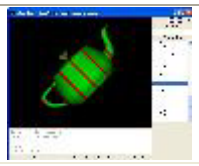	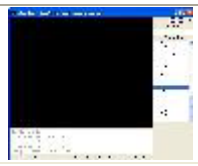
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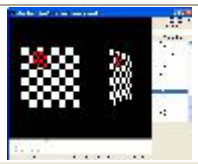	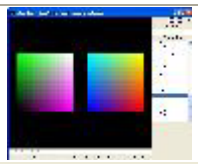	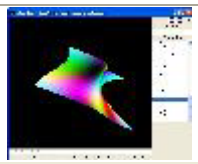	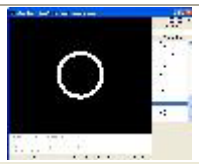	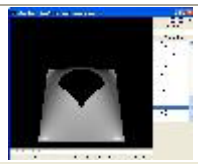
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	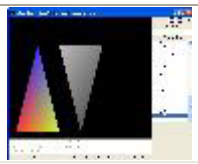			
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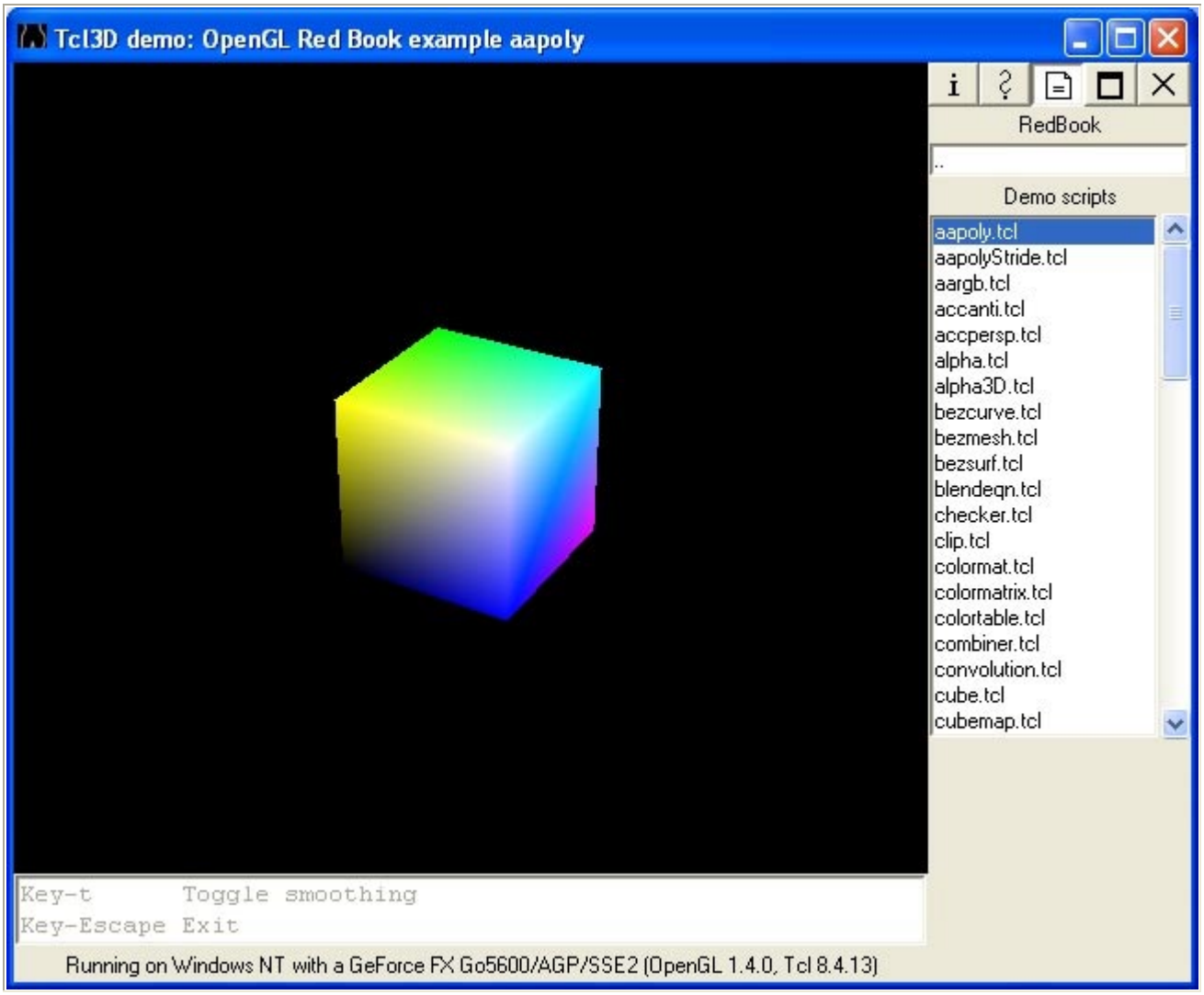
Demo:	**aapoly**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
aapoly.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
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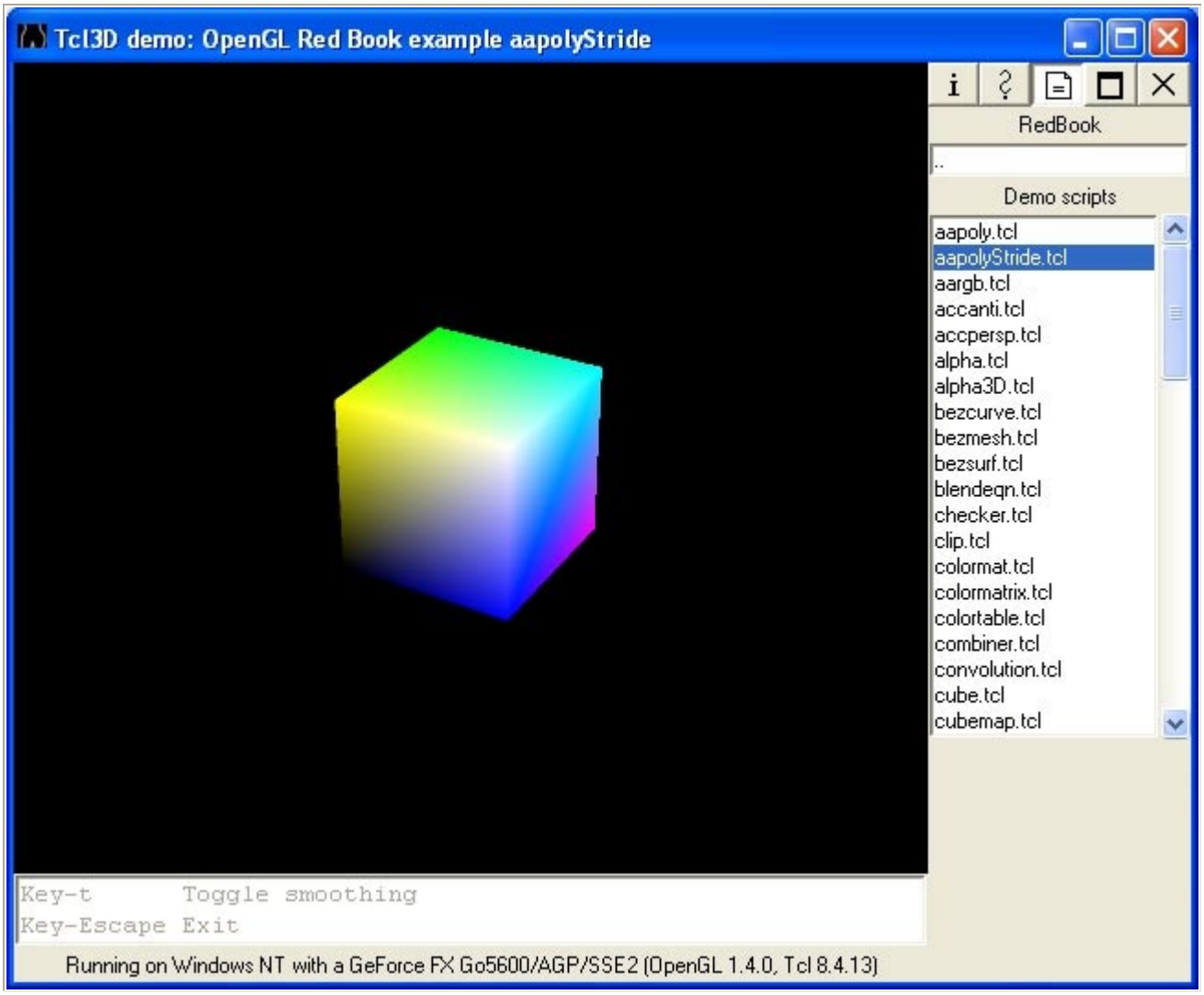
This program draws filled polygons with antialiased
edges.  The special GL_SRC_ALPHA_SATURATE blending
function is used.
Pressing the 't' key turns the antialiasing on and off.
```

Demo:	**aapolyStride**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
aapoly.tcl

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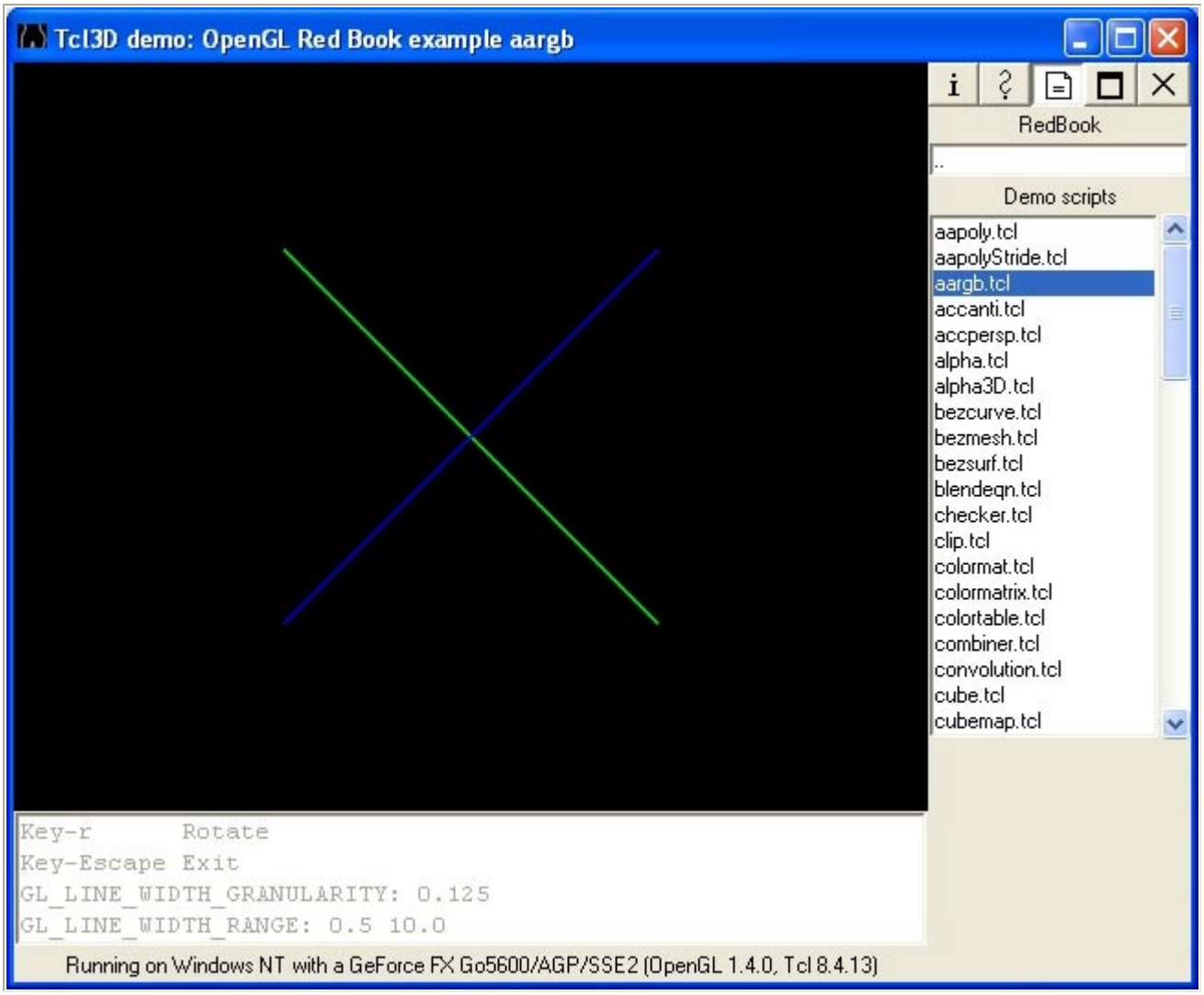
This program draws filled polygons with antialiased
edges.  The special GL_SRC_ALPHA_SATURATE blending
function is used.
Pressing the 't' key turns the antialiasing on and off.
```

Demo:	**aargb**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
aargb.tcl

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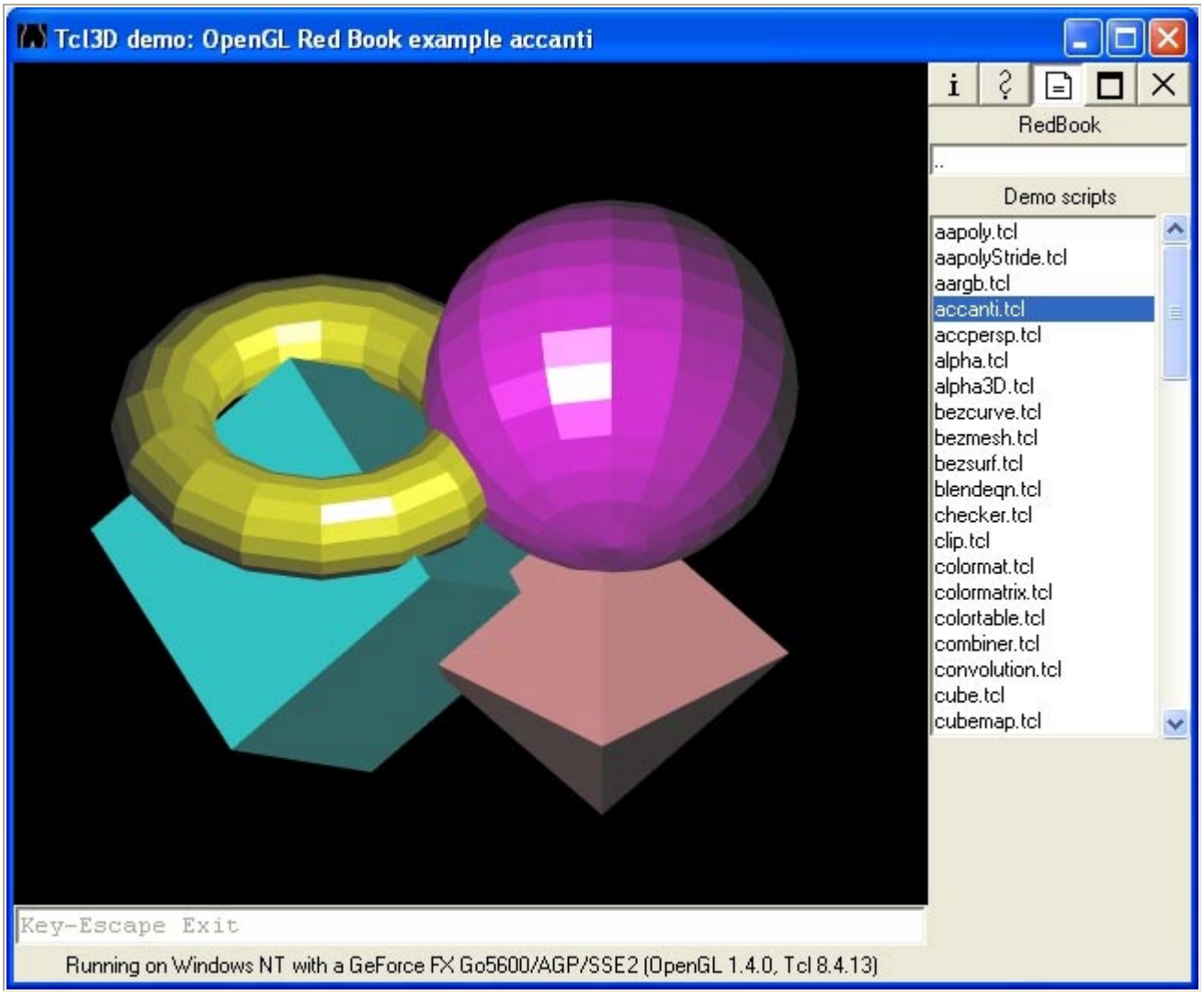
This program draws shows how to draw anti-aliased lines. It draws
two diagonal lines to form an X; when 'r' is typed in the window,
the lines are rotated in opposite directions.
```

Demo:	**accanti**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
accanti.tcl

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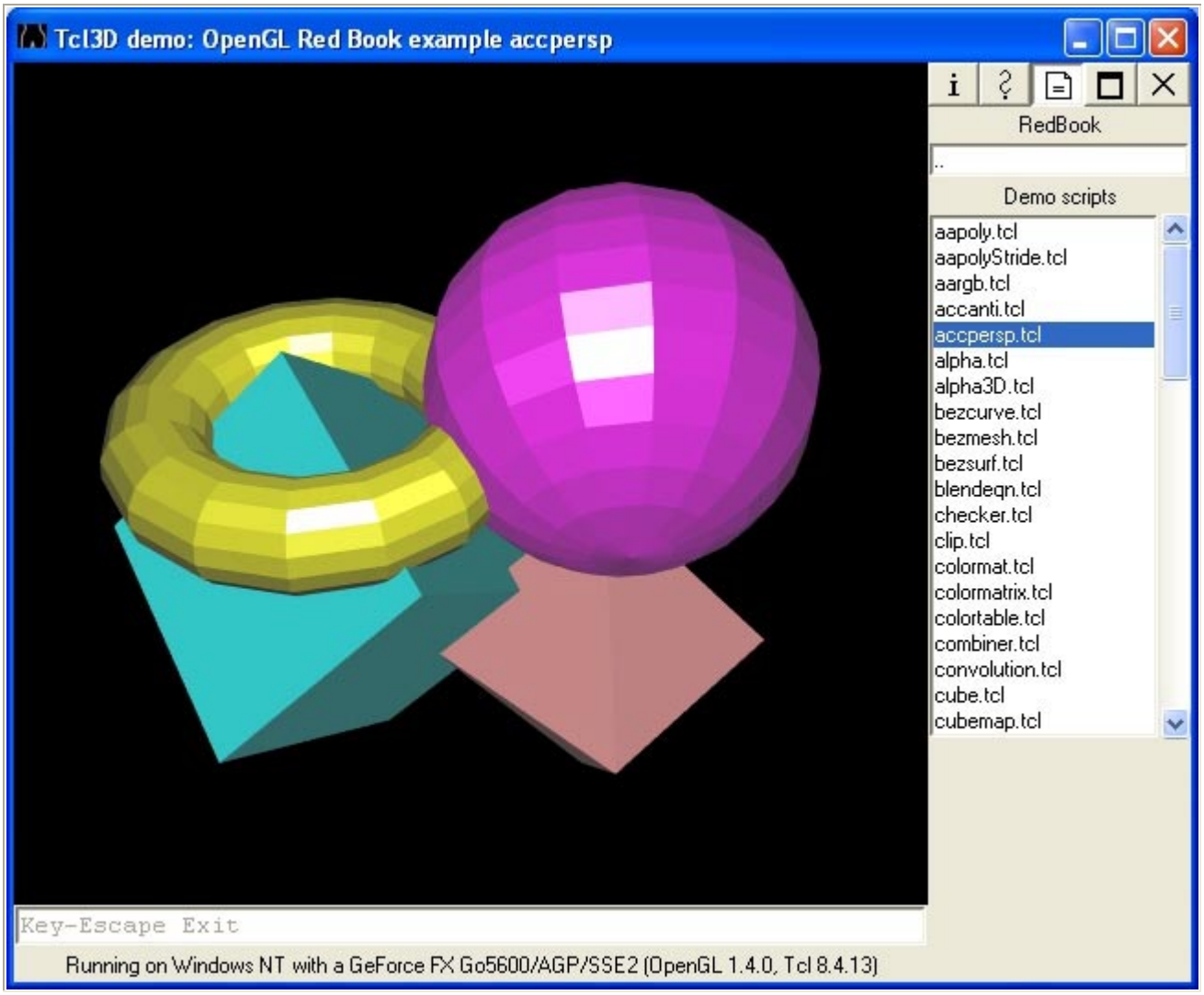
Use the accumulation buffer to do full-scene antialiasing
on a scene with orthographic parallel projection.
```

Demo:	**accpersp**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
accpersp.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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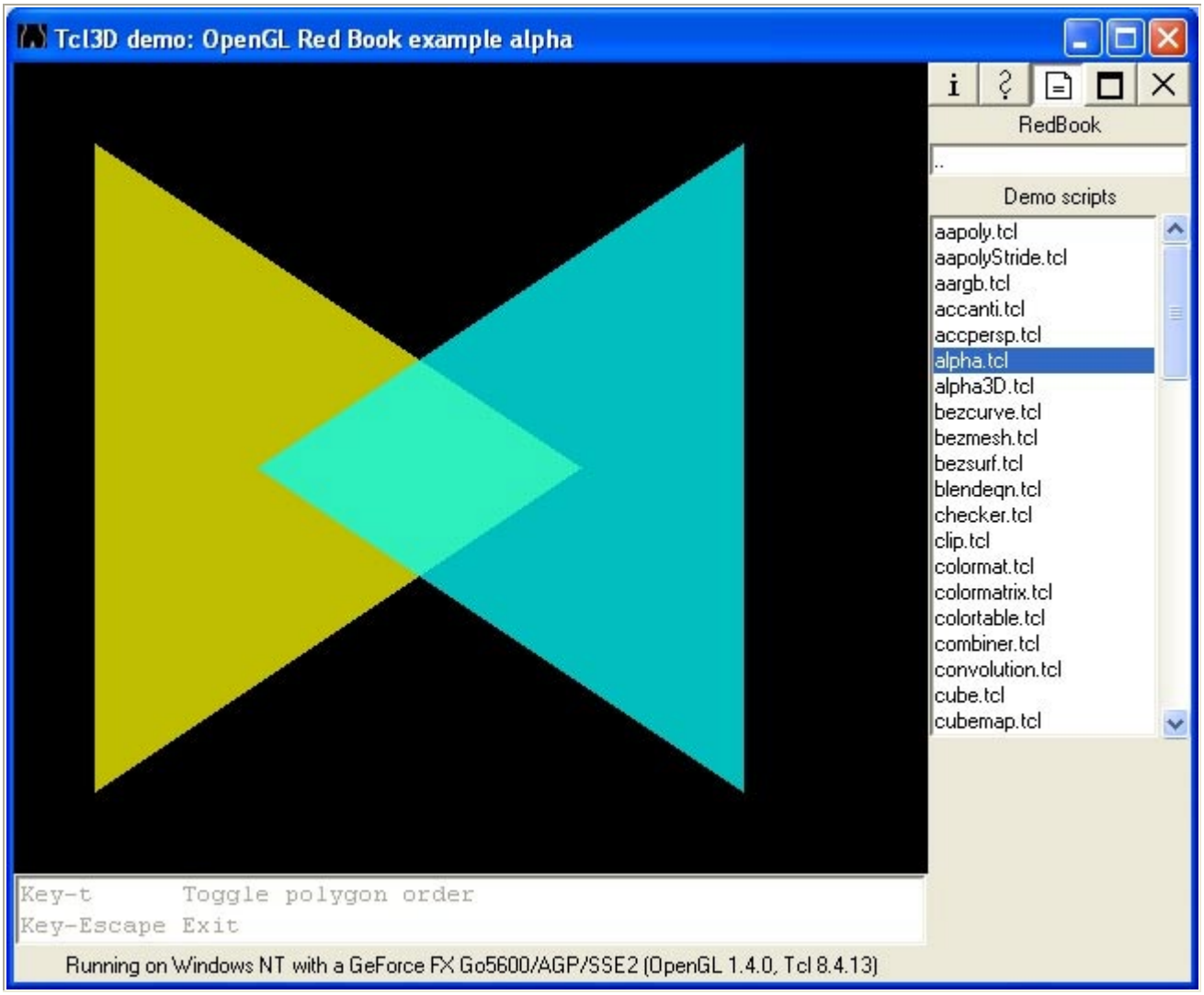
Use the accumulation buffer to do full-scene antialiasing
on a scene with perspective projection, using the special
routines accFrustum() and accPerspective().
```

Demo:	**alpha**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
alpha.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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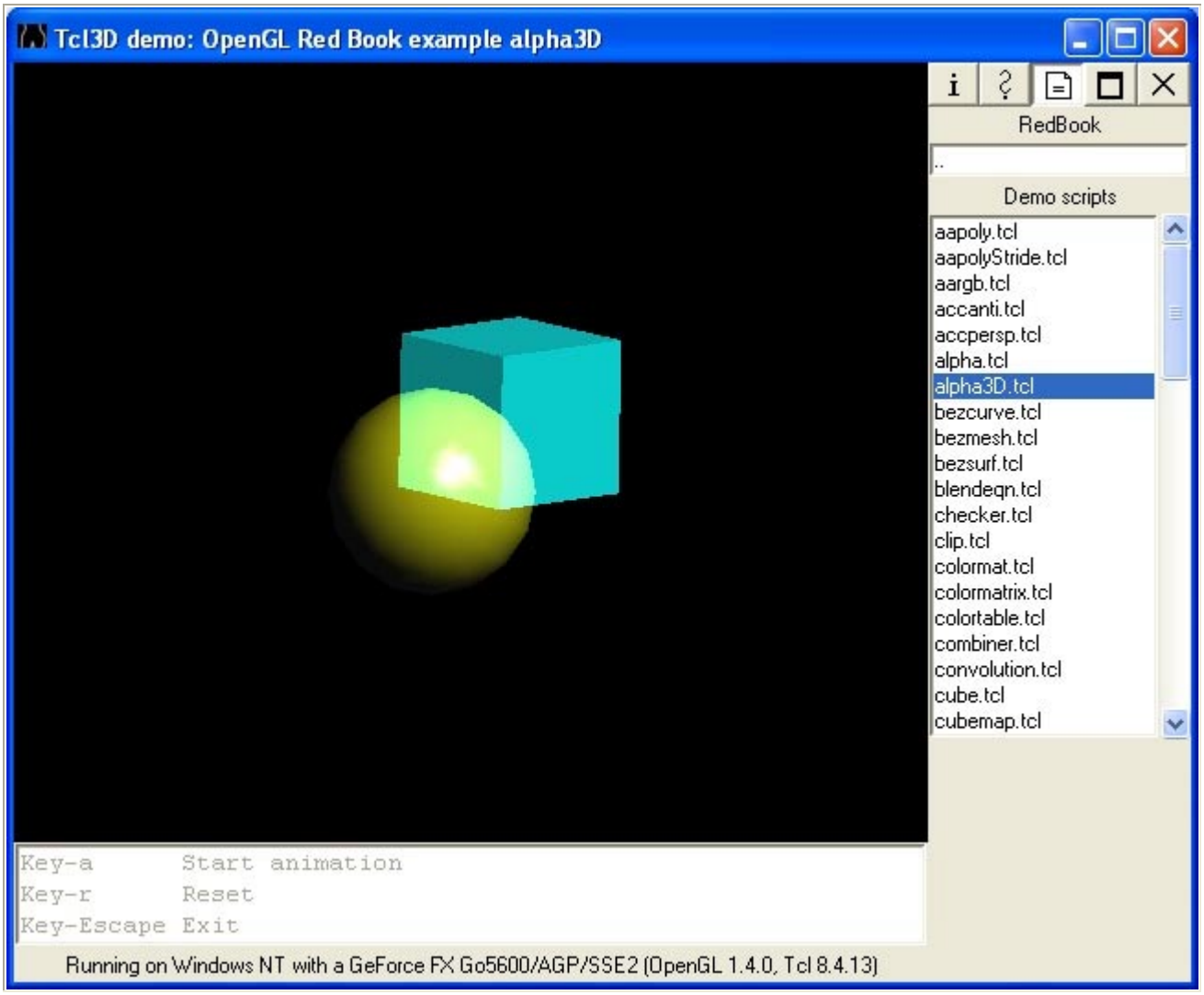
This program draws several overlapping filled polygons
to demonstrate the effect order has on alpha blending results.
Use the 't' key to toggle the order of drawing polygons.
```

Demo:	**alpha3D**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
alpha3D.tcl

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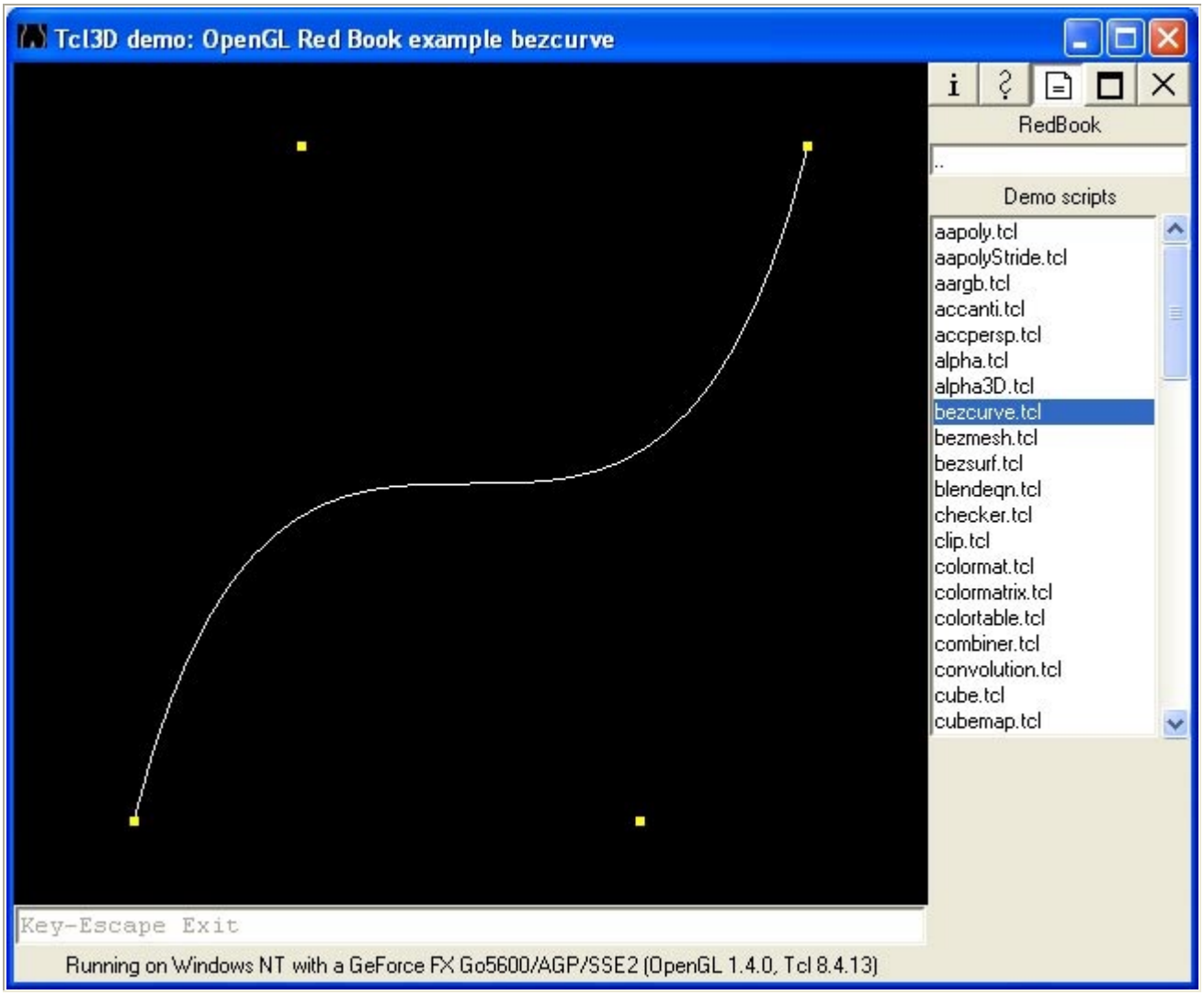
This program demonstrates how to intermix opaque and
alpha blended polygons in the same scene, by using
glDepthMask.  Press the 'a' key to animate moving the
transparent object through the opaque object.  Press
the 'r' key to reset the scene.
```

Demo:	**bezcurve**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
bezcurve.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
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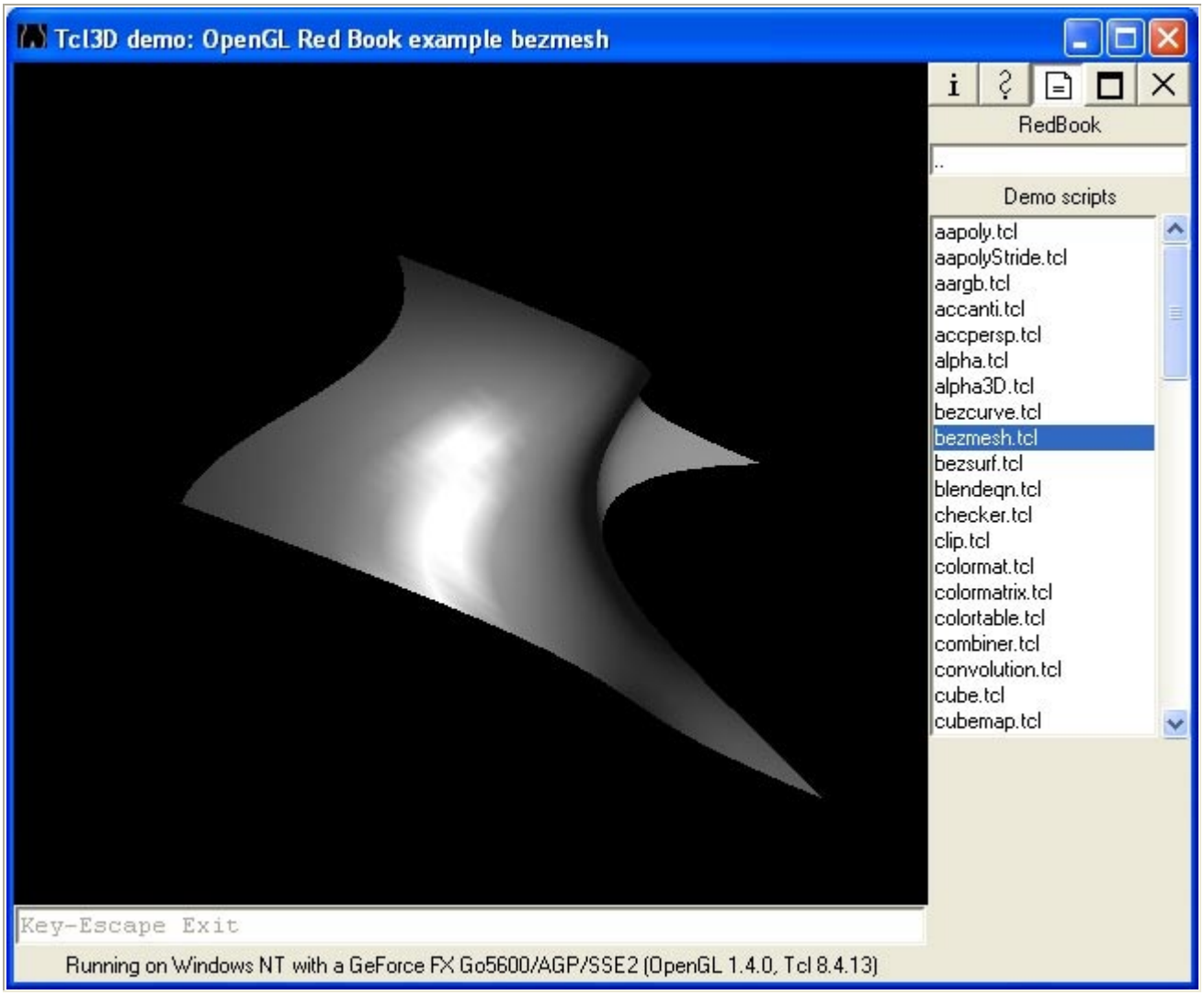
This program uses evaluators to draw a Bezier curve.
```

