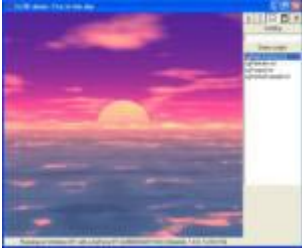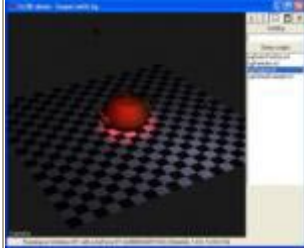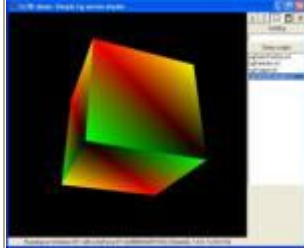# Tcl3D demos at a glance

Copyright © 2005-2008 by Paul Obermeier. All rights reserved.
All trademarks shown or mentioned in this document, are property of their respective owners.
Document generated with Tcl 8.4.16 on 2008/12/28 01:35:38
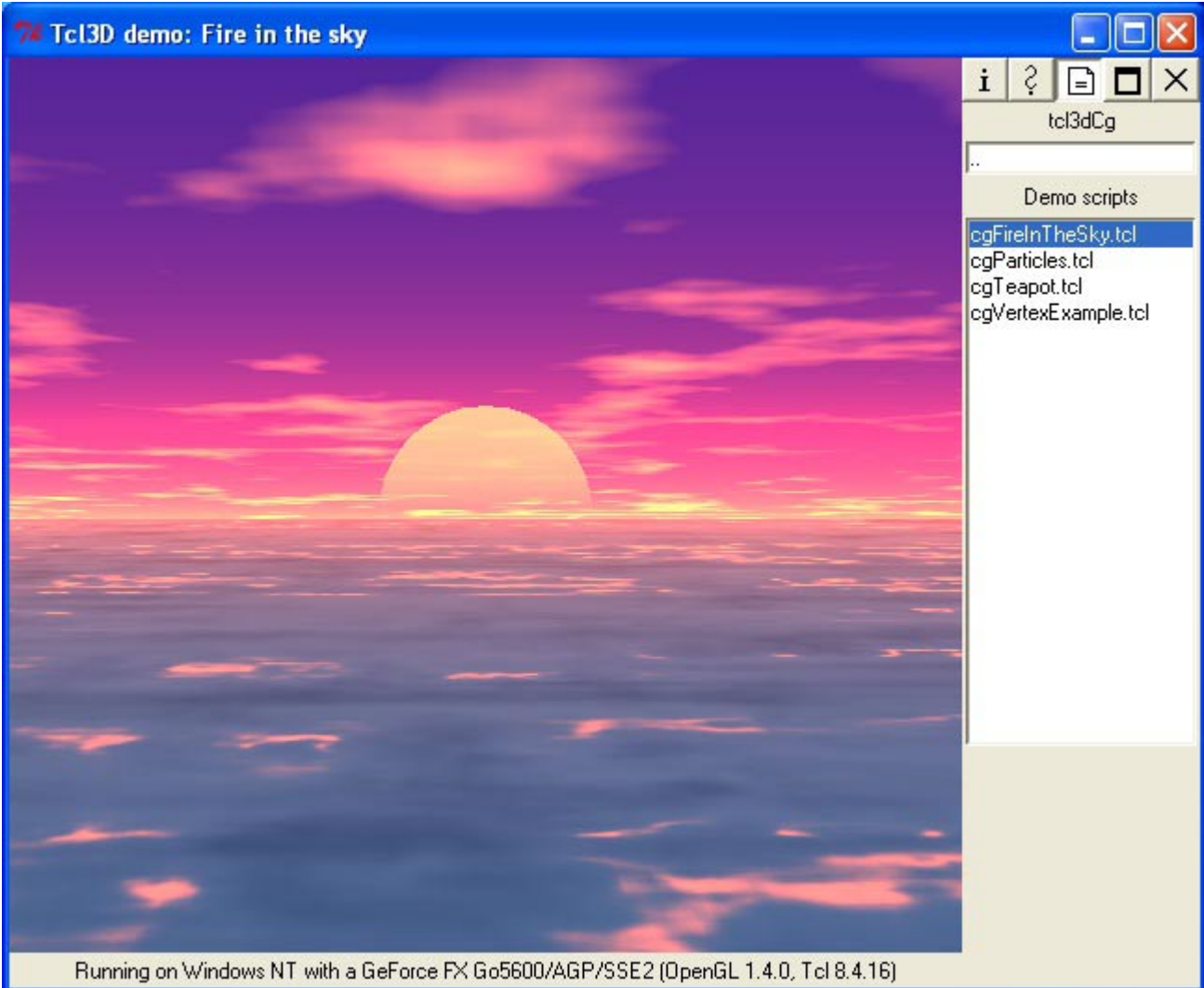
Overview	
Category	**Type**
LibrarySpecificDemos	tcl3dCg
	tcl3dFTGL
	tcl3dGauges
	tcl3dOde
	tcl3dOgl
	tcl3dOglExt
	tcl3dSDL
	tcl3dTogl
Tcl3DSpecificDemos	None
TutorialsAndBooks	CodeSampler
	GameProgrammer
	NeHe
	RedBook

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

Original files are Copyright (c) 2002 Jason Jerald
This software is provided 'as-is', without any express or implied warranty.
In no event will the authors be held liable for any damages arising from the
use of this software.

Permission is granted to anyone to use this software for any purpose,
including commercial applications, and to alter it and redistribute it
freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented;
you must not claim that you wrote the original software.
If you use this software in a product, an acknowledgment in
the product documentation would be appreciated but is not required.

2. Altered source versions must be plainly marked as such,
and must not be misrepresented as being the original software.

3. This notice may not be removed or altered from any source distribution.
```
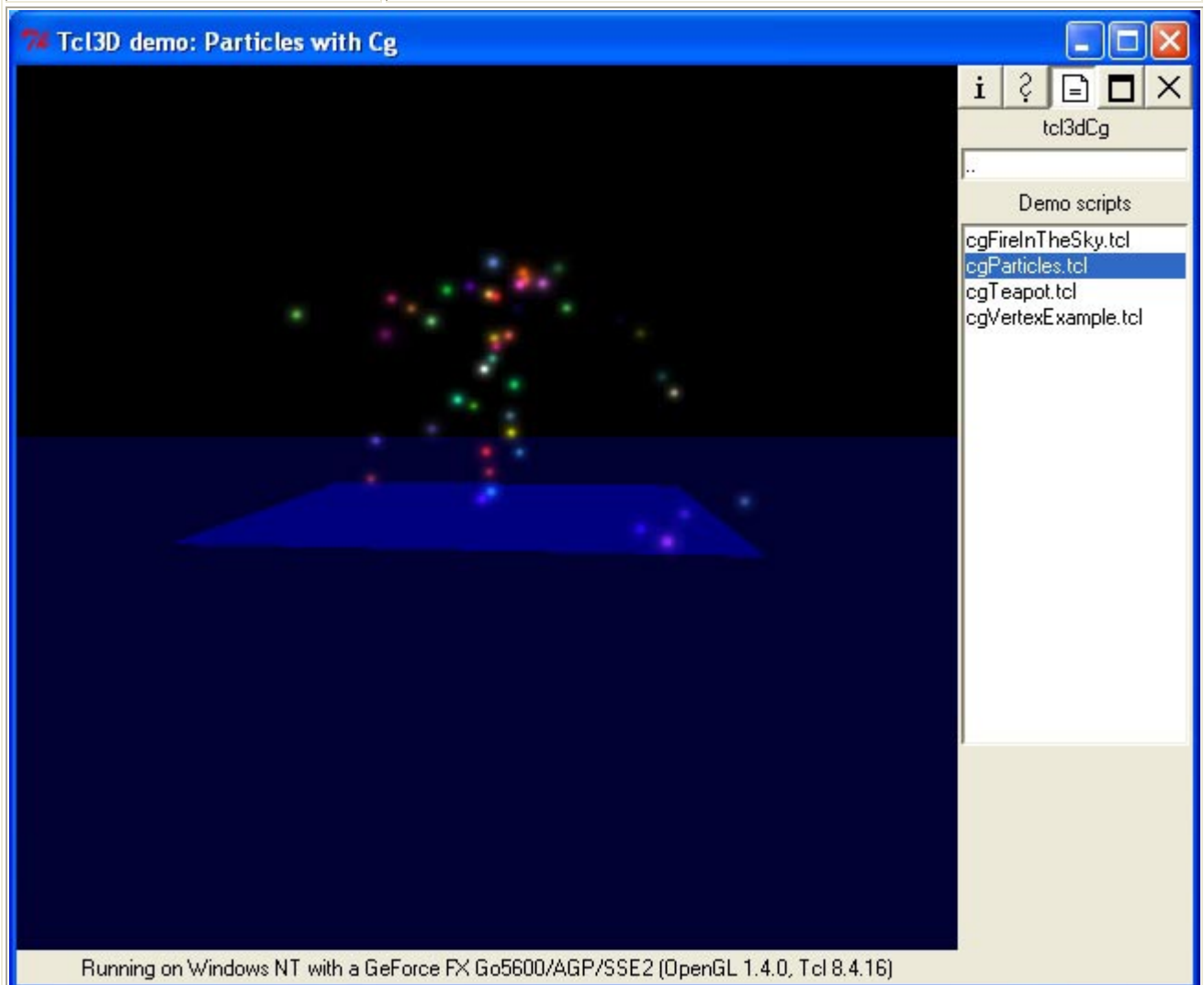
```
Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.
```

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

Original files are Copyright (c) 20002 Arkadiusz Waliszewski
This software is provided 'as-is', without any express or implied warranty.
In no event will the authors be held liable for any damages arising from the
use of this software.

Permission is granted to anyone to use this software for any purpose,
including commercial applications, and to alter it and redistribute it
freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented;
you must not claim that you wrote the original software.
If you use this software in a product, an acknowledgment
in the product documentation would be appreciated but is not required.

2. Altered source versions must be plainly marked as such,
and must not be misrepresented as being the original software.
```

```
3. This notice may not be removed or altered from any source distribution.

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

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.
```
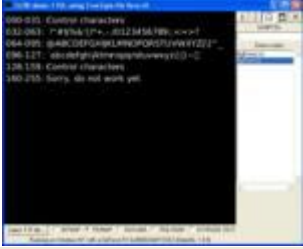
Demo:	cgVertexExample
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents


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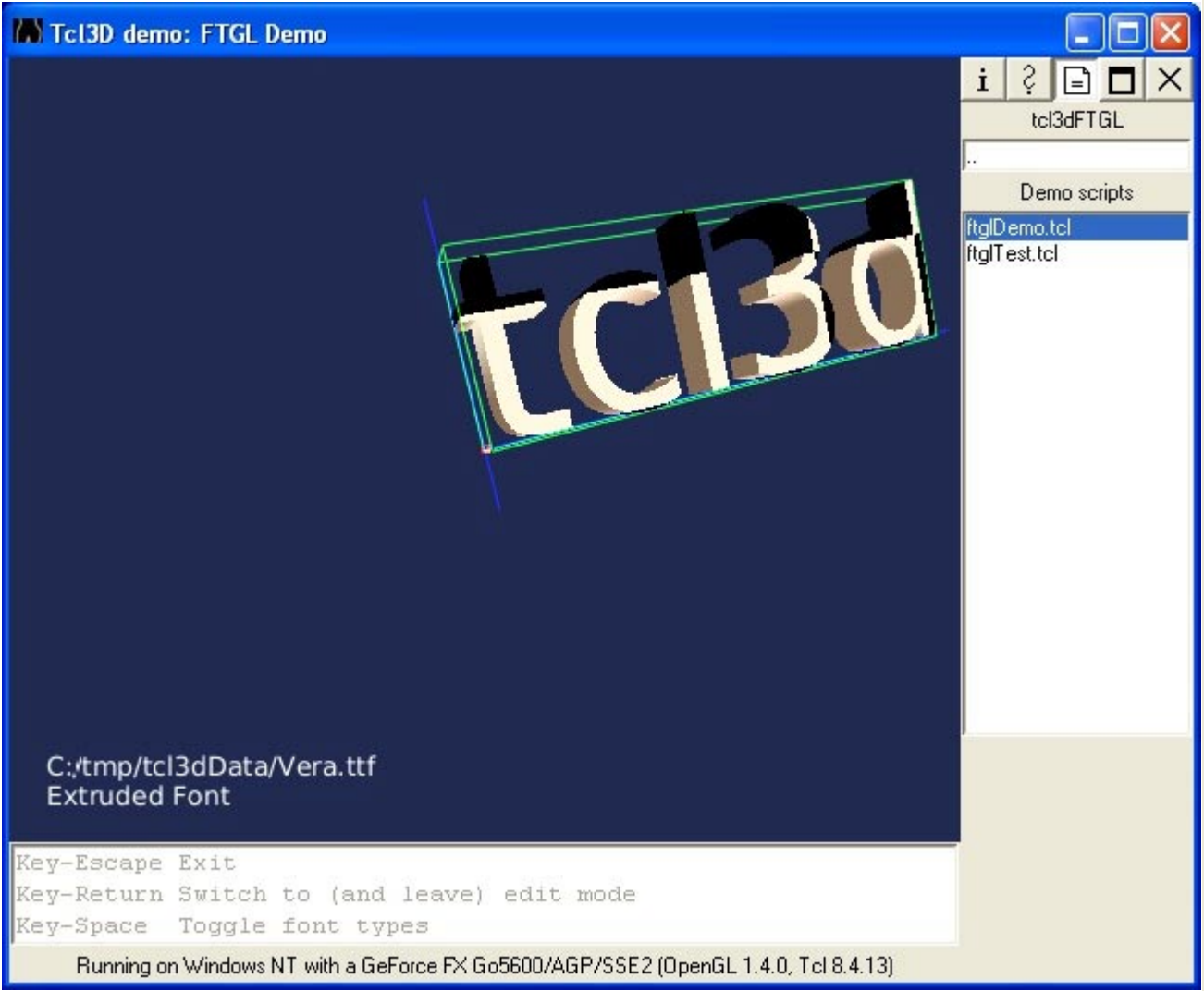
Type:	tcl3dFTGL
Category:	LibrarySpecificDemos
Root:	Contents
This section contains FTGL demo applications written in Tcl3D. The examples cover the demo applications distributed with FTGL.	
Available demos	
ftglDemo	ftglTest

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


```
ftglDemo.tcl

This demo demonstrates the different rendering styles available with FTGL.
Press <n> 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
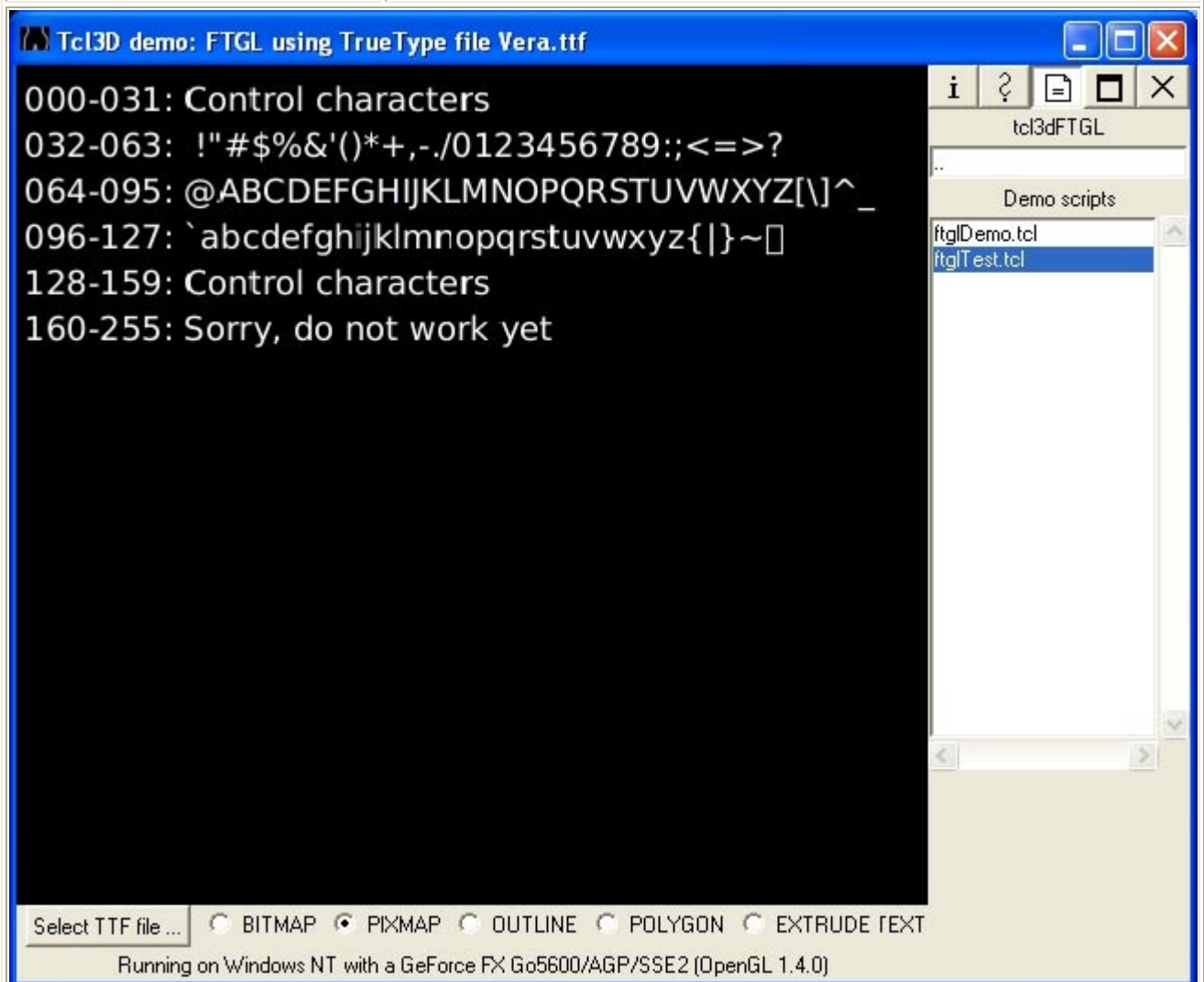

```
ftglTest.tcl

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

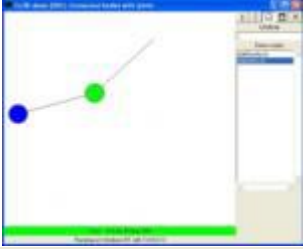|	
Copyright:	2005-2008 Paul Obermeier (obermeier@tcl3d.org)
	See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.
Module:	Tcl3D -> tcl3dGauges
Filename:	gaugedemo.tcl
Author:	Paul Obermeier
Description:	Demo program showing the use of the Tcl3D extension package gauge.

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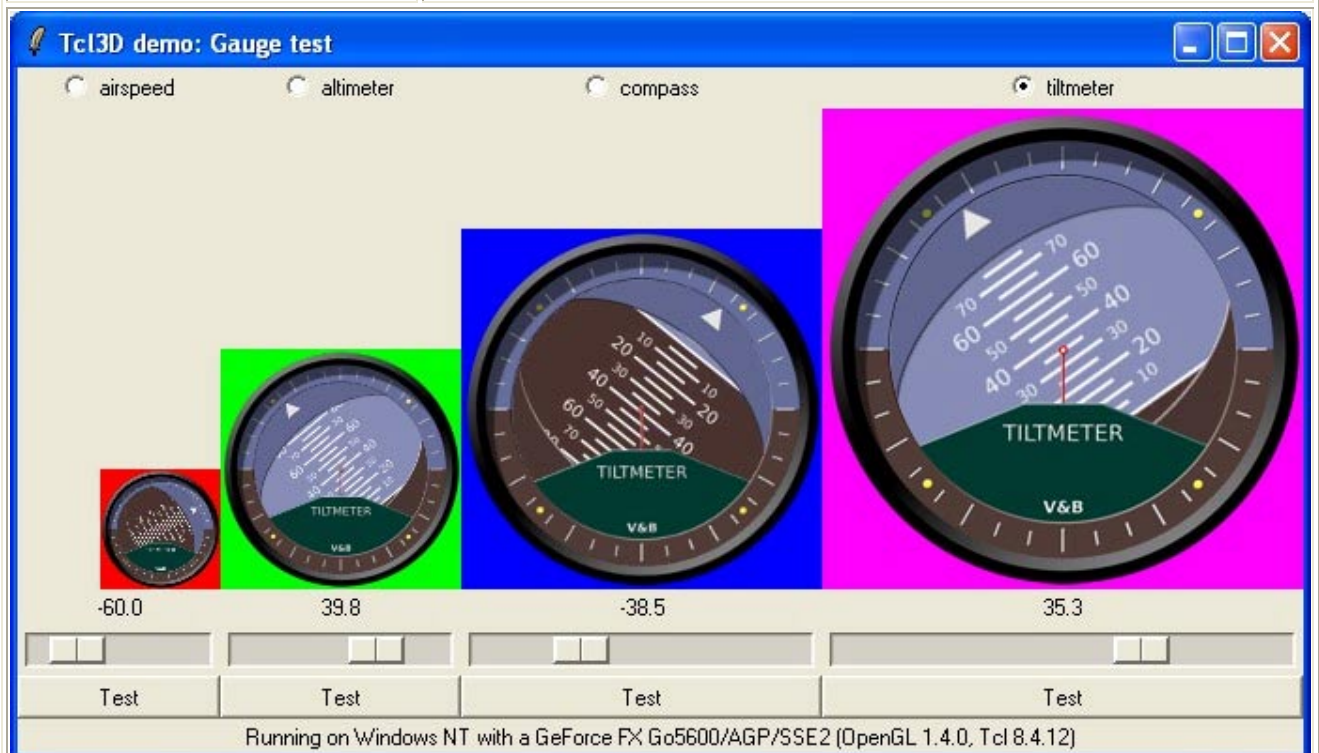

```
Copyright:        2005-2008 Paul Obermeier (obermeier@tcl3d.org)

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

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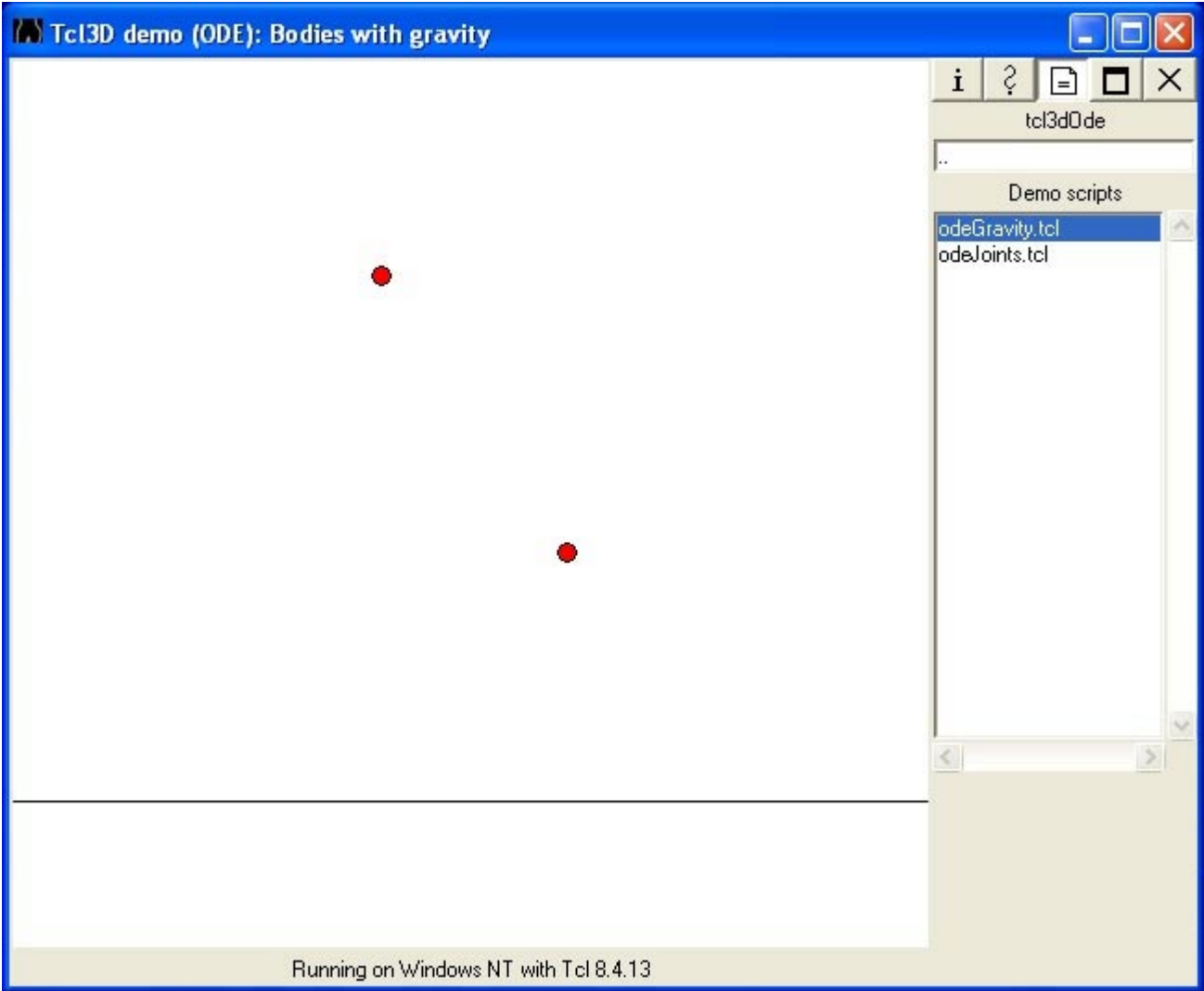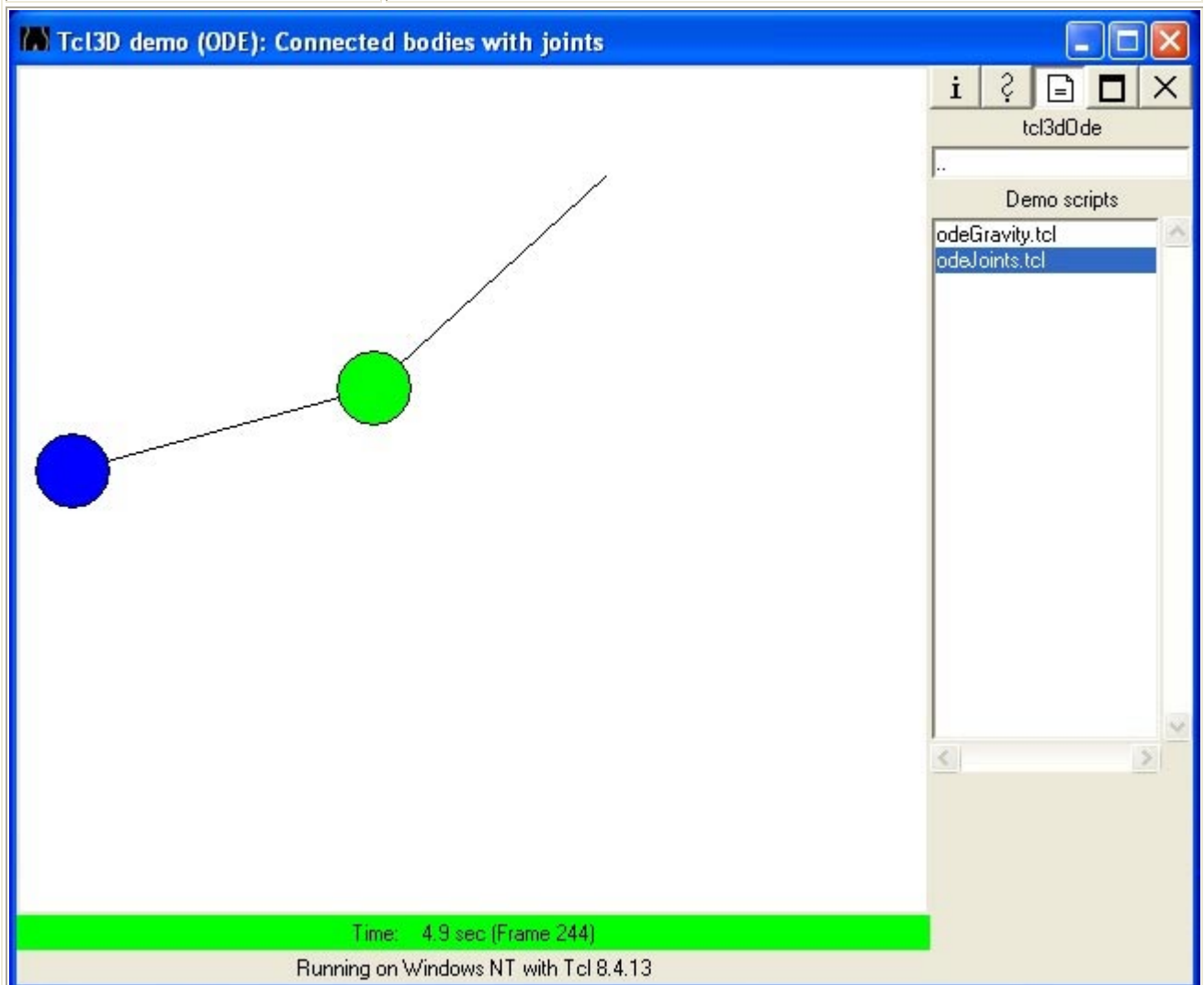
Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents
This section contains ODE demo applications written in Tcl3D. The examples cover some demo applications distributed with PyOde.	
Available demos	
odeGravity	odeJoints

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