Demo:	**bezmesh**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
bezmesh.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
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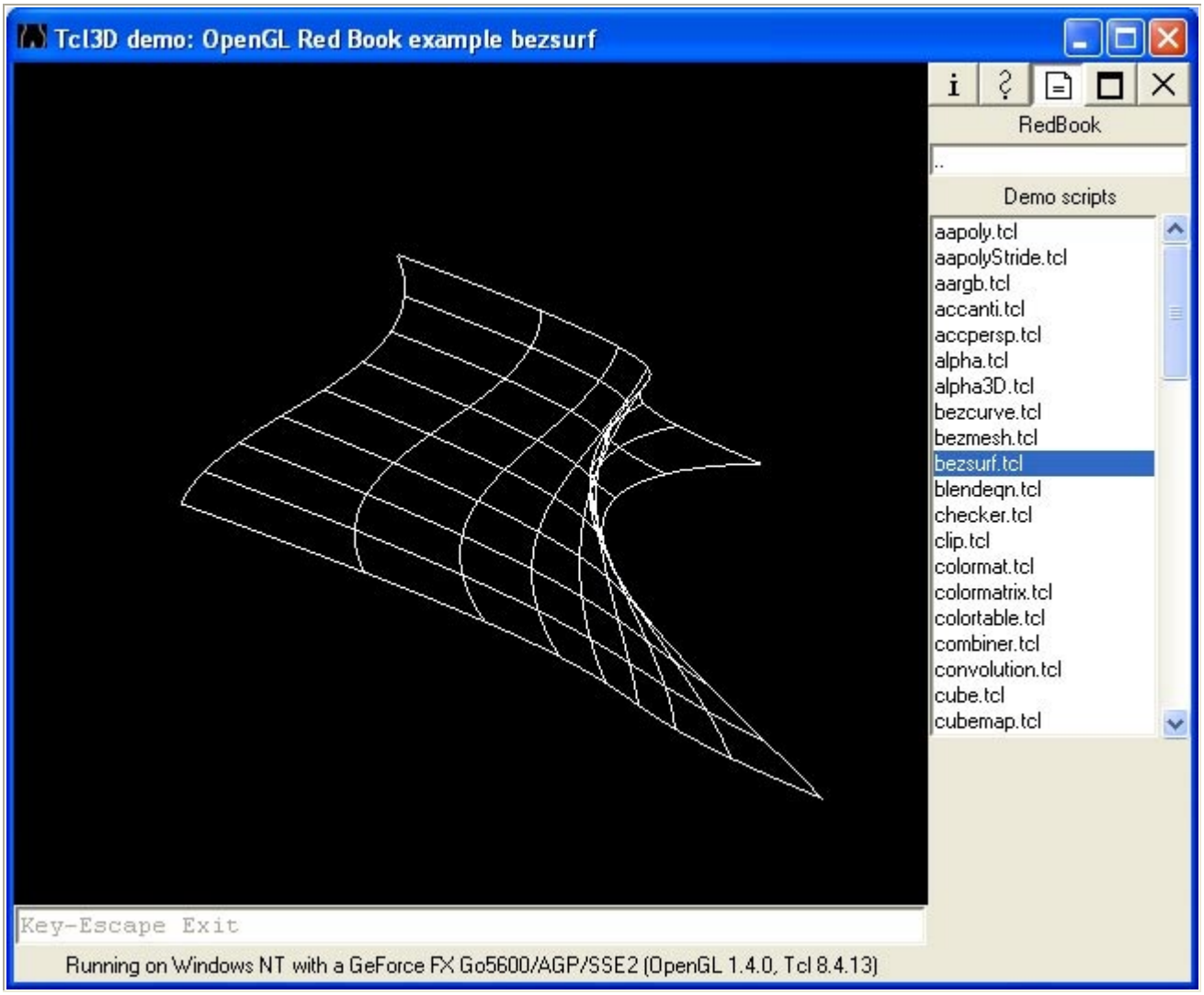
This program renders a lighted, filled Bezier surface,
using two-dimensional evaluators.
```

Demo:	**bezsurf**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
bezsurf.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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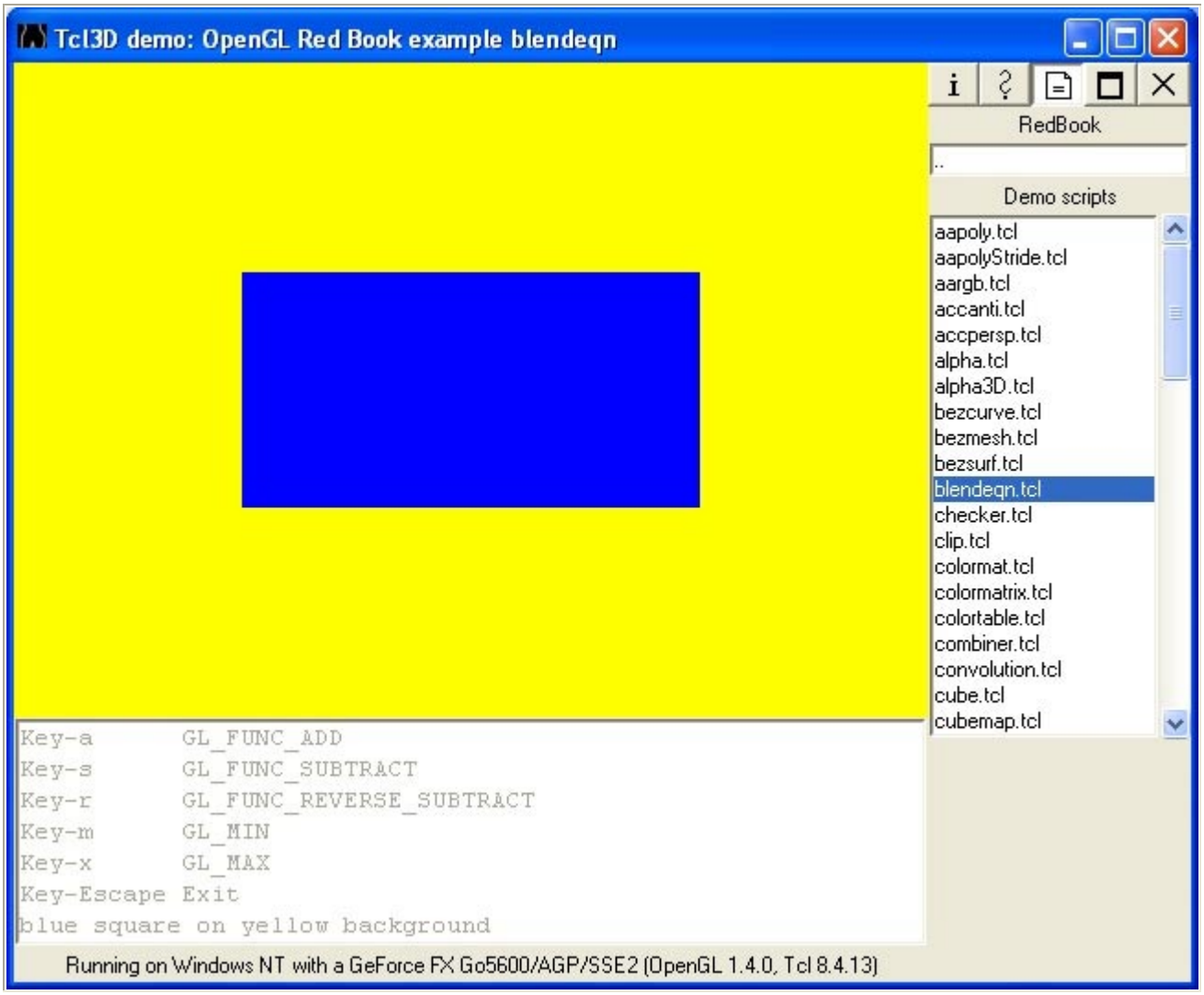
This program renders a wireframe Bezier surface,
using two-dimensional evaluators.
```

Demo:	**blendeqn**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
blendeqn.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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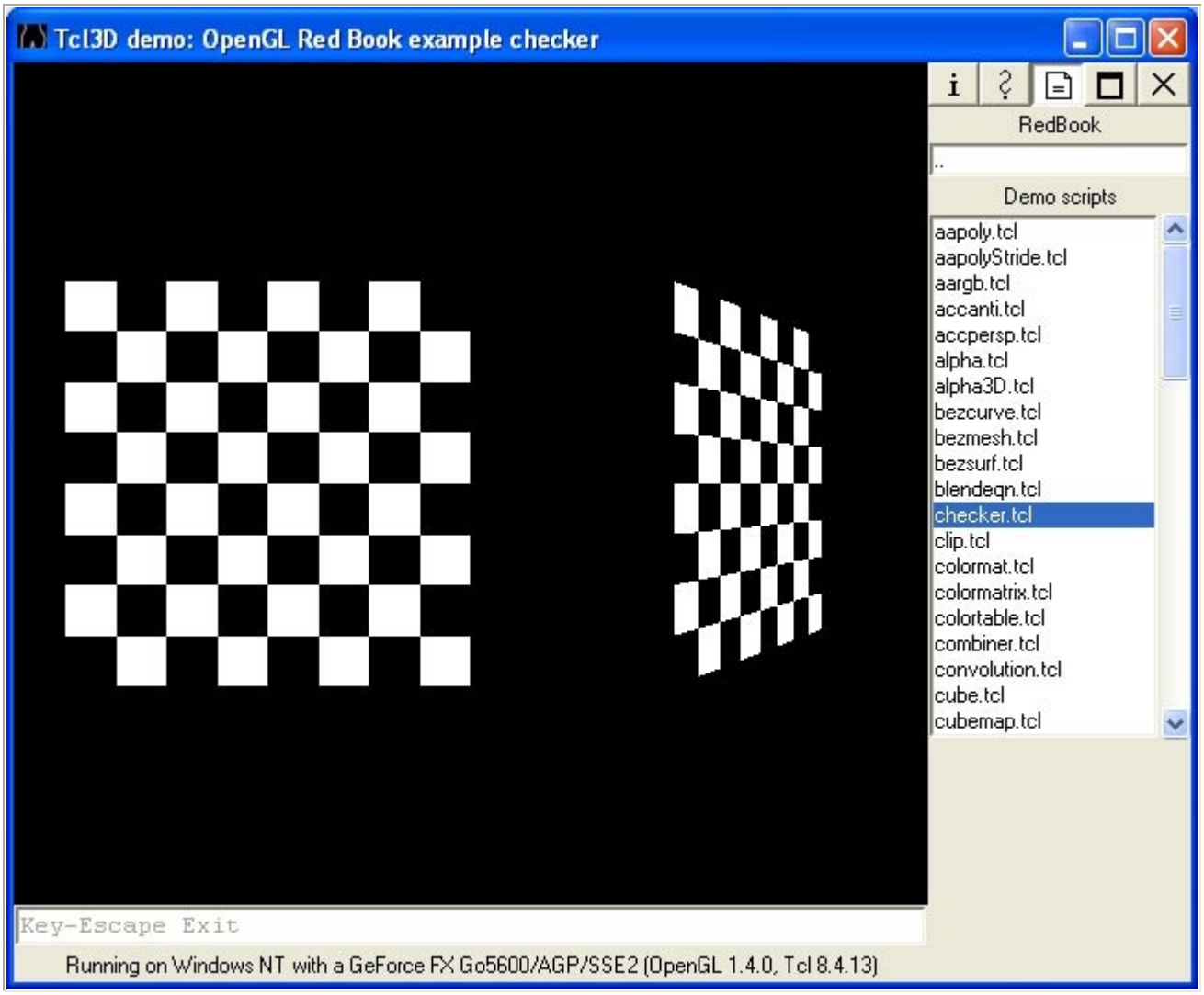
Demonstrate the different blending functions available with the
OpenGL imaging subset.  This program demonstrates use of the
glBlendEquation() call.

The following keys change the selected blend equation function:

     'a'  ->  GL_FUNC_ADD
     's'  ->  GL_FUNC_SUBTRACT
     'r'  ->  GL_FUNC_REVERSE_SUBTRACT
     'm'  ->  GL_MIN
     'x'  ->  GL_MAX

Extension function: glBlendEquation OpenGL 1.2
```

Demo:	**checker**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
checker.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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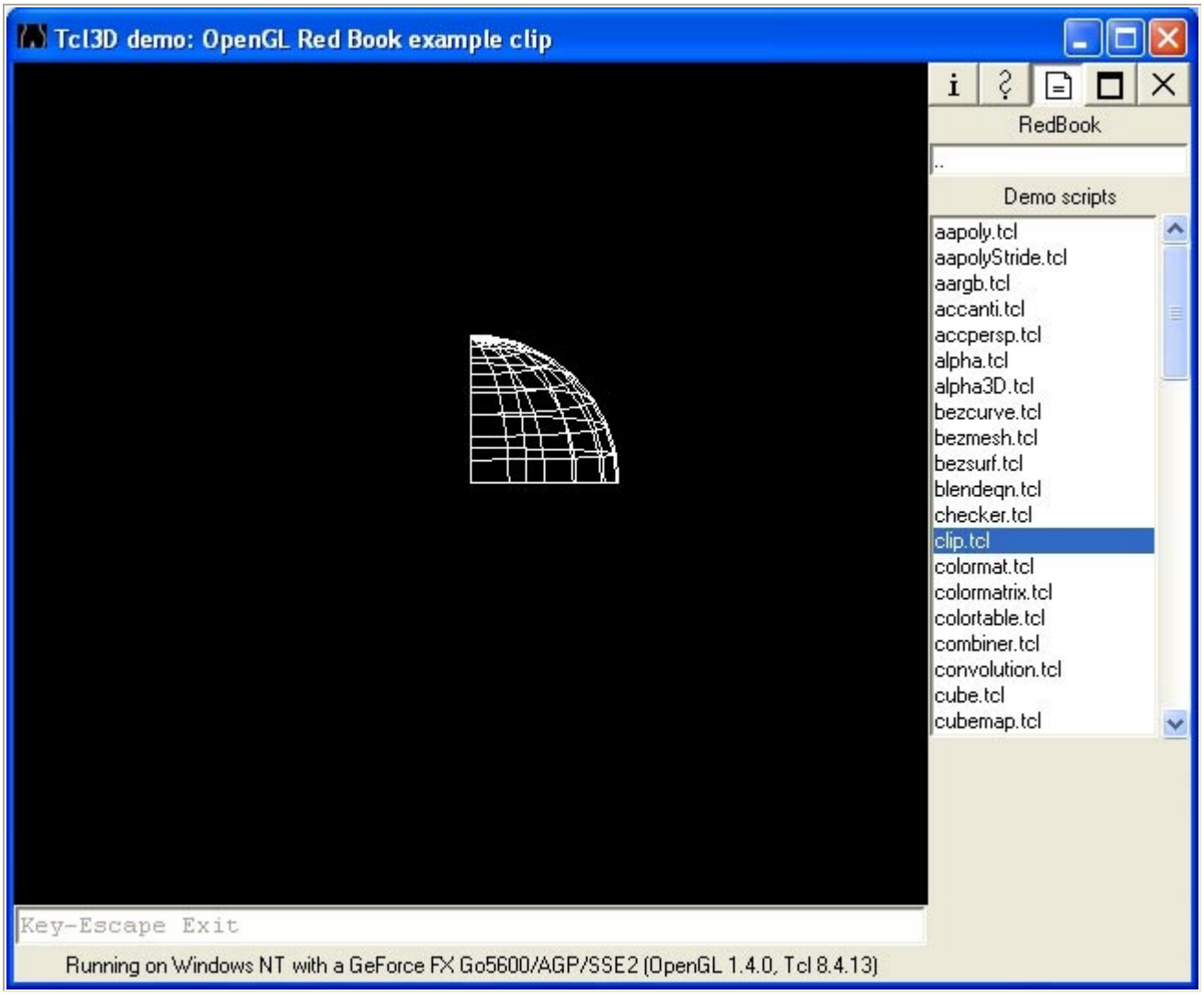
This program texture maps a checkerboard image onto
two rectangles.

If running this program on OpenGL 1.0, texture objects are
not used.
```

Demo:	**clip**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
clip.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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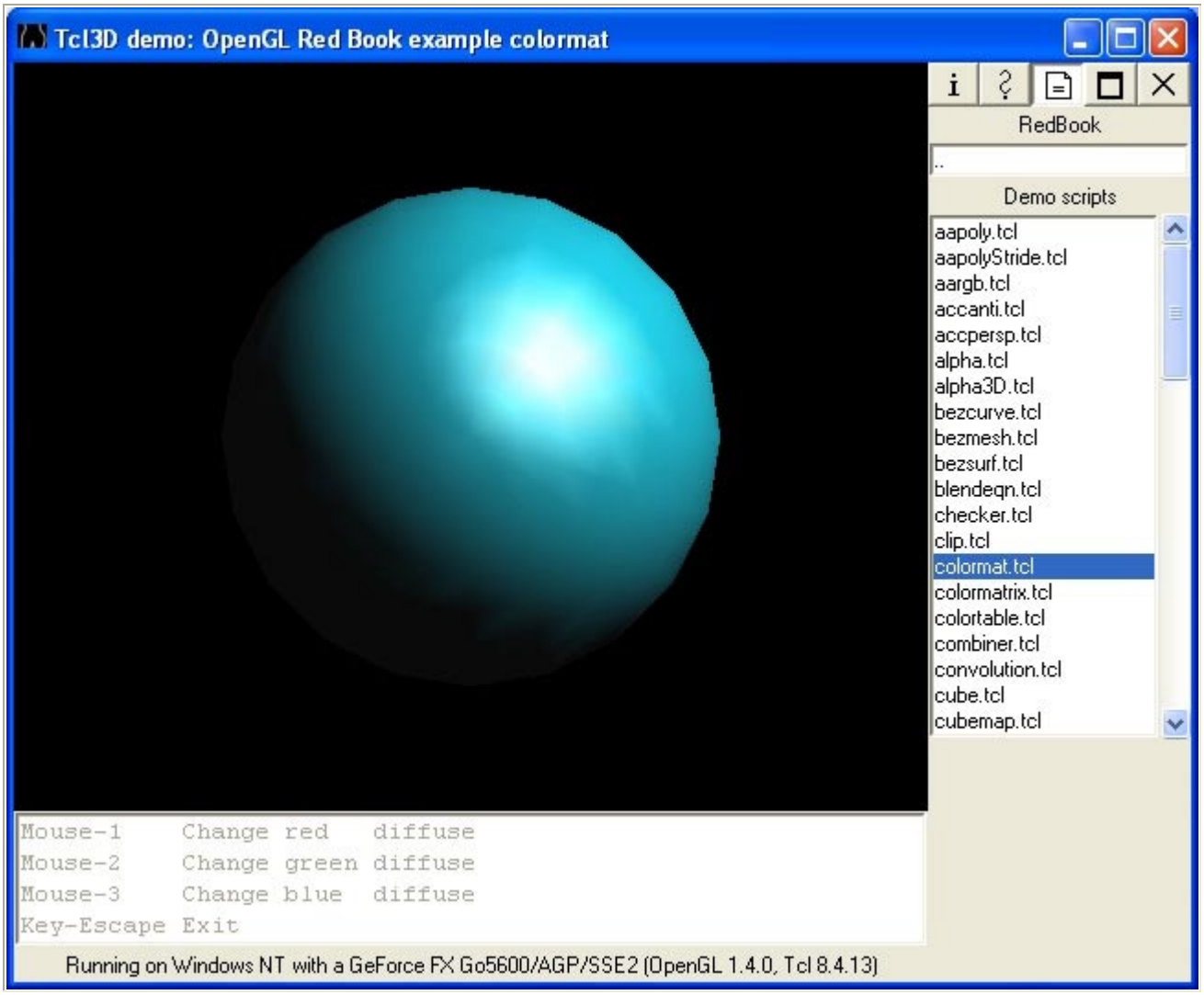
This program demonstrates arbitrary clipping planes.
```

Demo:	**colormat**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
colormat.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
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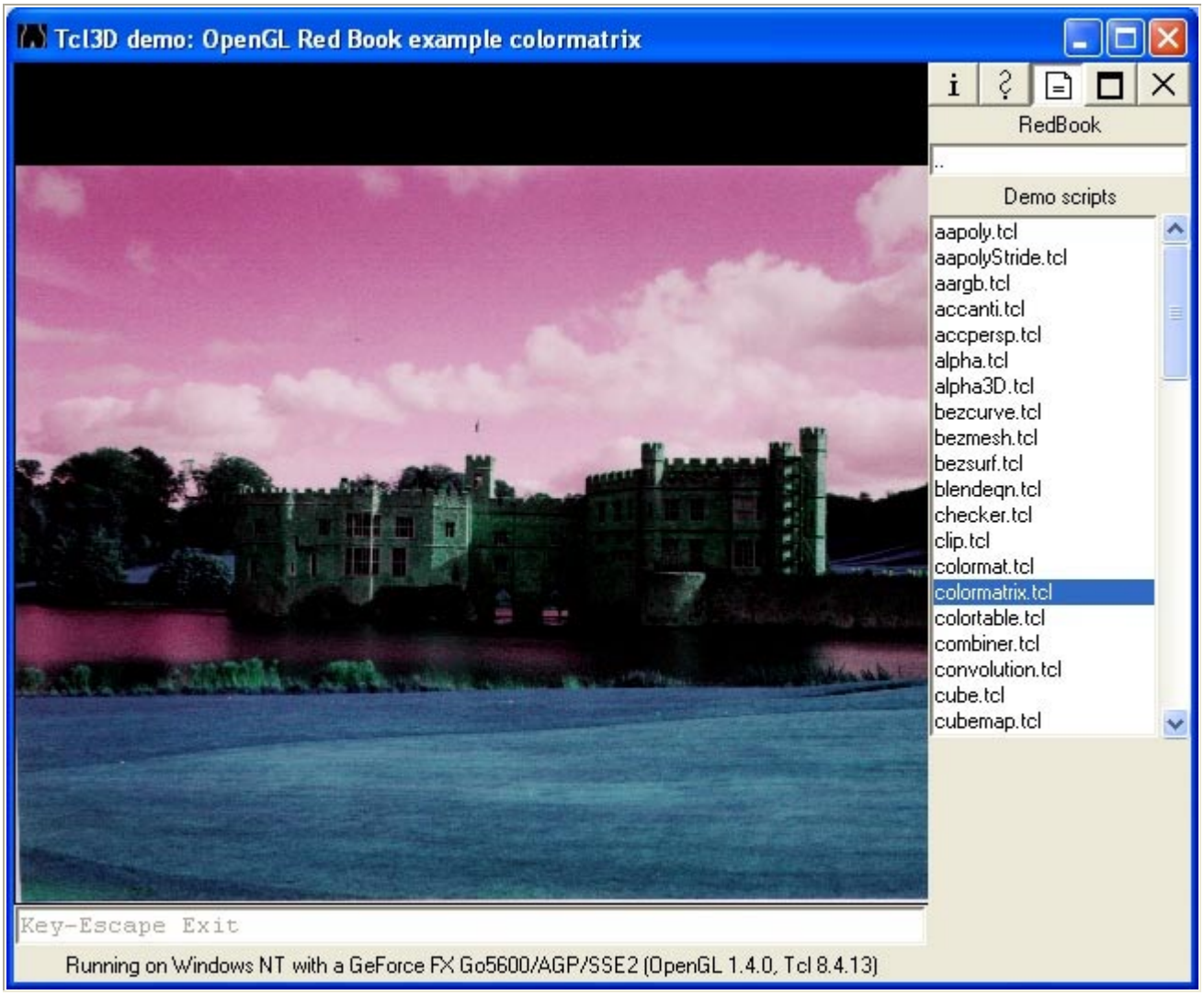
After initialization, the program will be in
ColorMaterial mode. Interaction:  pressing the
mouse buttons will change the diffuse reflection values.
```

Demo:	**colormatrix**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
colormatix.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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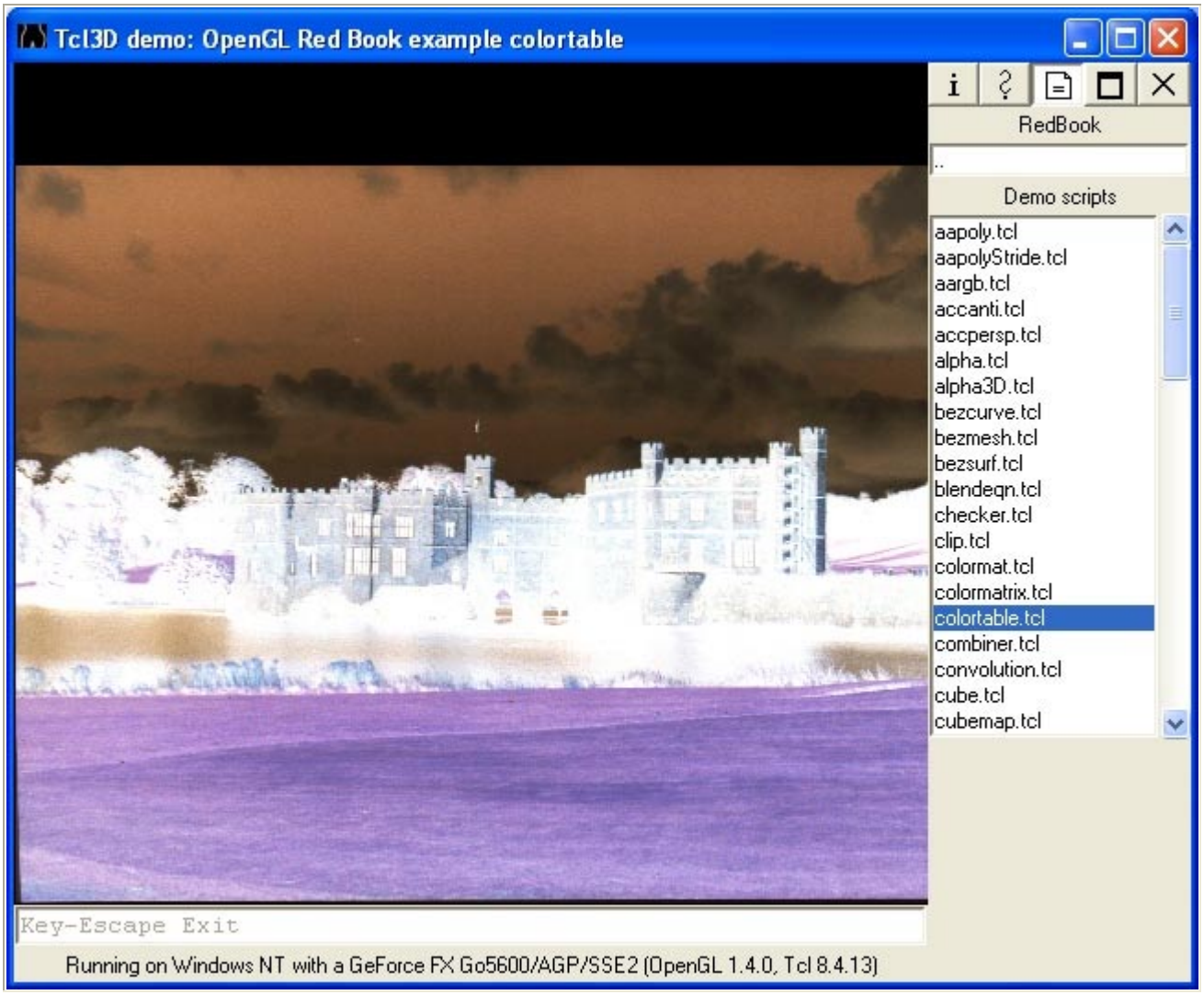
This program uses the color matrix to exchange the color channels of
an image.

Red   -> Green
Green -> Blue
Blue  -> Red
```

Demo:	**colortable**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
colortable.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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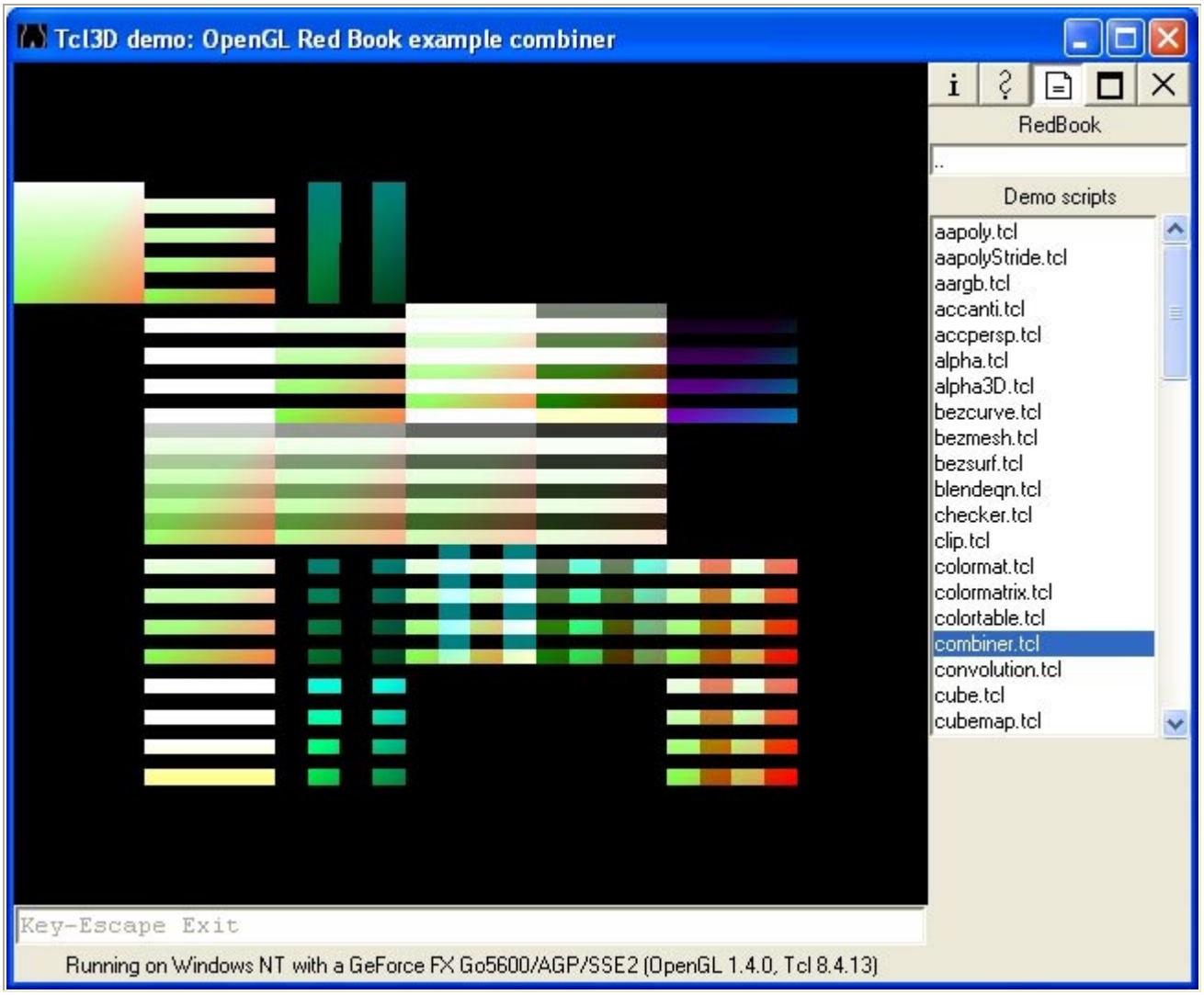
Invert a passed block of pixels.  This program illustrates the
use of the glColorTable() function.
```

Demo:	combiner
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
combiner.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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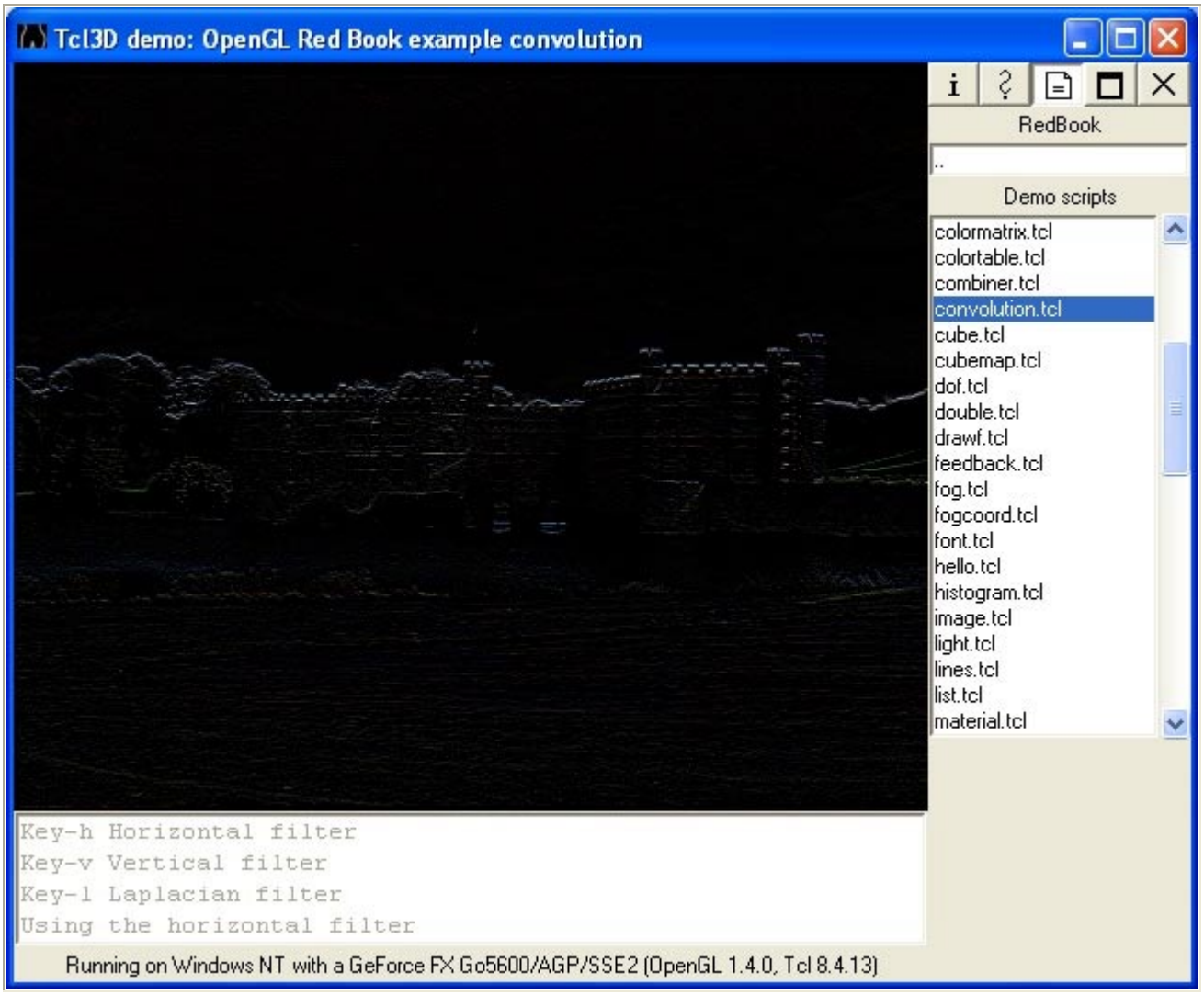
This program renders a variety of quads showing different
effects of texture combiner functions.

The first row renders an untextured polygon (so you can
compare the fragment colors) and then the 2 textures.
The second row shows several different combiner functions
on a single texture:  replace, modulate, add, add-signed,
and subtract.
The third row shows the interpolate combiner function
on a single texture with a constant color/alpha value,
varying the amount of interpolation.
The fourth row uses multitexturing with two textures
and different combiner functions.
The fifth row are some combiner experiments:  using the
scaling factor and reversing the order of subtraction
```

```
for a combination function.
```

Demo:	**convolution**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
convolution.tcl

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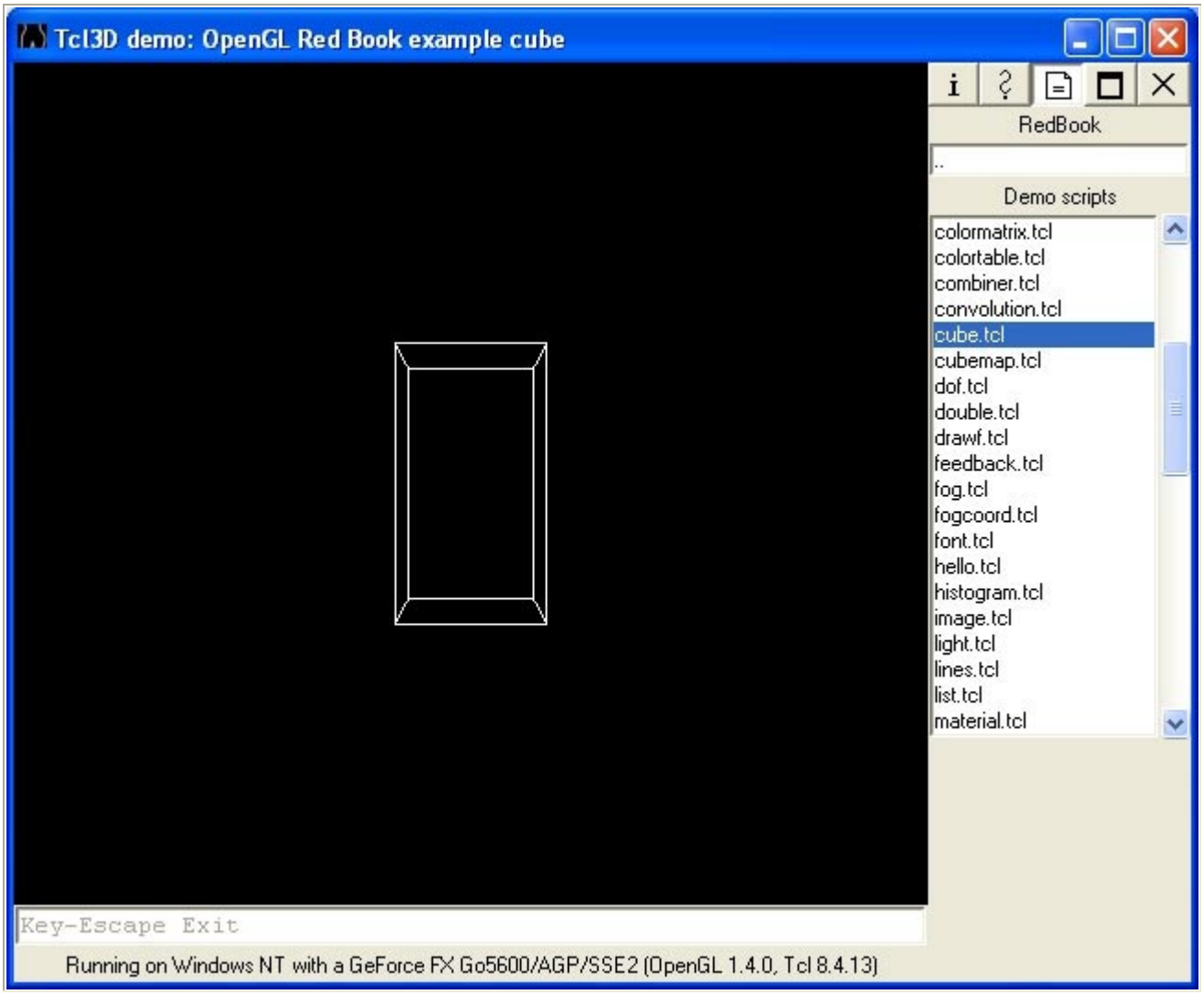
Use various 2D convolutions filters to find edges in an image.
```

Demo:	**cube**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
cube.tcl

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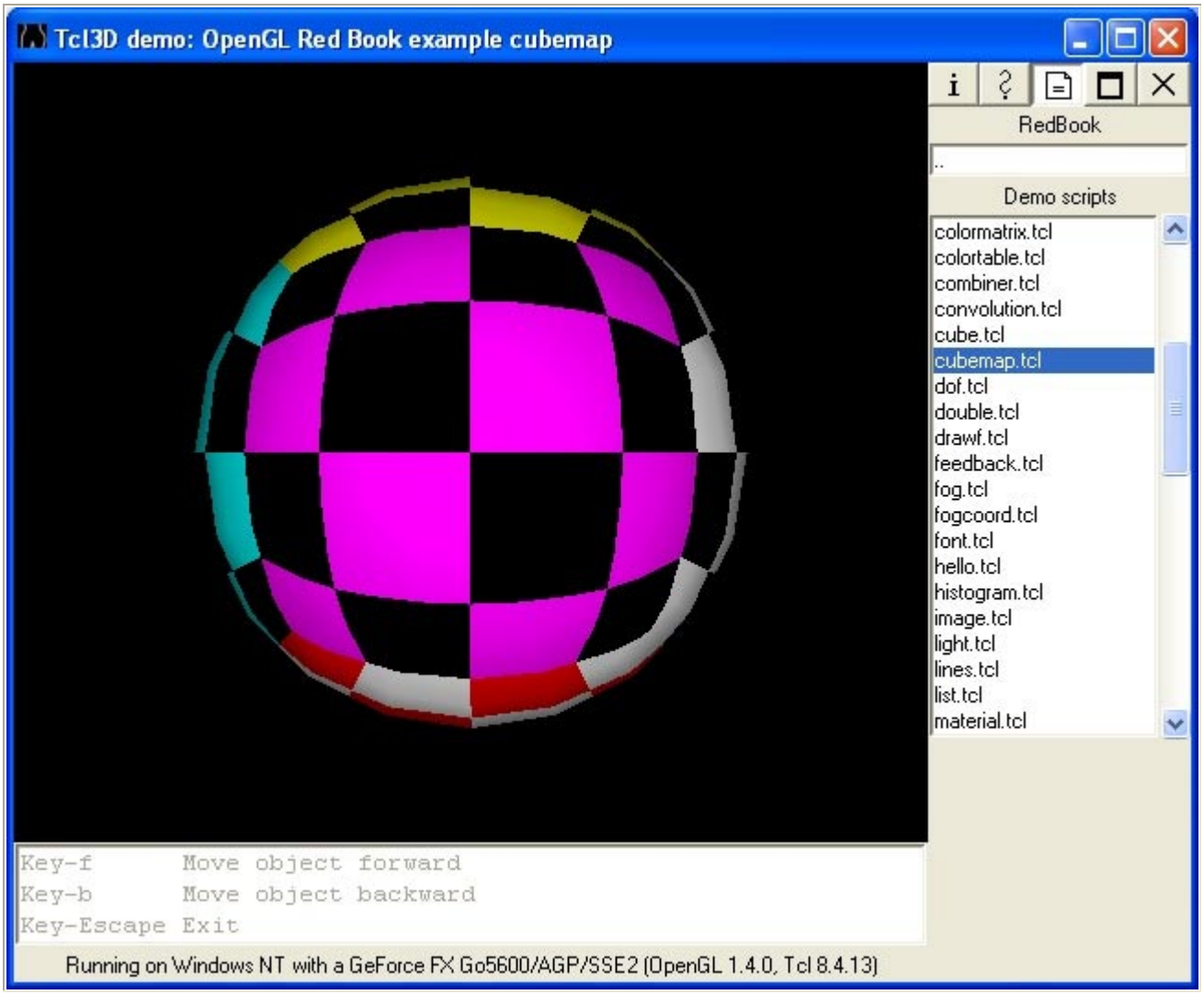
This program demonstrates a single modeling transformation,
glScalef() and a single viewing transformation, gluLookAt().
A wireframe cube is rendered.
```

Demo:	**cubemap**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
cubemap.tcl

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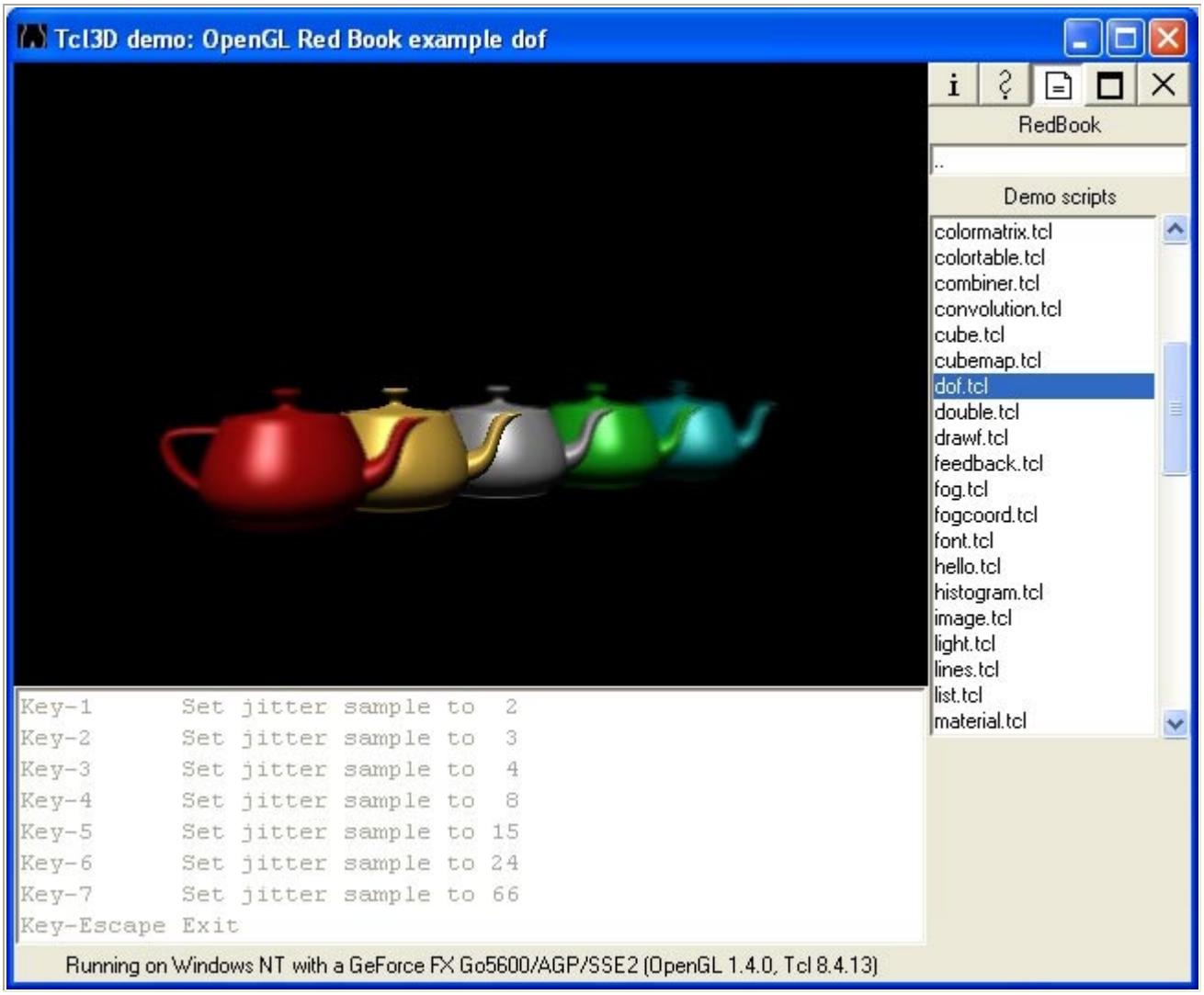
This program demonstrates cube map textures.
Six different colored checker board textures are
created and applied to a lit sphere.

Pressing the 'f' and 'b' keys translate the object
forward and backward.
```

Demo:	**dof**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
dof.tcl

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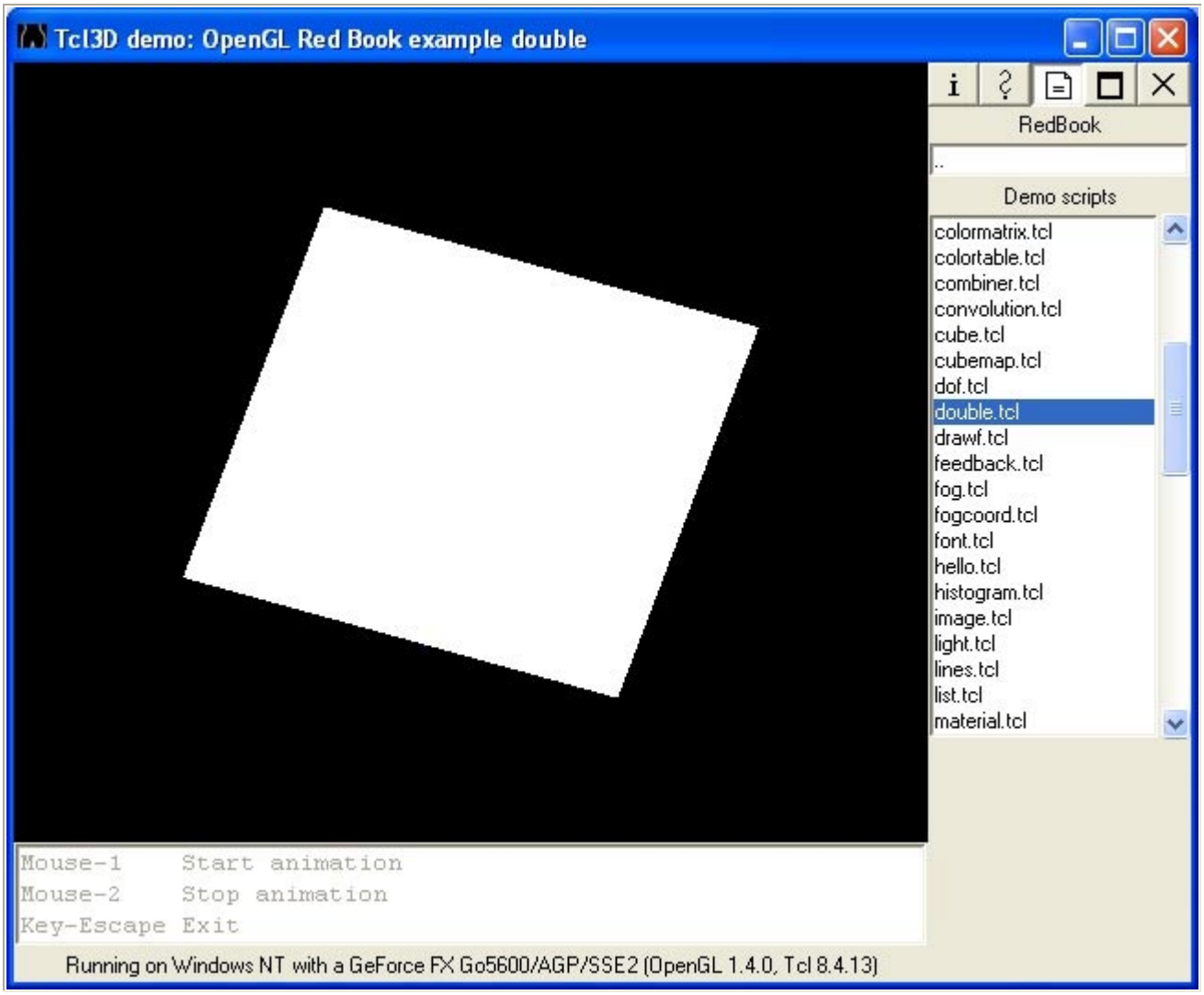
This program demonstrates use of the accumulation buffer to
create an out-of-focus depth-of-field effect.  The teapots
are drawn several times into the accumulation buffer.  The
viewing volume is jittered, except at the focal point, where
the viewing volume is at the same position, each time.  In
this case, the gold teapot remains in focus.
```

Demo:	**double**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
double.tcl

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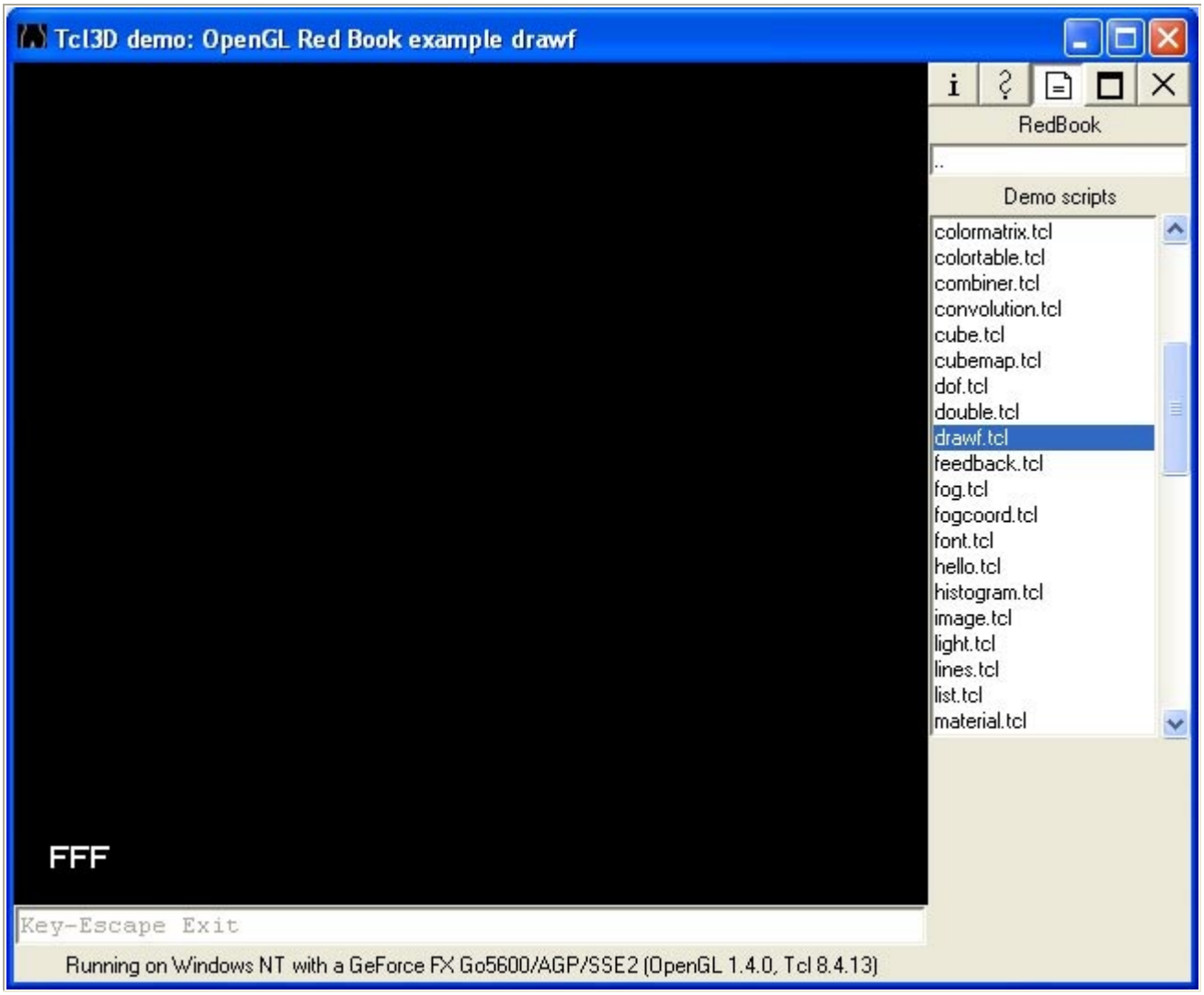
This is a simple double buffered program.
Pressing the left mouse button rotates the rectangle.
Pressing the middle mouse button stops the rotation.
```

Demo:	**drawf**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
drawf.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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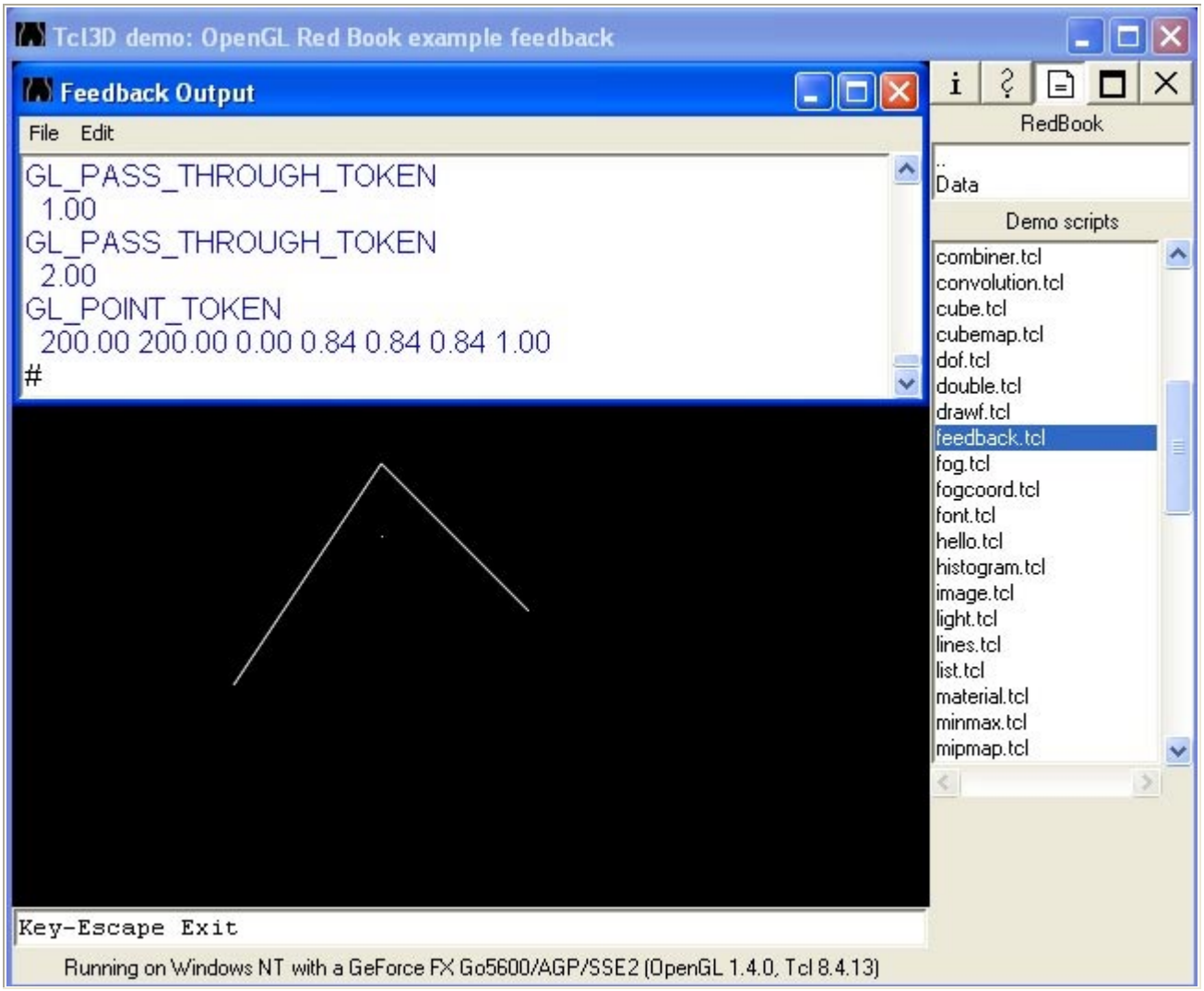
Draws the bitmapped letter F on the screen (several times).
This demonstrates use of the glBitmap() call.
```

Demo:	**feedback**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
feedback.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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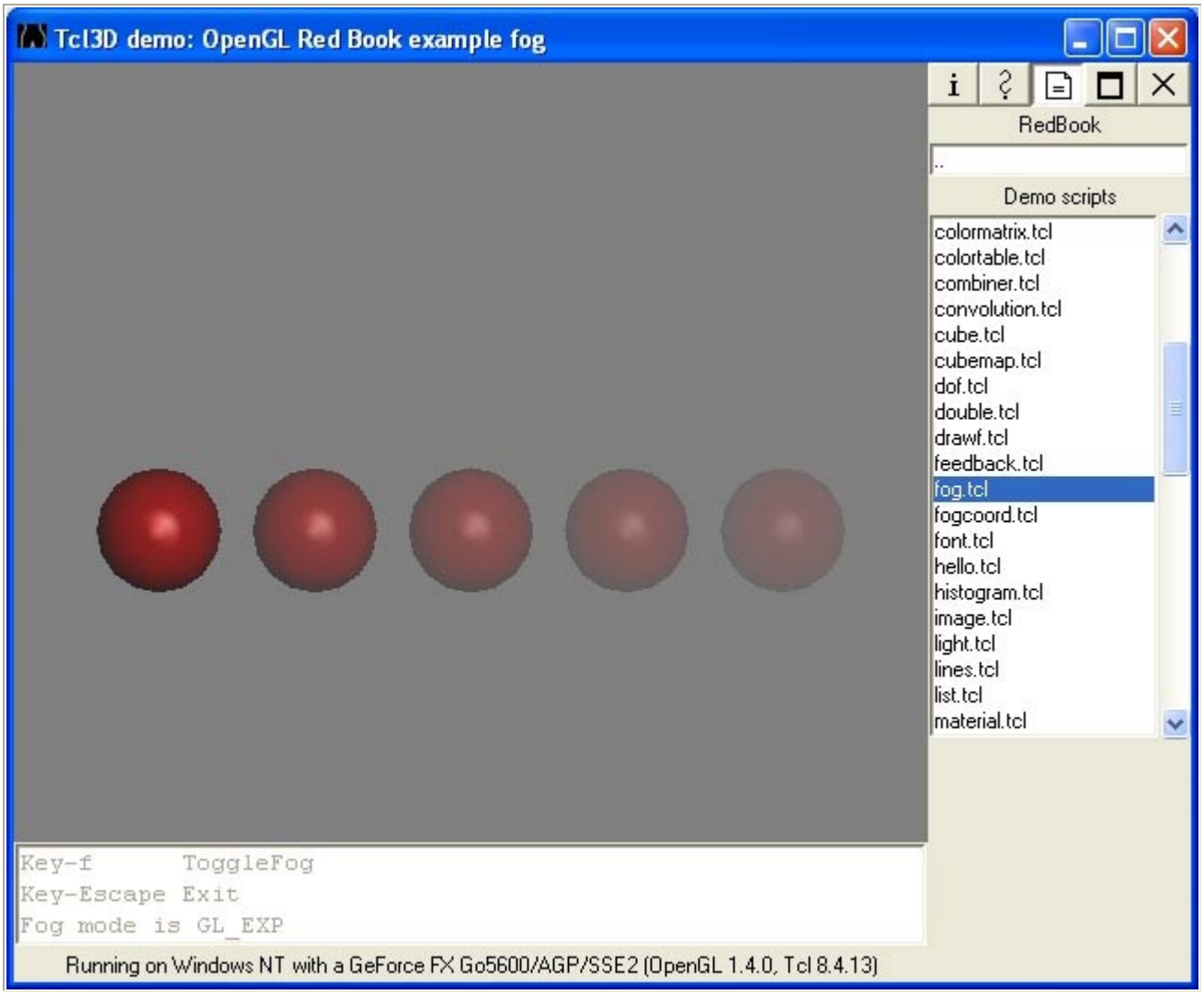
This program demonstrates use of OpenGL feedback.  First,
a lighting environment is set up and a few lines are drawn.
Then feedback mode is entered, and the same lines are
drawn. The results in the feedback buffer are printed.
```