```
Copyright:      2006-2008 Paul Obermeier (obermeier@tcl3d.org)

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

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.
```
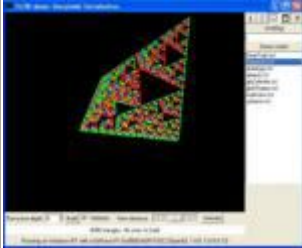
Demo:	odeJoints
Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents

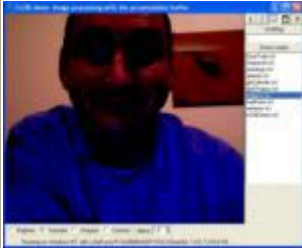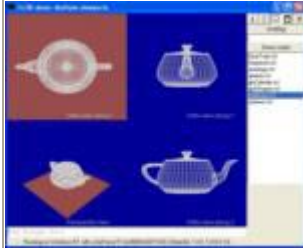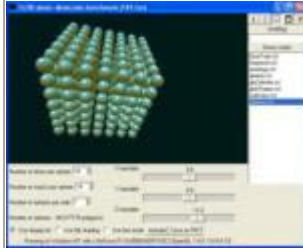|	
Copyright:	2006-2008 Paul Obermeier (obermeier@tcl3d.org)
	See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.
Module:	Tcl3D -> tcl3dOde
Filename:	odeJoints.tcl
Author:	Paul Obermeier
Description:	Tcl3D Ode example: Connected 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. Th
cover basic OpenGL programming.
Original sources from different sites. See the documentation for details.

Available demos				
GearTrain	Sierpinski	animlogo	atlantis	gluCy
glutShapes	imgproc	multiview	spheres	tcl3d(

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


```
GearTrain.tcl

GearTrain Simulator * Version:  1.00

Copyright (C) 1999  Shobhan Kumar Dutta  All Rights Reserved.
<skdutta@del3.vsnl.net.in>


Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.  IN NO EVENT SHALL
SHOBHAN KUMAR DUTTA BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
```

```
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.


Tcl conversion Copyright Philip Quaife August 2005.

This file is placed in the public domain

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

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


```
Copyright:      2005-2008 Paul Obermeier (obermeier@tcl3d.org)

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

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.
```
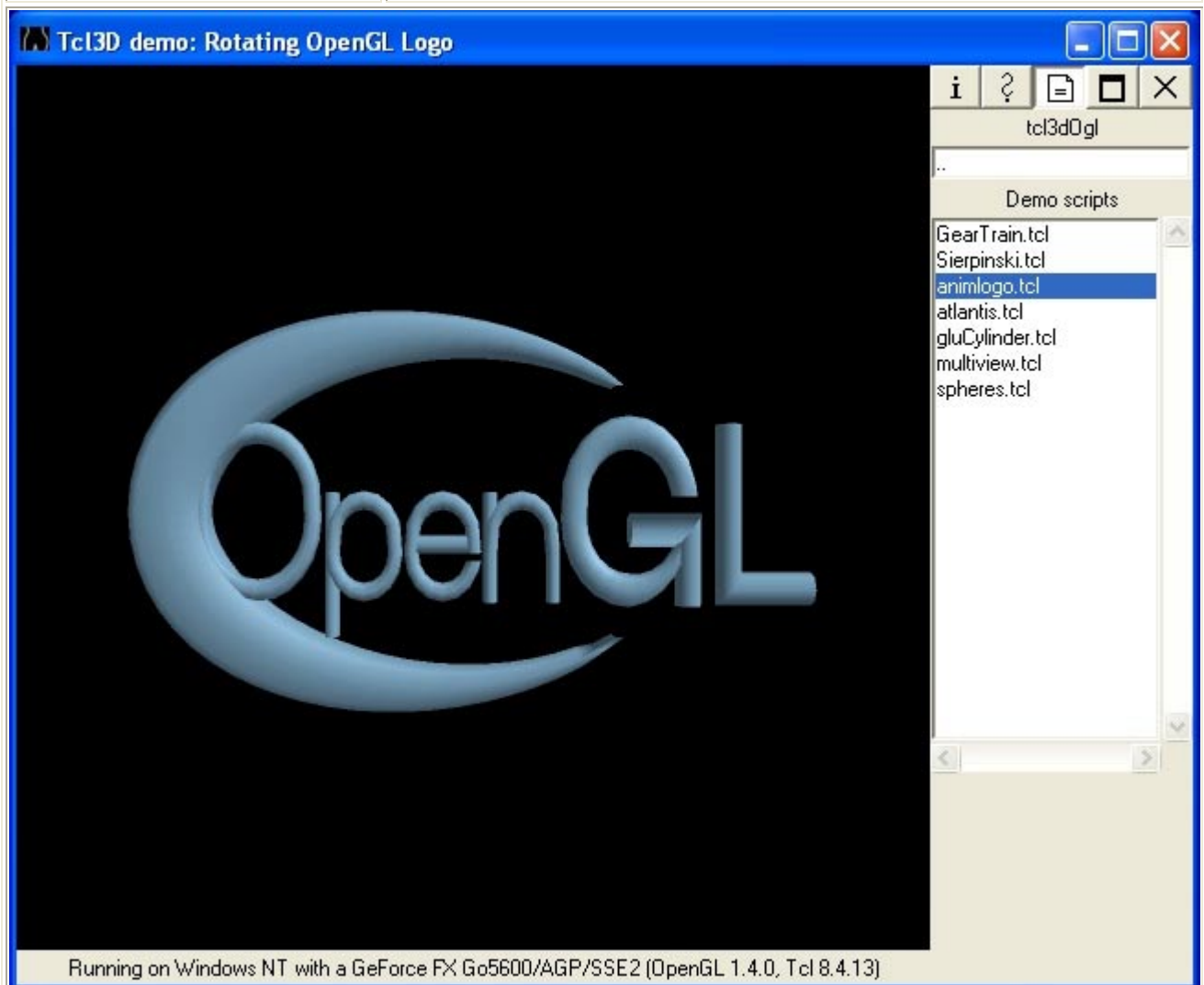
Demo:	animlogo
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents


```
animlogo.tcl

The animated OpenGL logo

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

Copying, redistributing, etc is permitted as long as this copyright
notice and the Dutch variable names :) stay in tact.

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

Copyright (c) Mark J. Kilgard, 1994. */

(c) Copyright 1993, 1994, Silicon Graphics, Inc.
ALL RIGHTS RESERVED
Permission to use, copy, modify, and distribute this software for
any purpose and without fee is hereby granted, provided that the above
copyright notice appear in all copies and that both the copyright notice
and this permission notice appear in supporting documentation, and that
the name of Silicon Graphics, Inc. not be used in advertising
or publicity pertaining to distribution of the software without specific,
written prior permission.

THE MATERIAL EMBODIED ON THIS SOFTWARE IS PROVIDED TO YOU "AS-IS"
AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE,
INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR
FITNESS FOR A PARTICULAR PURPOSE.  IN NO EVENT SHALL SILICON
GRAPHICS, INC.  BE LIABLE TO YOU OR ANYONE ELSE FOR ANY DIRECT,
SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY
KIND, OR ANY DAMAGES WHATSOEVER, INCLUDING WITHOUT LIMITATION,
LOSS OF PROFIT, LOSS OF USE, SAVINGS OR REVENUE, OR THE CLAIMS OF
```

```
THIRD PARTIES, WHETHER OR NOT SILICON GRAPHICS, INC.  HAS BEEN
ADVISED OF THE POSSIBILITY OF SUCH LOSS, HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE
POSSESSION, USE OR PERFORMANCE OF THIS SOFTWARE.

US Government Users Restricted Rights
Use, duplication, or disclosure by the Government is subject to
restrictions set forth in FAR 52.227.19(c)(2) or subparagraph
(c)(1)(ii) of the Rights in Technical Data and Computer Software
clause at DFARS 252.227-7013 and/or in similar or successor
clauses in the FAR or the DOD or NASA FAR Supplement.
Unpublished-- rights reserved under the copyright laws of the
United States.  Contractor/manufacturer is Silicon Graphics,
Inc., 2011 N.  Shoreline Blvd., Mountain View, CA 94039-7311.

OpenGL(TM) is a trademark of Silicon Graphics, Inc.

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.
```
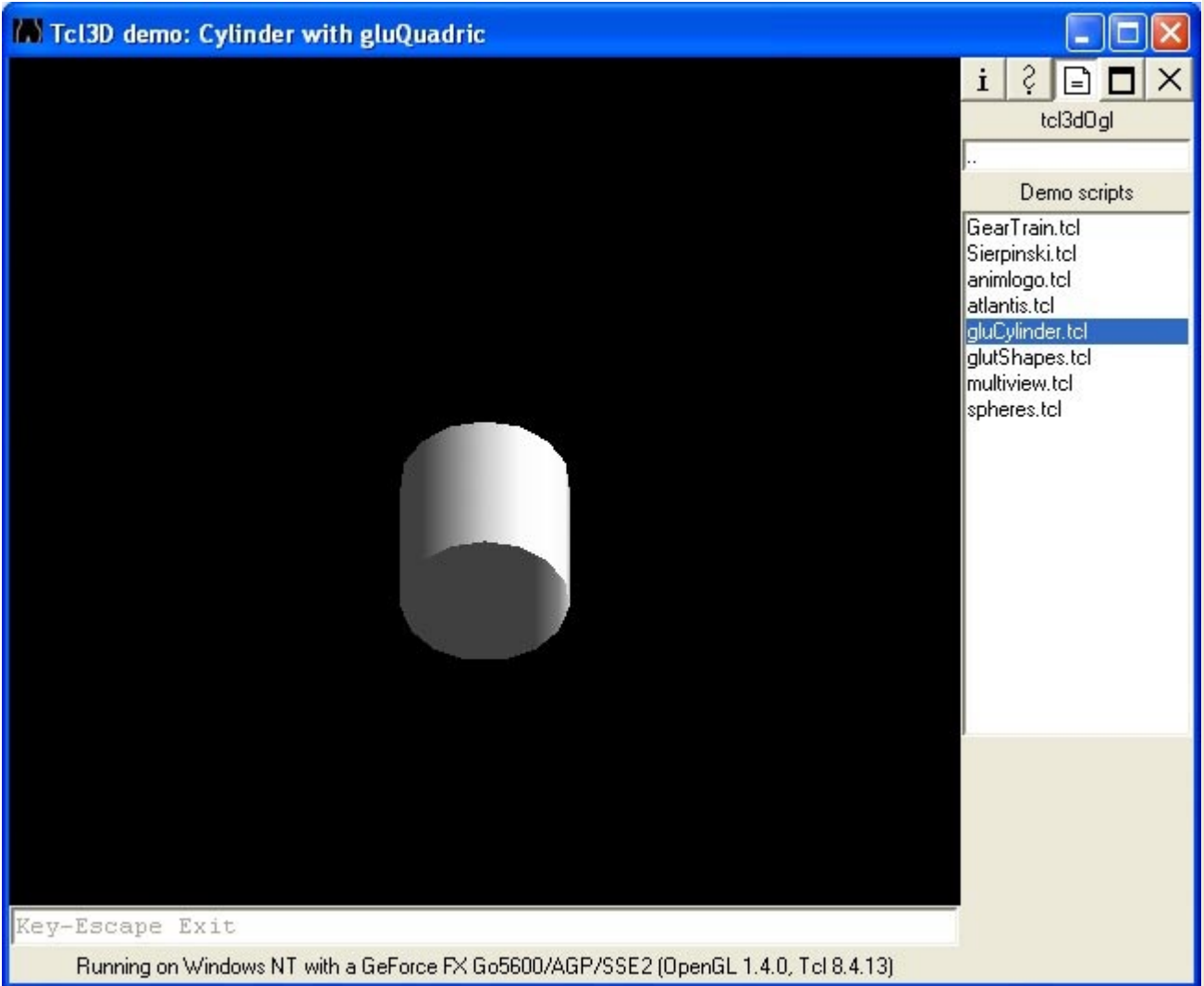
Demo:	gluCylinder
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents


```
Copyright:      2005-2008 Paul Obermeier (obermeier@tcl3d.org)

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

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


```
Copyright:      2006-2008 Paul Obermeier (obermeier@tcl3d.org)

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

Module:         Tcl3D -> tcl3dOgl
Filename:       glutShapes.tcl

Author:         Paul Obermeier
Date:           2006-12-01

Description:    Tcl3D demo showing all supported GLUT shapes.
```
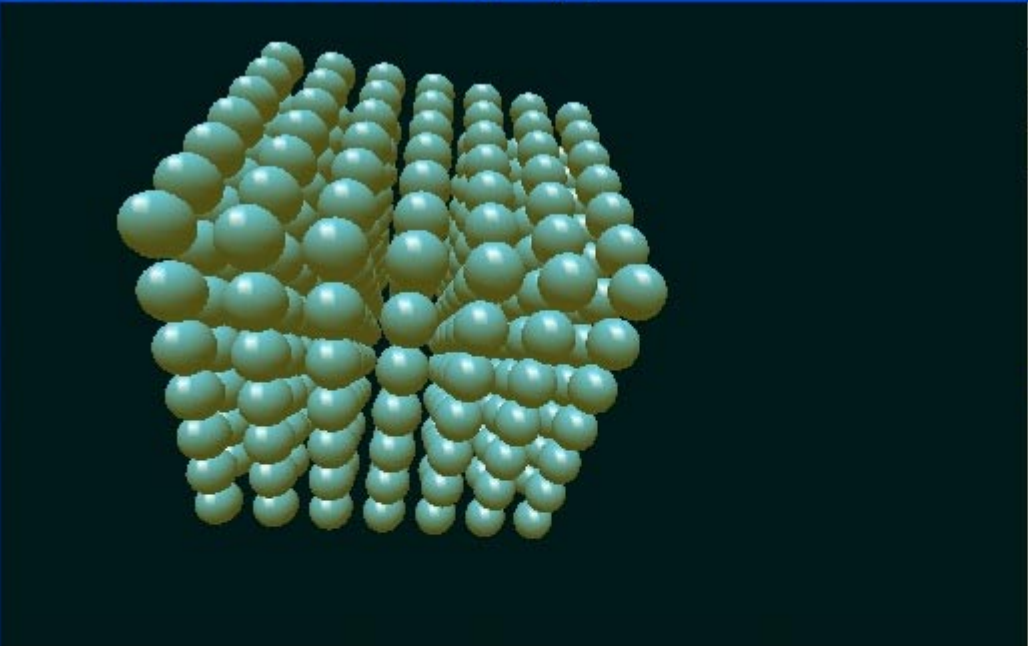
Demo:	imgproc
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents


```
 imgproc.c - by David Blythe, SGI

 Examples of various image processing operations coded as OpenGL
 accumulation buffer operations.  This allows extremely fast
 image processing on machines with hardware accumulation buffers
 (RealityEngine, InfiniteReality, VGX).

 This demo is part of the advanced glut demos.
 See
http://www.opengl.org/resources/code/samples/glut_examples/advanced/advanced.html

 Modified for Tcl3D by Paul Obermeier 2007/07/28
 See www.tcl3d.org for the Tcl3D extension.
```

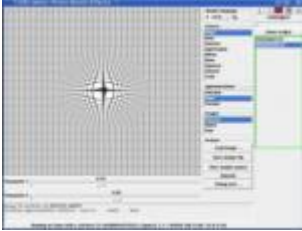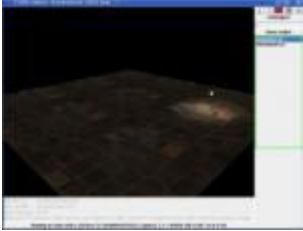| Demo:	multiview
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents
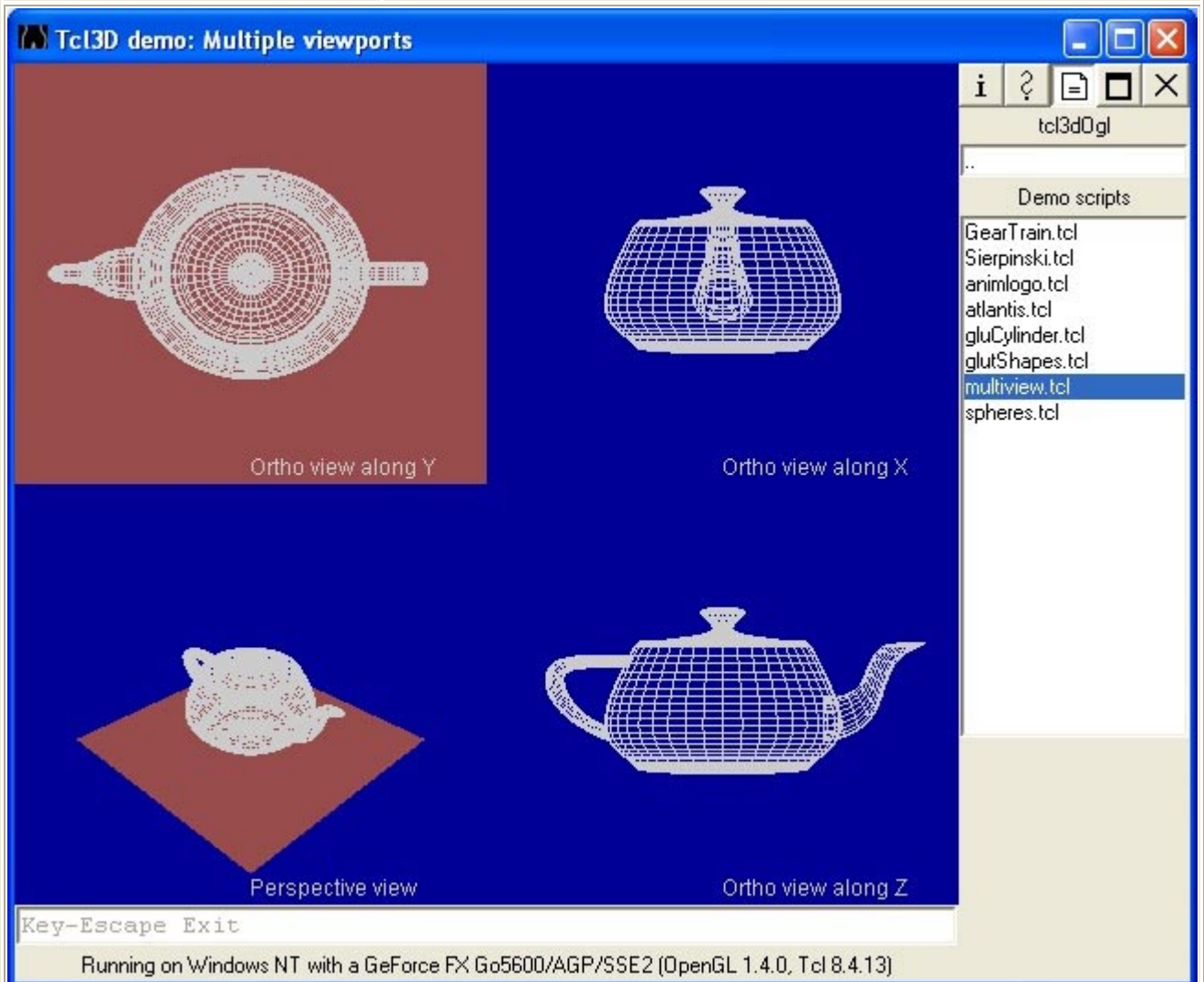