Demo:	**fog**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
fog.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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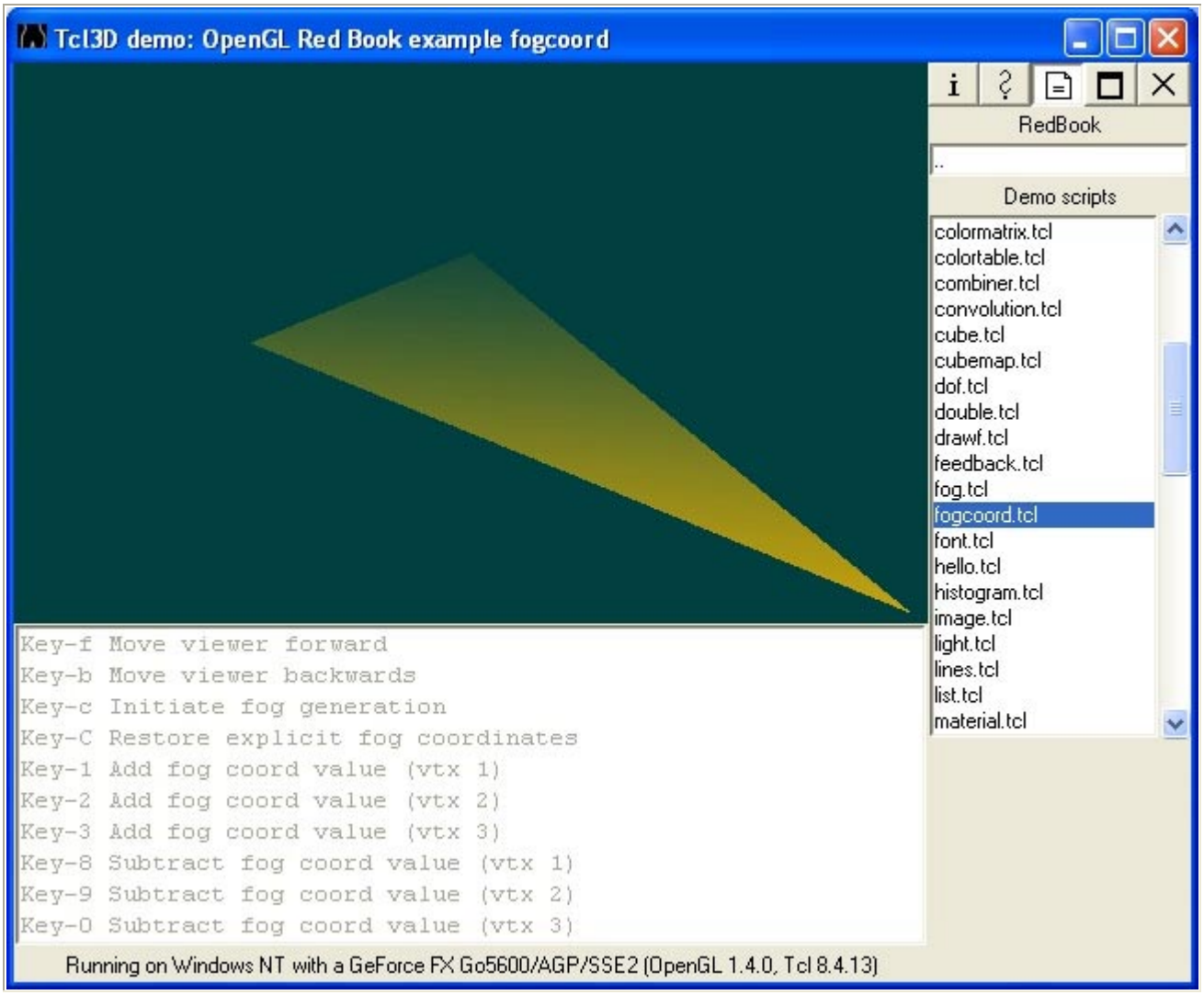
This program draws 5 red spheres, each at a different
z distance from the eye, in different types of fog.
Pressing the f key chooses between 3 types of
fog:  exponential, exponential squared, and linear.
In this program, there is a fixed density value, as well
as fixed start and end values for the linear fog.
```

Demo:	fogcoord
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
fogcoord.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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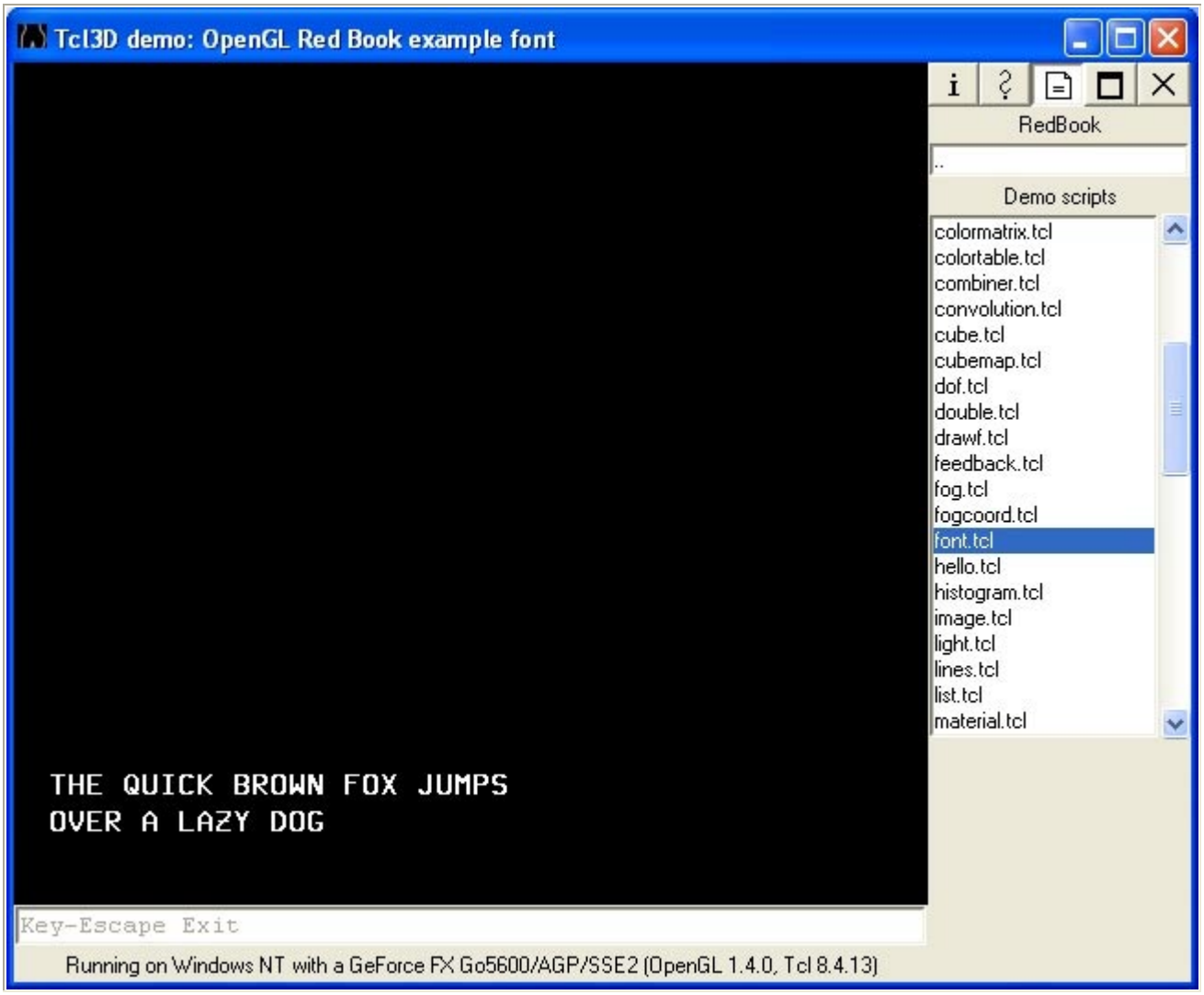
This program demonstrates the use of explicit fog
coordinates.  You can press the keyboard and change
the fog coordinate value at any vertex.  You can
also switch between using explicit fog coordinates
and the default fog generation mode.

Pressing the 'f' and 'b' keys move the viewer forward
and backwards.
Pressing 'c' initiates the default fog generation.
Pressing capital 'C' restores explicit fog coordinates.
Pressing '1', '2', '3', '8', '9', and '0' add or
subtract from the fog coordinate values at one of the
three vertices of the triangle.

Extension function: glFogCoordfEXT
```

Demo:	**font**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
font.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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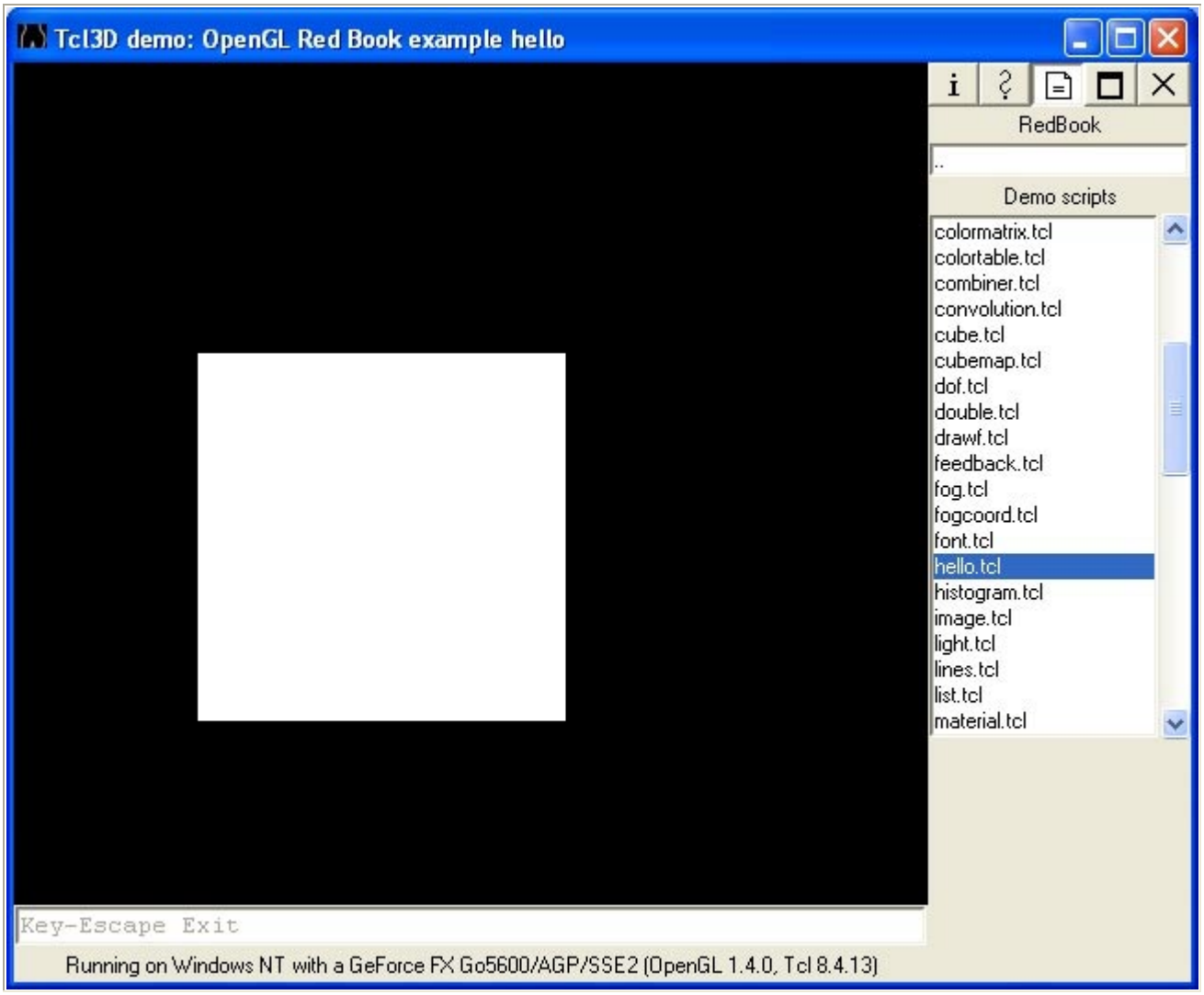
Draws some text in a bitmapped font.  Uses glBitmap()
and other pixel routines.  Also demonstrates use of
display lists.
```

Demo:	**hello**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
hello.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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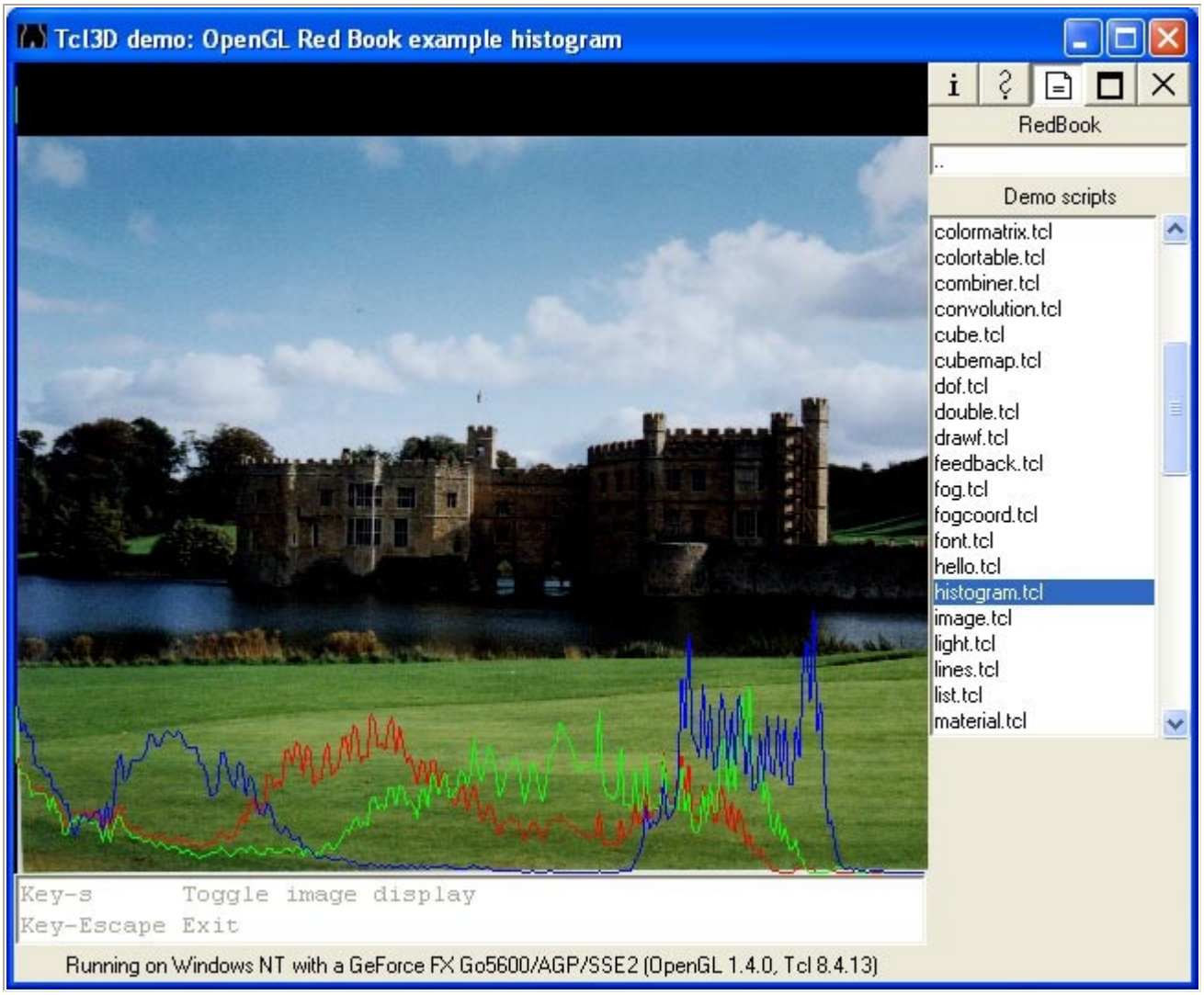
This is a simple, introductory OpenGL program.
```

Demo:	**histogram**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
histogram.tcl

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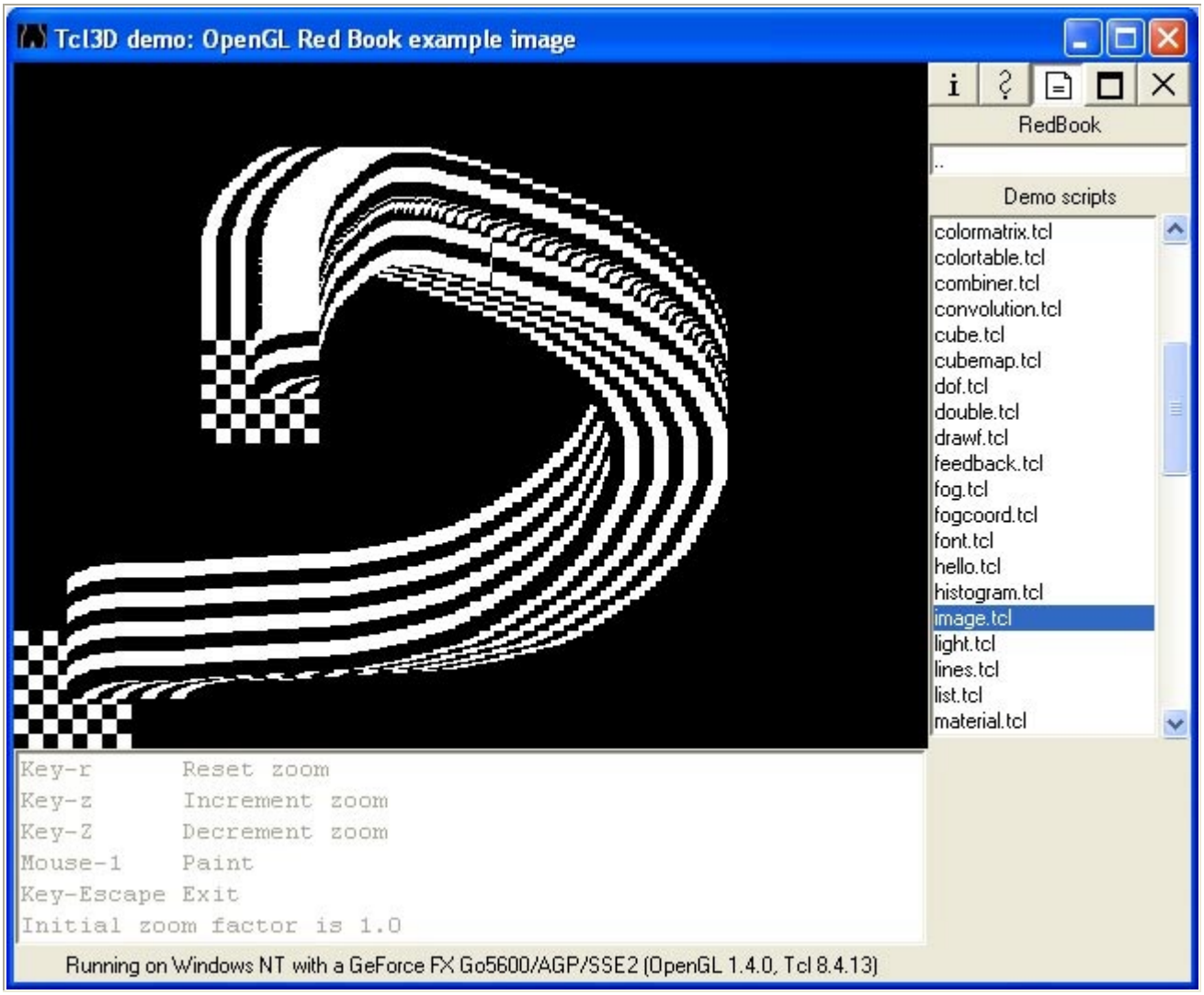
Compute the histogram of the image. This program illustrates the
use of the glHistogram() function.
```

Demo:	**image**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
image.tcl

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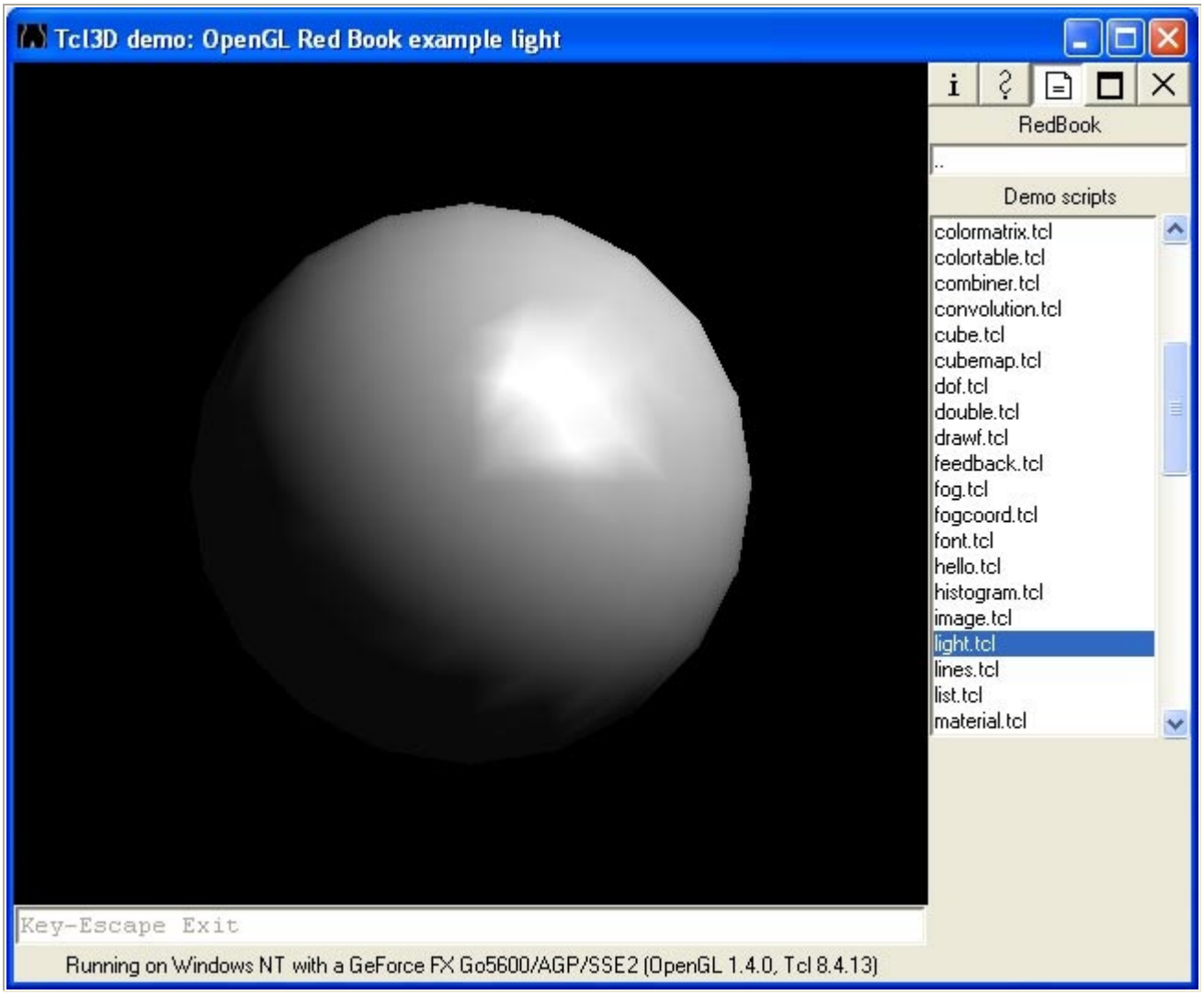
This program demonstrates drawing pixels and shows the effect
of glDrawPixels(), glCopyPixels(), and glPixelZoom().
Interaction: moving the mouse while pressing the mouse button
will copy the image in the lower-left corner of the window
to the mouse position, using the current pixel zoom factors.
There is no attempt to prevent you from drawing over the original
image.  If you press the 'r' key, the original image and zoom
factors are reset.  If you press the 'z' or 'Z' keys, you change
the zoom factors.
```

Demo:	**light**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
light.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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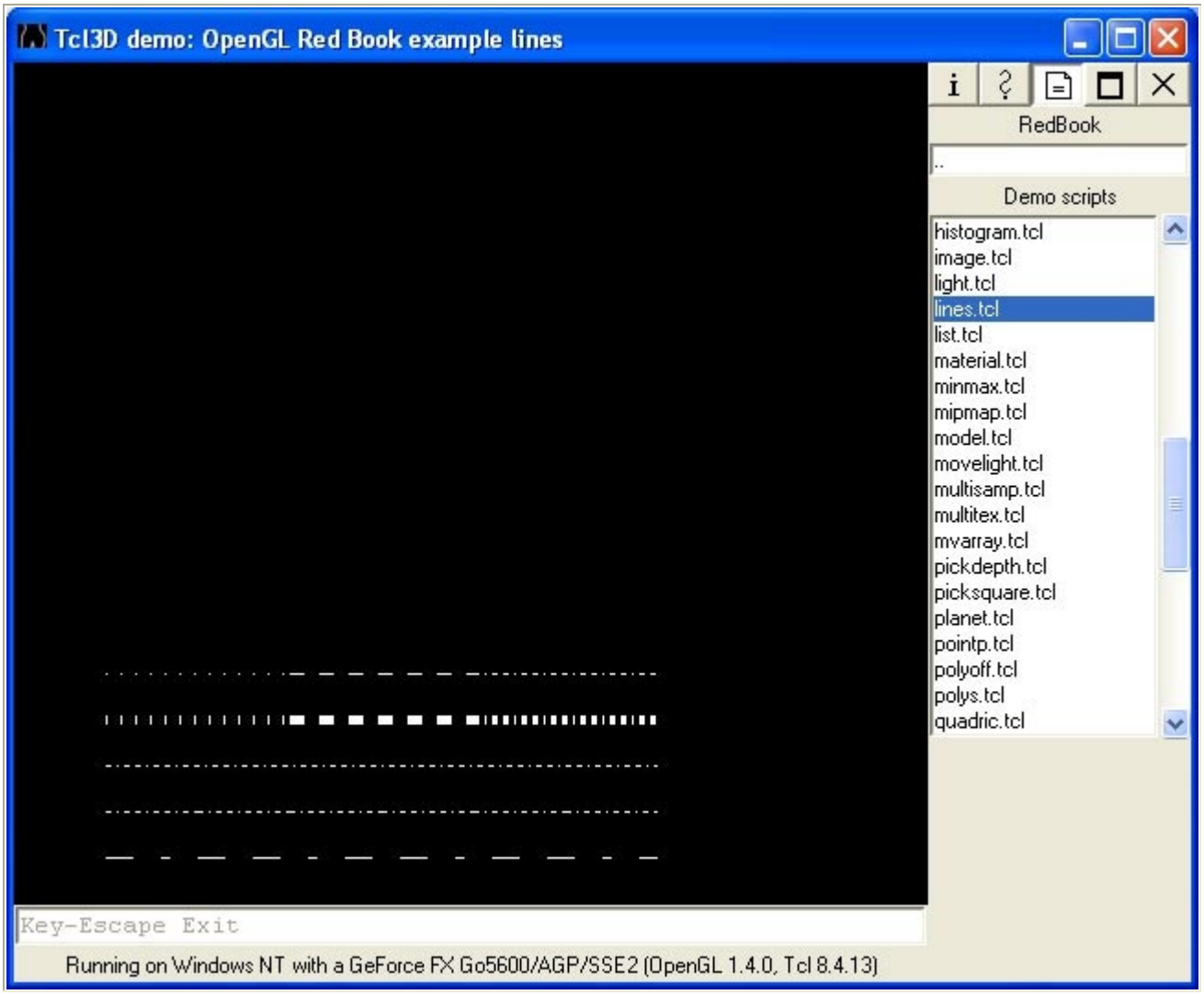
This program demonstrates the use of the OpenGL lighting
model. A sphere is drawn using a grey material characteristic.
A single light source illuminates the object.
```

Demo:	**lines**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
lines.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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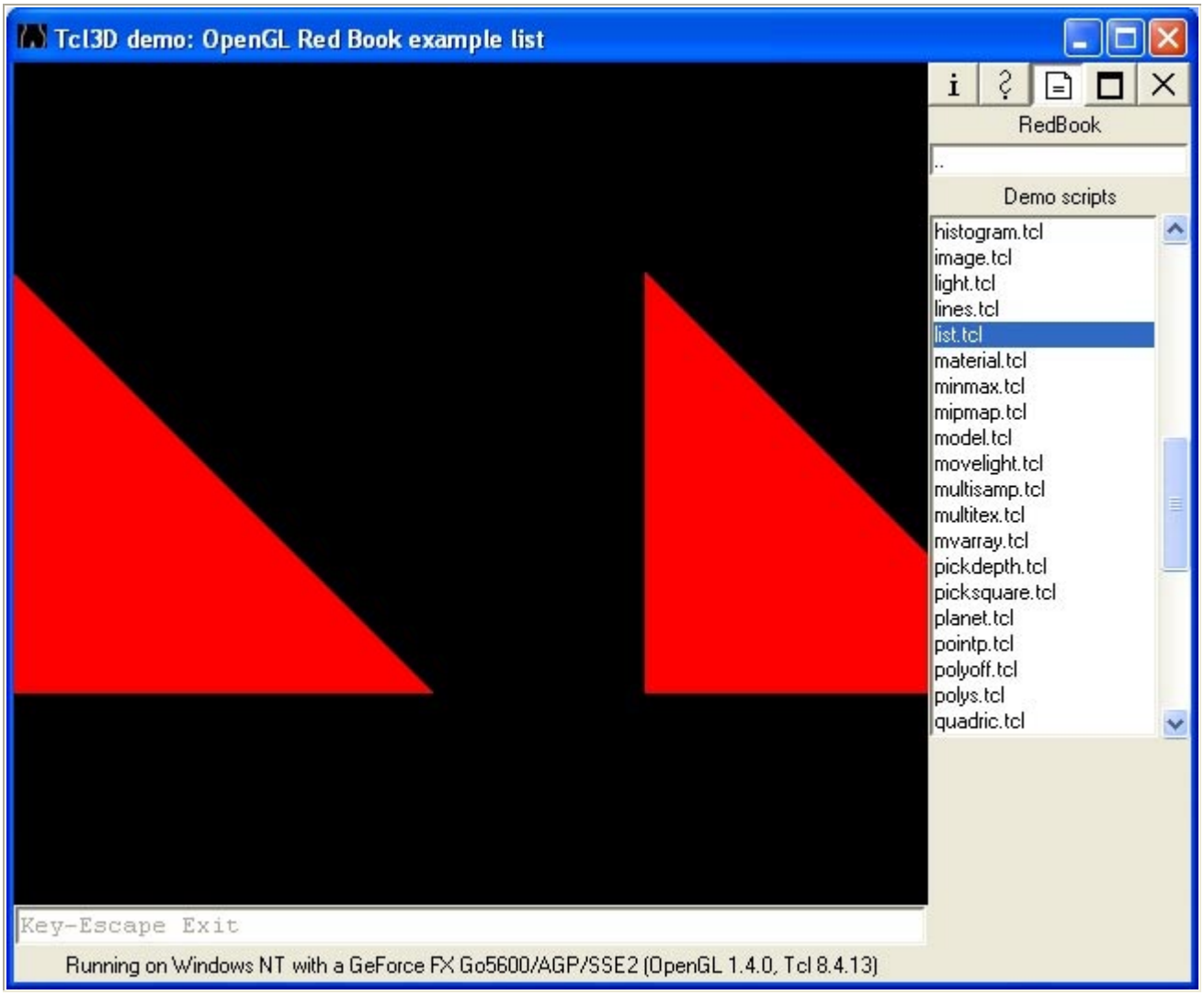
This program demonstrates geometric primitives and
their attributes.
```

Demo:	**list**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
list.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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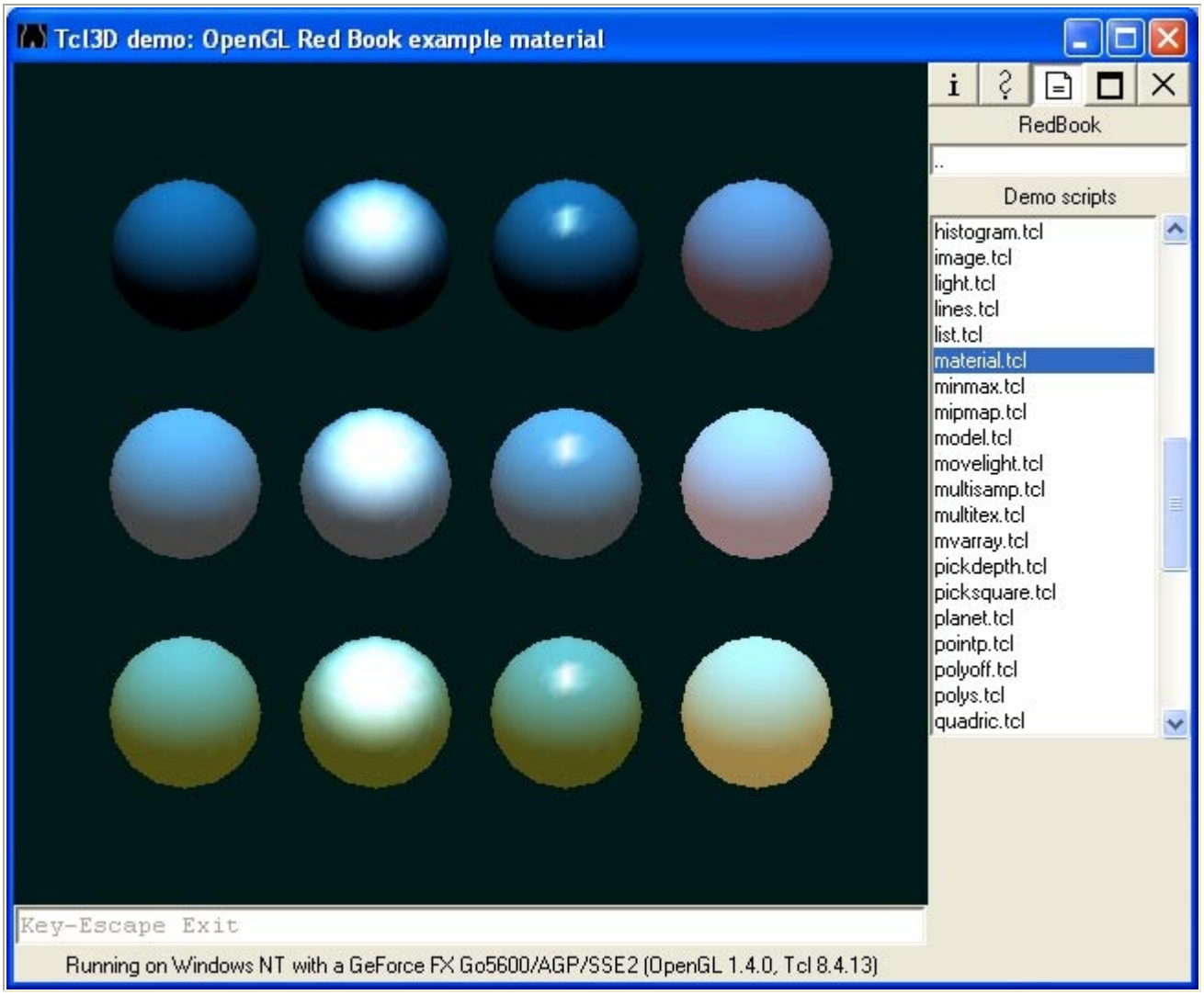
This program demonstrates how to make and execute a
display list.  Note that attributes, such as current
color and matrix, are changed.
```

Demo:	**material**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
material.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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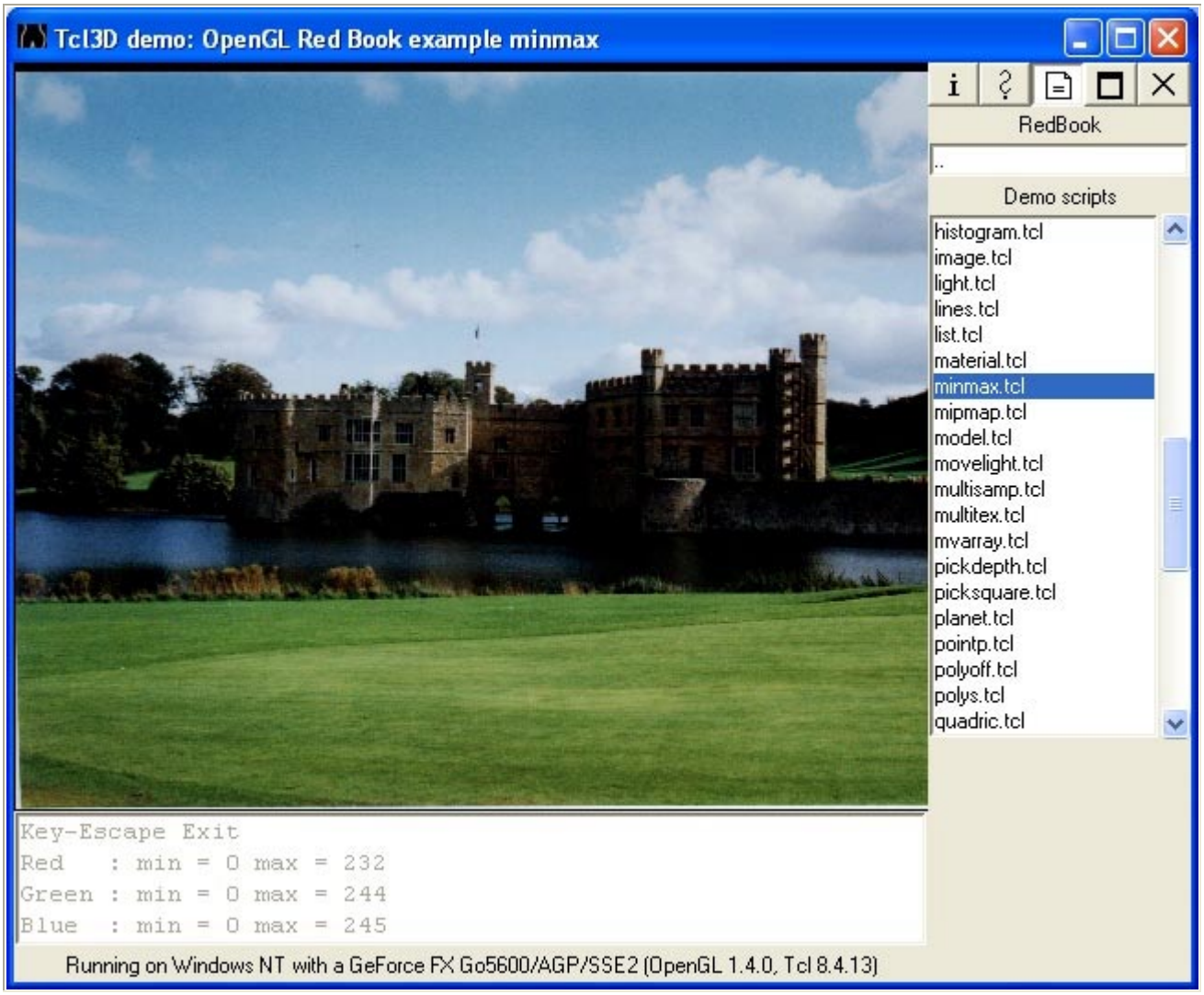
This program demonstrates the use of the GL lighting model.
Several objects are drawn using different material characteristics.
A single light source illuminates the objects.
```

Demo:	**minmax**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
minmax.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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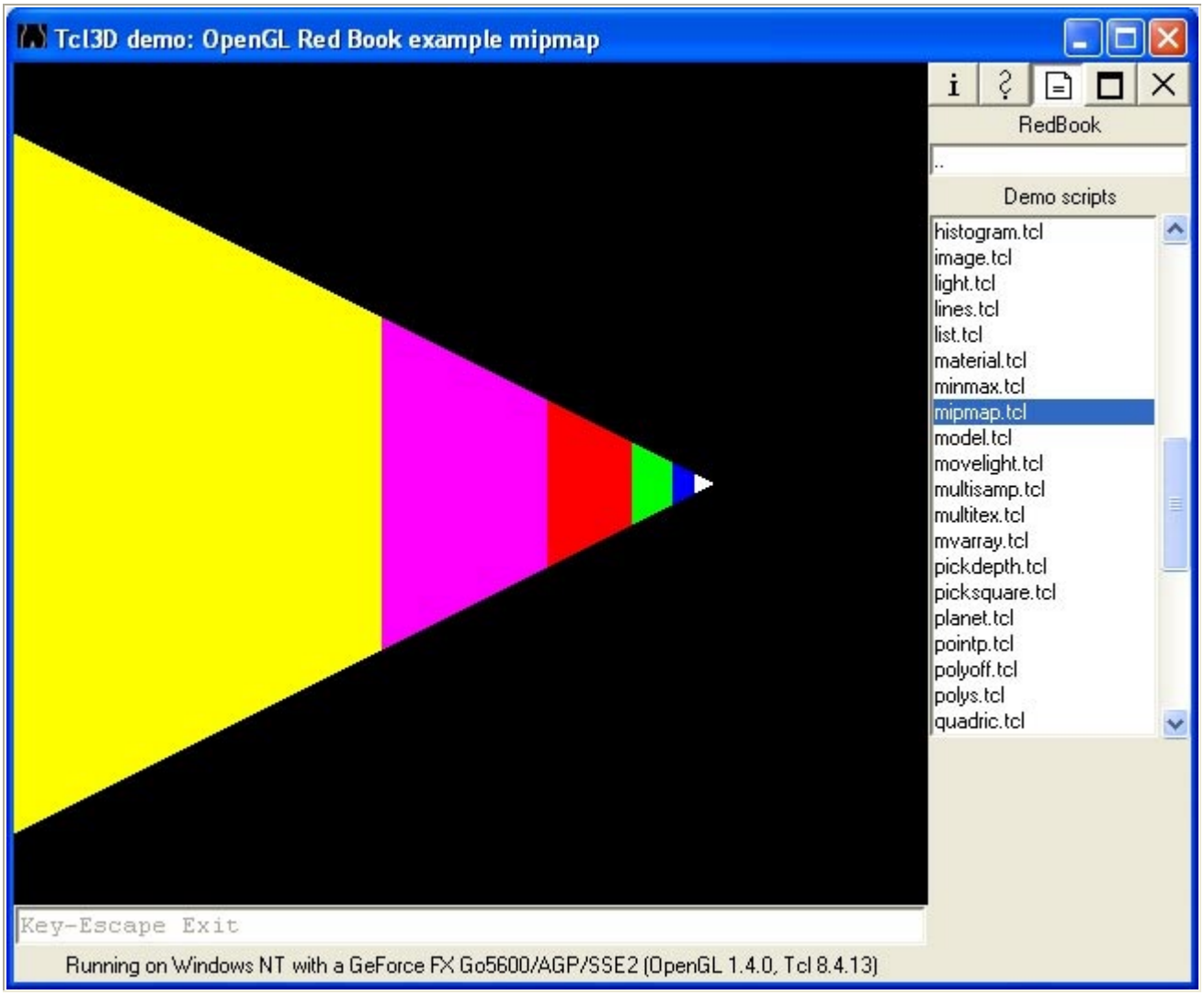
Determine the minimum and maximum values of a group of pixels.
This demonstrates use of the glMinmax() call.
```

Demo:	**mipmap**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
mipmap.tcl

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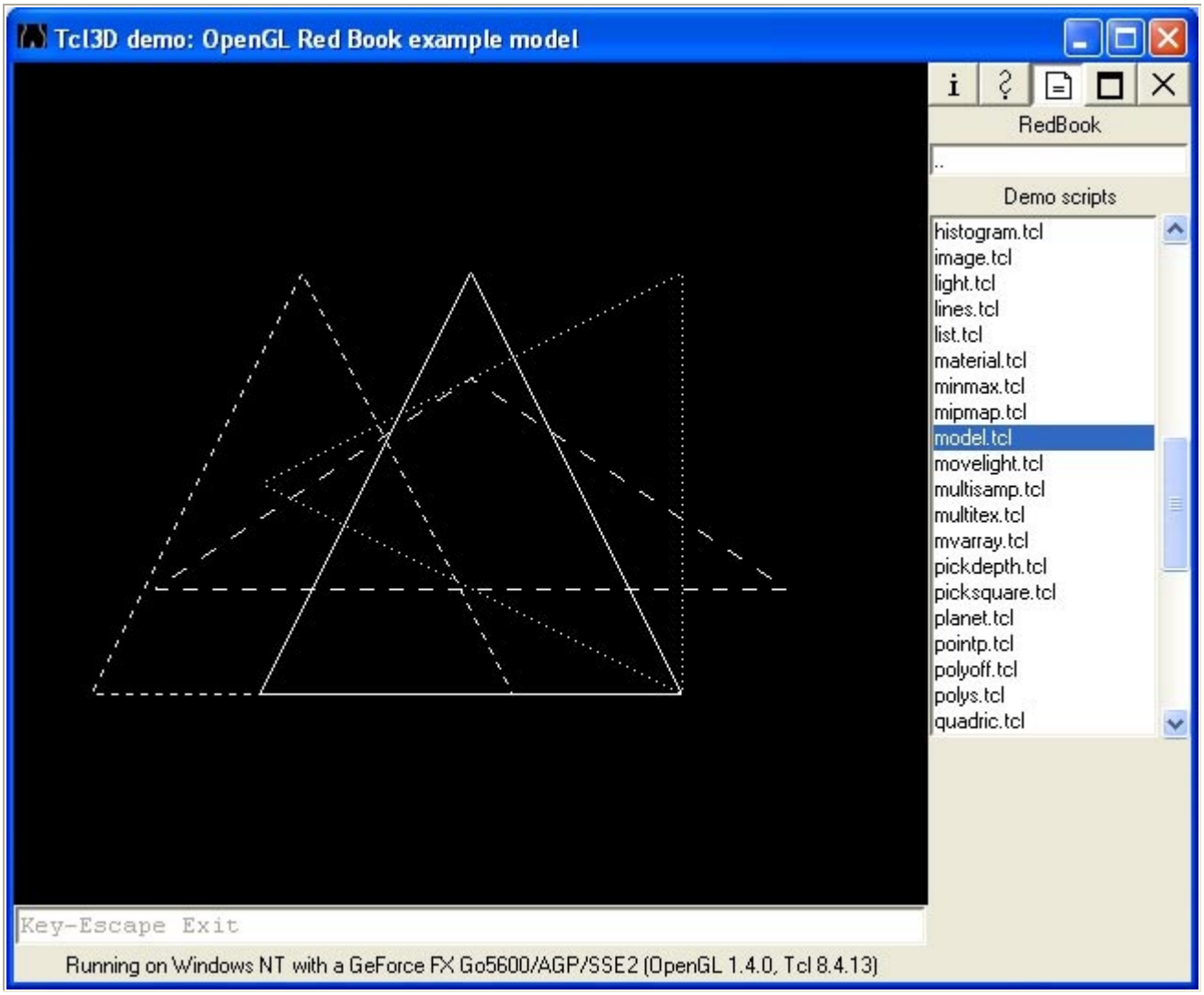
This program demonstrates using mipmaps for texture maps.
To overtly show the effect of mipmaps, each mipmap reduction
level has a solidly colored, contrasting texture image.
Thus, the quadrilateral which is drawn is drawn with several
different colors.
```

Demo:	**model**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
model.tcl

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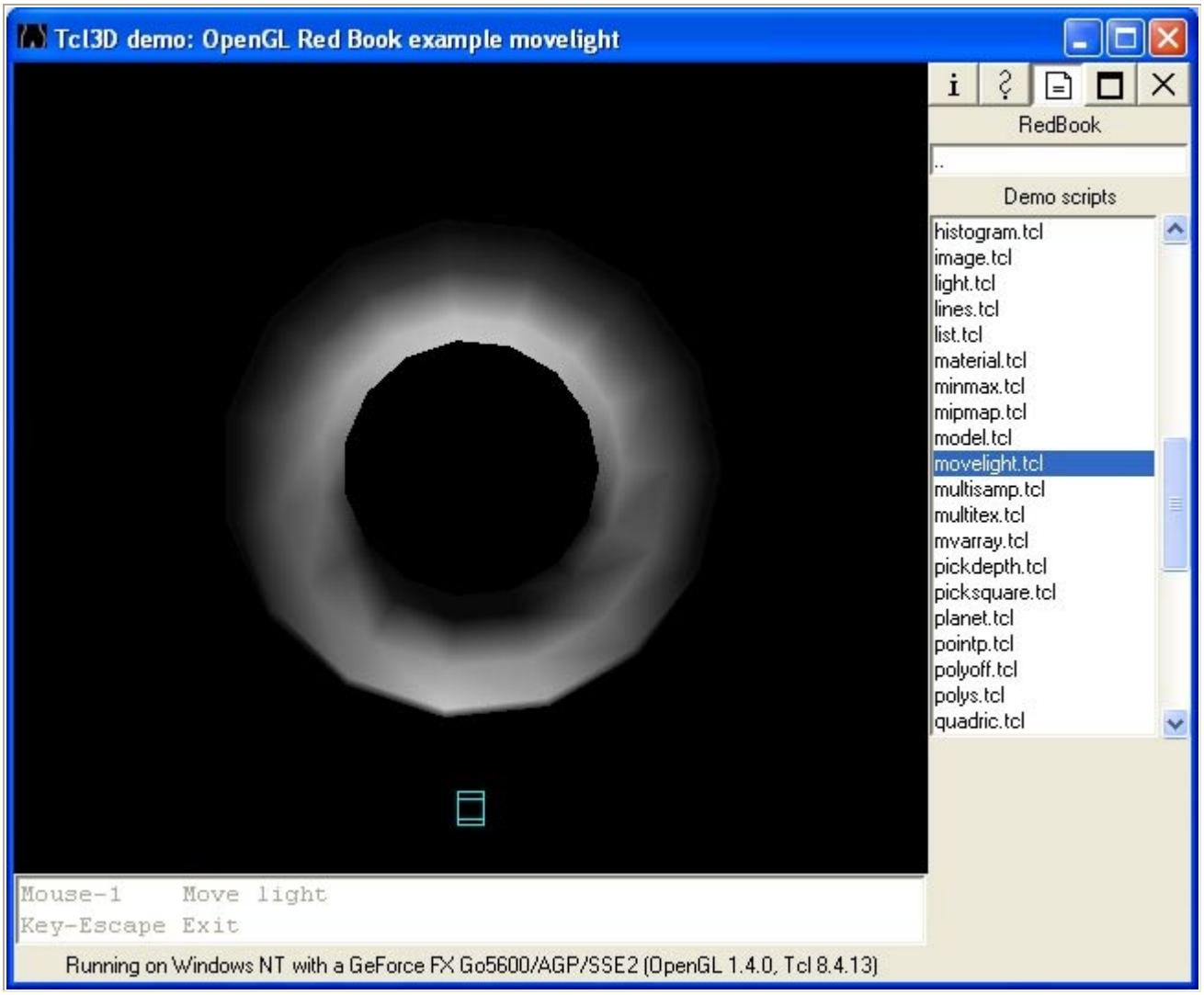
This program demonstrates modeling transformations
```

Demo:	**movelight**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
movelight.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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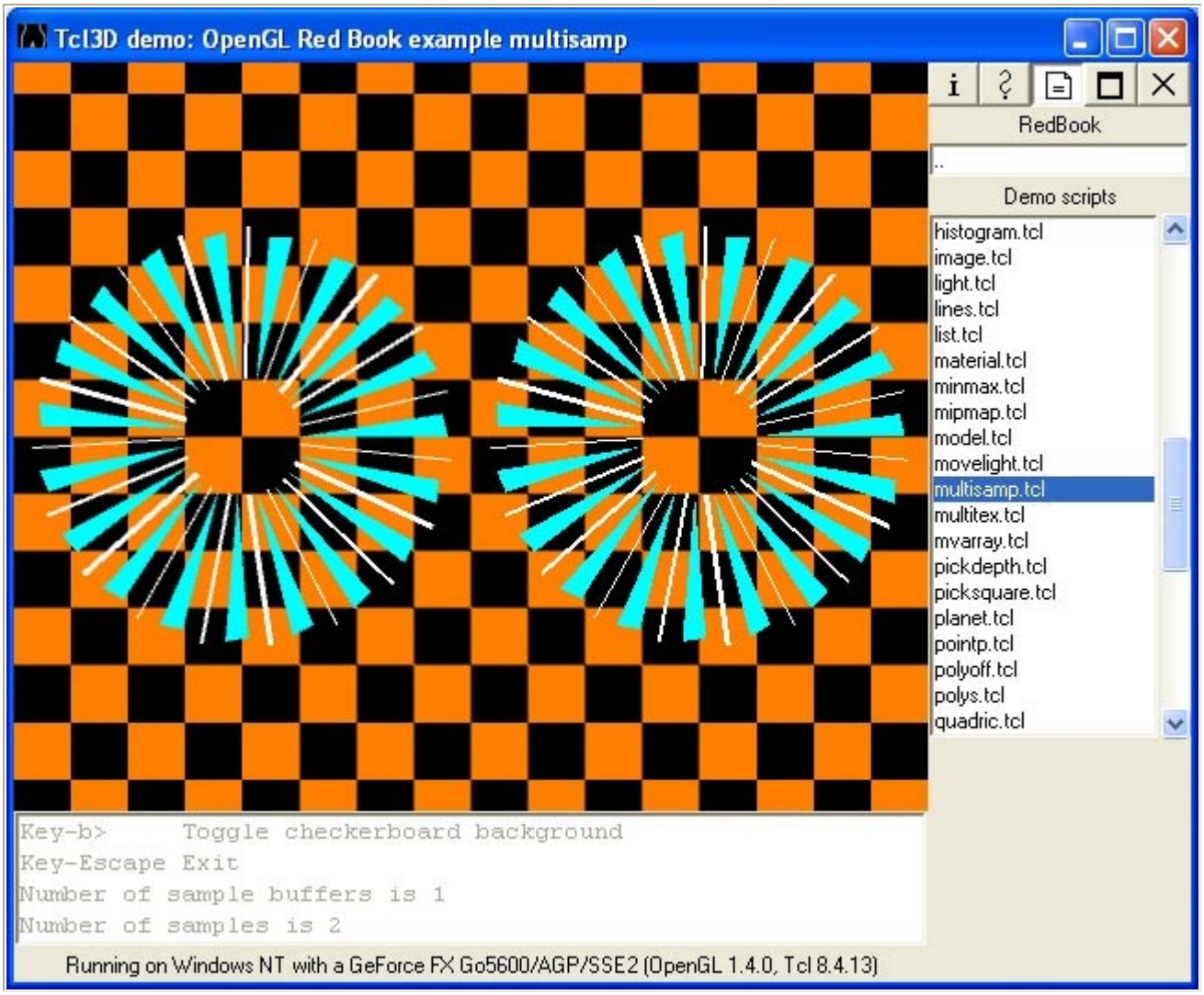
This program demonstrates when to issue lighting and
transformation commands to render a model with a light
which is moved by a modeling transformation (rotate or
translate).  The light position is reset after the modeling
transformation is called.  The eye position does not change.

A sphere is drawn using a grey material characteristic.
A single light source illuminates the object.

Interaction:  pressing the left mouse button alters
the modeling transformation (x rotation) by 30 degrees.
The scene is then redrawn with the light in a new position.
```

Demo:	**multisamp**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
multisamp.tcl

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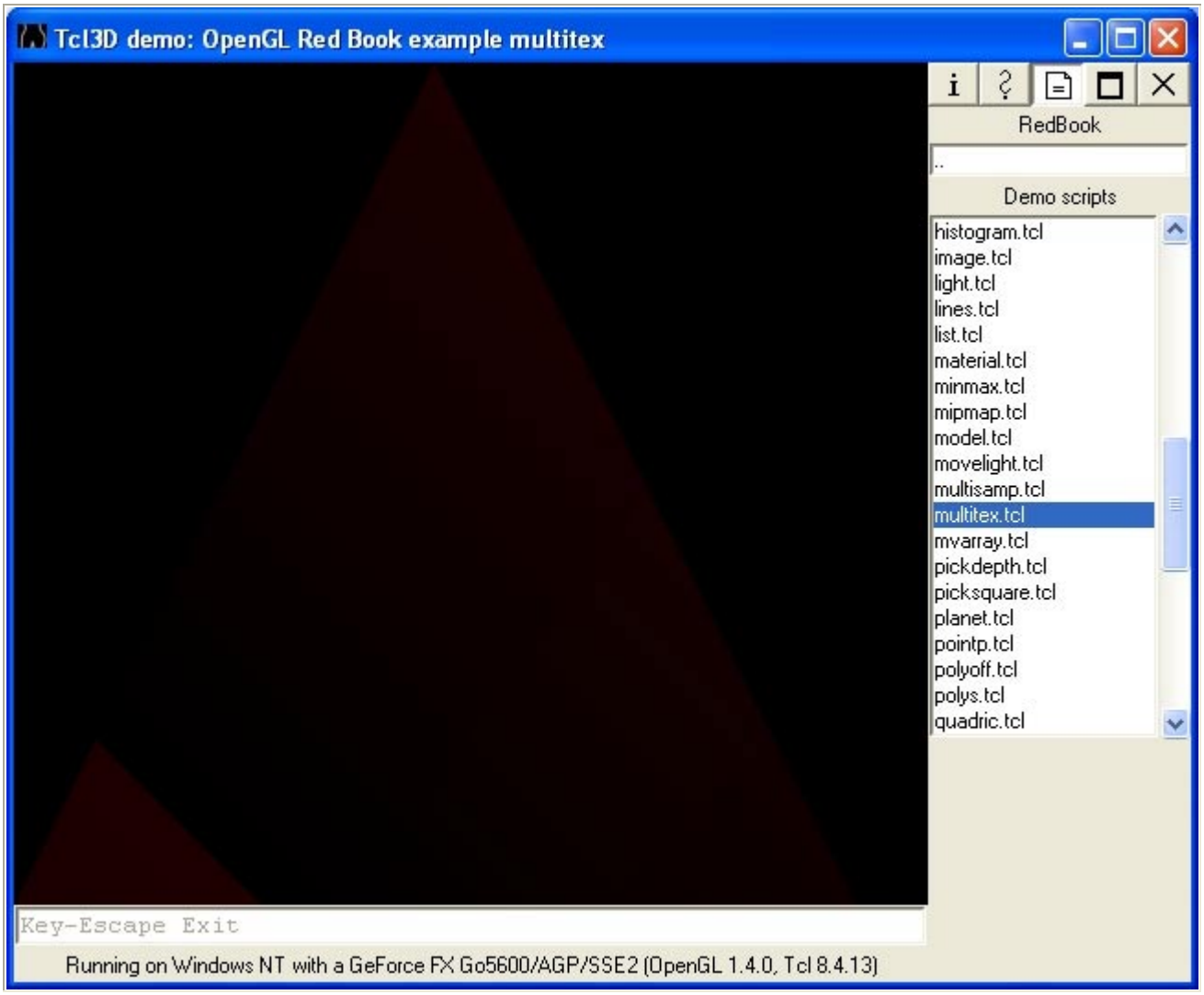
This program draws shows how to use multisampling to
draw anti-aliased geometric primitives.  The same
display list, a pinwheel of triangles and lines of
varying widths, is rendered twice.  Multisampling is
enabled when the left side is drawn.  Multisampling is
disabled when the right side is drawn.

Pressing the 'b' key toggles drawing of the checkerboard
background.  Antialiasing is sometimes easier to see
when objects are rendered over a contrasting background.

This demo uses the multisampling options built into tcl3dTogl starting
from version 0.3.2.
Another way to set the number of samples is via the driver specific GUI under
Windows, or by setting the environment variable __GL_FSAA_MODE under Linux.
```

Demo:	**multitex**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
multitex.tcl

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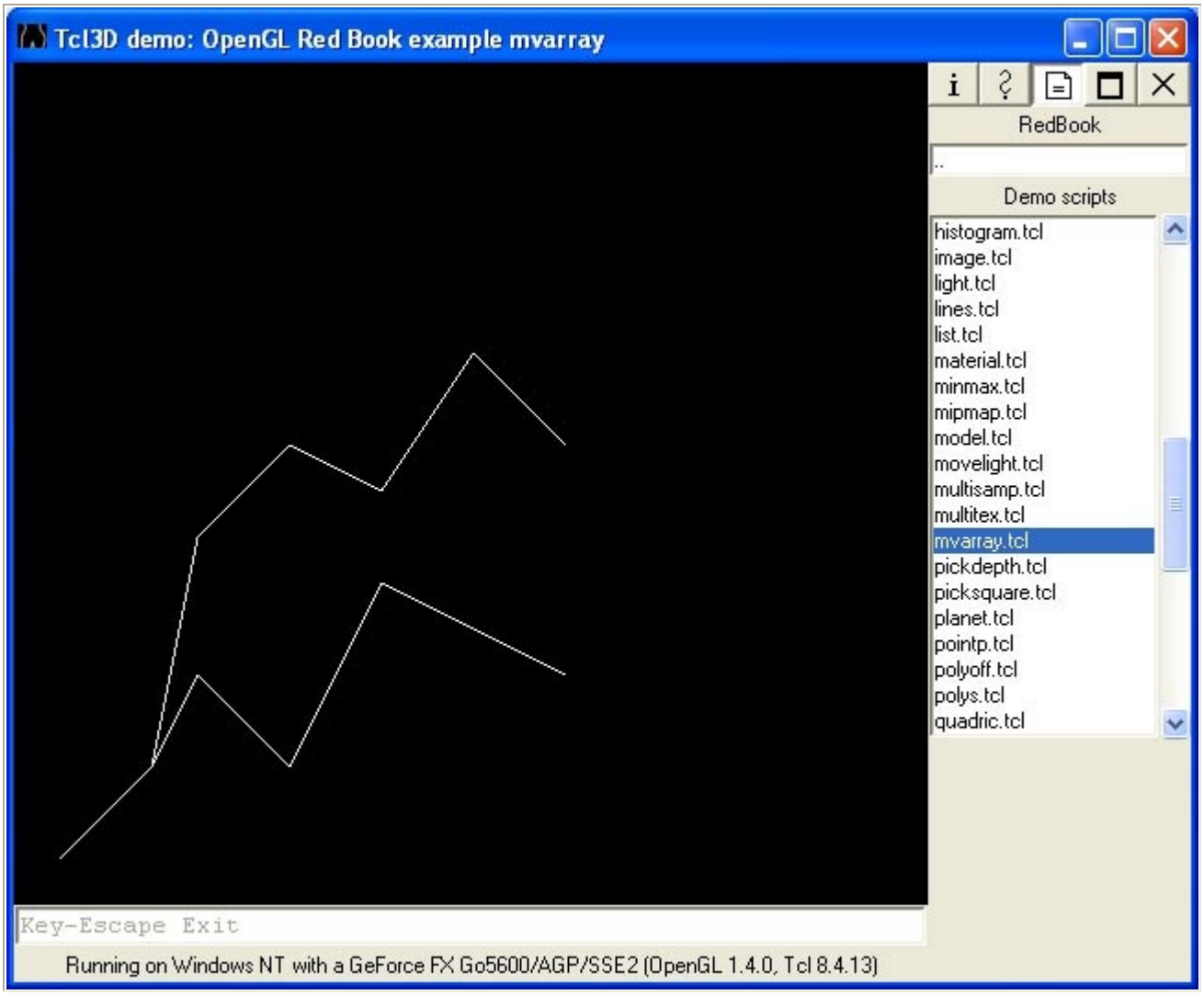
```

Demo:	**mvarray**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
mvarray.tcl

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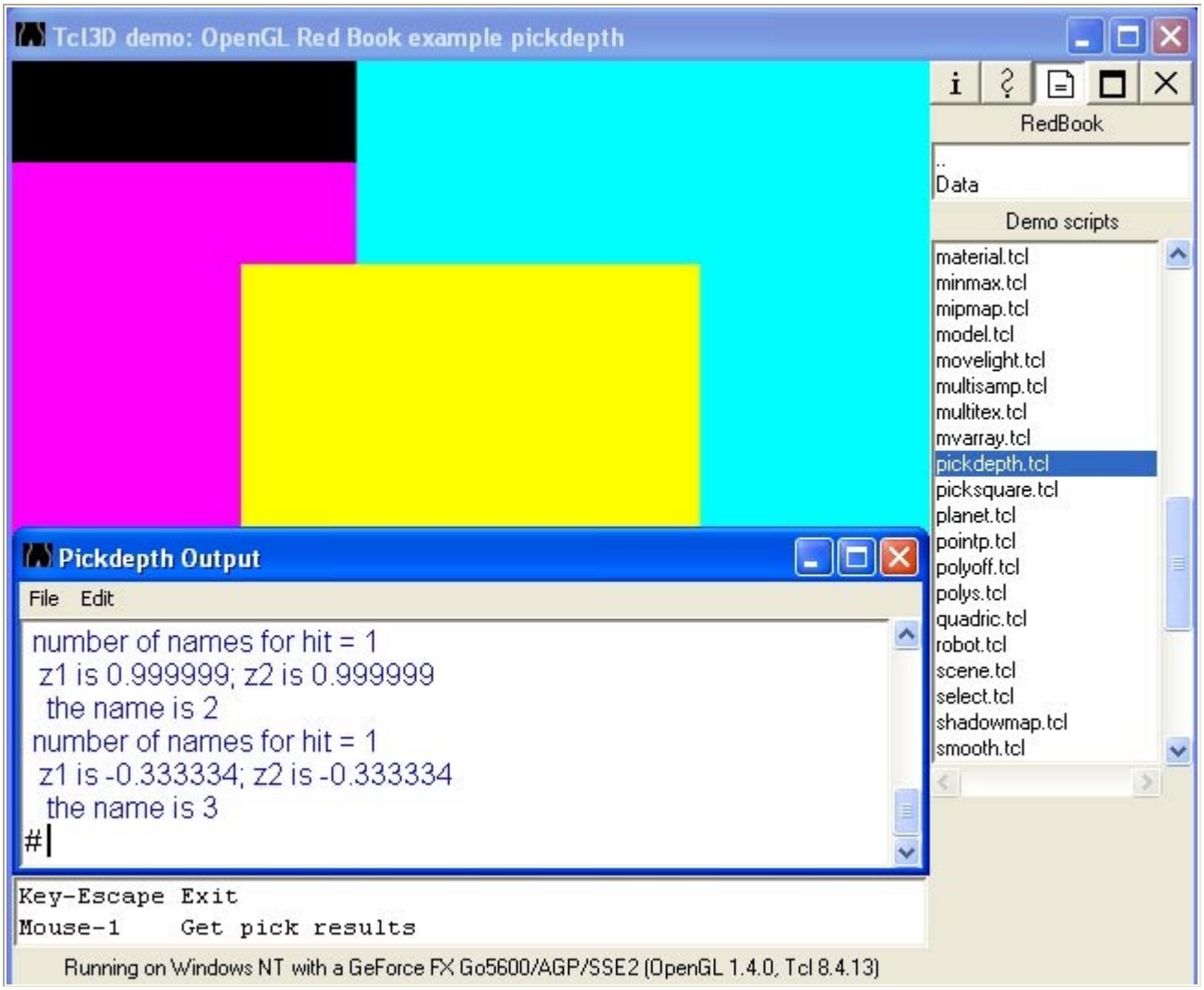
This program demonstrates multiple vertex arrays,
specifically the OpenGL routine glMultiDrawElements().
```

Demo:	**pickdepth**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
pickdepth.tcl

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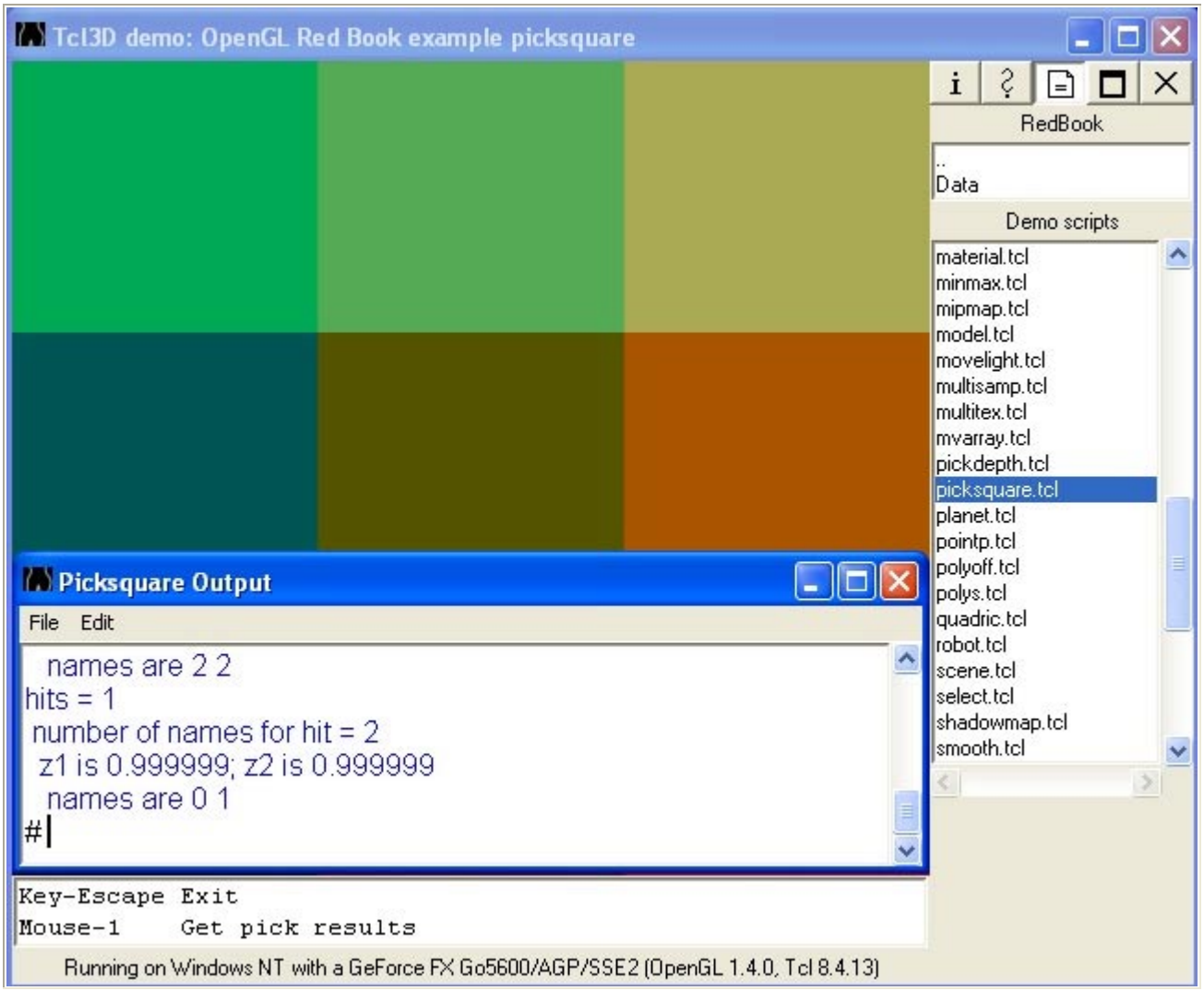
Picking is demonstrated in this program.  In
rendering mode, three overlapping rectangles are
drawn.  When the left mouse button is pressed,
selection mode is entered with the picking matrix.
Rectangles which are drawn under the cursor position
are "picked."  Pay special attention to the depth
value range, which is returned.
```