```
Copyright:      2005-2008 Paul Obermeier (obermeier@tcl3d.org)

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

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

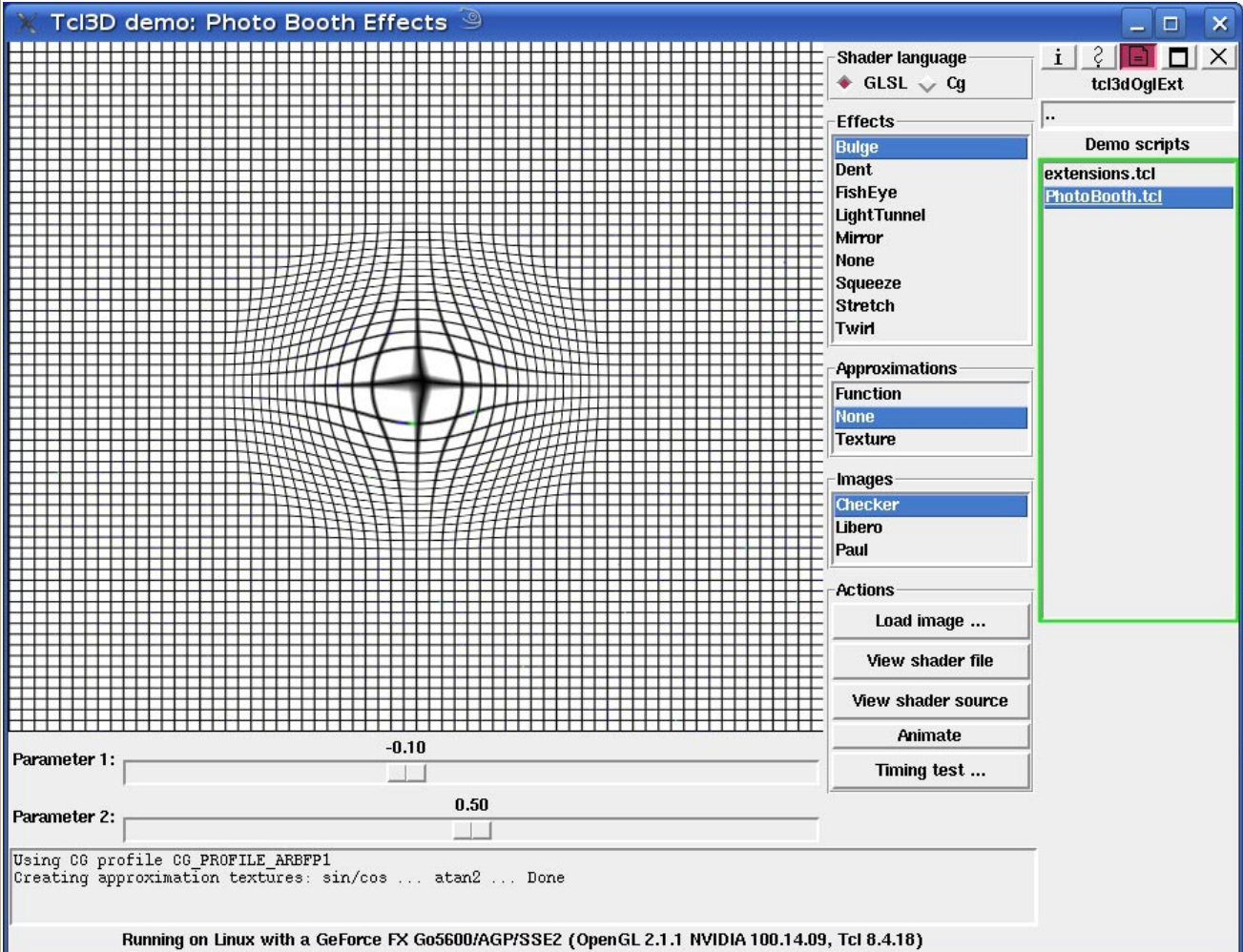|	
Copyright:	2005-2008 Paul Obermeier (obermeier@tcl3d.org) See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.
Module: Filename:	Tcl3D -> tcl3dOgl spheres.tcl
Author:	Paul Obermeier
Description:	Tcl3D demo displaying spheres in various modes.

Demo:	tcl3dChaos
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents


```
Copyright:      2007-2008 Paul Obermeier (obermeier@tcl3d.org)

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

Module:         Tcl3D -> tcl3dOgl
Filename:       tcl3dChaos.tcl

Author:         Paul Obermeier

Description:    Implementation of algorithmn described on Wiki page
                "Simple Chaos Theory with Tcl" (http://wiki.tcl.tk/11887)
                using Tcl3D.
                Interesting values:
                2000   8 10 14    revert
                6300   3  3  3    revert
```

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	
PhotoBooth	extensions

Demo:	PhotoBooth
Type:	tcl3dOglExt
Category:	LibrarySpecificDemos
Root:	Contents

```
 PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
 LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
 NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
 SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.


 Modified for Tcl3D by Paul Obermeier 2007/04/14
 See www.tcl3d.org for the Tcl3D extension.


 The demo has been modified to allow up to 2 parameters to be changed
 interactively via a slider.
 The parameter range of the two sliders can be provided as comment lines
 at the top of the shader source files.
 Further enhancements include:
 Loading of image files of any size via the "Load image" button. All image files
 with  an  extension  of  .jpg  or  .tga  in  the  directory  of  the  script  are
automatically
 recognized and inserted into the "Images" labelframe.
 Add your own shader without modifying the Tcl script by adding a new file with
extension
 .frag in the directory of the script.


 A description of the effect shaders and the original sources are
 available at http://dem.ocracy.org/libero/photobooth/
```

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

Tcl3D demo: Extensions (563 fps)

tcl3dOglExt

..

Demo scripts

extensions.tcl
PhotoBooth.tcl

Mouse-L   StartAnimation
Mouse-MR   StopAnimation
Key-Escape Exit
ARB_multitexture EXT_point_parameters ARB_texture_compression EXT_texture_edge_clamp

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

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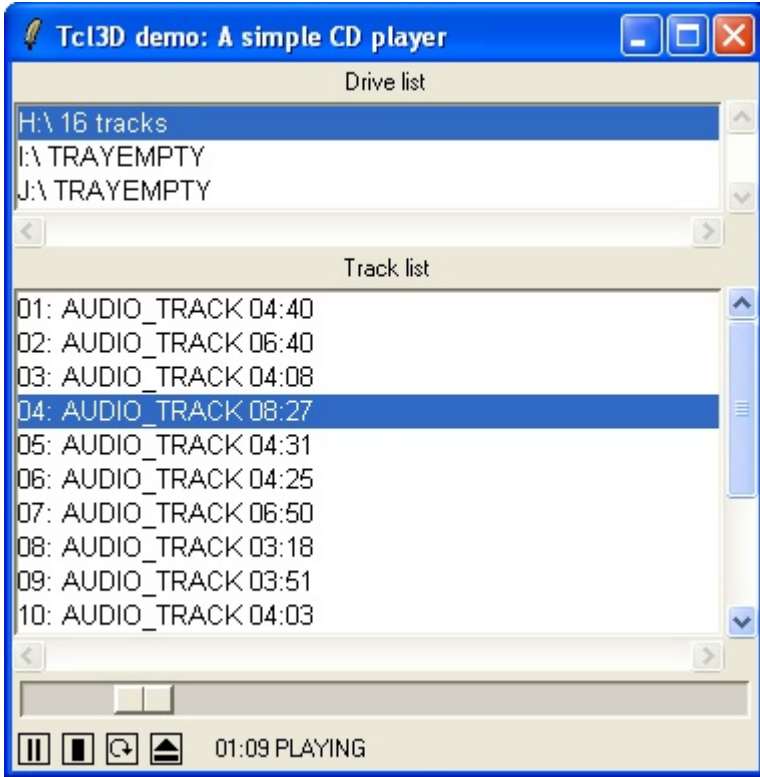
Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents
This section contains SDL demo applications written in Tcl3D. The examples cover joystick and CD programming with the help of the SDL library.	
Available demos	
cdplayer	joysticktest

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


```
Copyright:      2006-2008 Paul Obermeier (obermeier@tcl3d.org)

                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.
```
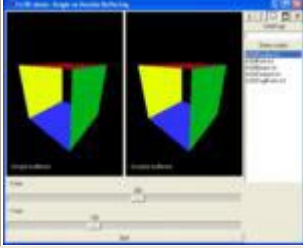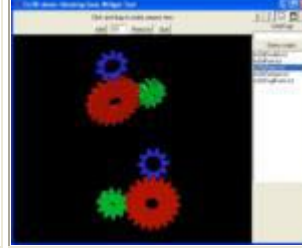
Demo:	joysticktest
Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents

|	
Copyright:	2005-2008 Paul Obermeier (obermeier@tcl3d.org) See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.
Module: Filename:	Tcl3D -> tcl3dSDL 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	tcl3dTo

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
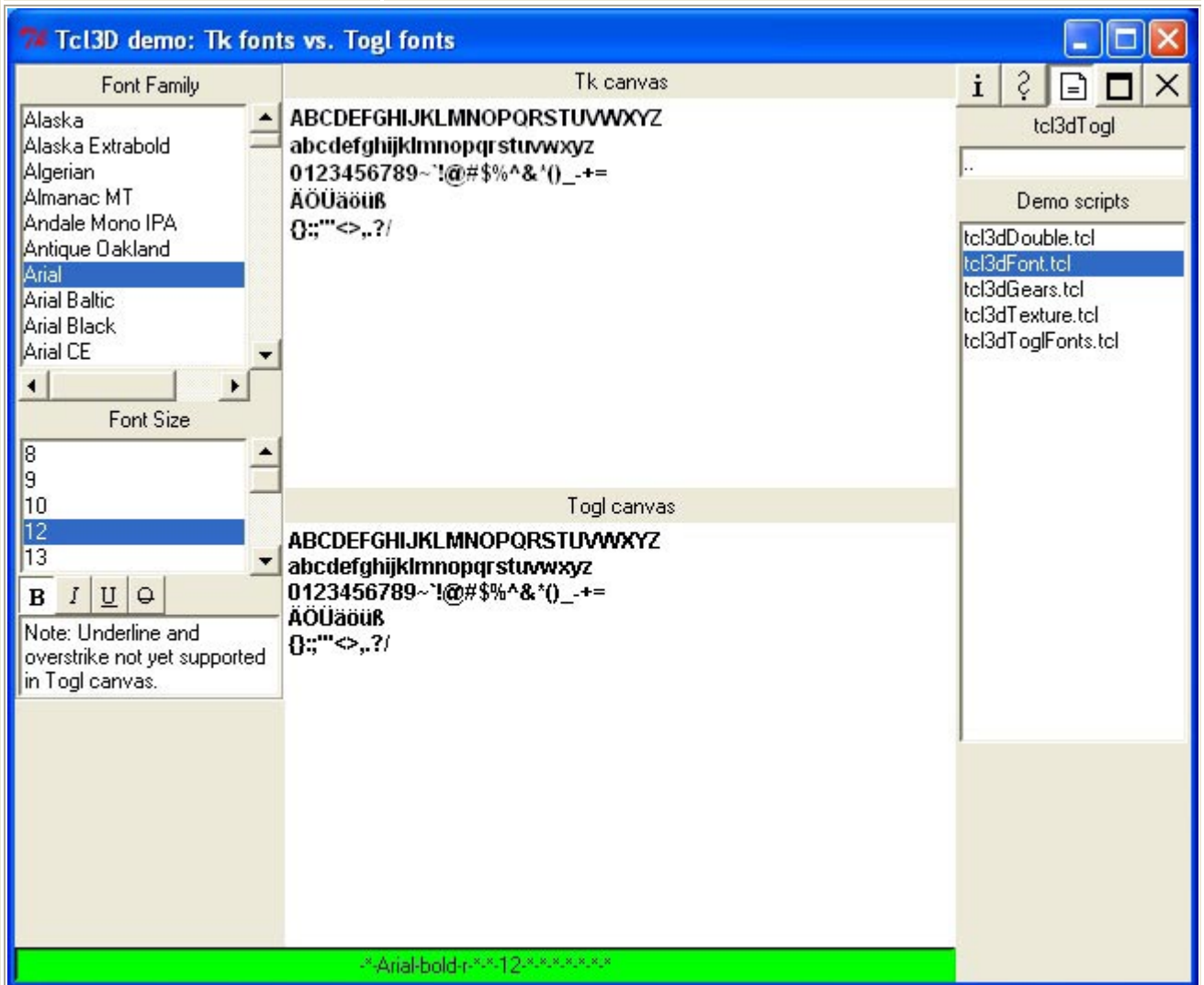

```
Copyright:      2005-2008 Paul Obermeier (obermeier@tcl3d.org)

                See the file "Tcl3D_License.txt" for information on
                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).
```

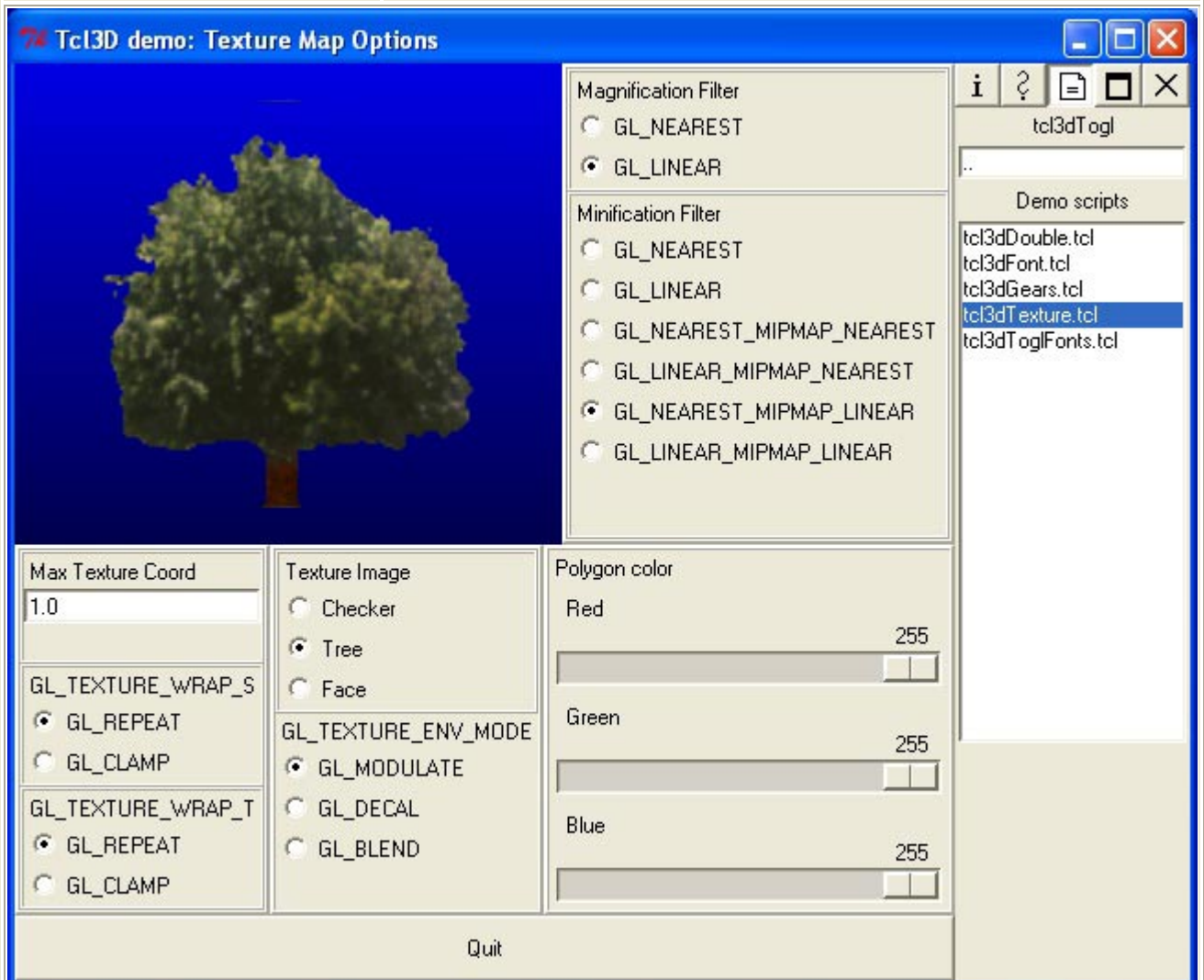| Demo:	tcl3dGears
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents
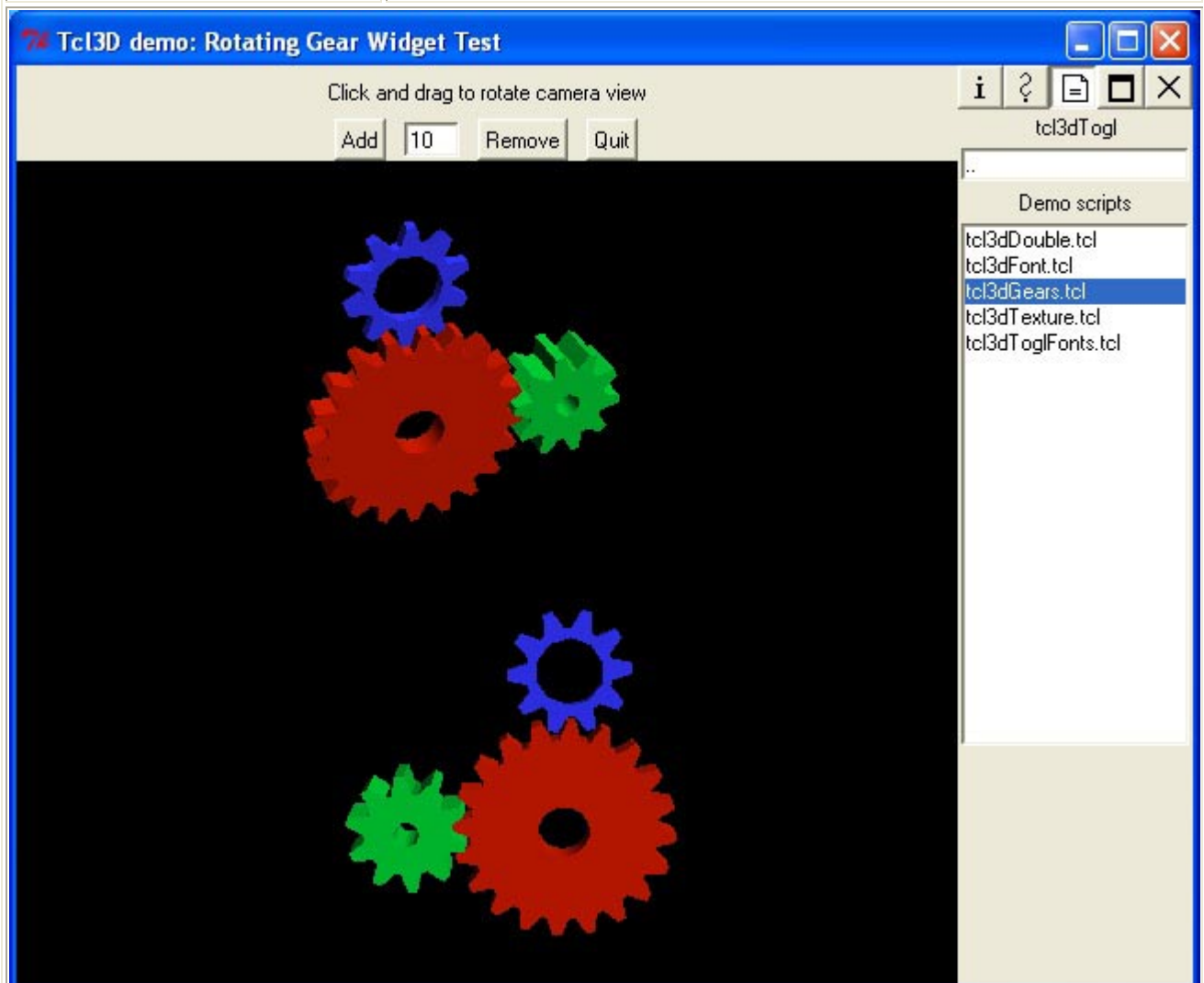

```
tcl3dGears.tcl

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)
See the LICENSE file for copyright details.

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

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


```
Copyright:      2006-2008 Paul Obermeier (obermeier@tcl3d.org)

                See the file "Tcl3D_License.txt" for information on
                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	

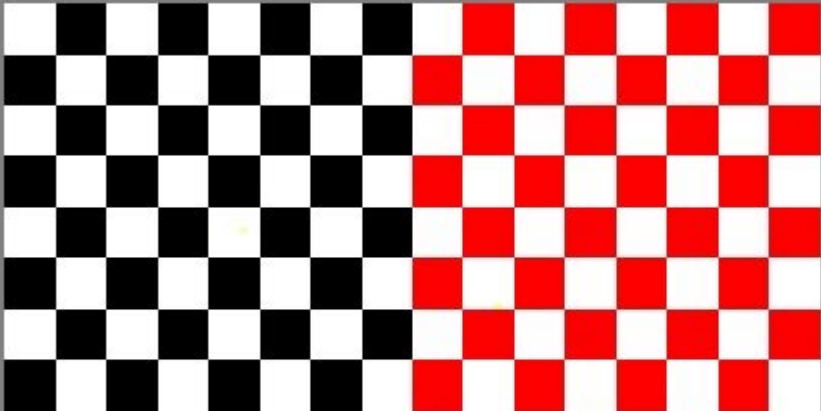| Demo:	bytearray
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents


```
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

```
Tcl3D demo: Texture generation comparison

                                    i  ?  ▯  ◻  ✕

                                    Tcl3DSpecificDemos

                                    ..

                                    Demo scripts

                                    bytearray.tcl
                                    checkerBoard.tcl
                                    imgViewer.tcl
                                    modelViewer.tcl
                                    tcl3dInfo.tcl
                                    togllnCanvas.tcl
                                    vectormanip.tcl


Key-Escape Exit
Black checker: 243764 microseconds per iteration
Red    checker: 825 microseconds per iteration

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)
```

```
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
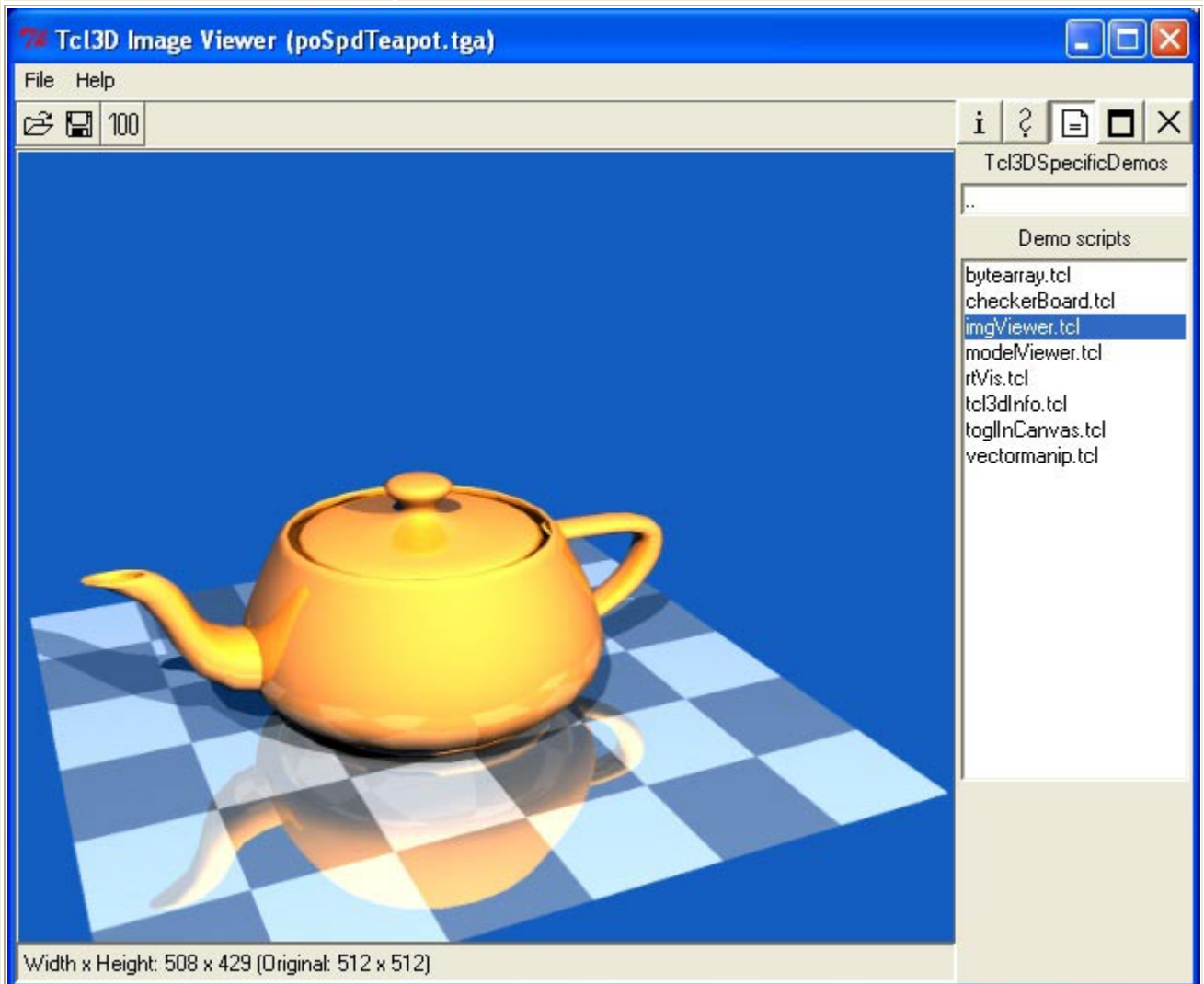

```
Copyright:      2005-2008 Paul Obermeier (obermeier@tcl3d.org)

                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.
```
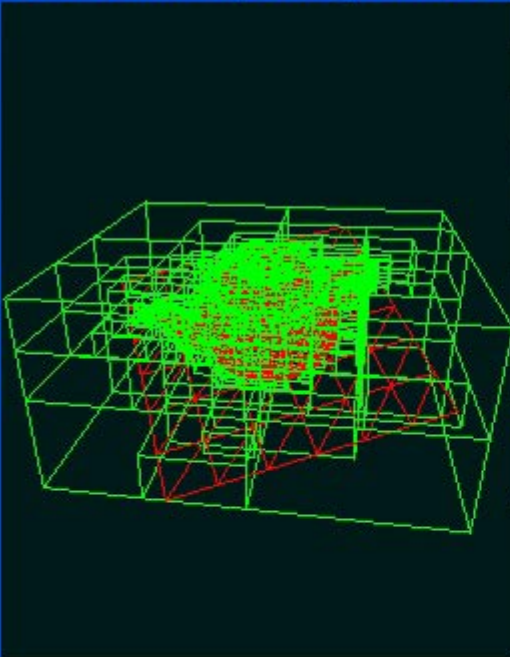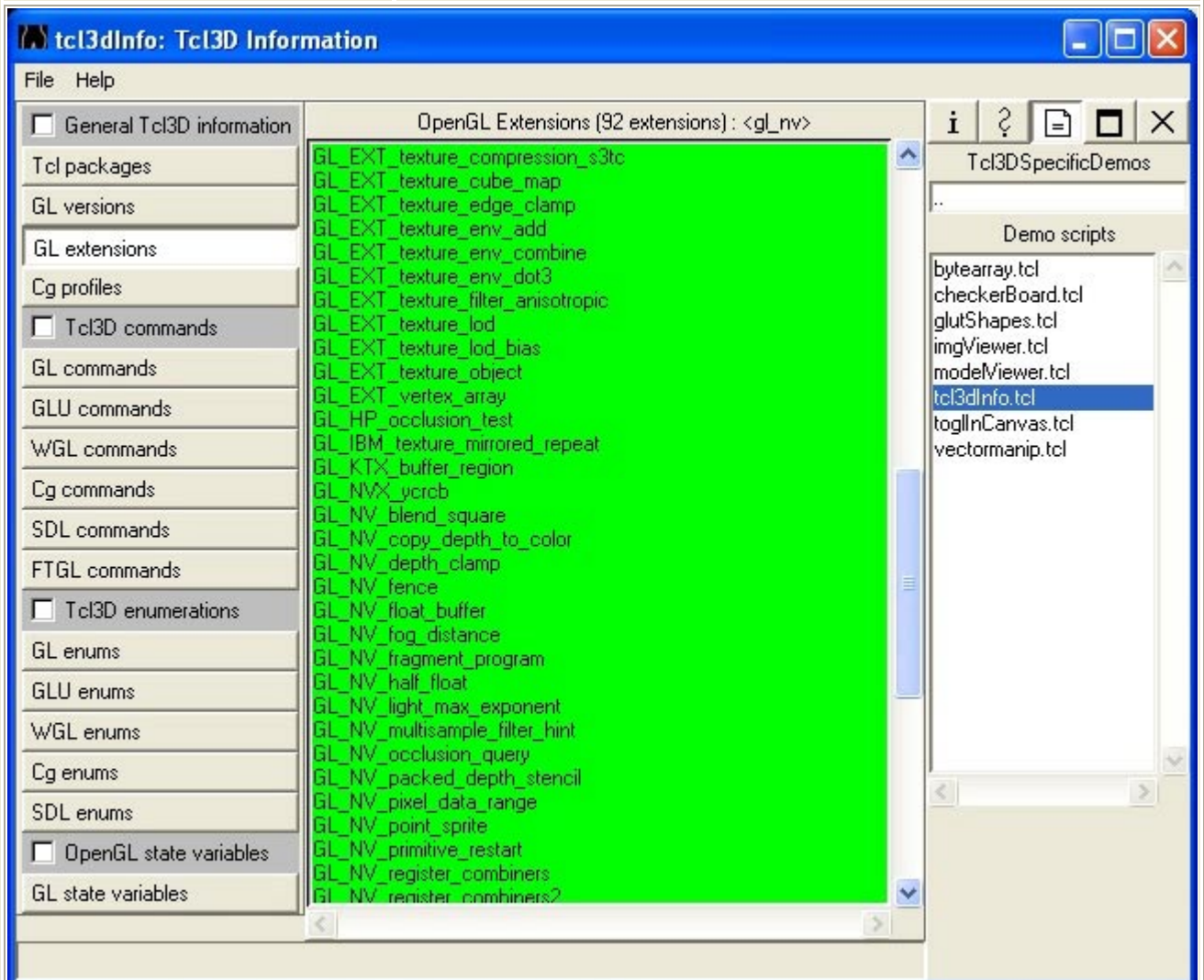
Demo:	modelViewer
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

Copyright:	2005-2008 Paul Obermeier (obermeier@tcl3d.org)
	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:	rtVis
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents


```
Copyright:    2008 Paul Obermeier (obermeier@tcl3d.org)

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

Module:       Tcl3DSpecificDemos
Filename:     rtVis.tcl

Author:       Paul Obermeier

Description:  Ray Tracing visualization program.
              The comments of the rtvis* procedures explain how to
              use the ray-tracing visualization commands.
```

Demo:	tcl3dInfo
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

tcl3dInfo: Tcl3D Information

File   Help

☐ General Tcl3D information
Tcl packages
GL versions
GL extensions
Cg profiles
☐ Tcl3D commands
GL commands
GLU commands
WGL commands
Cg commands
SDL commands
FTGL commands
☐ Tcl3D enumerations
GL enums
GLU enums
WGL enums
Cg enums
SDL enums
☐ OpenGL state variables
GL state variables

OpenGL Extensions (92 extensions) : <gl_nv>

GL_EXT_texture_compression_s3tc
GL_EXT_texture_cube_map
GL_EXT_texture_edge_clamp
GL_EXT_texture_env_add
GL_EXT_texture_env_combine
GL_EXT_texture_env_dot3
GL_EXT_texture_filter_anisotropic
GL_EXT_texture_lod
GL_EXT_texture_lod_bias
GL_EXT_texture_object
GL_EXT_vertex_array
GL_HP_occlusion_test
GL_IBM_texture_mirrored_repeat
GL_KTX_buffer_region
GL_NVX_ycrcb
GL_NV_blend_square
GL_NV_copy_depth_to_color
GL_NV_depth_clamp
GL_NV_fence
GL_NV_float_buffer
GL_NV_fog_distance
GL_NV_fragment_program
GL_NV_half_float
GL_NV_light_max_exponent
GL_NV_multisample_filter_hint
GL_NV_occlusion_query
GL_NV_packed_depth_stencil
GL_NV_pixel_data_range
GL_NV_point_sprite
GL_NV_primitive_restart
GL_NV_register_combiners
GL_NV_register_combiners2

Tcl3DSpecificDemos

..

Demo scripts

bytearray.tcl
checkerBoard.tcl
glutShapes.tcl
imgViewer.tcl
modelViewer.tcl
tcl3dInfo.tcl
toglInCanvas.tcl
vectormanip.tcl

```
Copyright:      2005-2008 Paul Obermeier (obermeier@tcl3d.org)

                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
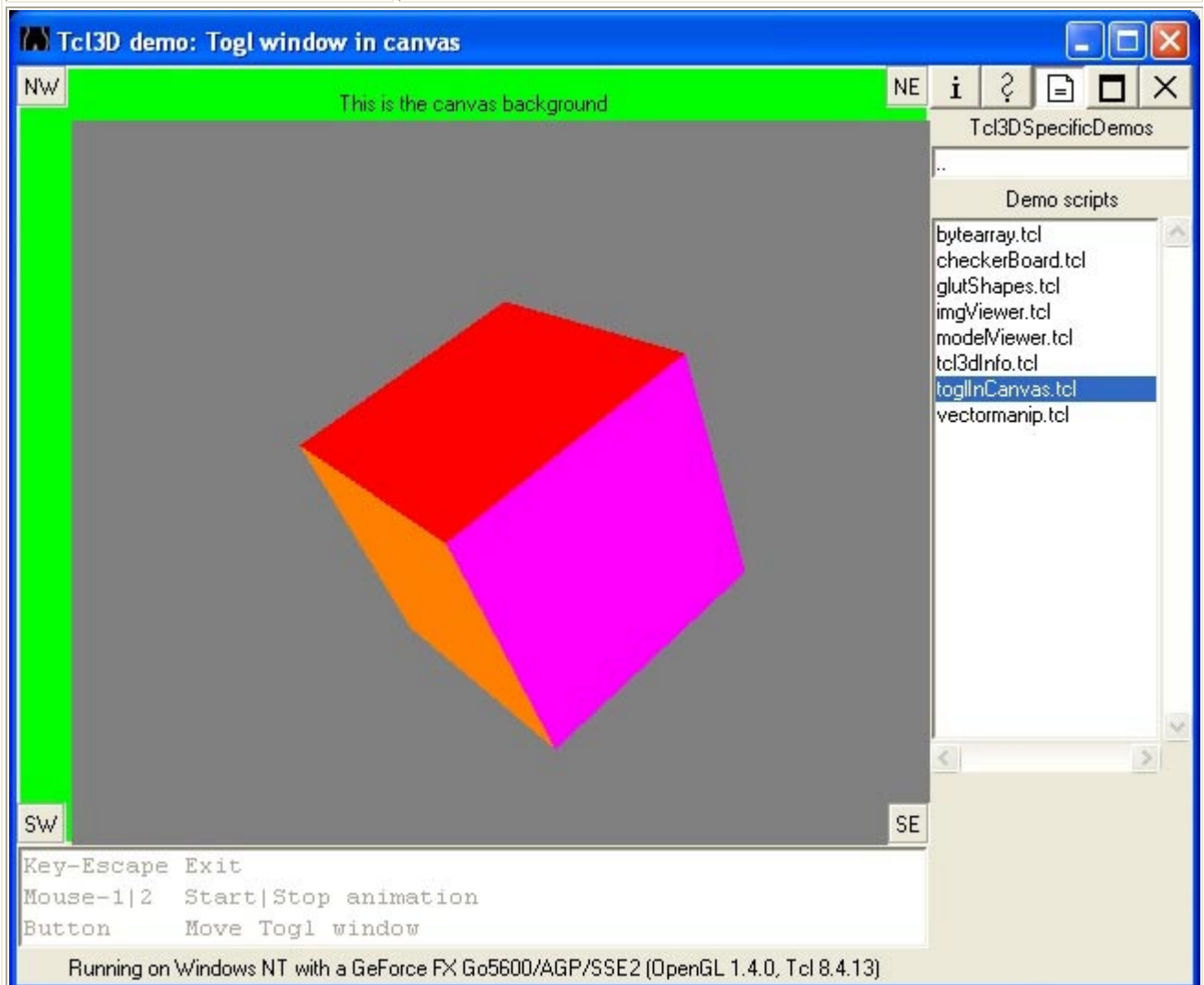

```
toglInCanvas.tcl

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
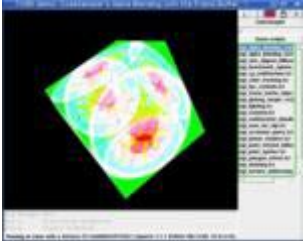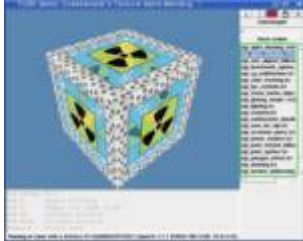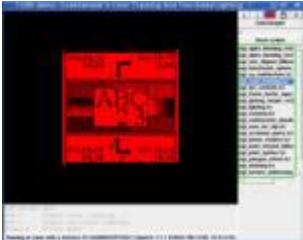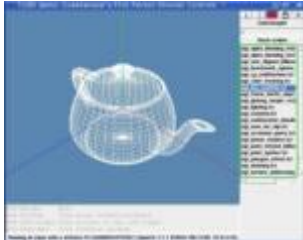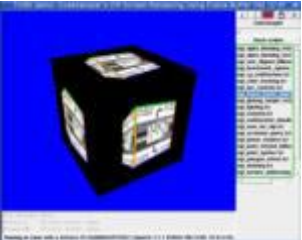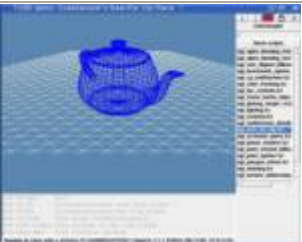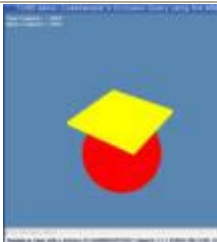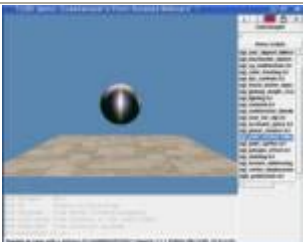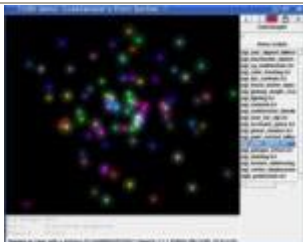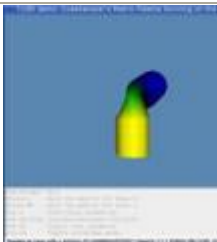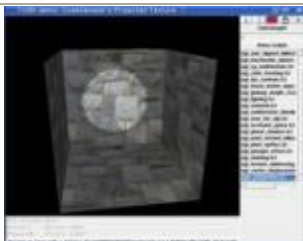

```
vectormanip.tcl

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
```
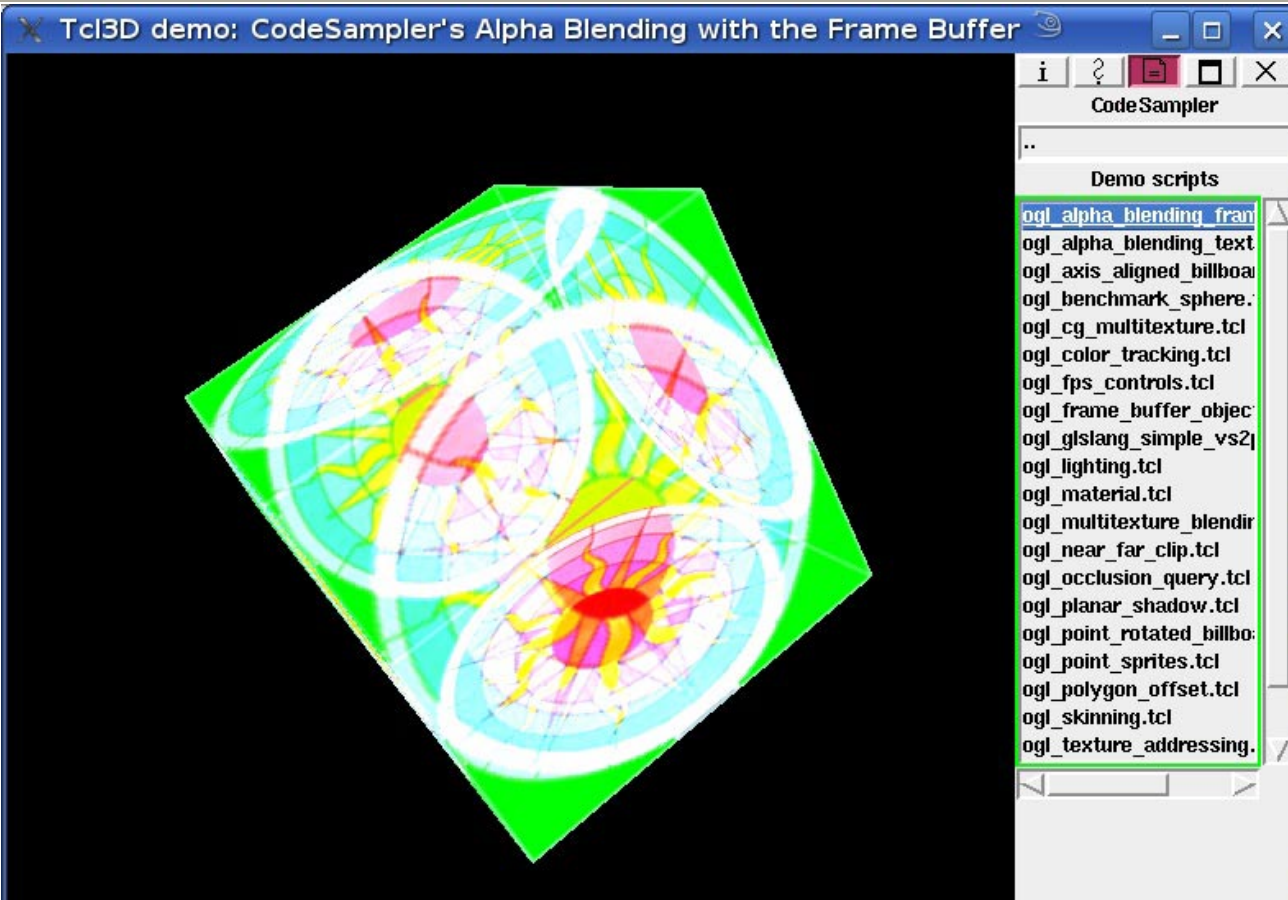
Category:	TutorialsAndBooks
Root:	[Contents](#)
Available types	
[CodeSampler](#)	
[GameProgrammer](#)	
[NeHe](#)	
[RedBook](#)	

Category:	TutorialsAndBooks
Root:	[Contents](#)

Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Several demo applications from Kevin Harris' page have been ported to Tcl3D. The examples cover Cg programming.

Original sources available at: http://www.codesampler.com/oglsrc.htm

Available demos			
ogl_alpha_blending_framebuffer	ogl_alpha_blending_texture	ogl_axis_aligned_billboard	ogl_benchmark
ogl_color_tracking	ogl_fps_controls	ogl_frame_buffer_object	ogl_glslang_simpl
ogl_material	ogl_multitexture_blending	ogl_near_far_clip	ogl_occlusion_
ogl_point_rotated_billboard	ogl_point_sprites	ogl_polygon_offset	ogl_skinnin
ogl_vertex_displacement	oglu_projtexture		

Demo:	ogl_alpha_blending_framebuffer
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
     ------------------------------------------------------------------------
            Name: ogl_alpha_blending_framebuffer.cpp
          Author: Kevin Harris (kevin@codesampler.com)
   Last Modified: 03/25/05
     Description: This sample demonstrates how to perform alpha-blending in
                  the frame-buffer. The sample renders a textured cube which
                  is alpha-blended into the frame-buffer in such a way as to
                  create a translucent effect.

     Control Keys: b - Toggle blending
     ------------------------------------------------------------------------

  Original C++ code by Kevin Harris (kevin@codesampler.com)
  See www.codesampler.com for the original files
  OpenGL samples page 4: Alpha Blending in the Frame buffer
  http://www.codesampler.com/oglsrc/oglsrc_4.htm#ogl_alpha_blending_framebuffer

  Modified for Tcl3D by Paul Obermeier 2008/05/01
  See www.tcl3d.org for the Tcl3D extension.
```
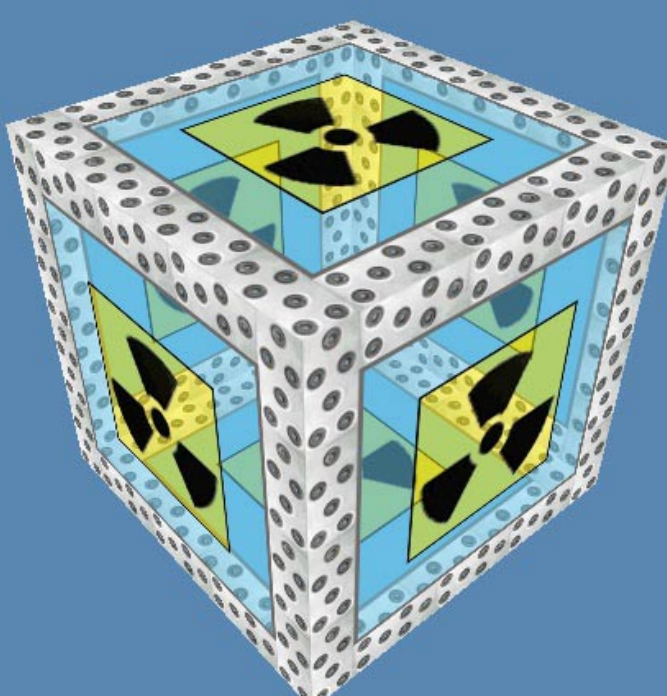
Demo:	ogl_alpha_blending_texture
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
        --------------------------------------------------------------------------
               Name: ogl_alpha_blending_texture.cpp
             Author: Kevin Harris (kevin@codesampler.com)
      Last Modified: 03/25/05
        Description: This sample demonstrates how to perform alpha blending using
                     the alpha channel of a standard .tga texture. For proper
                     alpha blending, the sample uses a cull-mode sorting trick
                     to ensure the sides of the textured cube get rendered in
                     back-to-front order.

       Control Keys: b - Toggle blending
                     s - Toggle usage of cull-mode sorting trick
                     Up Arrow - Move the test cube closer
                     Down Arrow - Move the test cube away
        --------------------------------------------------------------------------


     Original C++ code by Kevin Harris (kevin@codesampler.com)
     See www.codesampler.com for the original files
     OpenGL samples page 3: Alpha Texture Blending
     http://www.codesampler.com/oglsrc/oglsrc_3.htm#ogl_alpha_blending_texture

     Modified for Tcl3D by Paul Obermeier 2008/05/01
```
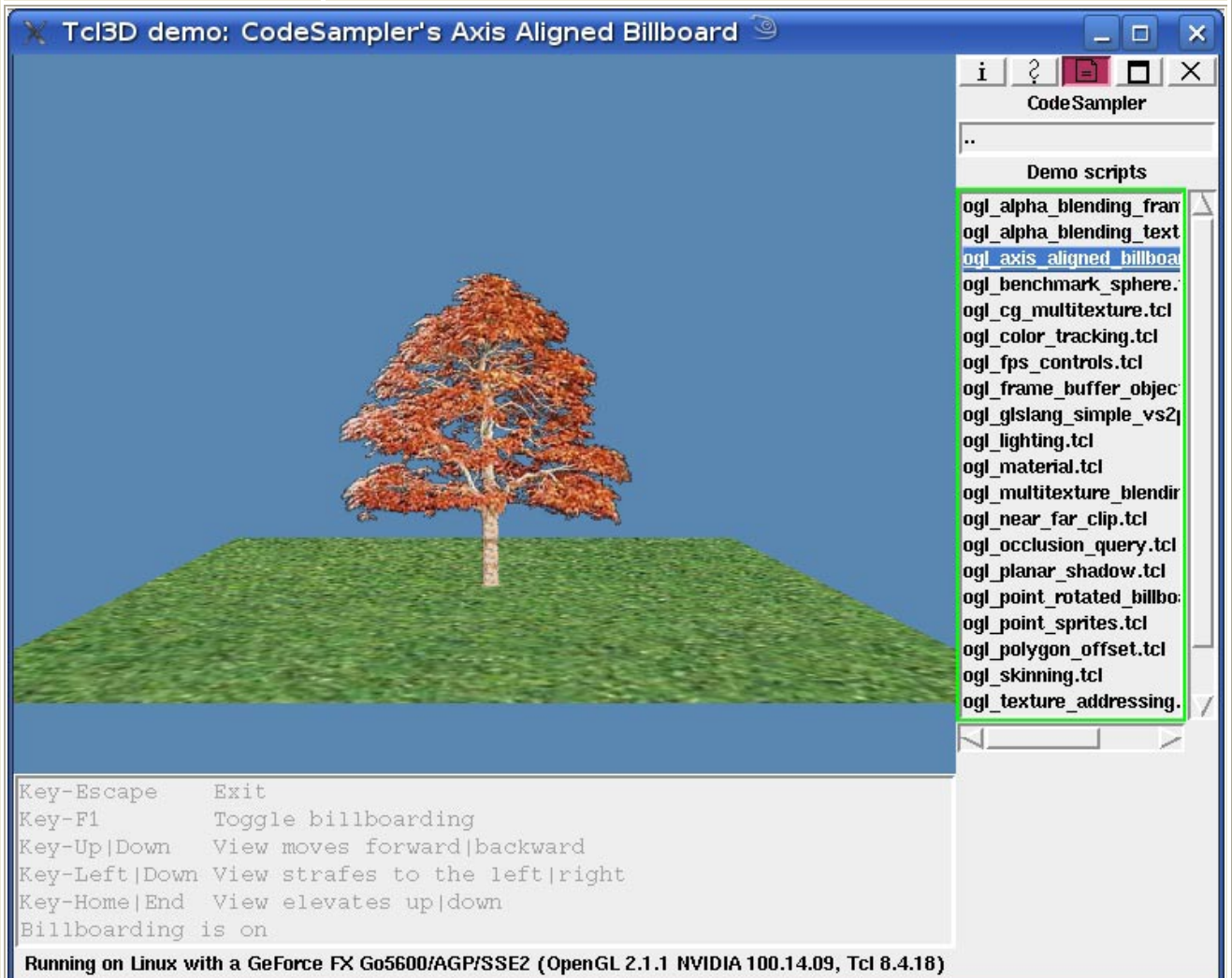
```
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	ogl_axis_aligned_billboard
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
------------------------------------------------------------------------
          Name: ogl_axis_aligned_billboard.cpp
        Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
   Description: An example of axis aligned billboarding.

  Control Keys: F1          - Toggle billboarding
                Up          - View moves forward
                Down        - View moves backward
                Left        - View strafes left
                Right       - View strafes Right
                Left Mouse  - Perform looking
                Mouse       - Look about the scene
------------------------------------------------------------------------


 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 8: Axis-Aligned Billboards


 Modified for Tcl3D by Paul Obermeier 2007/03/10
 See www.tcl3d.org for the Tcl3D extension.
```