Demo:	**picksquare**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
picksquare.tcl

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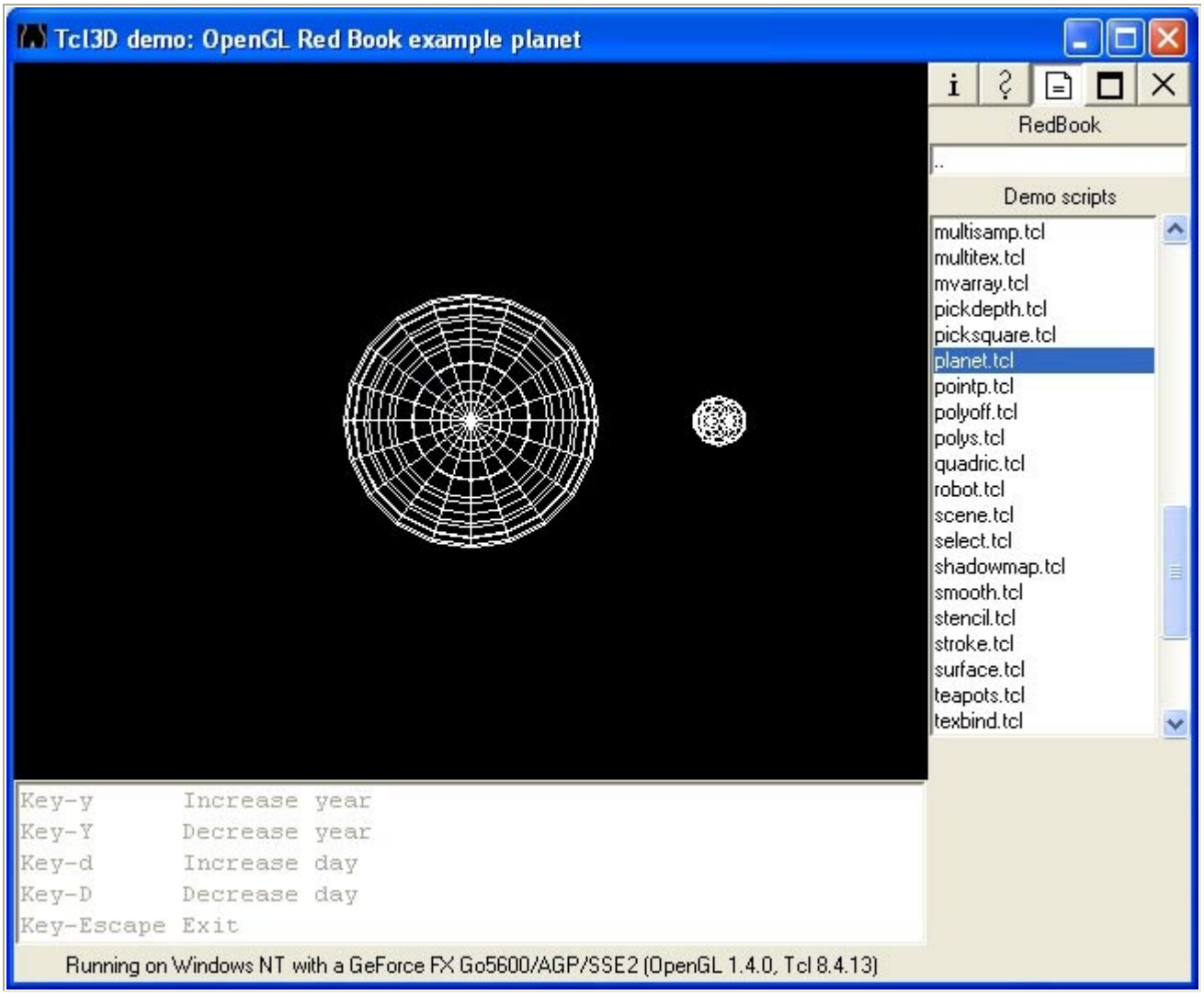
Use of multiple names and picking are demonstrated.
A 3x3 grid of squares is drawn.  When the left mouse
button is pressed, all squares under the cursor position
have their color changed.
```

Demo:	**planet**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
planet.tcl

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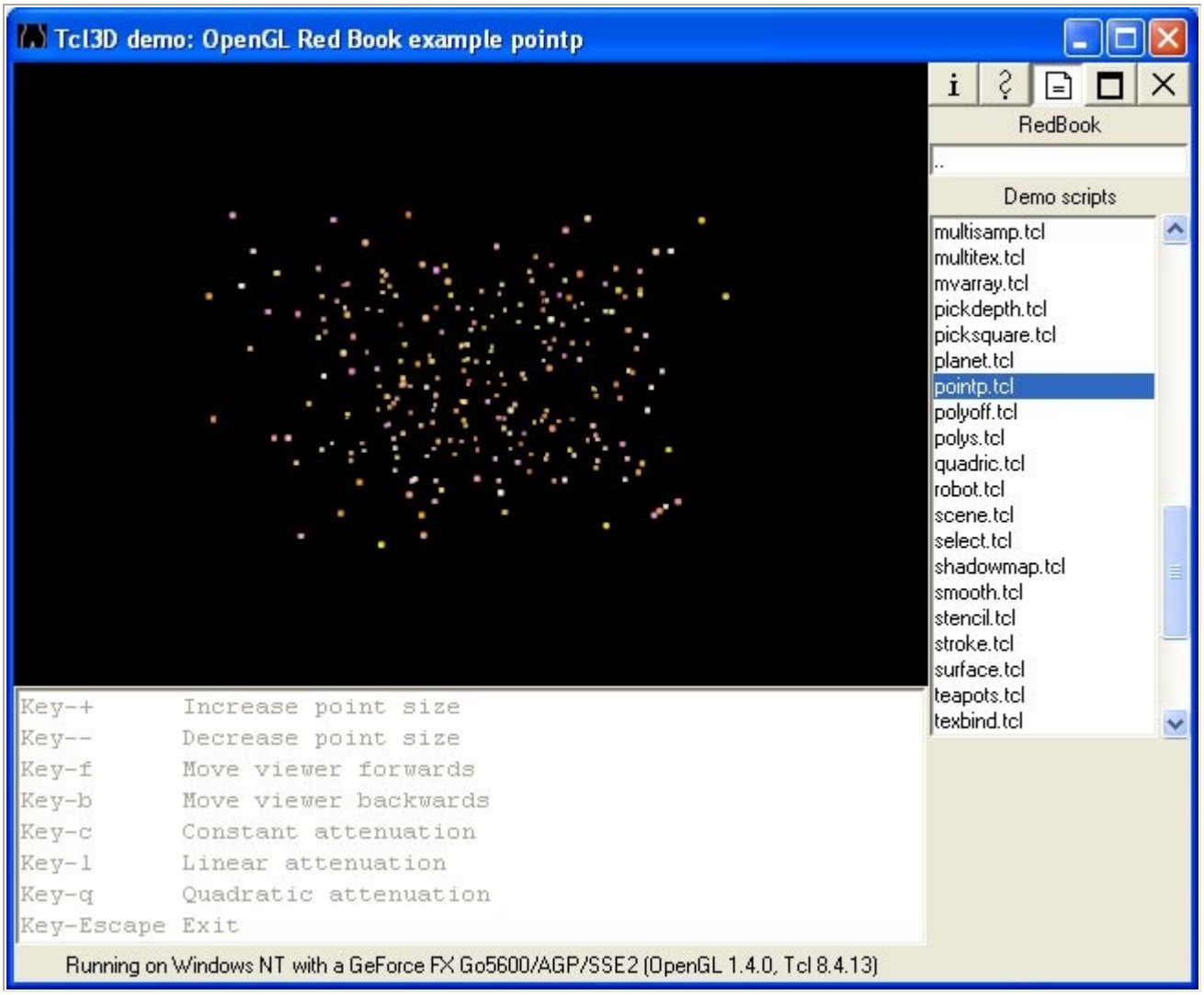
This program shows how to composite modeling transformations
to draw translated and rotated models.
Interaction:  pressing the d and y keys (day and year)
alters the rotation of the planet around the sun.
```

Demo:	**pointp**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
pointp.tcl

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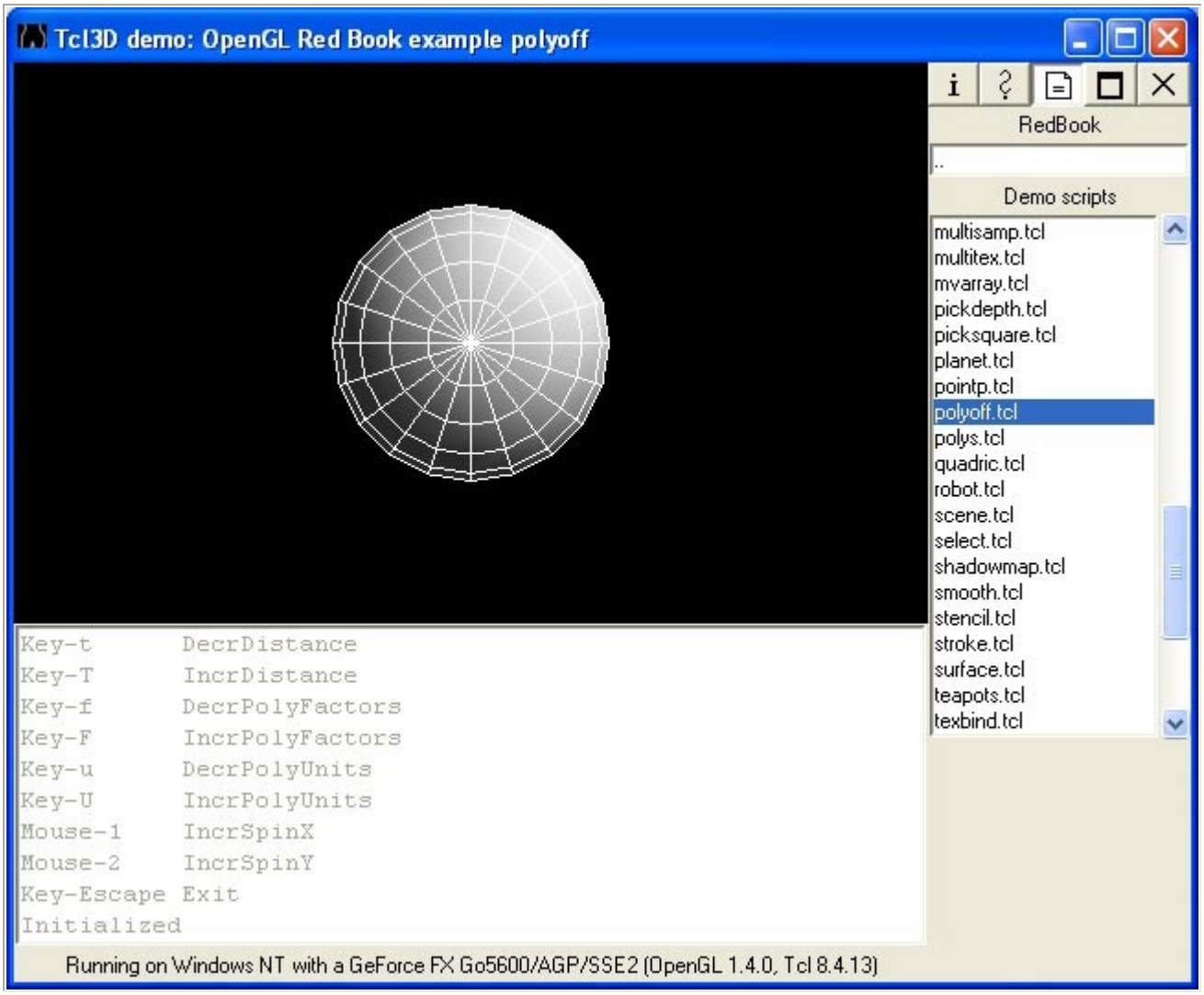
This program demonstrates point parameters and their effect
on point primitives.
250 points are randomly generated within a 10 by 10 by 40
region, centered at the origin.  In some modes (including the
default), points that are closer to the viewer will appear larger.

Pressing the 'l', 'q', and 'c' keys switch the point
parameters attenuation mode to linear, quadratic, or constant,
respectively.
Pressing the 'f' and 'b' keys move the viewer forward
and backwards.  In either linear or quadratic attenuation
mode, the distance from the viewer to the point will change
the size of the point primitive.
Pressing the '+' and '-' keys will change the current point
size. In this program, the point size is bounded, so it
```

```
will not get less than 2.0, nor greater than GL_POINT_SIZE_MAX.
```

Demo:	**polyoff**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
polyoff.tcl

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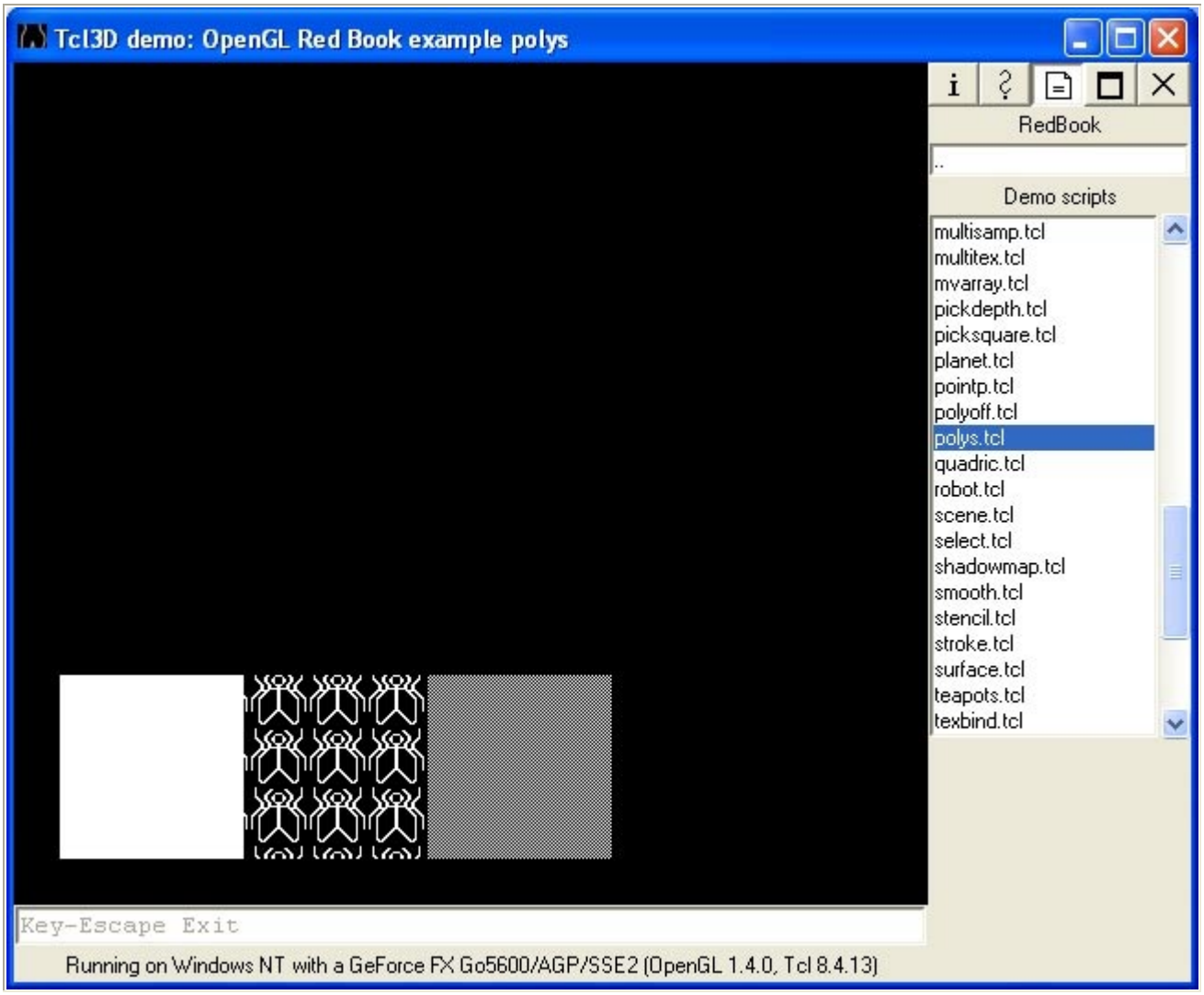
This program demonstrates polygon offset to draw a shaded
polygon and its wireframe counterpart without ugly visual
artifacts ("stitching").
```

Demo:	**polys**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
polys.tcl

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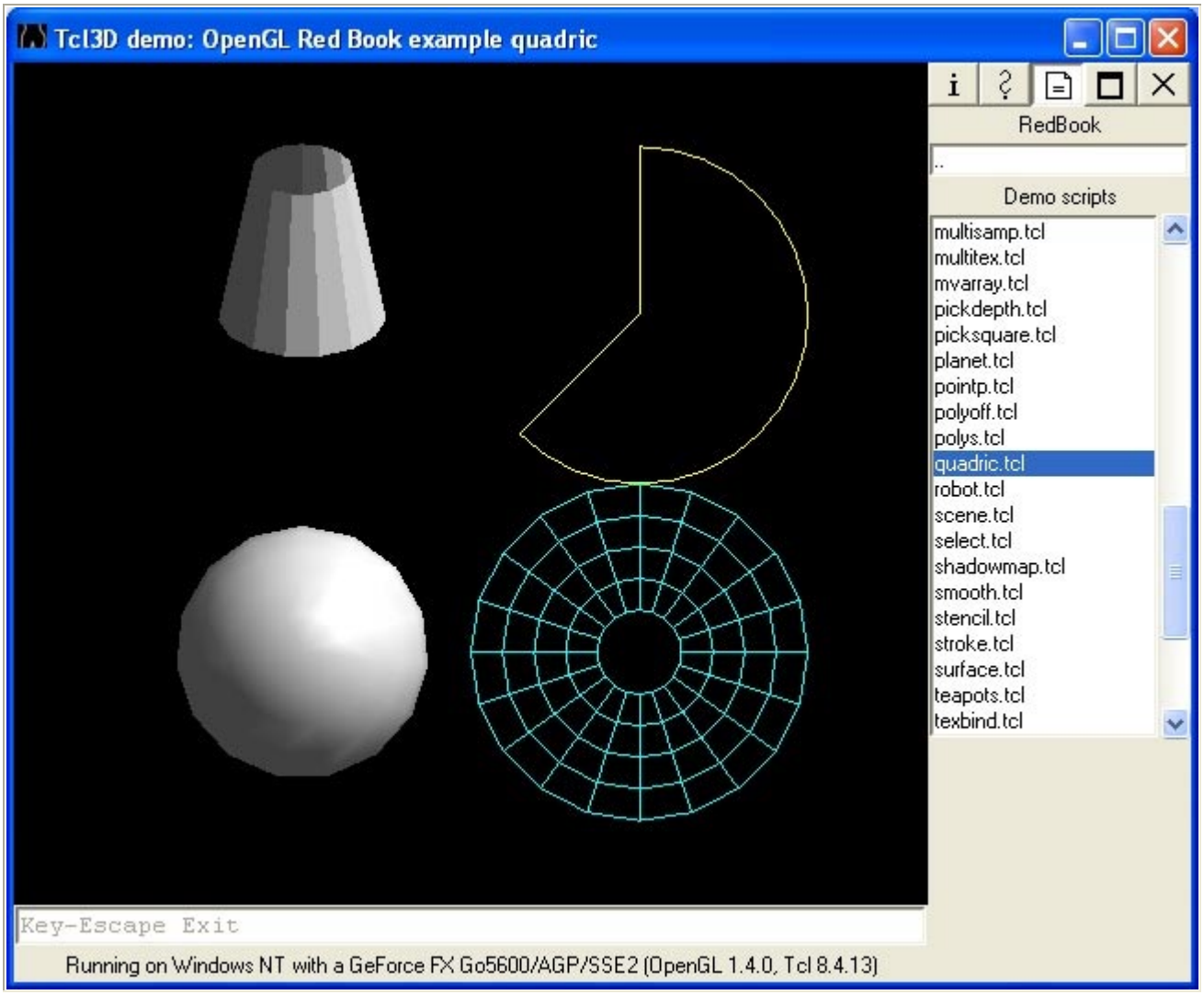
This program demonstrates polygon stippling.
```

Demo:	**quadric**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
quadric.tcl

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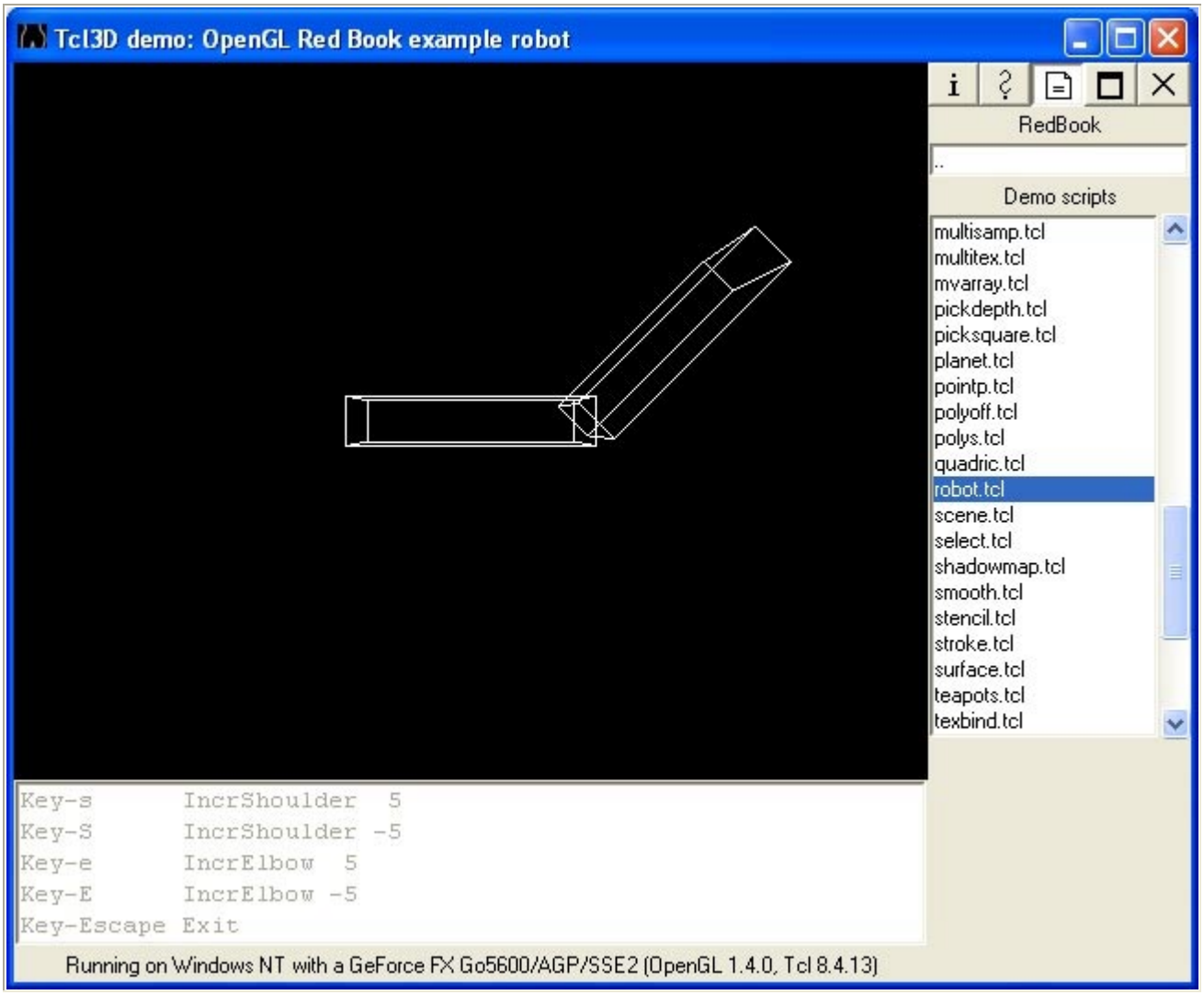
This program demonstrates the use of some of the gluQuadric*
routines. Quadric objects are created with some quadric
properties and the callback routine to handle errors.
Note that the cylinder has no top or bottom and the circle
has a hole in it.
```

Demo:	**robot**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
robot.tcl

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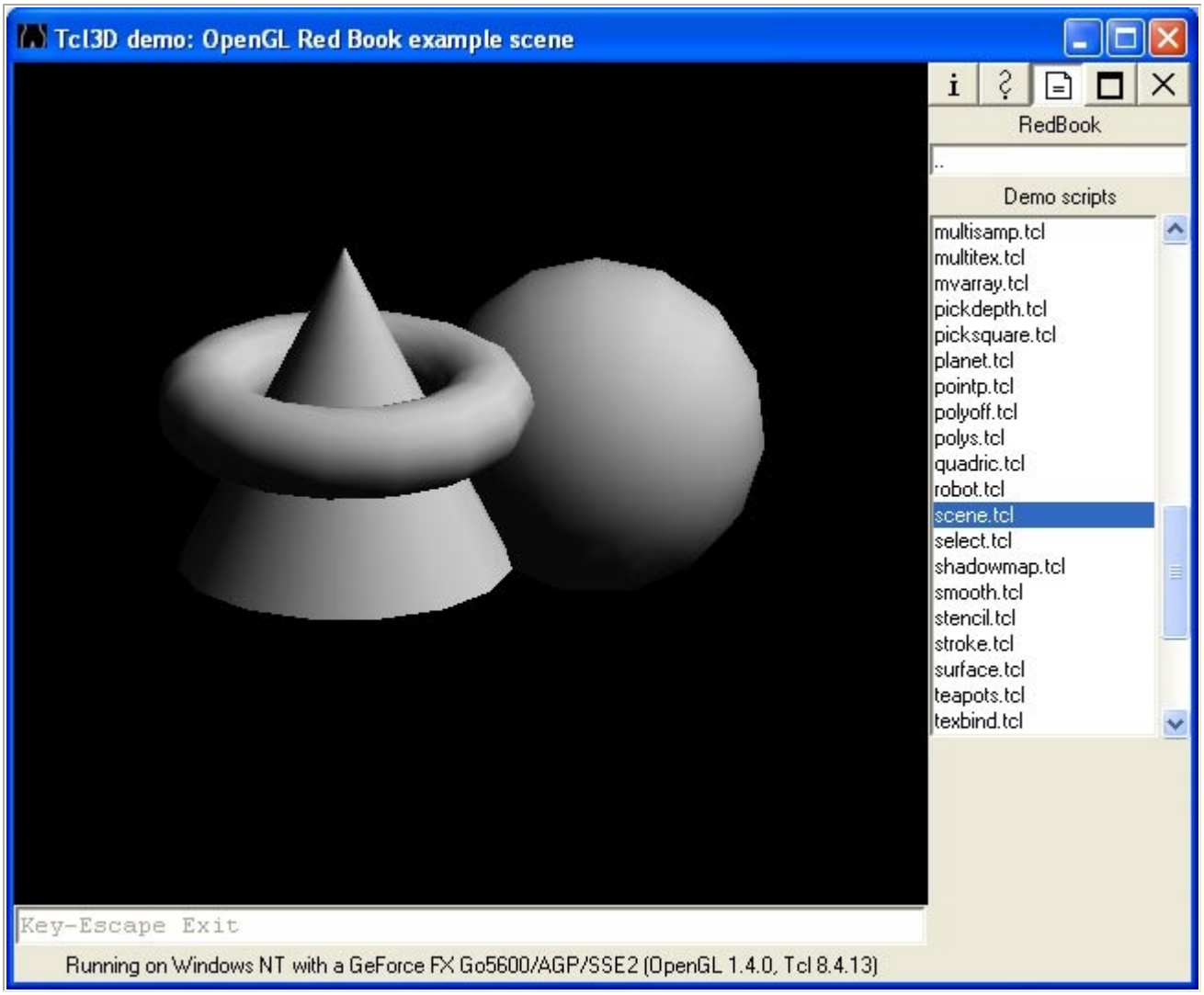
This program shows how to composite modeling transformations
to draw translated and rotated hierarchical models.
Interaction:  pressing the s and e keys (shoulder and elbow)
alters the rotation of the robot arm.
```

Demo:	**scene**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
scene.tcl

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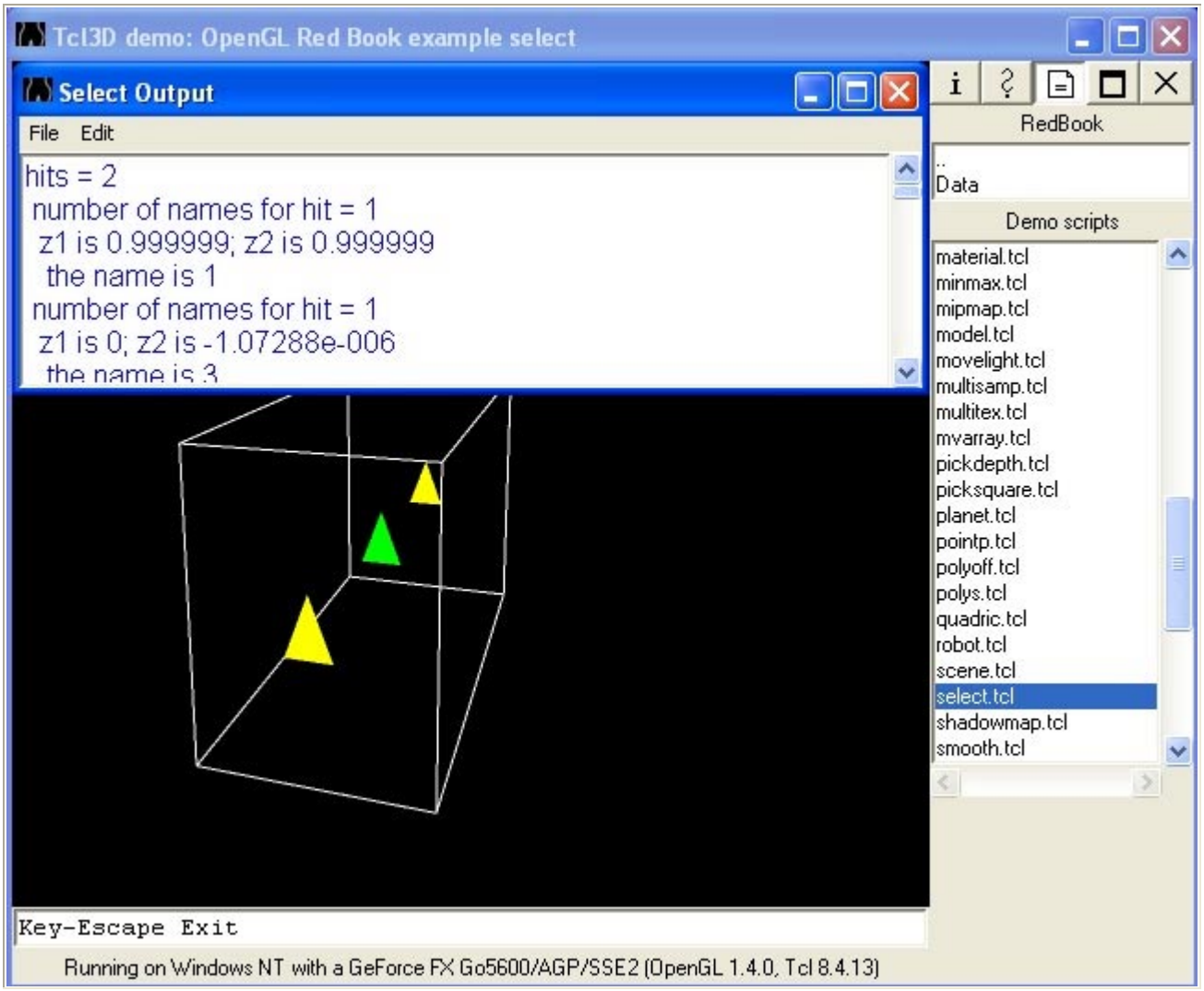
This program demonstrates the use of the GL lighting model.
Objects are drawn using a grey material characteristic.
A single light source illuminates the objects.
```