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


```
--------------------------------------------------------------------------
          Name: ogl_benchmark_sphere.cpp
        Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 04/21/05
   Description: 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.

  Control Keys: Left Mouse Button - Spin the view.
                F1 - Decrease sphere precision.
                F2 - Increase sphere precision.
                F3 - Use Immediate mode
                F4 - Use a Display List
                F5 - Use a Vertex Array
                F6 - Perform Benchmarking
                F7 - Toggle wire-frame mode.
--------------------------------------------------------------------------


 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 9: Benchmarking Test App
```
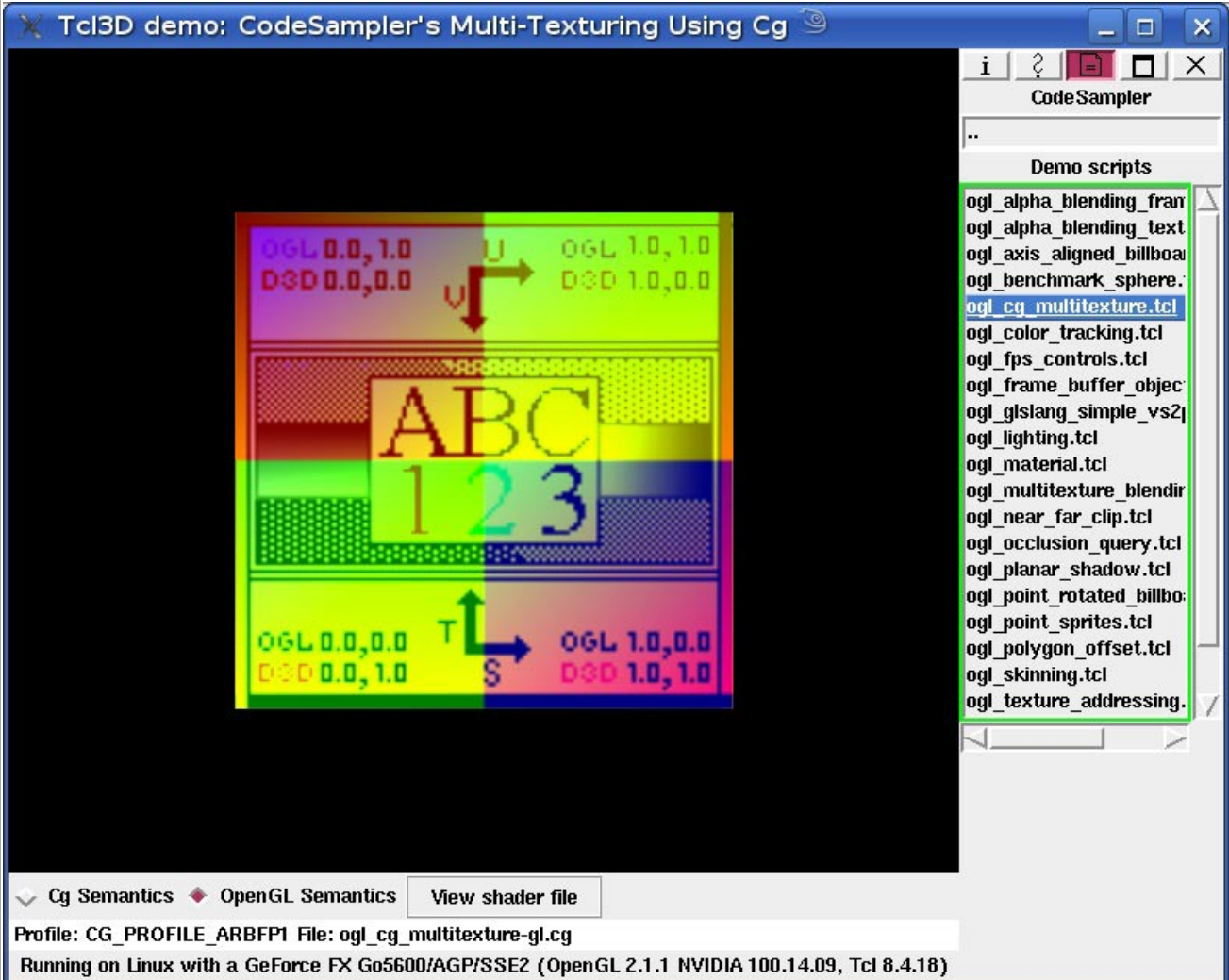
```
Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	ogl_cg_multitexture
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
--------------------------------------------------------------------------
          Name: ogl_cg_multitexture.cpp
        Author: Kevin Harris
 Last Modified: 04/26/05
   Description: This sample demonstrates how to blend two textures together
               with Cg using either OpenGL's native multi-texture support
               (using semantics) or by using Cg's special texture functions:
               cgGLSetTextureParameter, cgGLEnableTextureParameter, and
               cgGLDisableTextureParameter.
--------------------------------------------------------------------------

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 10: Multi-Texturing with Cg

 Modified for Tcl3D by Paul Obermeier 2007/05/22
 See www.tcl3d.org for the Tcl3D extension.

 The original demo has been extended with a little GUI to allow switching
 between the two call semantics at runtime.
 To visualize, that a different shader program is active,
 the OpenGL semantics shader adds only half of the checker image color.
```

Demo:	ogl_color_tracking
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

```
--------------------------------------------------------------------------
        Name: ogl_color_tracking.cpp
      Author: Kevin Harris (kevin@codesampler.com)
Last Modified: 04/28/05
 Description: This sample demonstrates color-tracking and two-sided
              lighting in OpenGL.

              Color tracking allows us to substitute the color of our
              vertices for one or more of the material colors used by
              OpenGL's lighting equation. This feature is typically not
              used much anymore as since modelers today use textures to
              color their geometry - not vertex colors. Of course, this
              technique is alive and kicking in a billion lines of legacy
              code so it's good to understand this technique just in case
              you run across it.

              Two-sided lighting basically means that we want OpenGL to
              light both sides of our geometry instead of just the front
              faces. Again, this feature is typically not used much
              anymore since it's very inefficient to light both sides of
              every triangle but there are some cases where this is
              helpful to know.
```

```
   Control Keys: c - Toggle between a material color or color tracking the
                     vertices
                 l - Toggle two-sided lighting
-----------------------------------------------------------------------------

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 5: Color Tracking and Two-Sided lighting
 http://www.codesampler.com/oglsrc/oglsrc_5.htm#ogl_color_tracking


 Modified for Tcl3D by Paul Obermeier 2008/05/01
 See www.tcl3d.org for the Tcl3D extension.
```

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


```
            ----------------------------------------------------------------
            Name: ogl_fps_controls.cpp
          Author: Kevin Harris (kevin@codesampler.com)
    Last Modified: 02/01/05
      Description: This sample demonstrates how to collect user input and
                  build a custom view matrix for First Person Shooter style
                  controls.


    Control Keys: Up          - View moves forward
                  Down        - View moves backward
                  Left        - View strafes left
                  Right       - View strafes Right
                  Left Mouse  - Perform looking
                  Mouse       - Look about the scene
                  Home        - View moves up
                  End         - View moves down
            ----------------------------------------------------------------


 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 5: First Person Shooter Controls
```
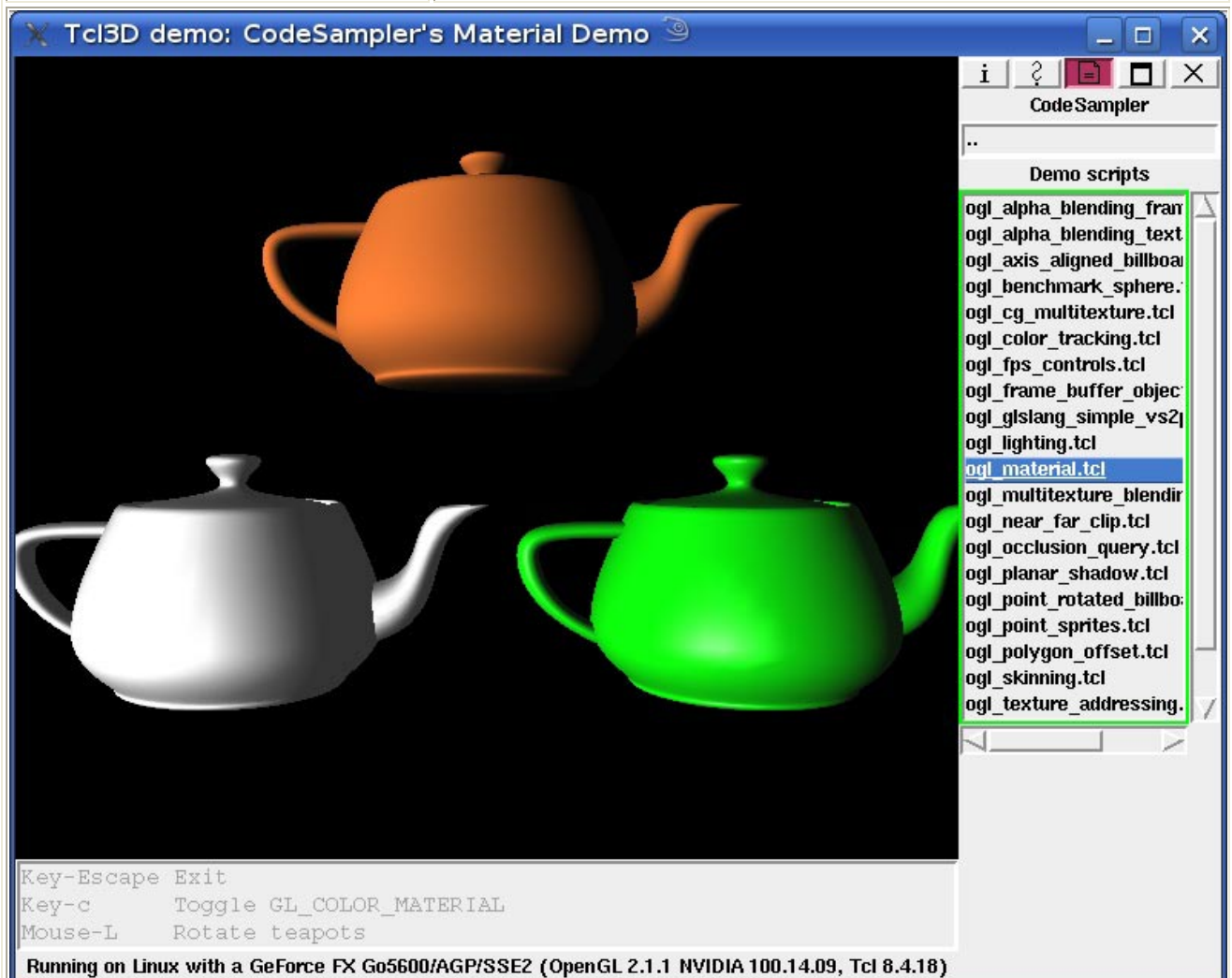
```
Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	ogl_frame_buffer_object
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
-----------------------------------------------------------------------------
          Name: ogl_frame_buffer_object.cpp
        Author: Kevin Harris  (kevin@codesampler.com)
 Last Modified: 07/06/05
   Description: This sample demonstrates how to create dynamic textures
               through off-screen rendering. The off-screen rendering step
               is accomplished using a frame-buffer and render-buffer
               object, which is created using OpenGL's
               EXT_framebuffer_object extension.

               As a demonstration, a spinning textured cube is rendered
               to a frame-buffer object, which is in turn, used to create a
               dynamic texture. The dynamic texture is then used to texture
               a second spinning cube, which will be rendered to the
               application's window.

   Control Keys: Left Mouse Button  - Spin the large, black cube.
                 Right Mouse Button - Spin the textured cube being rendered
                                      into the p-buffer.


 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

```
 Note: The EXT_framebuffer_object extension is an excellent replacement for
       the WGL_ARB_pbuffer and WGL_ARB_render_texture combo which is normally
       used to create dynamic textures. An example of this older technique
       can be found here:

       http://www.codesampler.com/oglsrc/oglsrc_7.htm#ogl_offscreen_rendering
-------------------------------------------------------------------------------

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 14: Off-screen Rendering Using Frame-Buffer Objects

 Modified for Tcl3D by Paul Obermeier 2007/02/25
 See www.tcl3d.org for the Tcl3D extension.
```

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


```
--------------------------------------------------------------------------
          Name: ogl_glslang_simple_vs2ps.cpp
        Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 04/21/05
   Description: This sample demonstrates how to write vertex and fragment
               shaders using OpenGL's new high-level shading language
               GLslang.

  Control Keys: F1 - Toggle usage of vertex and fragment shaders.

 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.
--------------------------------------------------------------------------


 Original C++ code by Kevin Harris (kevin@codesampler.com)
 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.
```

Demo:	ogl_lighting
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
            ----------------------------------------------------------------
                  Name: ogl_lighting.cpp
                Author: Kevin Harris (kevin@codesampler.com)
         Last Modified: 02/01/05
           Description: This sample demonstrates the three basic types of lights
                        that are available in OpenGL: directional, spot, and point.

           Control Keys: l - Changes the light's type
                         w - Toggles wire frame mode
            ----------------------------------------------------------------

         Original C++ code by Kevin Harris (kevin@codesampler.com)
         See www.codesampler.com for the original files
         OpenGL samples page 5: Lighting
         http://www.codesampler.com/oglsrc/oglsrc_5.htm#ogl_lighting

         Modified for Tcl3D by Paul Obermeier 2008/05/01
         See www.tcl3d.org for the Tcl3D extension.
```

Demo:	ogl_material
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
         --------------------------------------------------------------------------
                   Name: ogl_material.cpp
                 Author: Kevin Harris (kevin@codesampler.com)
          Last Modified: 04/28/05
            Description: This sample demonstrates how to use materials with lighting
                         to produce different surface effects.

            Control Keys: Left Mouse Button - Spin the view
         --------------------------------------------------------------------------

         Original C++ code by Kevin Harris (kevin@codesampler.com)
         See www.codesampler.com for the original files
         OpenGL samples page 5: Materials
         http://www.codesampler.com/oglsrc/oglsrc_5.htm#ogl_material

         Modified for Tcl3D by Paul Obermeier 2008/04/28
         See www.tcl3d.org for the Tcl3D extension.
```

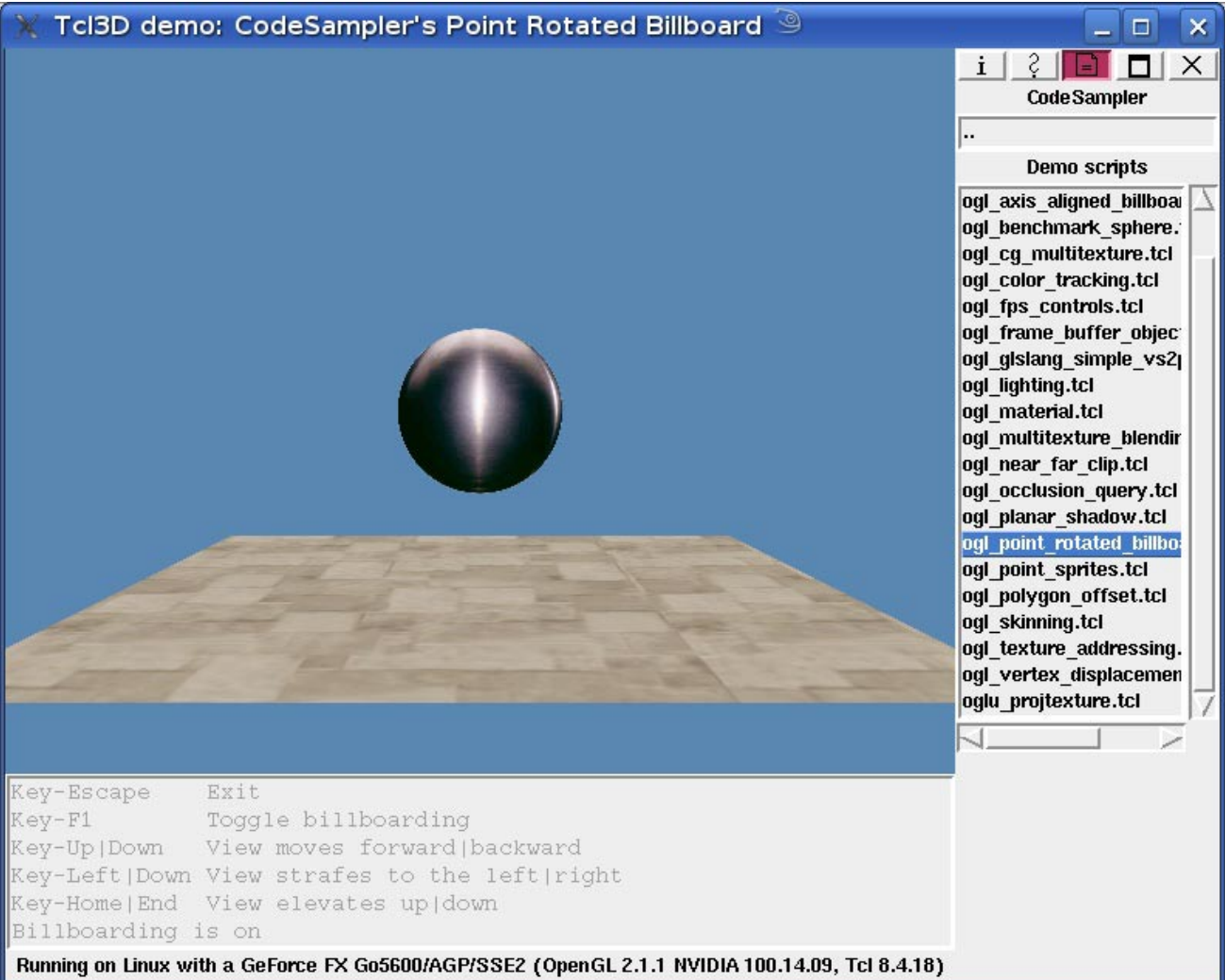| Demo:	ogl_multitexture_blending
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
--------------------------------------------------------------------------
        Name: ogl_multitexture_blending.cpp
      Author: Kevin Harris (kevin@codesampler.com)
Last Modified: 02/08/05
 Description: This sample demonstrates how to use the OpenGL extensions
             GL_ARB_multitexture and GL_ARB_texture_env_combine in
             conjunction with specially encoded vertex colors to blend
             three textures together.

             This technique is very popular in terrain rendering engines
             which use it to blend dramatically different textures such
             as rock and grass together with out creating a noticeable
             edge. For example, with three textures consisting of stone,
             grass, and sand you can render a mountain that blends in
             patches of grass and sand at its base.

             Of course, while this technique remains popular as a
             fall-back for older hardware, shaders make this task a lot
             easier and are quickly becoming the preferred method for
             terrain texture blending.

The technique basically consists of the following steps:
```

```
Step 1: Take the desired contribution of the three textures and encode them
        into the vertex's color such that the RGB portion of the color
        controls the interpolation between texture stages 0 and 1, and the
        color's ALPHA controls the interpolation between texture stages
        1 and 2.

Step 2: Use GL_ARB_multitexture to apply three textures simultaneously to
        our geometry.

Step 3: Set the first texture on texture stage 0.

Step 4: During texture stage 1, use GL_INTERPOLATE_ARB to linearly
        interpolate between the output of stage 0 and the texture of stage 1
        with GL_SRC_COLOR (i.e. the RGB part of the color).

Step 4: During texture stage 2, use GL_INTERPOLATE_ARB to linearly
        interpolate between the output of stage 1 and the texture of stage 2
        with GL_SRC_ALPHA (i.e. the ALPHA part of the color).

  Control Keys: F1   - Increase contribution of texture 0
                F2   - Decrease contribution of texture 0
                F3   - Increase contribution of texture 2
                F4   - Decrease contribution of texture 2
                F5   - Toggle wire-frame mode.
                Up   - View moves forward
                Down - View moves backward

Note: I tried to create an intuitive way to set the contribution of each
      texture at run-time using the function keys, but this system is still
      a little confusing since I only allow the contribution of texture 0
      and texture 2 to be adjusted. This is due to the fact that the
      equation for encoding the blending info into the vertex color simply
      infers the contribution value of texture 1 based on the values for
      textures 0 and 2. Therefore, the contribution value of texture 1 must
      be indirectly set by adjusting the contributions of textures 0 and 2.
---------------------------------------------------------------------------

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 4: Multi-Texture Blending

Modified for Tcl3D by Paul Obermeier 2007/03/10
See www.tcl3d.org for the Tcl3D extension.
```
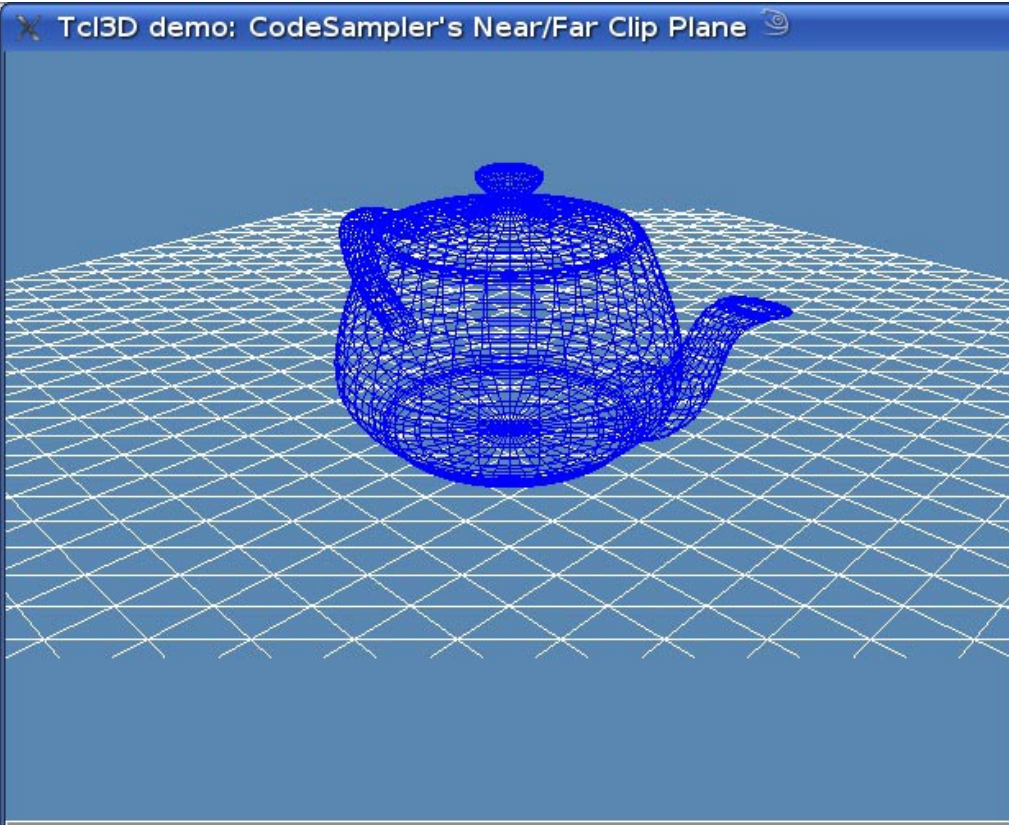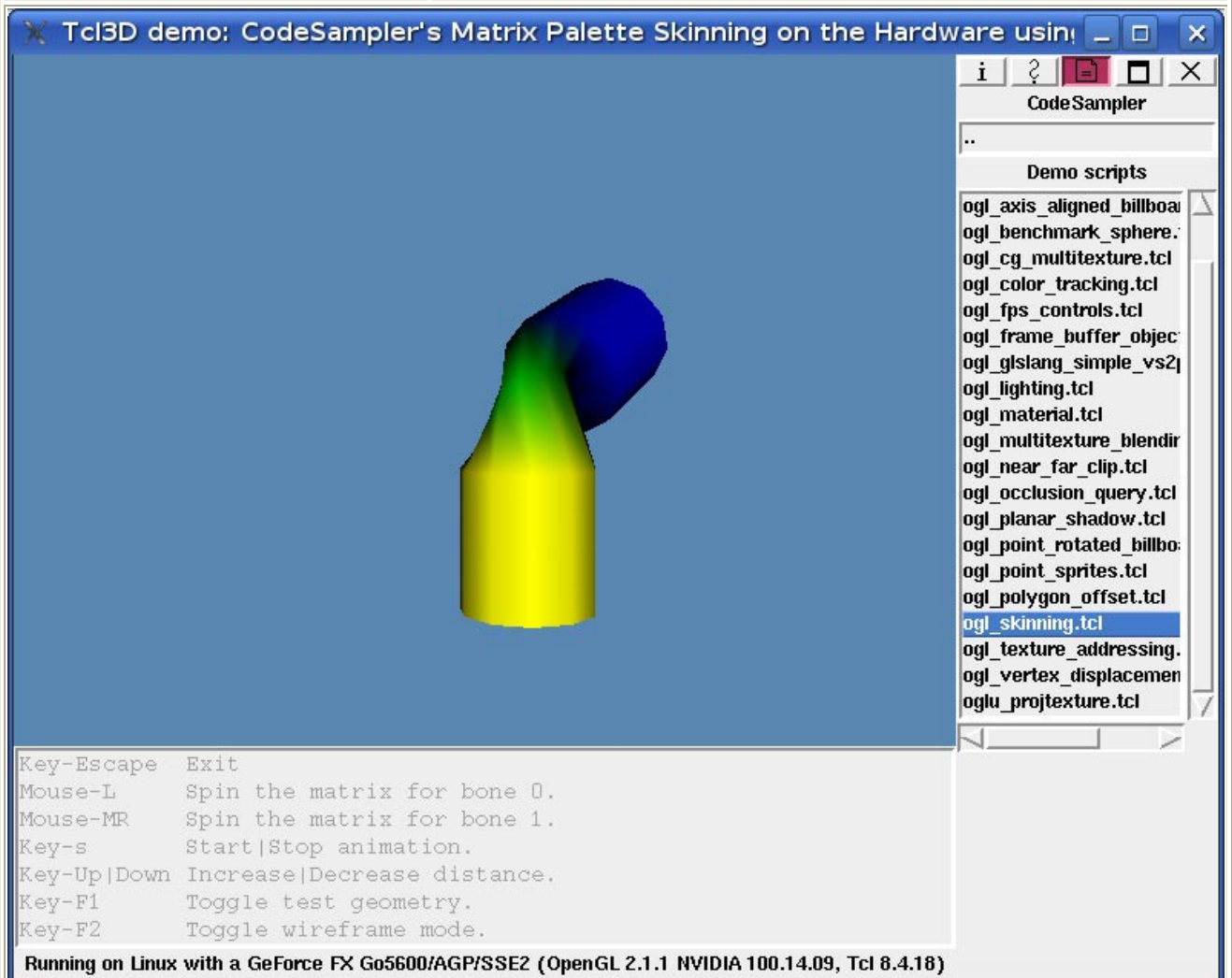
Demo:	ogl_near_far_clip
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
--------------------------------------------------------------------------
          Name: ogl_near_far_clip.cpp
        Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
   Description: This sample demonstrates how adjustments to OpenGL's
               near and far clip planes effect the view.

  Control Keys: Up          - View moves forward
                Down        - View moves backward
                Left        - View strafes left
                Right       - View strafes Right
                Left Mouse  - Perform looking
                Mouse       - Look about the scene

                F1          - Increase near clip value
                F2          - Decrease near clip value
                F3          - Increase far clip value
                F4          - Decrease far clip value
--------------------------------------------------------------------------

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
```

```
OpenGL samples page 2: Near/Far Clipping Plane

Modified for Tcl3D by Paul Obermeier 2007/03/10
See www.tcl3d.org for the Tcl3D extension.
```

Demo:	ogl_occlusion_query
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents
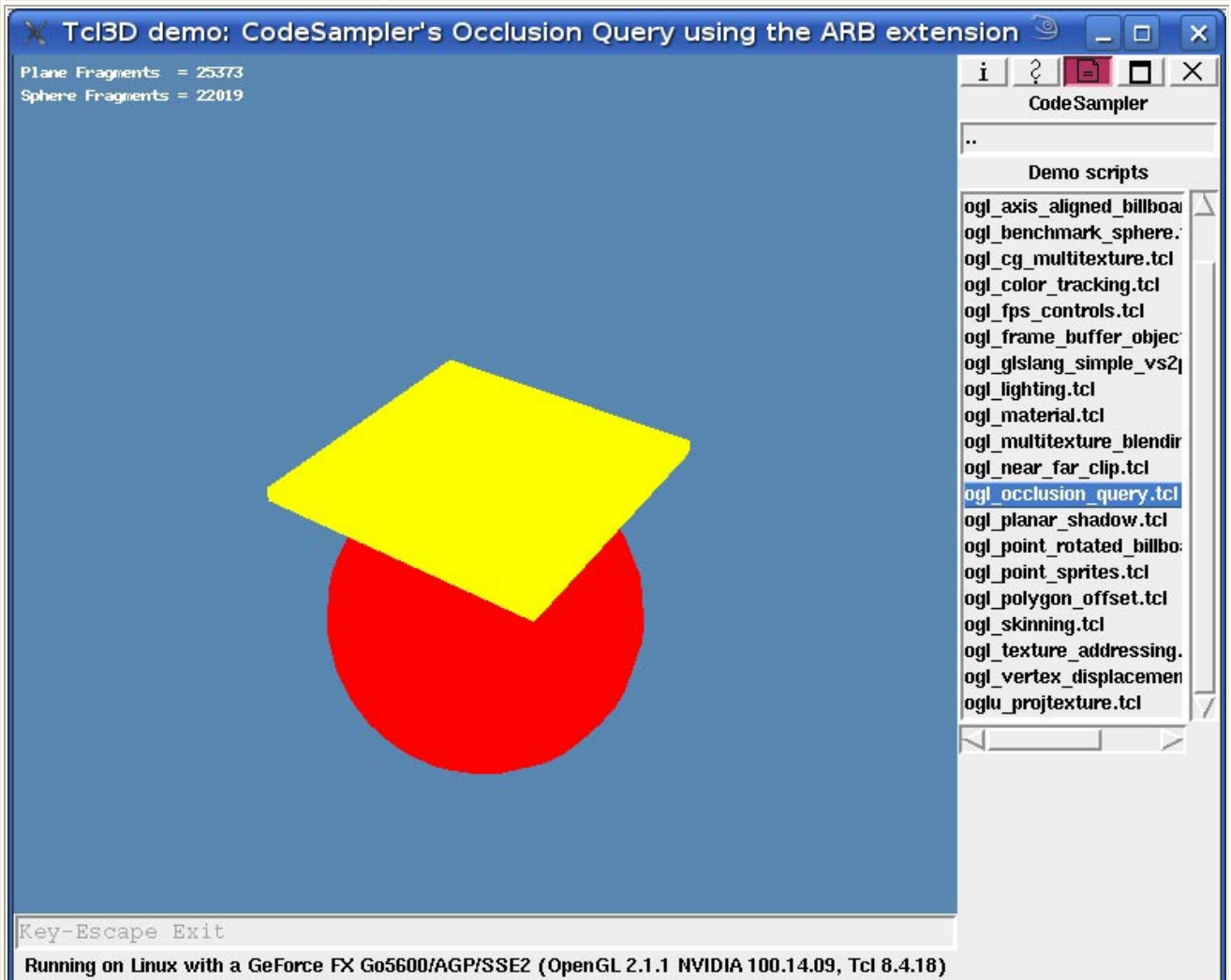

```
        ------------------------------------------------------------------------
               Name: ogl_occlusion_query_arb.cpp
             Author: Kevin Harris (kevin@codesampler.com)
      Last Modified: 02/01/05
        Description: This sample demonstrates how to use OpenGL's new extension,
                     ARB_occlusion_query and NV_occlusion_query.

       Control Keys: Left Mouse Button - Spin the view
        ------------------------------------------------------------------------

     Original C++ code by Kevin Harris (kevin@codesampler.com)
     See www.codesampler.com for the original files
     OpenGL samples page 7: Occlusion Query

     Modified for Tcl3D by Paul Obermeier 2007/03/10
     See www.tcl3d.org for the Tcl3D extension.

     This sample integrates ARB_occlusion_query and NV_occlusion_qeury code into one
    file.
     If called with no command line arguments, it uses the ARB_occlusion_query
    extension.
     Use "nv" as parameter to use the NV_occlusion_query extension.
```
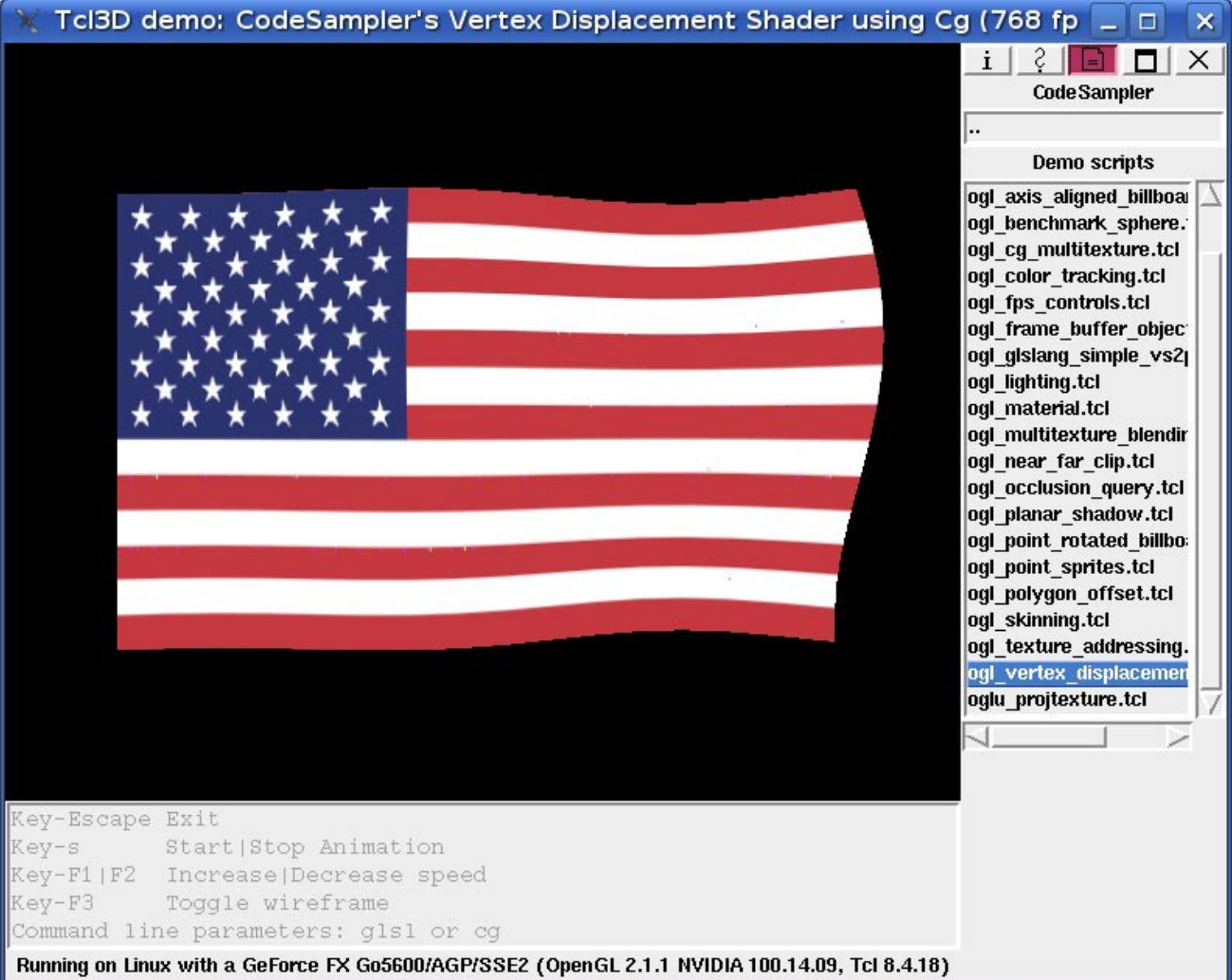
Demo:	ogl_planar_shadow
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
      ---------------------------------------------------------------------------
              Name: ogl_planar_shadow.cpp
            Author: Kevin Harris (kevin@codesampler.com)
     Last Modified: 02/01/05
       Description: This sample demonstrates how to create planar shadows under
                   OpenGL.

                   Planar shadows are created by building a special projection
                   matrix which flattens an object's geometry into a plane when
                   rendered.

                   If the plane, which the geometry is flattened into, matches
                   up with another planar surface like a floor or a wall, the
                   flattened geometry can be made to resemble a shadow on that
                   surface.

      Control Keys: Up    - Light moves up
                    Down  - Light moves down
                    Left  - Light moves left
                    Right - Light moves right

                    Left Mouse Button  - Spin the view
```

```
                    Right Mouse Button - Spin the teapot
--------------------------------------------------------------------------

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 7: Planar Shadows
 http://www.codesampler.com/oglsrc/oglsrc_7.htm#ogl_planar_shadow

 Modified for Tcl3D by Paul Obermeier 2008/05/02
 See www.tcl3d.org for the Tcl3D extension.
```

Demo:	ogl_point_rotated_billboard
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
----------------------------------------------------------------------
          Name: ogl_point_rotated_billboard.cpp
        Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
   Description: An example of point rotated billboarding.

  Control Keys: F1          - Toggle billboarding
                Up          - View moves forward
                Down        - View moves backward
                Left        - View strafes left
                Right       - View strafes Right
                Left Mouse  - Perform looking
                Mouse       - Look about the scene
----------------------------------------------------------------------


 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 8: Point-Rotated Billboards


 Modified for Tcl3D by Paul Obermeier 2007/03/10
 See www.tcl3d.org for the Tcl3D extension.
```

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


```
--------------------------------------------------------------------------
         Name: ogl_point_sprites.cpp
       Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
   Description: This sample demonstrates how to create point sprites
                using OpenGL's new 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)
 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_polygon_offset
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
--------------------------------------------------------------------------
          Name: ogl_polygon_offset.cpp
        Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
   Description: This sample demonstrates how to eliminate z-fighting when
               rendering polygons directly on top of other polygons.

  Control Keys: Left Mouse Button - Spin the view
                F1 - Increase Offset Factor
                F2 - Decrease Offset Factor
                F3 - Increase Offset Unit
                F4 - Decrease Offset Unit
--------------------------------------------------------------------------


 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 5: Polygon Offset

 Modified for Tcl3D by Paul Obermeier 2007/03/05
 See www.tcl3d.org for the Tcl3D extension.

 See http://www.opengl.org/sdk/docs/man/xhtml/glPolygonOffset.xml
```

```
for the glPolygonOffset command.
```

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


```
    --------------------------------------------------------------------------
            Name: ogl_cg_skinning.cpp ogl_glslang_skinning.cpp
          Author: Kevin Harris (kevin@codesampler.com)
   Last Modified: 04/28/05
     Description: 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.

                  Special thanks go out to Cyril Zeller, and Matthias Wloka
                  of nVIDIA for their help in straightening out a few oddities
                  that my sample was suffering from. In short, Cg works fine
                  and I'm occasionally a big dummy! ;)

    Control Keys: Left Mouse Button  - Spin the matrix for bone0.
                  Right Mouse Button - Spin the matrix for bone1.

                  F1 - Toggle test geometry between a cylinder and a simple
                       grouping of 3 quads.
                  F2 - Toggle wire-frame mode
    --------------------------------------------------------------------------
```

```
Original C++ code by Kevin Harris (kevin@codesampler.com)
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 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.
```
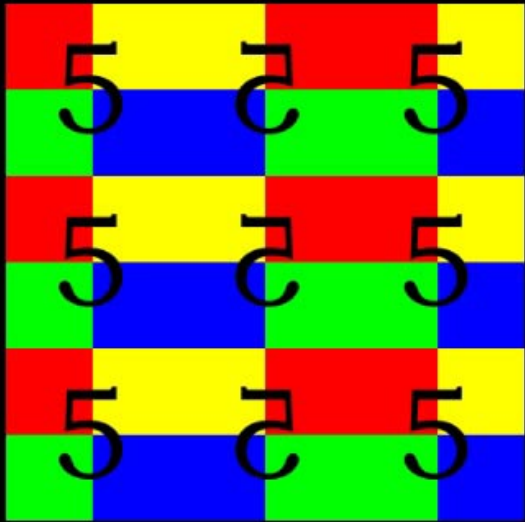
Demo:	ogl_texture_addressing
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents


```
        -------------------------------------------------------------------------
                 Name: ogl_texture_addressing.cpp
               Author: Kevin Harris (kevin@codesampler.com)
        Last Modified: 02/01/05
          Description: This sample demonstrates the two methods of texture
                       addressing that are available under OpenGL:

                       GL_REPEAT
                       GL_CLAMP
                       GL_MIRRORED_REPEAT_ARB ( GL_ARB_texture_mirrored_repeat )
                       GL_CLAMP_TO_BORDER_ARB ( GL_ARB_texture_border_clamp )
                       GL_CLAMP_TO_EDGE       ( GL_SGIS_texture_edge_clamp )

         Control Keys: F1 - Changes addressing method for the S coordinates
                       F2 - Changes addressing method for the T coordinates
        -------------------------------------------------------------------------

        Original C++ code by Kevin Harris (kevin@codesampler.com)
        See www.codesampler.com for the original files
        OpenGL samples page 3: Texture Addressing

        Modified for Tcl3D by Paul Obermeier 2007/03/06
```

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

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


```
        --------------------------------------------------------------------------
                Name: ogl_cg_vertex_displacement.cpp
                      ogl_glslang_vertex_displacement.cpp
              Author: Kevin Harris (kevin@codesampler.com)
       Last Modified: 04/21/05
         Description: This sample demonstrates how to perform mesh deformation or
                      vertex displacement with OpenGL using a Cg or GLSL shader.

        Control Keys: F1 - Increase flag motion
                      F2 - Decrease flag motion
                      F3 - Toggle wire-frame mode
        --------------------------------------------------------------------------