Demo:	**select**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
select.tcl

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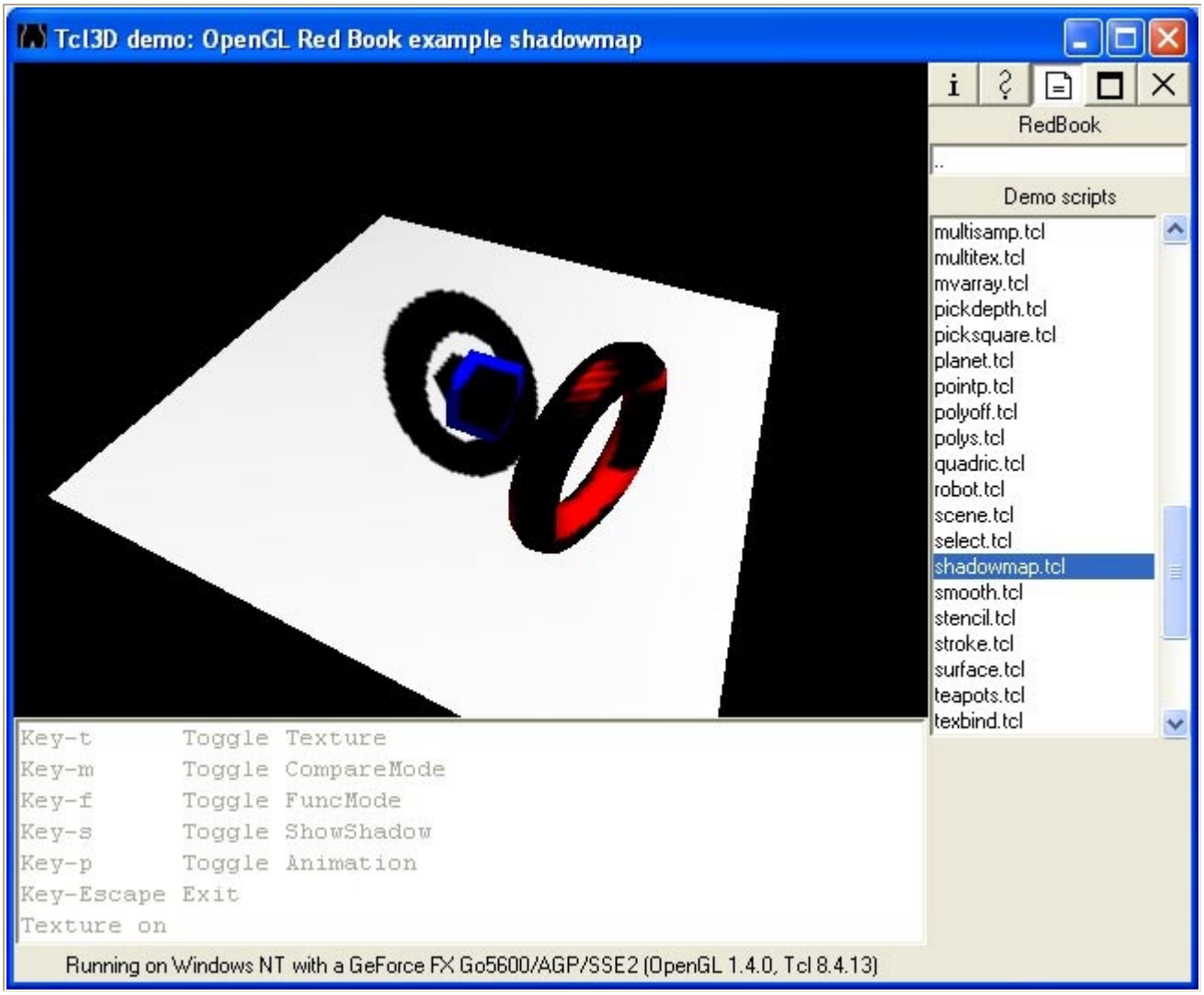
This is an illustration of the selection mode and
name stack, which detects whether objects which collide
with a viewing volume.  First, four triangles and a
rectangular box representing a viewing volume are drawn
(drawScene routine).  The green triangle and yellow
triangles appear to lie within the viewing volume, but
the red triangle appears to lie outside it.  Then the
selection mode is entered (selectObjects routine).
Drawing to the screen ceases.  To see if any collisions
occur, the four triangles are called.  In this example,
the green triangle causes one hit with the name 1, and
the yellow triangles cause one hit with the name 3.
```

Demo:	**shadowmap**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
shadowmap.tcl

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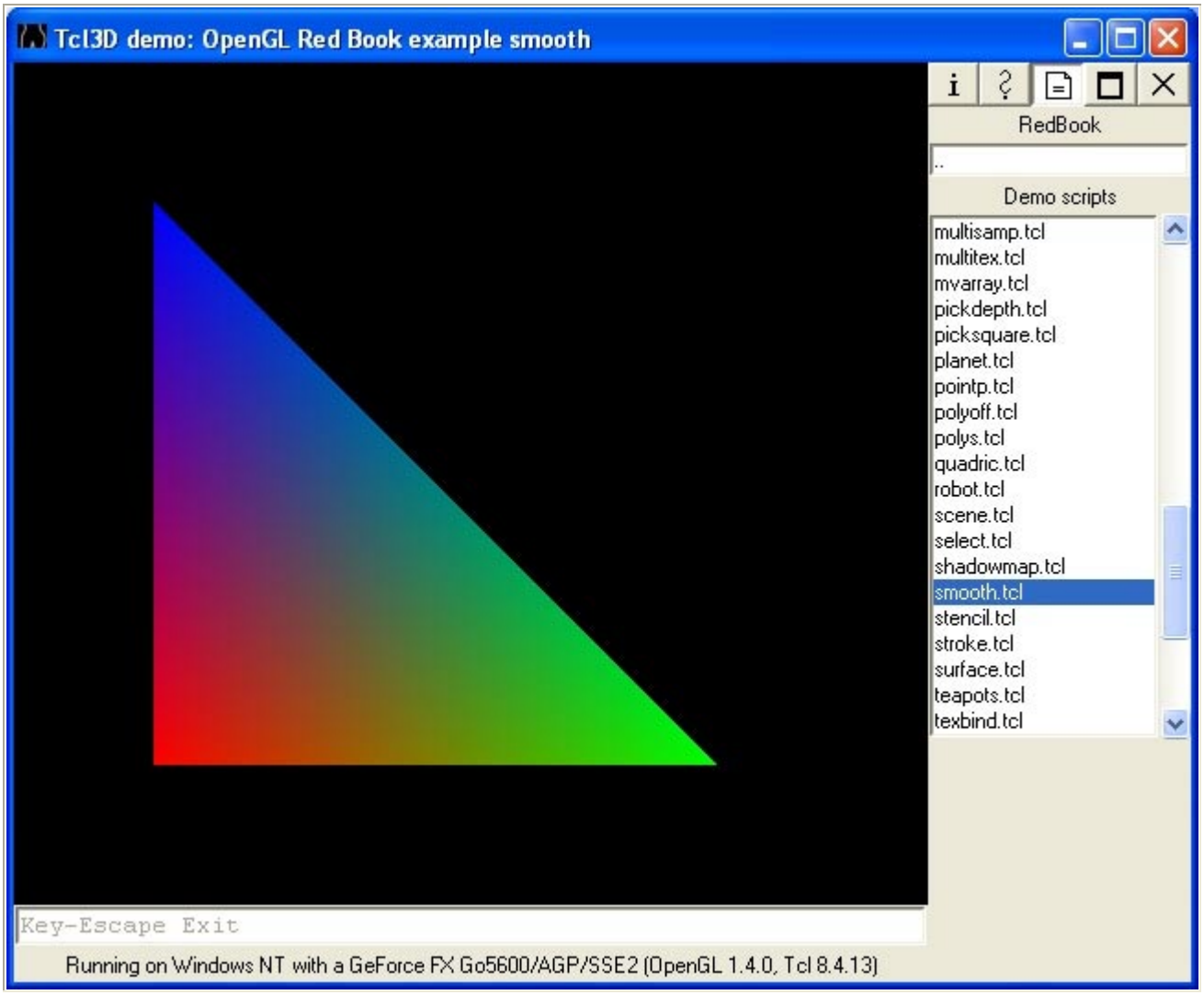
```

Demo:	**smooth**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
smooth.tcl

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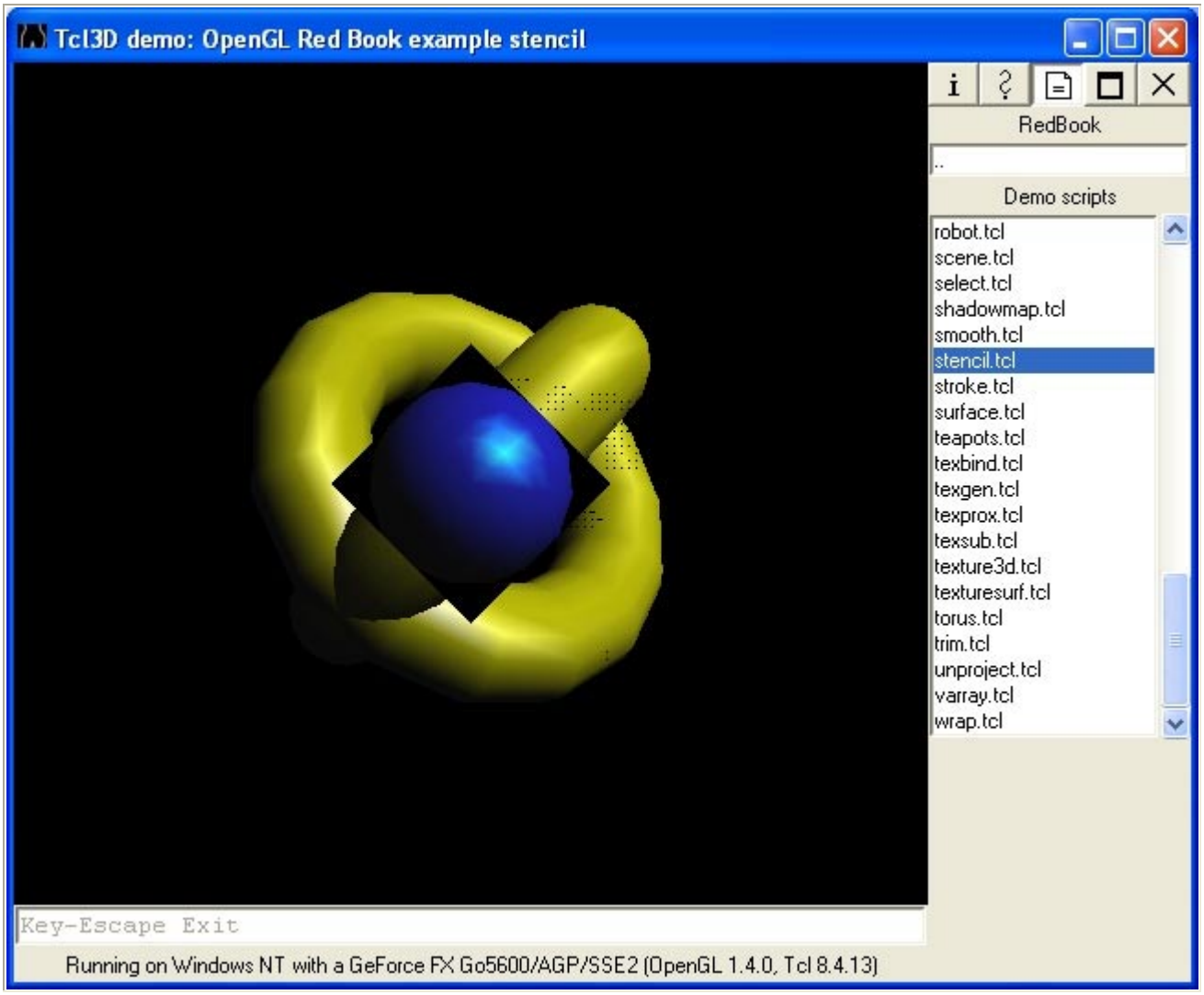
This program demonstrates smooth shading.
A smooth shaded polygon is drawn in a 2-D projection.
```

Demo:	**stencil**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
stencil.tcl

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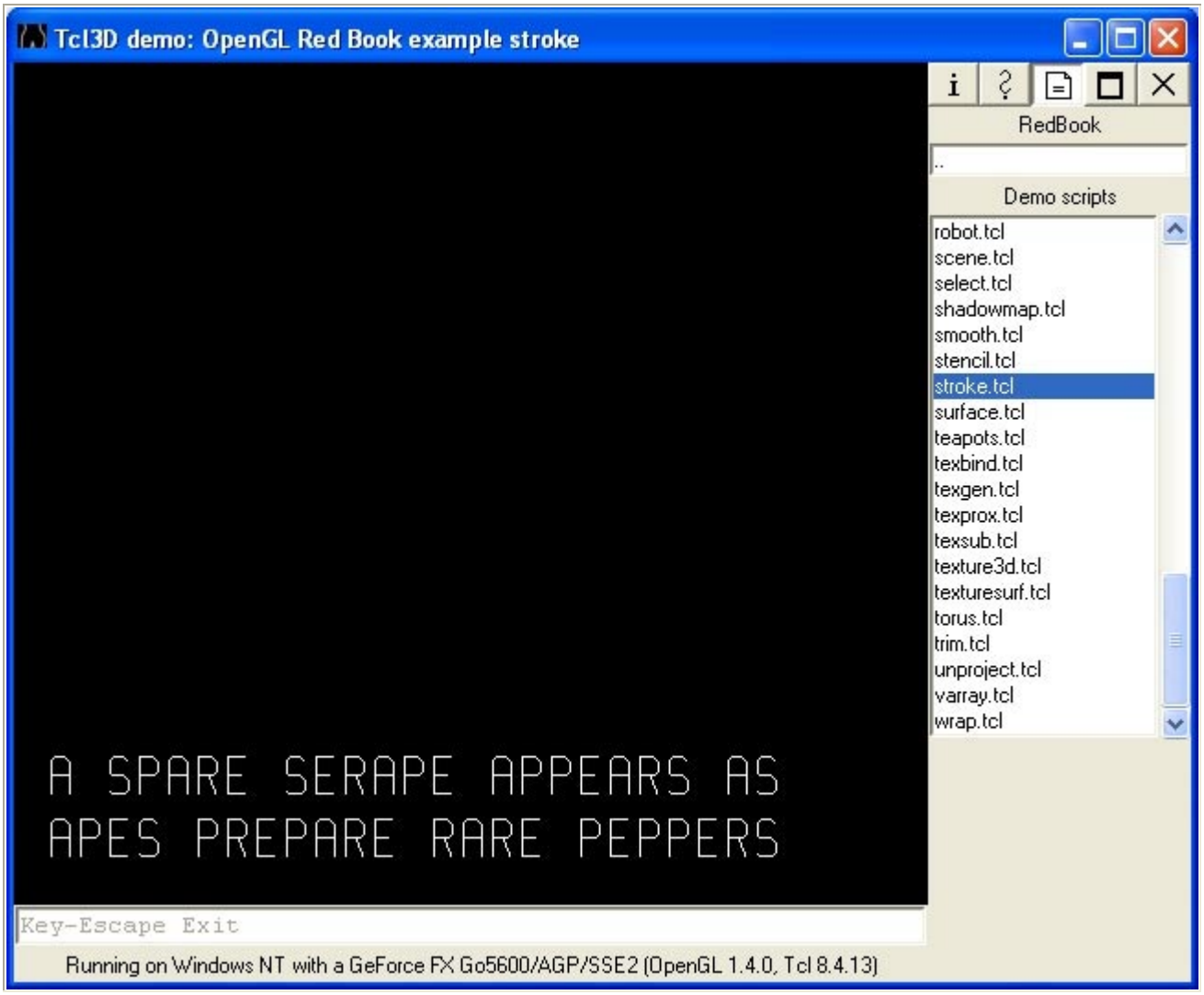
This program demonstrates use of the stencil buffer for
masking nonrectangular regions.
Whenever the window is redrawn, a value of 1 is drawn
into a diamond-shaped region in the stencil buffer.
Elsewhere in the stencil buffer, the value is 0.
Then a blue sphere is drawn where the stencil value is 1,
and yellow torii are drawn where the stencil value is not 1.
```

Demo:	**stroke**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
stroke.tcl

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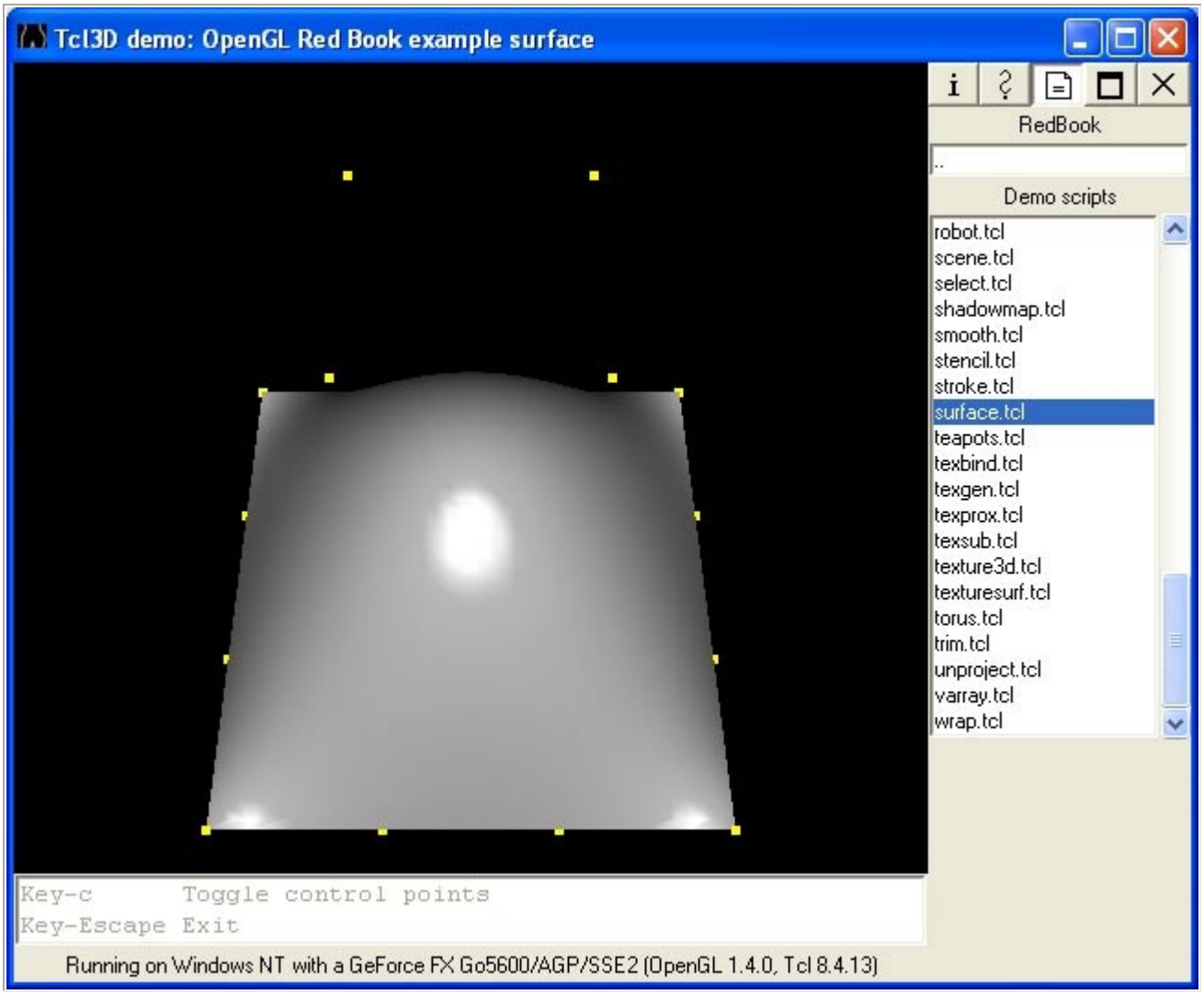
This program demonstrates some characters of a
stroke (vector) font.  The characters are represented
by display lists, which are given numbers which
correspond to the ASCII values of the characters.
Use of glCallLists() is demonstrated.
```

Demo:	**surface**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
surface.tcl

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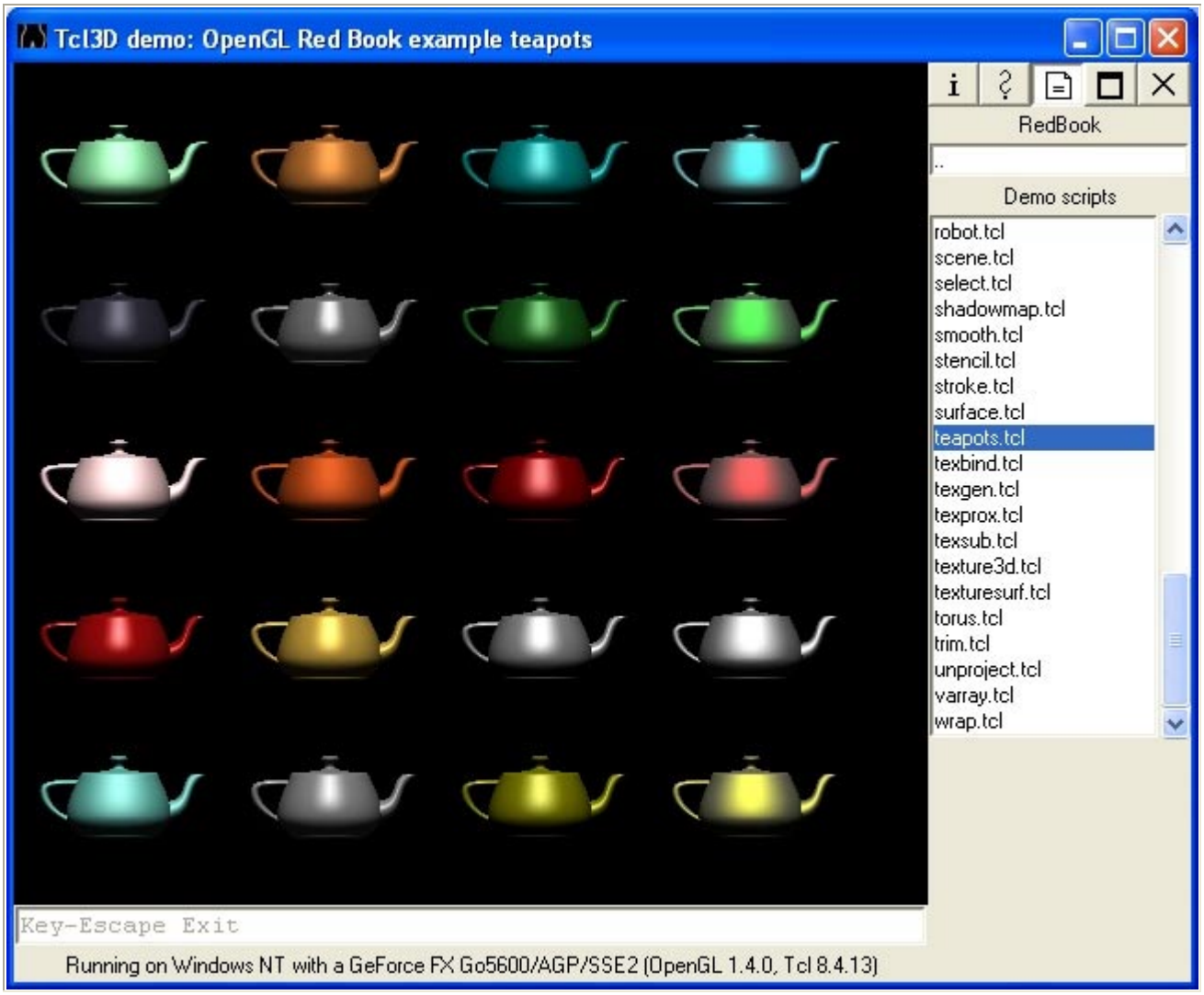
This program draws a NURBS surface in the shape of a
symmetrical hill. The 'c' keyboard key allows you to
toggle the visibility of the control points themselves.
Note that some of the control points are hidden by the
surface itself.
```

Demo:	**teapots**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
teapots.tcl

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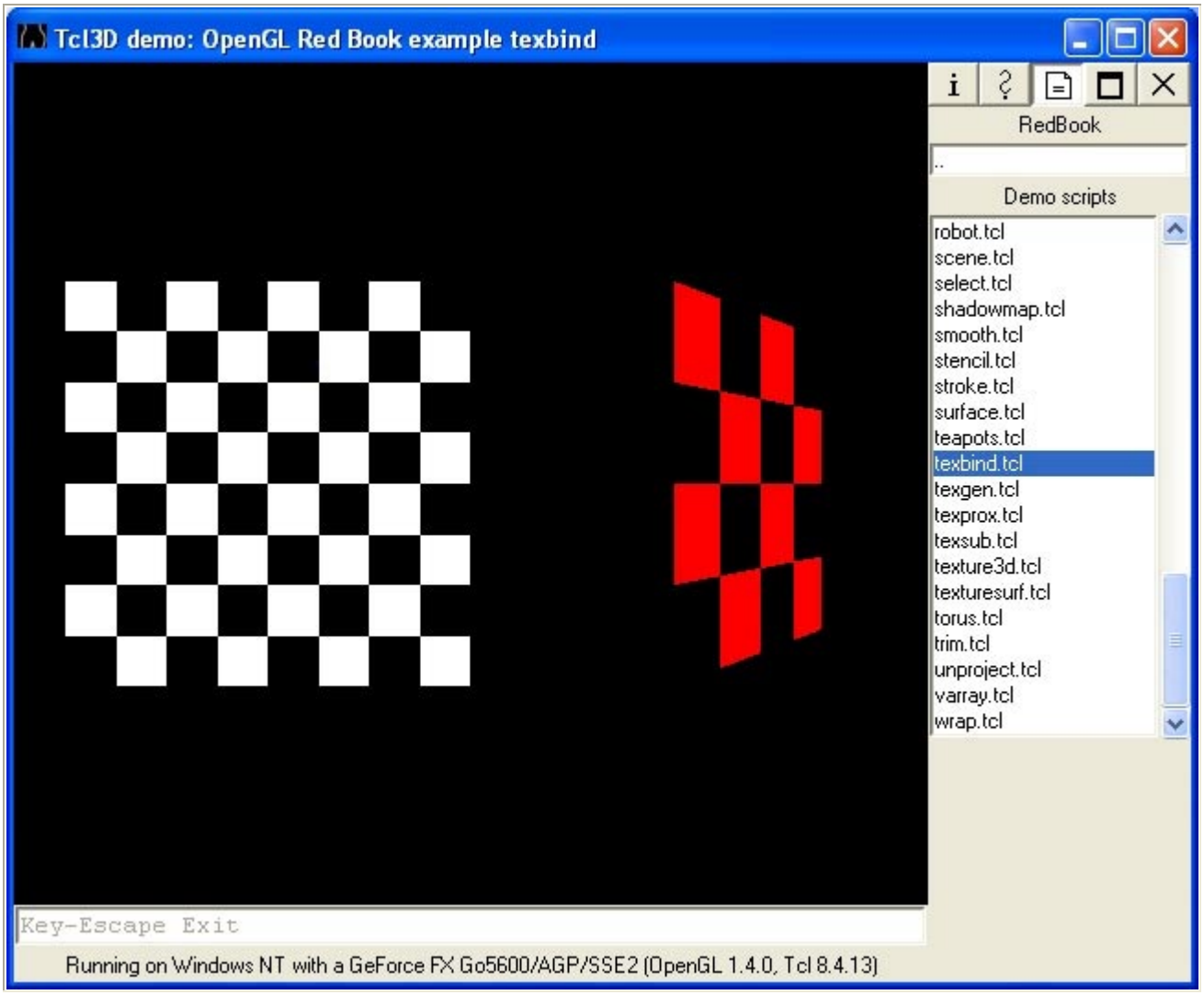
This program demonstrates lots of material properties.
A single light source illuminates the objects.
```

Demo:	**texbind**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
texbind.tcl

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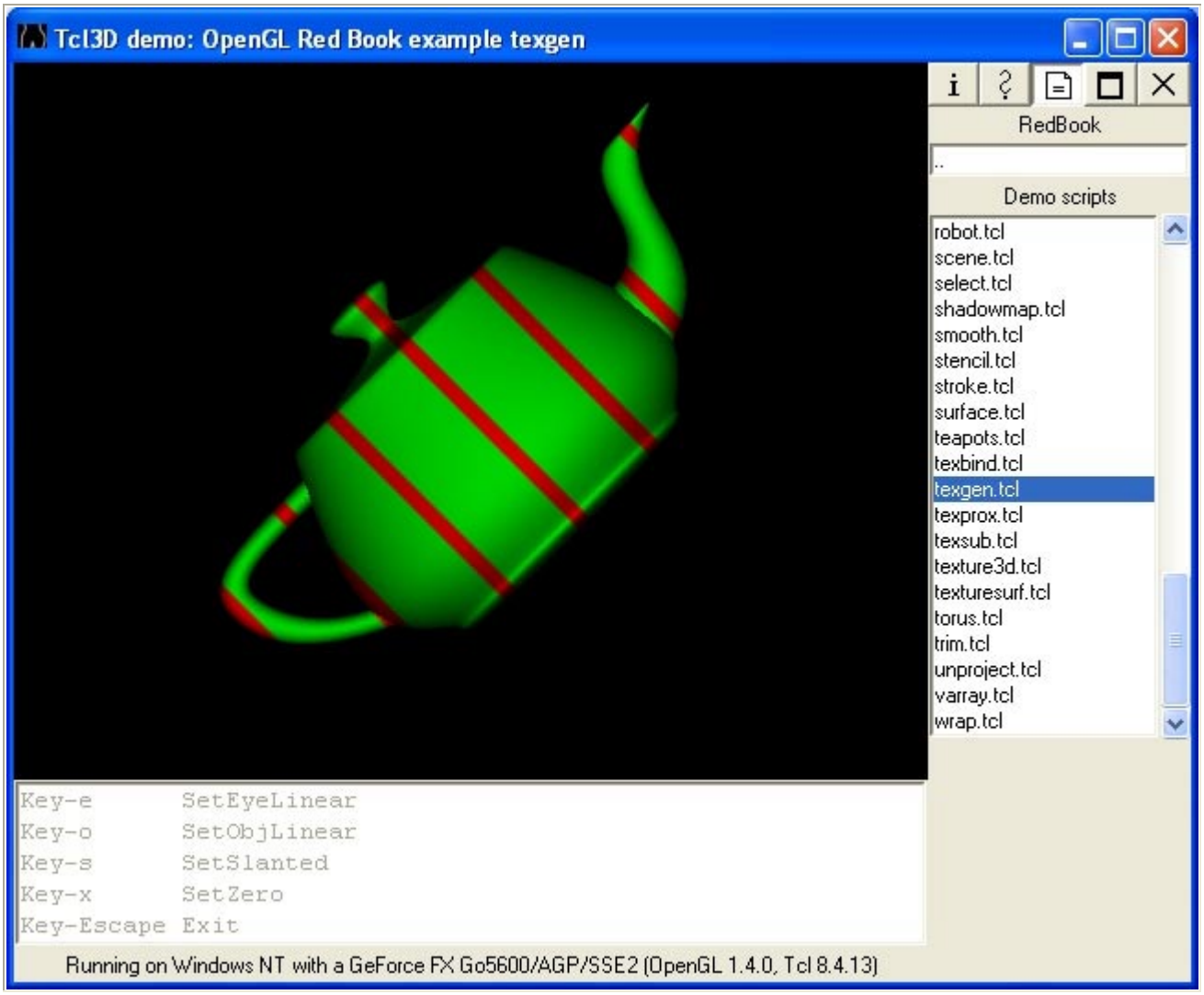
This program demonstrates using glBindTexture() by
creating and managing two textures.
```