  Original C++ code by Kevin Harris (kevin@codesampler.com)
  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.
```
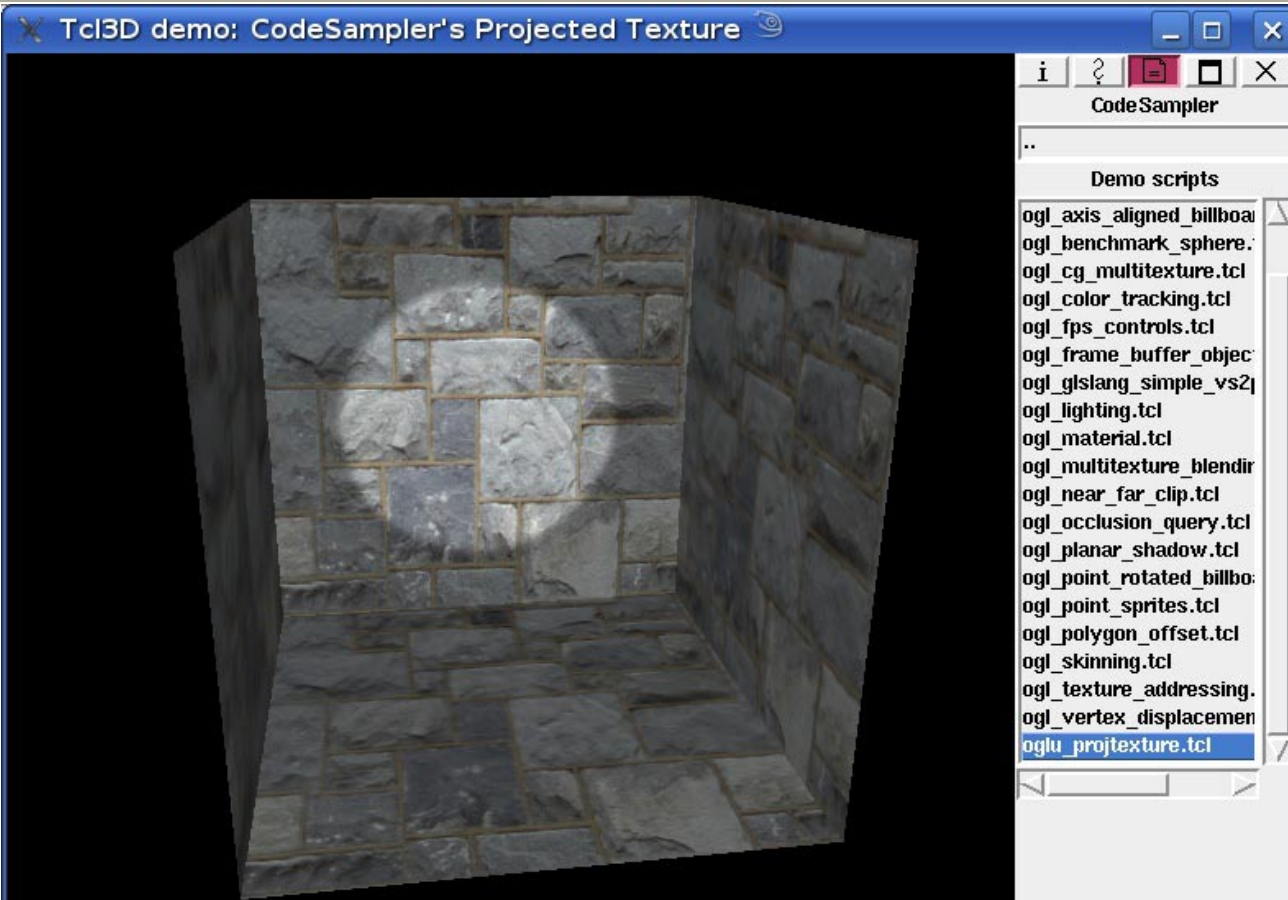
```
Use "glsl" as parameter to use the GLSL shader.
```

Demo:	oglu_projtexture
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

 This program demonstrates how one would go about doing a projected texture.
 The sample here shows how a projected texture technique can be used to produce a light map.
 The point is that even though you have very few vertices available for the fixed function
 pipeline lighting solution, you can achieve nice per pixel lighting even though the surface
 has only a handful of vertices.
 This sample draws a cube, only allowing the inside being visible via culling front facing polys,
 and then projects the light map texture on the second texture stage all through the fixed
 function pipeline.
 The left mouse button will move the cube around and the right mouse button will move the
 projected # light map around.
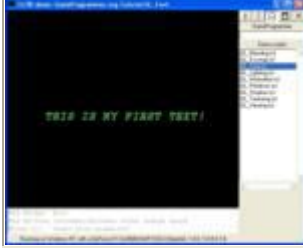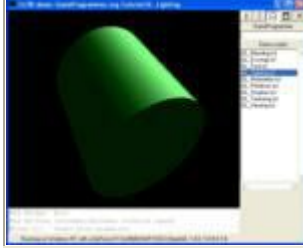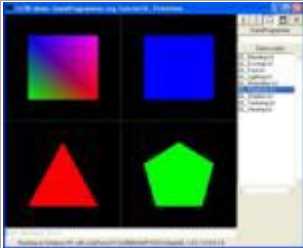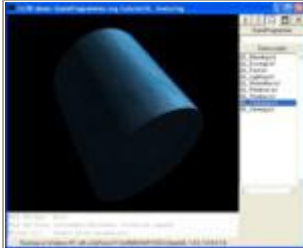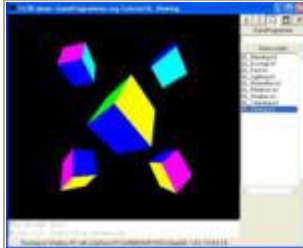
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents

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

Available demos

GL_Blending	GL_Envmap	GL_Font	GL_Lighting	GL_Mo
GL_Primitives	GL_Shadow	GL_Texturing	GL_Viewing	

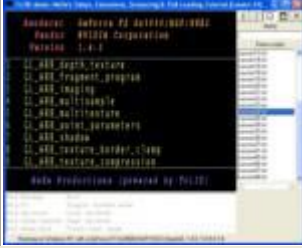| Demo:	GL_Blending
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents
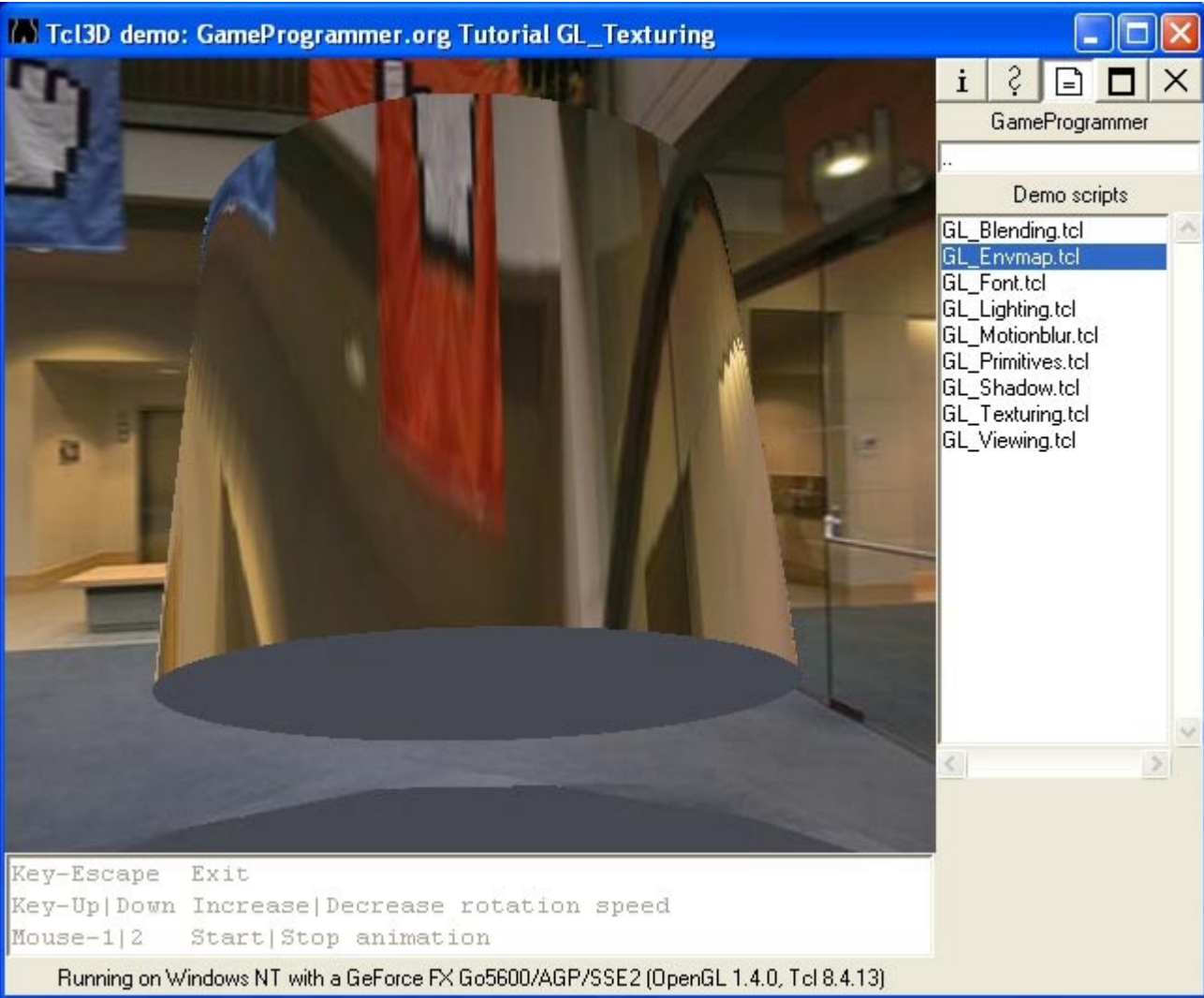

```
GL_Blending.tcl

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.
```
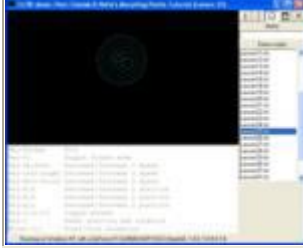
Demo:	GL_Envmap
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents
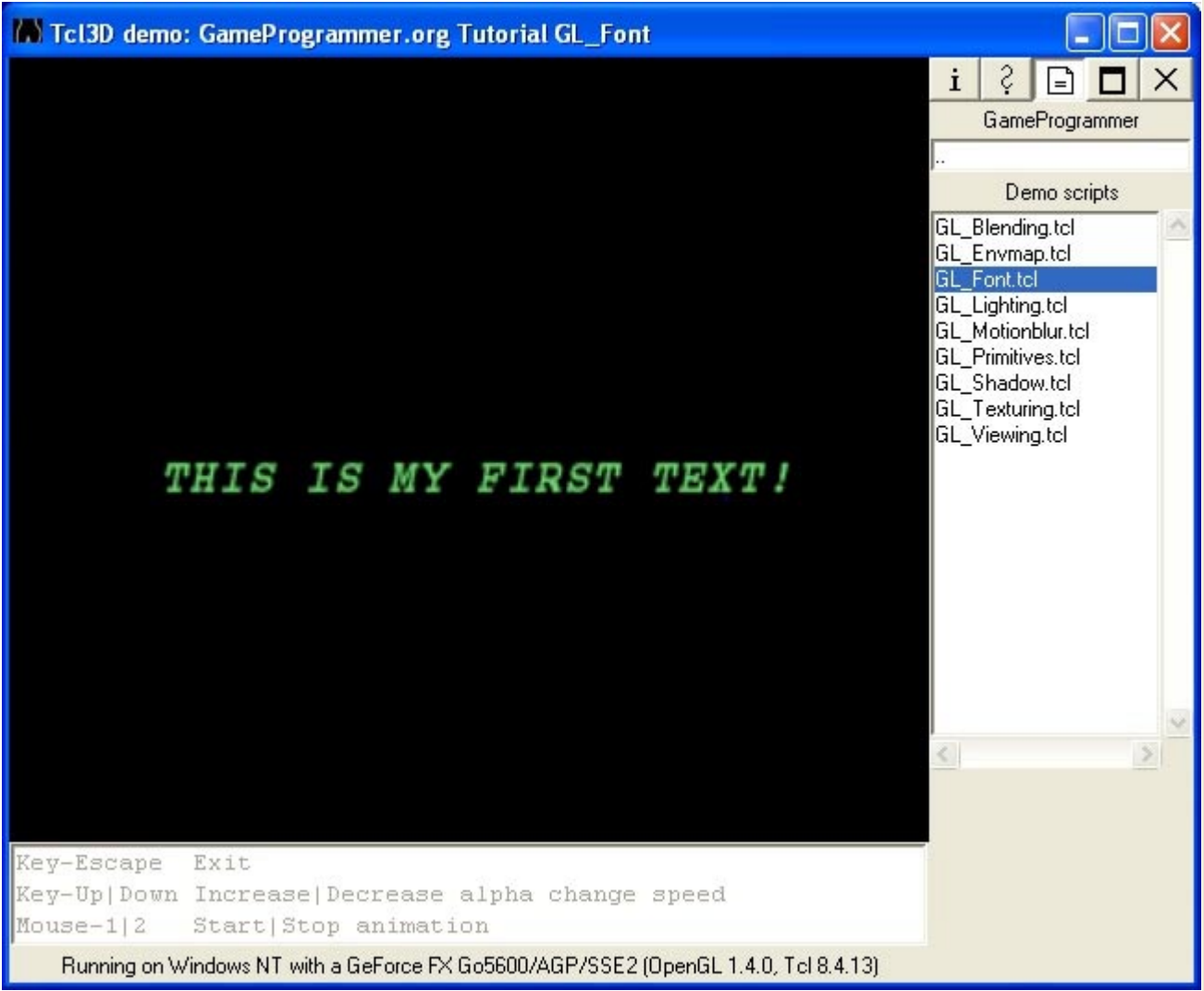

```
GL_Texturing.tcl

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.
```
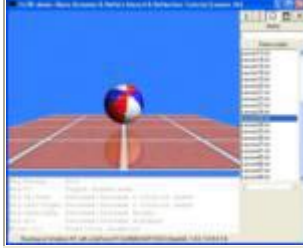
Demo:	GL_Font
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents
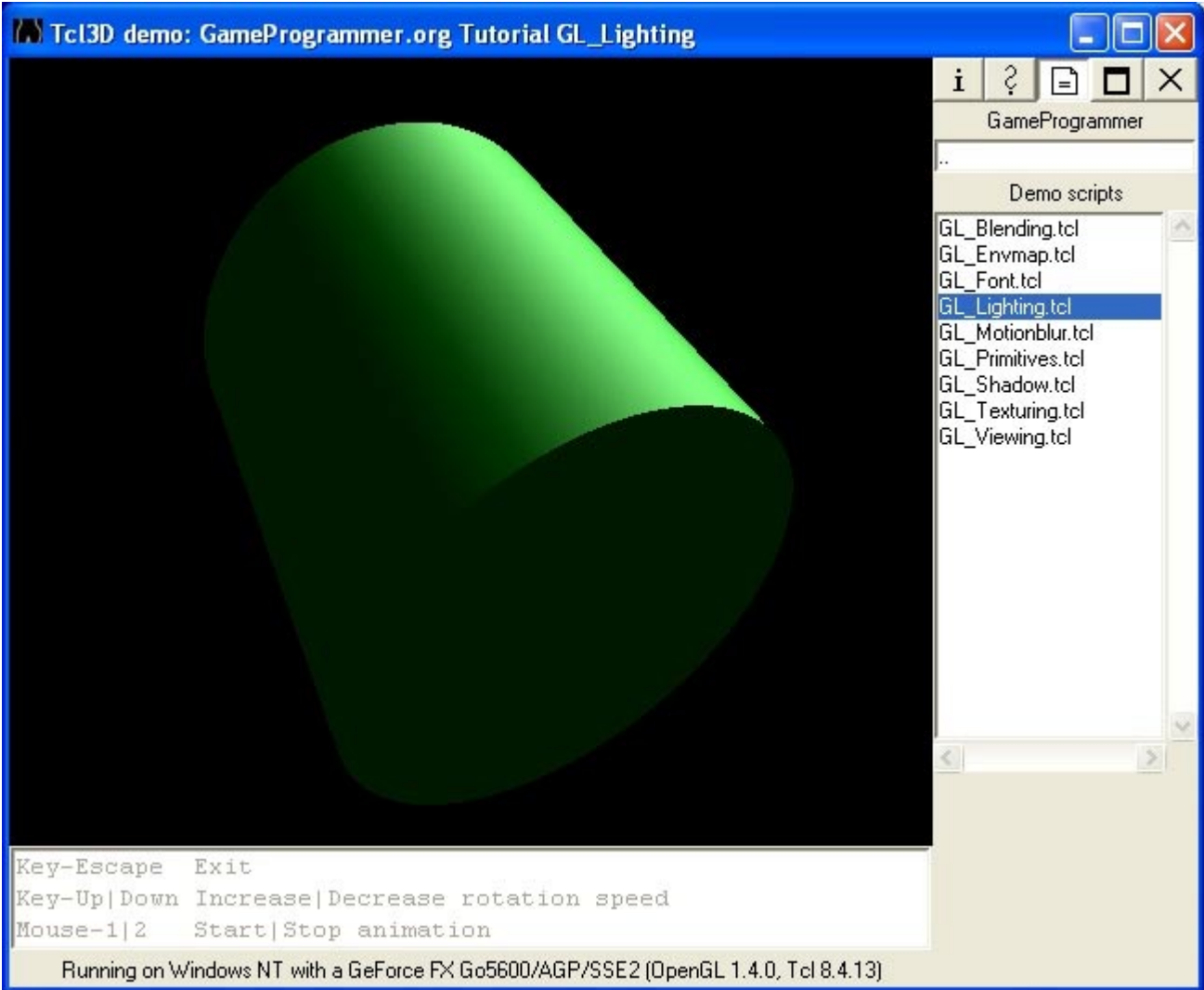

```
GL_Font.tcl

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.
```
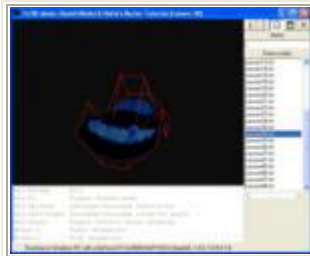
Demo:	GL_Lighting
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents
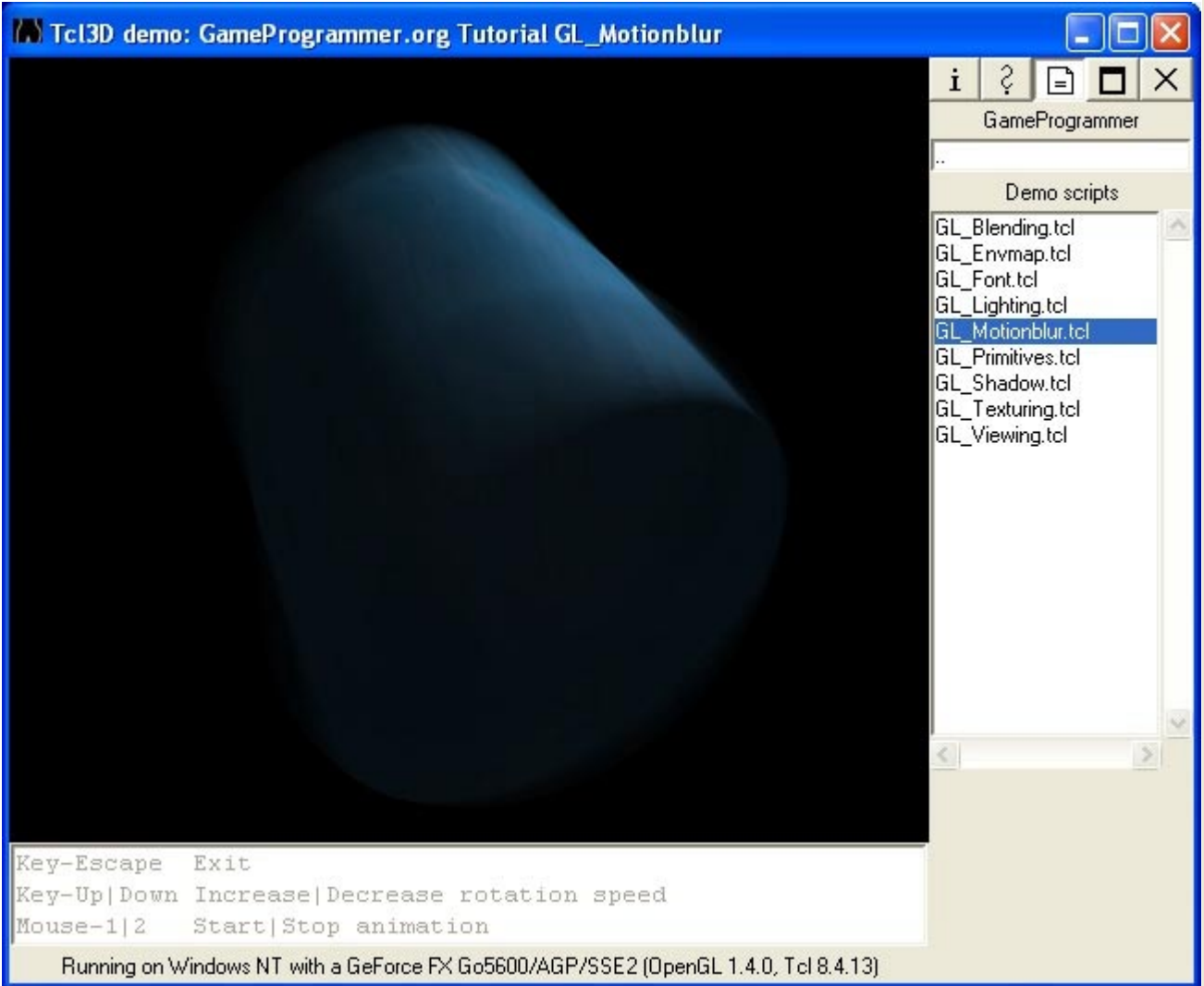

```
GL_Lighting.tcl

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

Original code Copyright 2006 by Vahid Kazemi

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
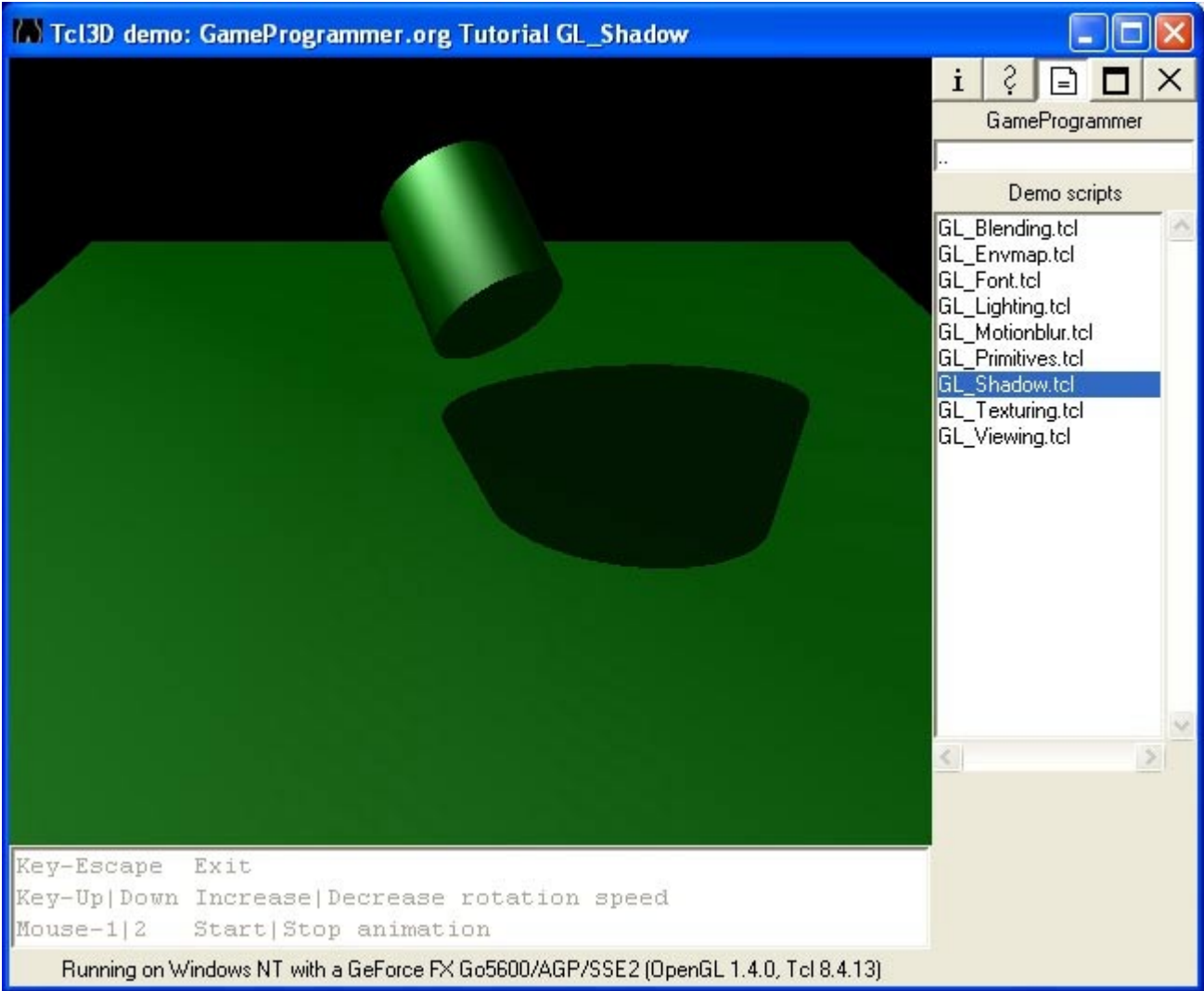

```
GL_Primitives.tcl

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
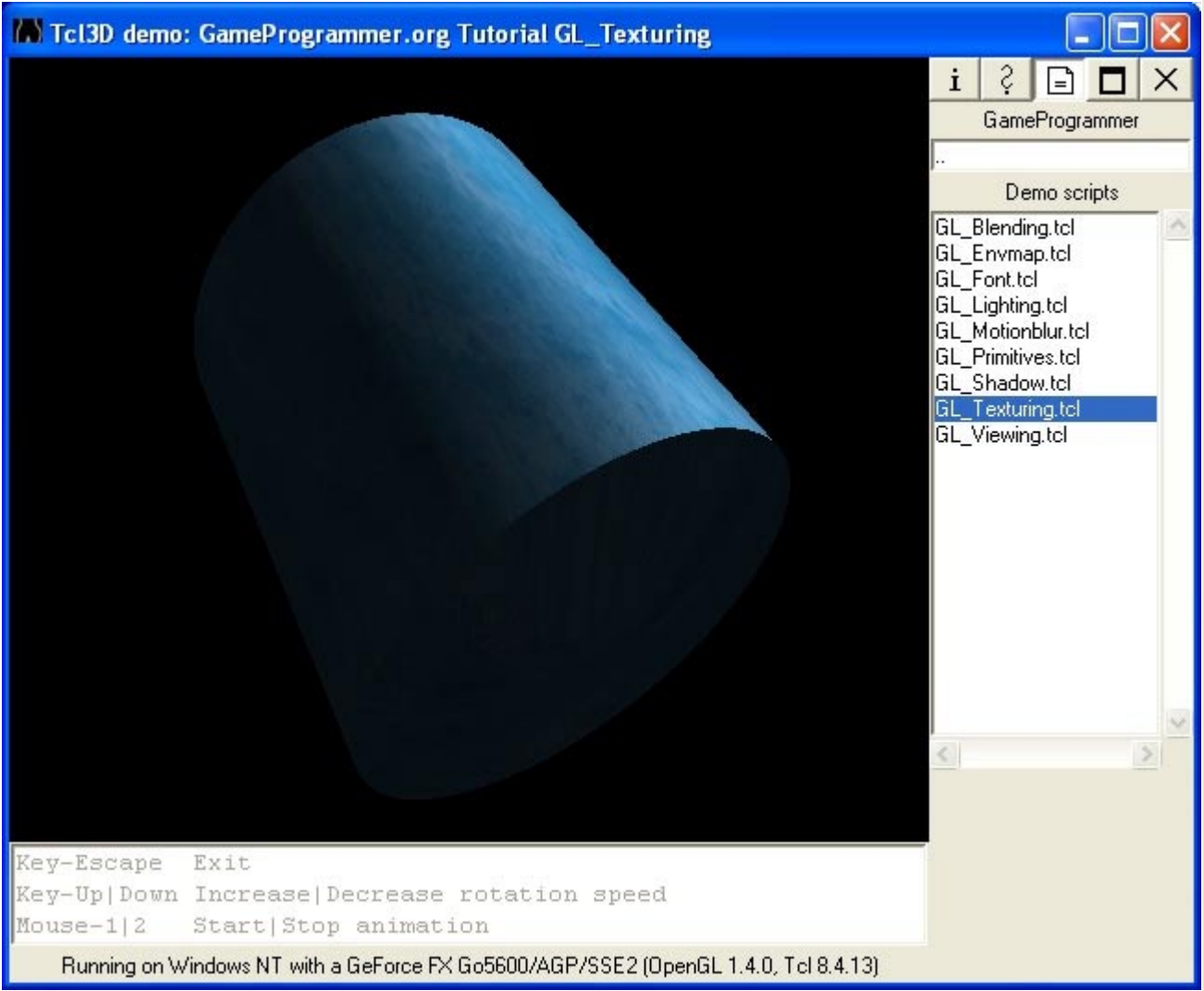