Demo:	**texgen**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
texgen.c

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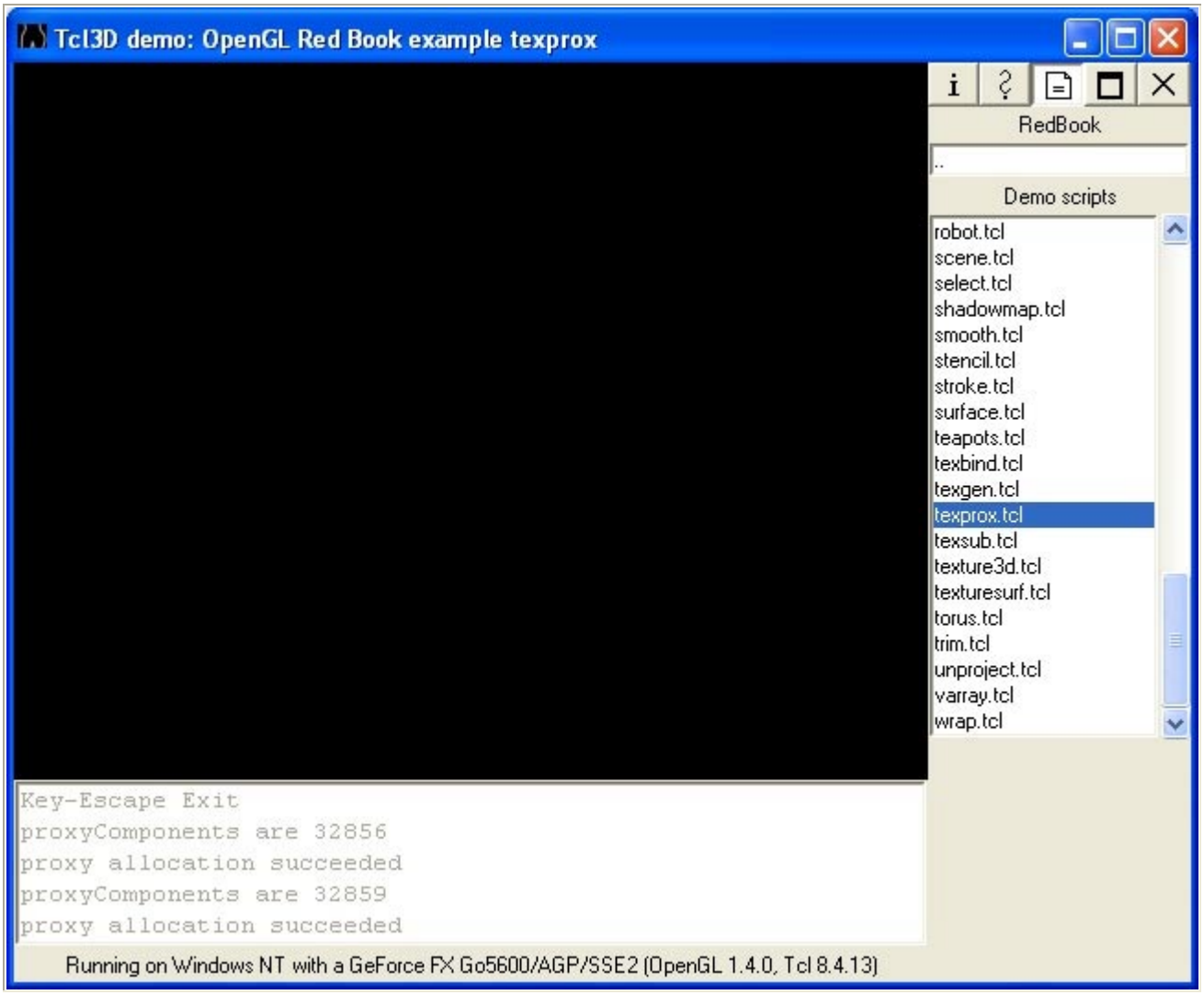
This program draws a texture mapped teapot with
automatically generated texture coordinates.  The
texture is rendered as stripes on the teapot.
Initially, the object is drawn with texture coordinates
based upon the object coordinates of the vertex
and distance from the plane x = 0.  Pressing the 'e'
key changes the coordinate generation to eye coordinates
of the vertex. Pressing the 'o' key switches it back
to the object coordinates.  Pressing the 's' key
changes the plane to a slanted one (x + y + z = 0).
Pressing the 'x' key switches it back to x = 0.
```

Demo:	**texprox**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
texprox.tcl

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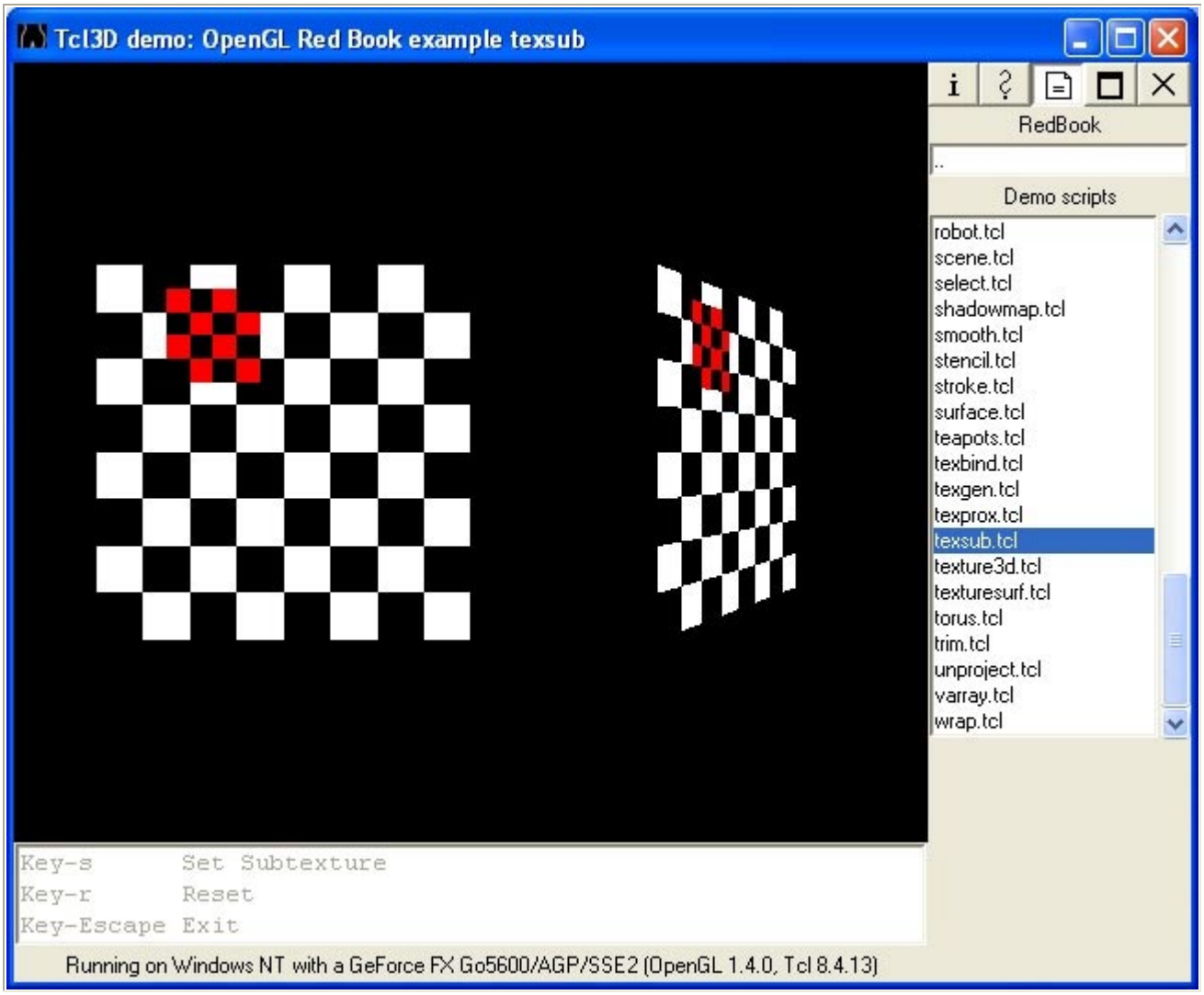
The brief program illustrates use of texture proxies.
This program only prints out some messages about whether
certain size textures are supported and then exits.
```

Demo:	**texsub**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
texsub.tcl

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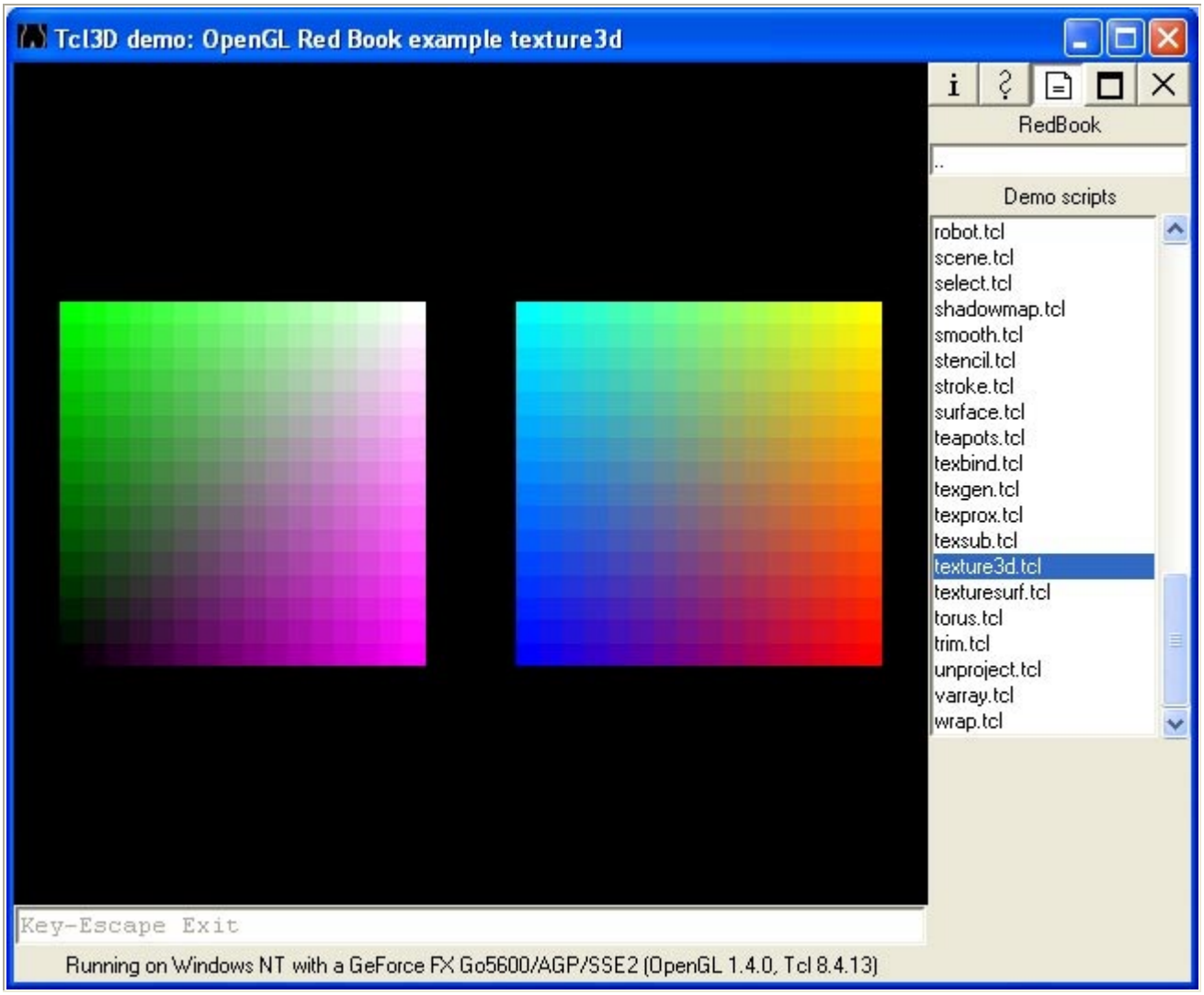
This program texture maps a checkerboard image onto
two rectangles.  This program clamps the texture, if
the texture coordinates fall outside 0.0 and 1.0.
If the s key is pressed, a texture subimage is used to
alter the original texture.  If the r key is pressed,
the original texture is restored.
```

Demo:	**texture3d**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
texture3d.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
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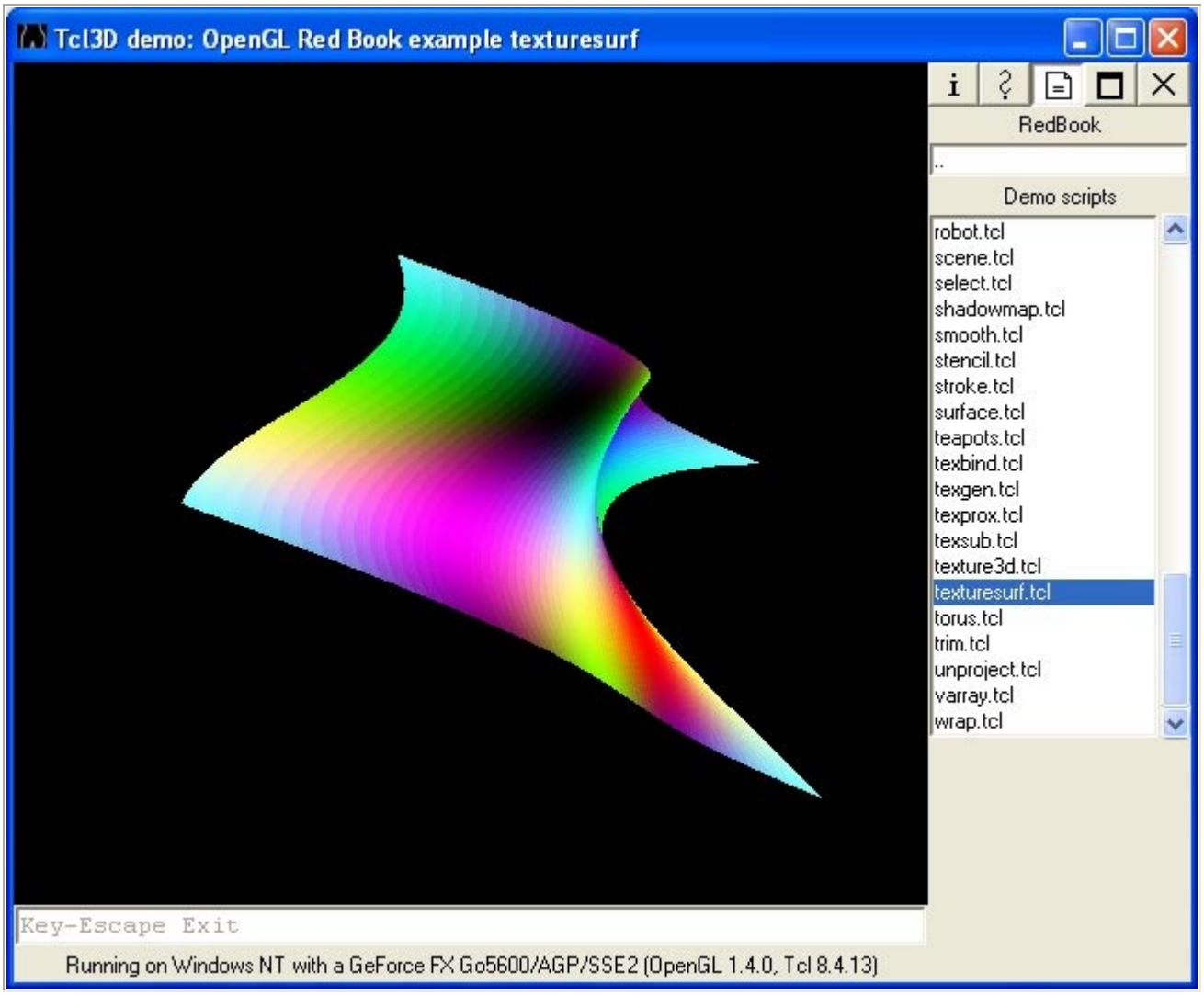
This program demonstrates using a three-dimensional texture.
It creates a 3D texture and then renders two rectangles
with different texture coordinates to obtain different
"slices" of the 3D texture.
```

Demo:	**texturesurf**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
texturesurf.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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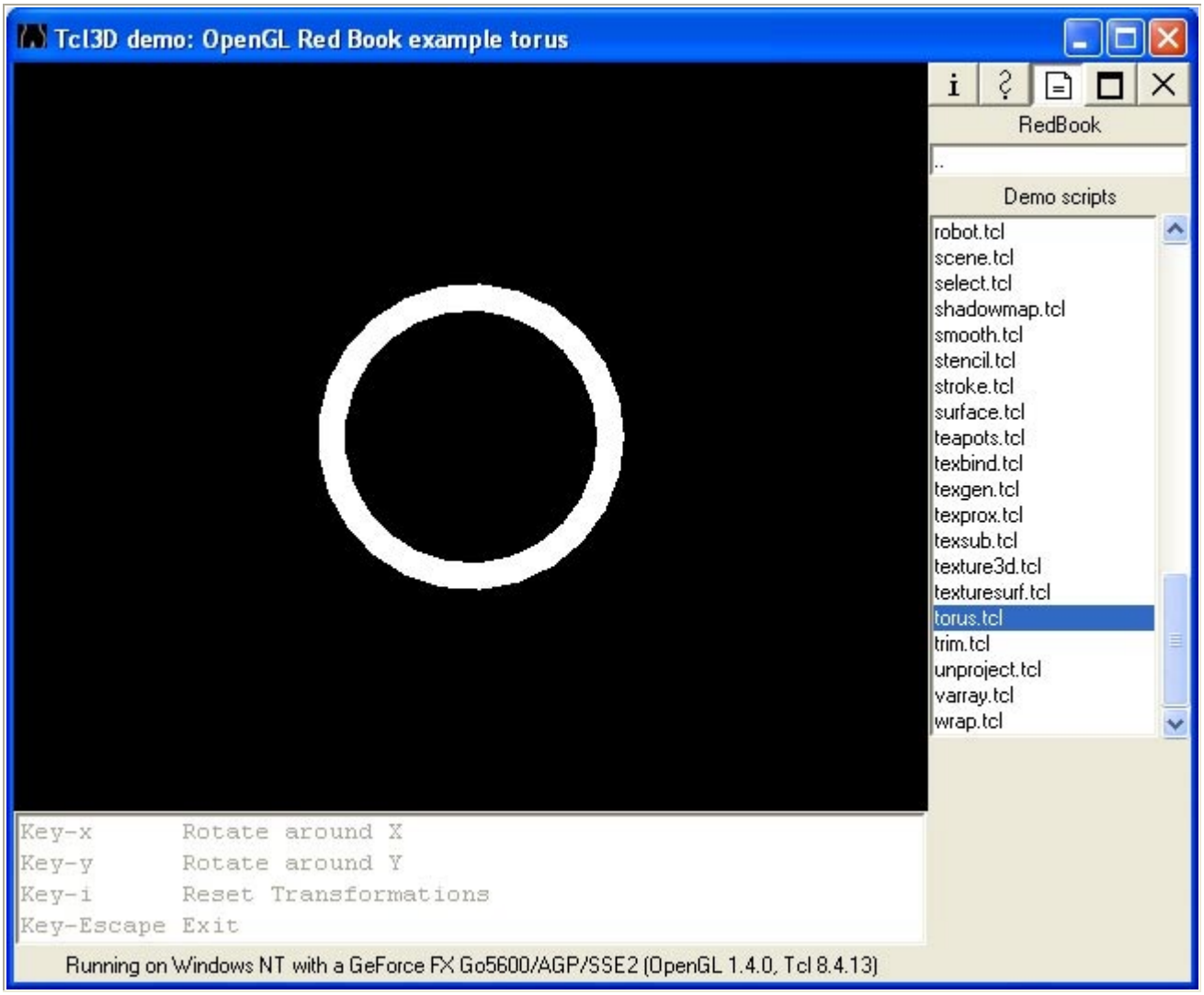
This program uses evaluators to generate a curved
surface and automatically generated texture coordinates.
```

Demo:	**torus**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
torus.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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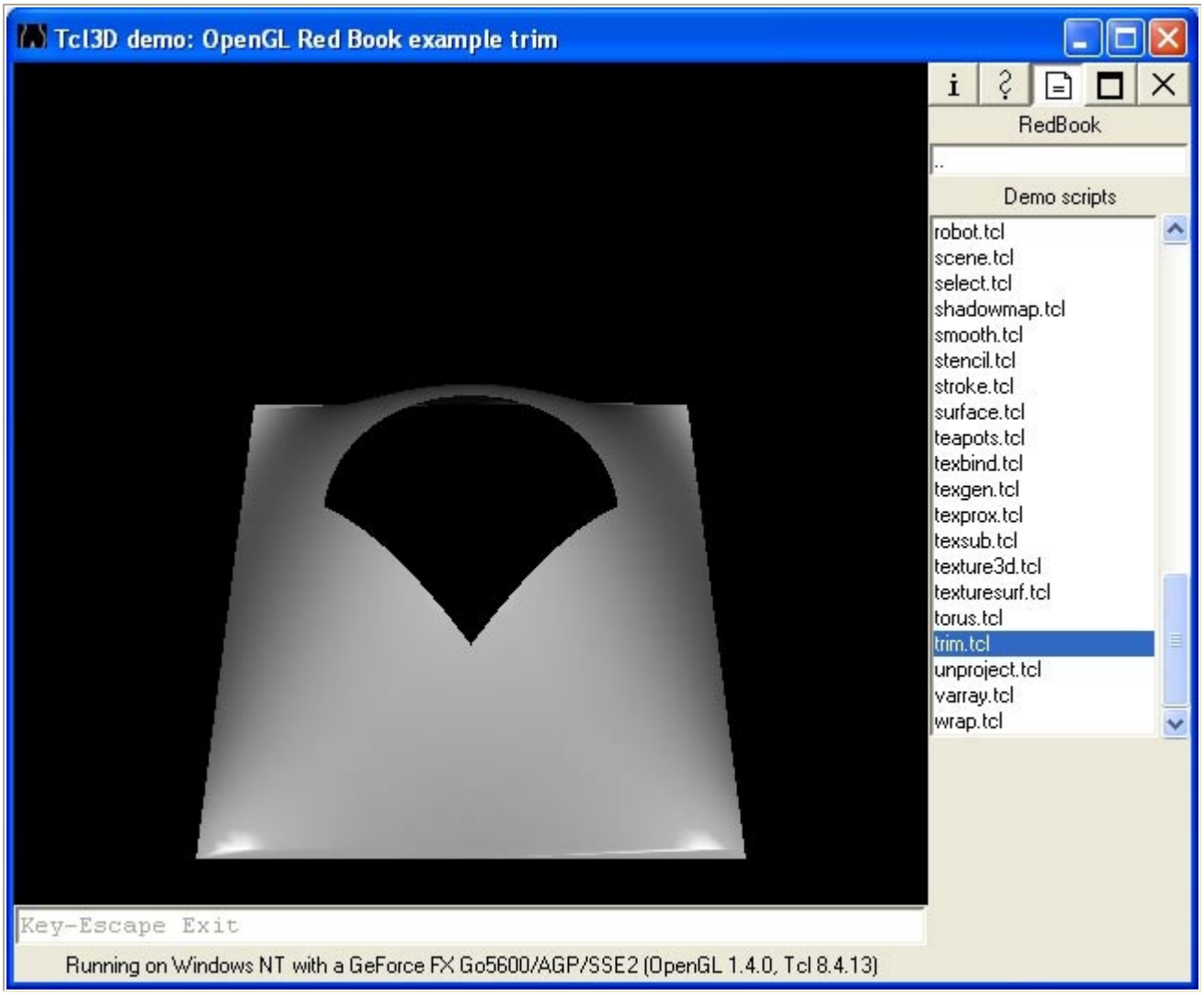
This program demonstrates the creation of a display list.
```

Demo:	**trim**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
trim.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
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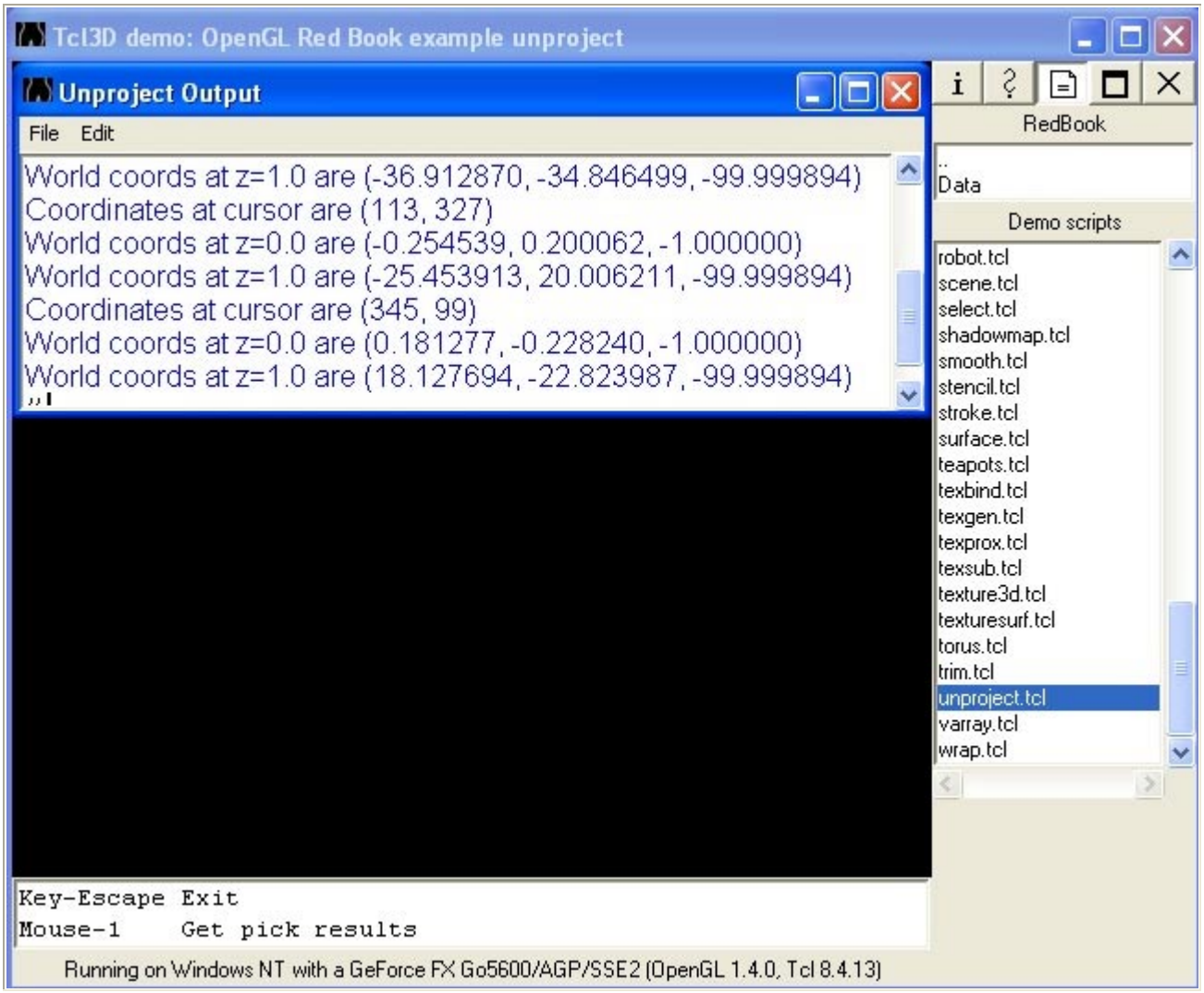
This program draws a NURBS surface in the shape of a
symmetrical hill, using both a NURBS curve and pwl
(piecewise linear) curve to trim part of the surface.
```

Demo:	**unproject**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
unproject.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
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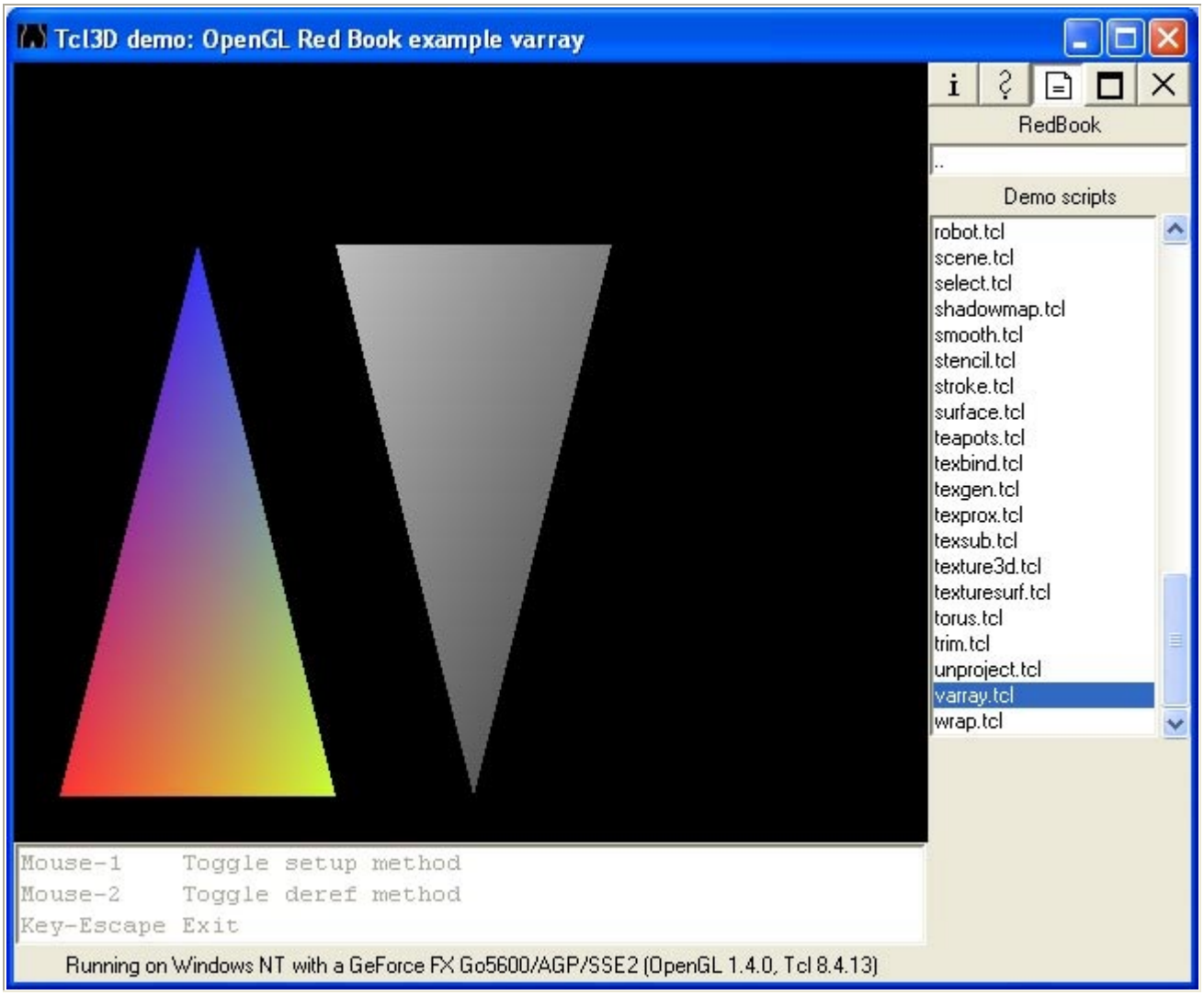
When the left mouse button is pressed, this program
reads the mouse position and determines two 3D points
from which it was transformed. Very little is displayed.
```

Demo:	**varray**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
varray.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
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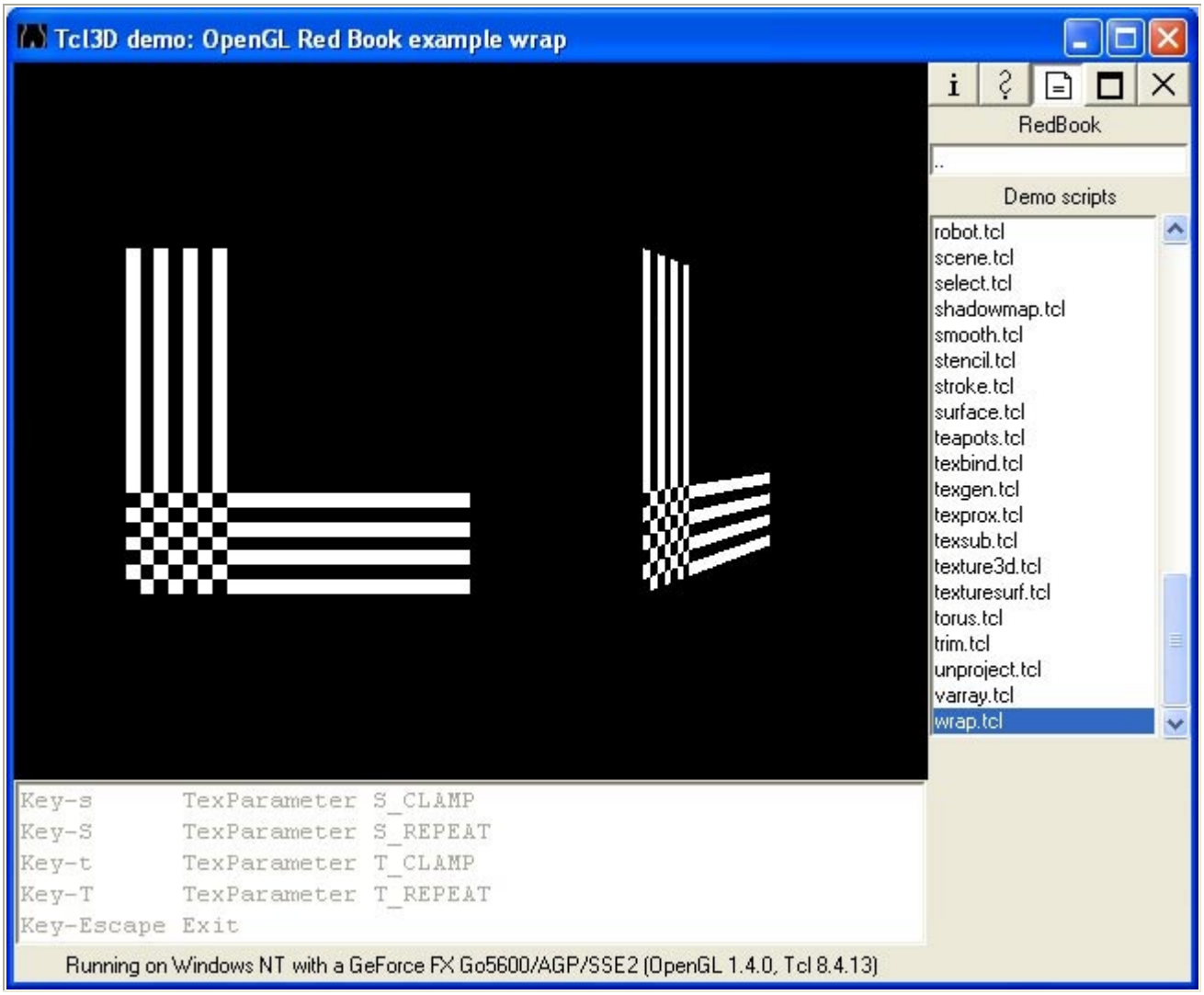
This program demonstrates vertex arrays.
```

Demo:	**wrap**
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents




```
wrap.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program texture maps a checkerboard image onto
two rectangles.  This program demonstrates the wrapping
modes, if the texture coordinates fall outside 0.0 and 1.0.
Interaction: Pressing the 's' and 'S' keys switch the
wrapping between clamping and repeating for the s parameter.
The 't' and 'T' keys control the wrapping for the t parameter.

If running this program on OpenGL 1.0, texture objects are
not used.
```