```
GL_Shadow.tcl

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
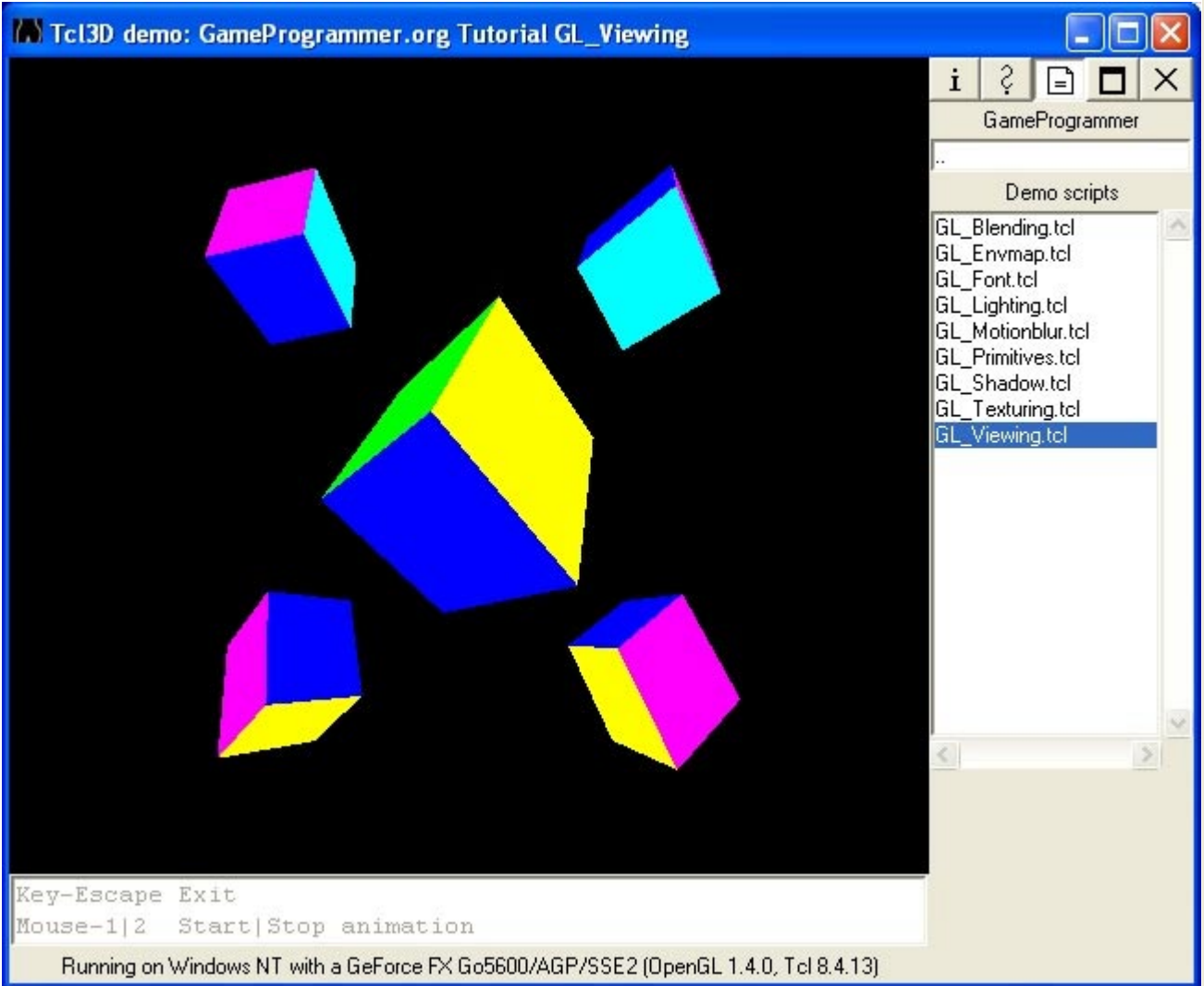

```
GL_Texturing.tcl

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.
```
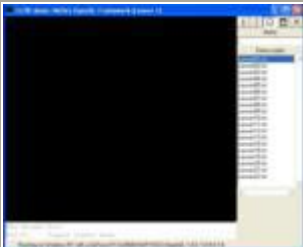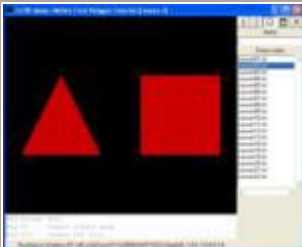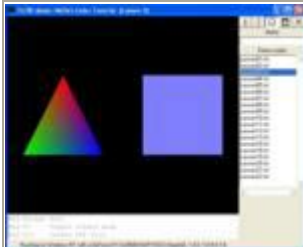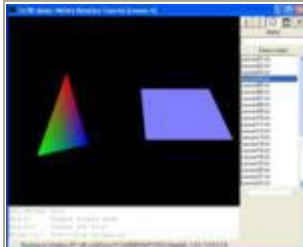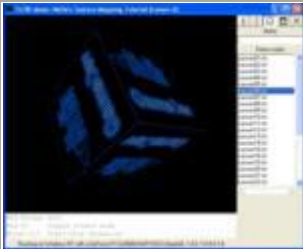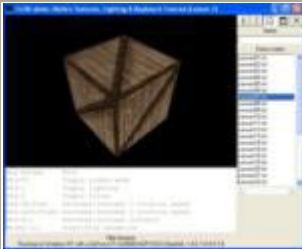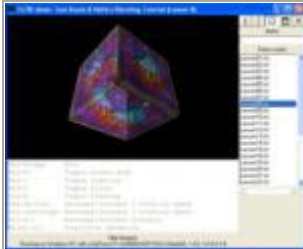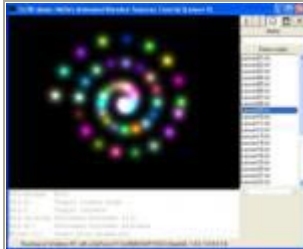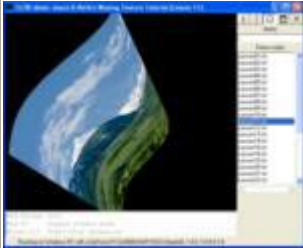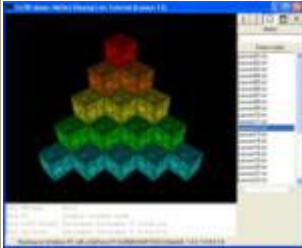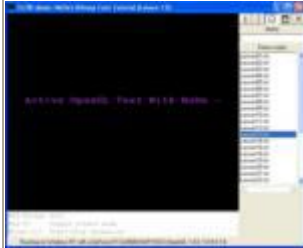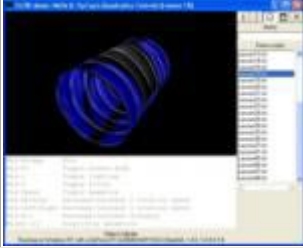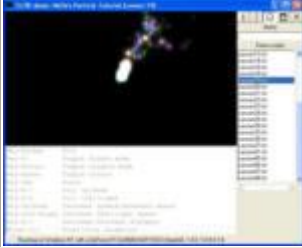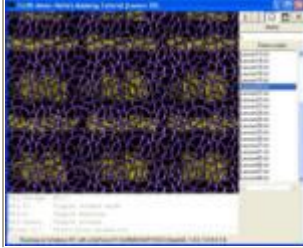
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Some of the NeHe OpenGL tutorials have been ported to run with Tcl3D. Currently 34 out of 48 lessons are a
Original sources available at: http://nehe.gamedev.net/

Available demos				
Lesson01	Lesson02	Lesson03	Lesson04	Less
Lesson06	Lesson07	Lesson08	Lesson09	Less
Lesson11	Lesson12	Lesson13	Lesson14	Less
Lesson18	Lesson19	Lesson20	Lesson21	Less
Lesson23	Lesson24	Lesson25	Lesson26	Less
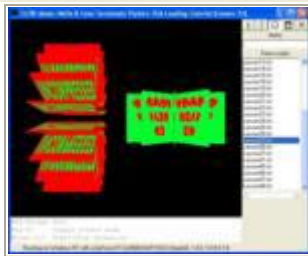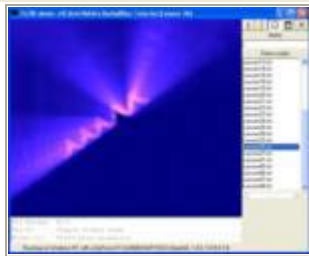
[Lesson28](#)	[Lesson33](#)	[Lesson36](#)	[Lesson37](#)	[Less
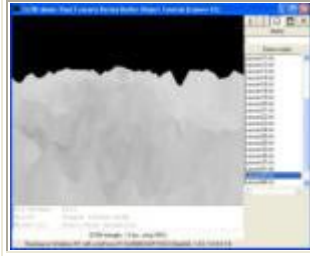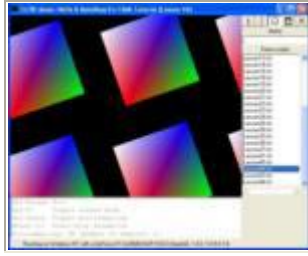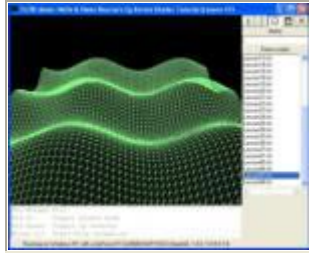
[Lesson45](#)	[Lesson46](#)	[Lesson47](#)	[Lesson48](#)
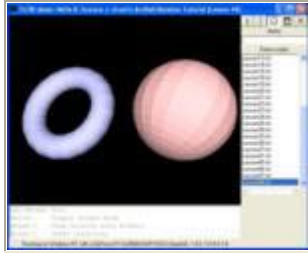
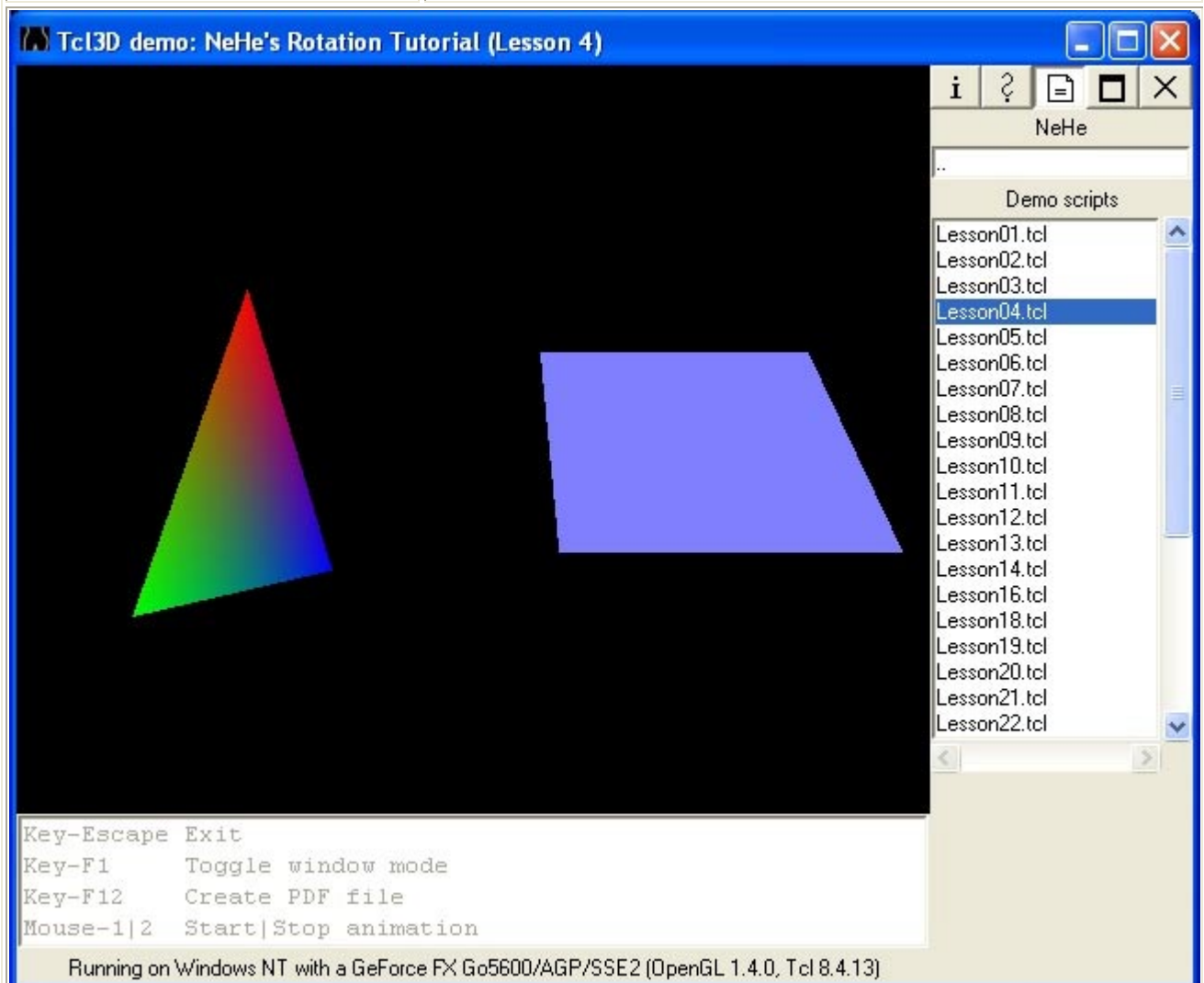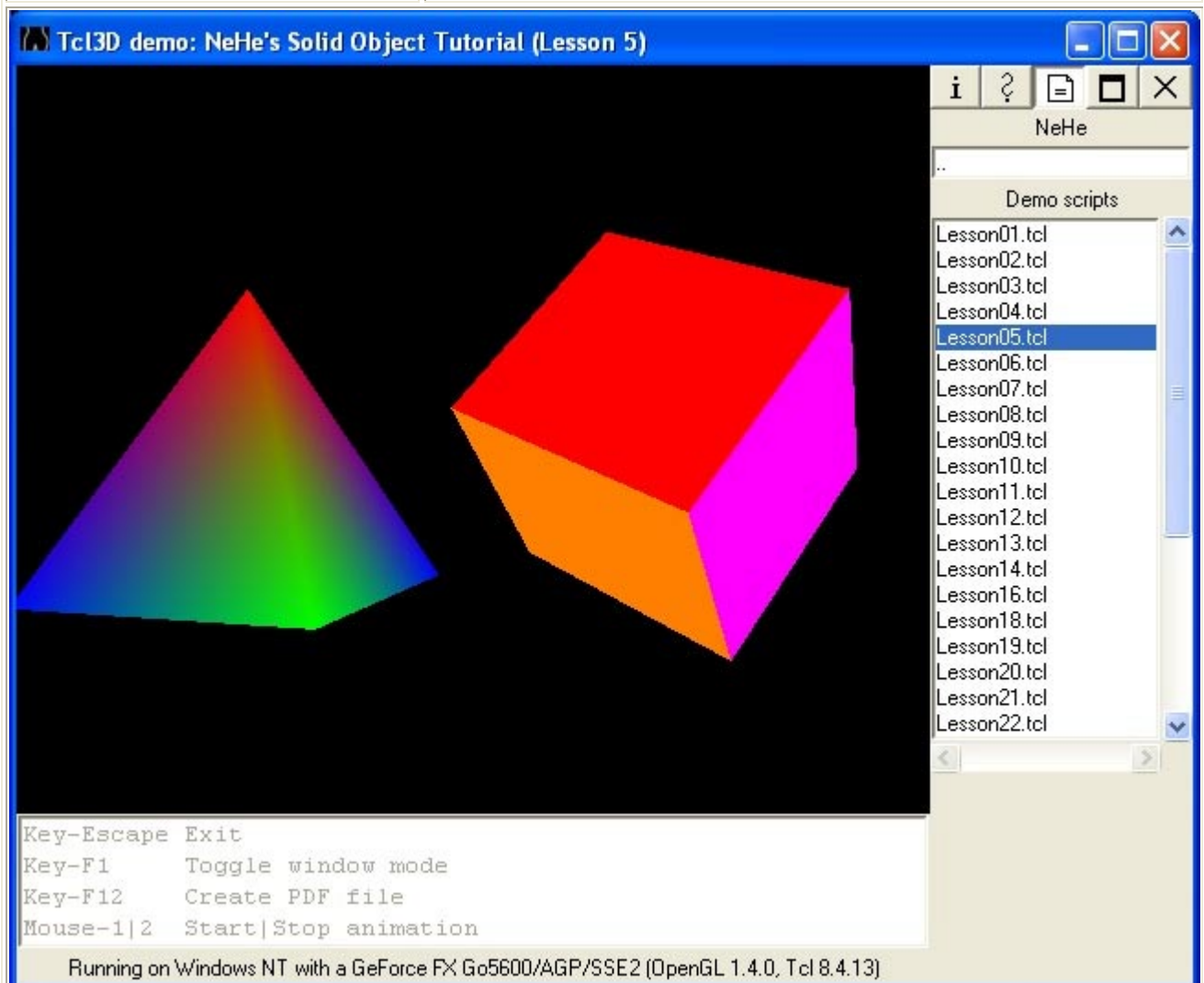| **Demo:**	**Lesson01**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents
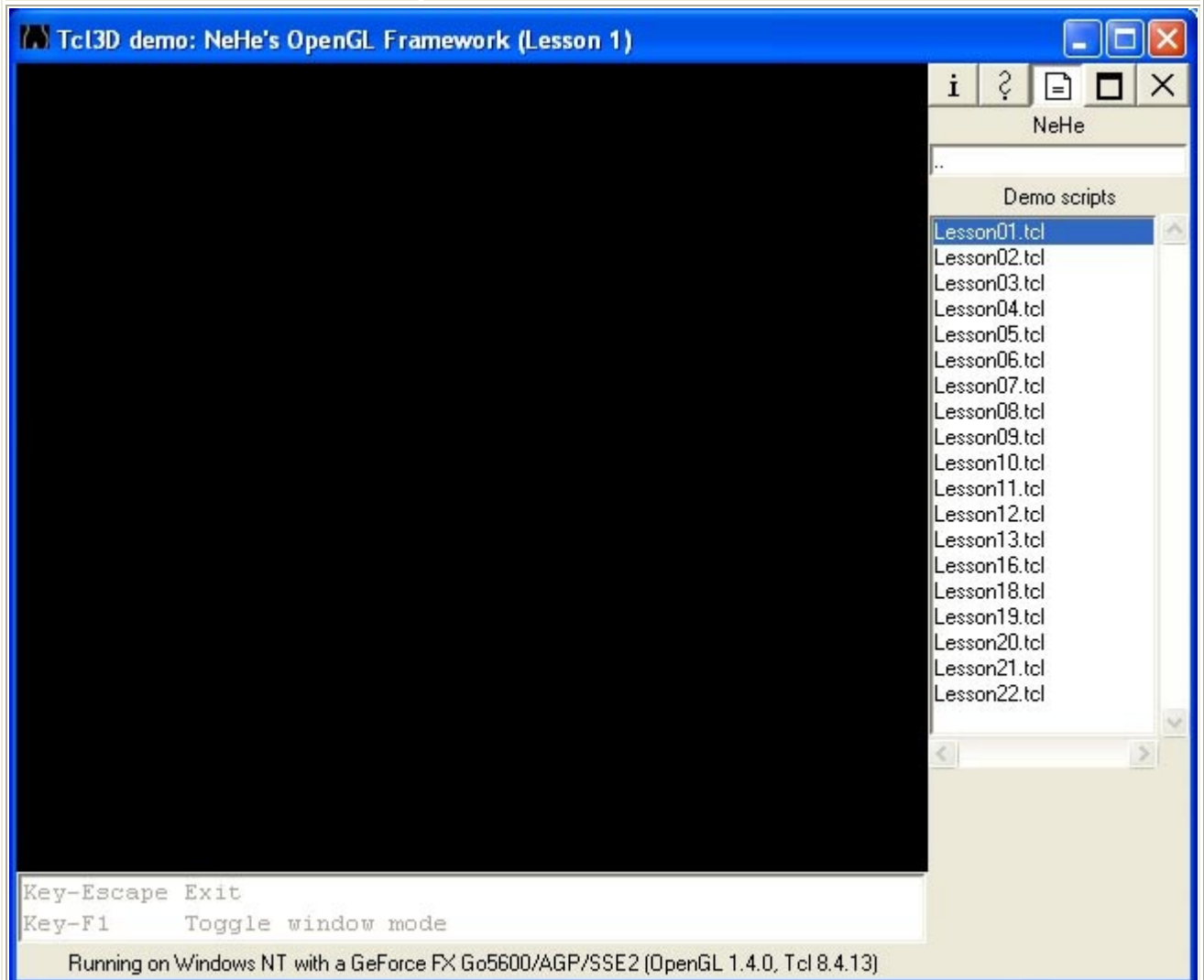

```
Lesson01.tcl

NeHe's OpenGL Framework

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.
```

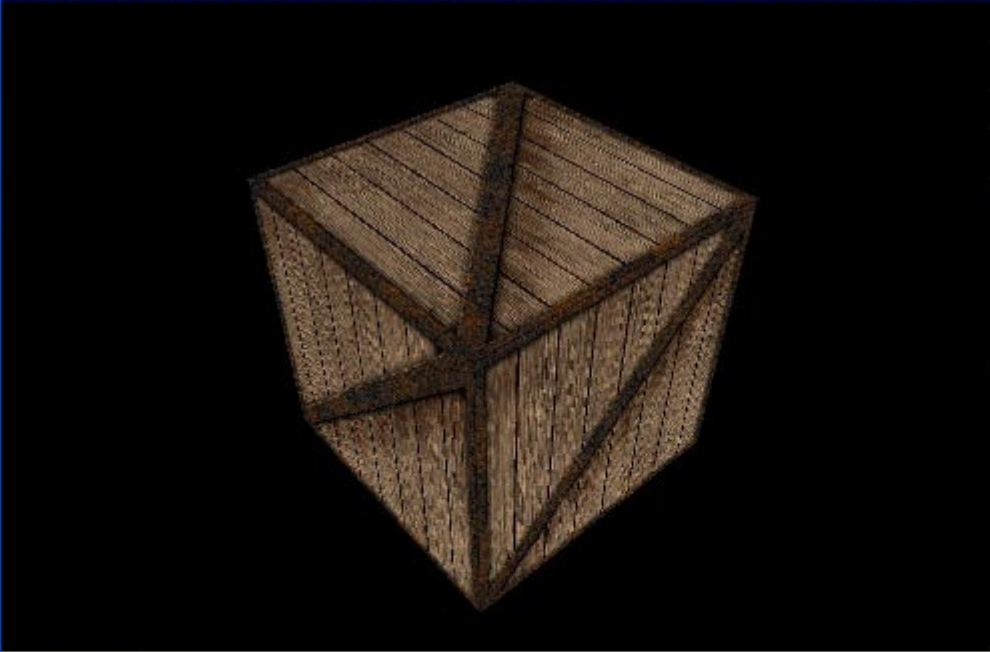| Demo:	Lesson02
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents
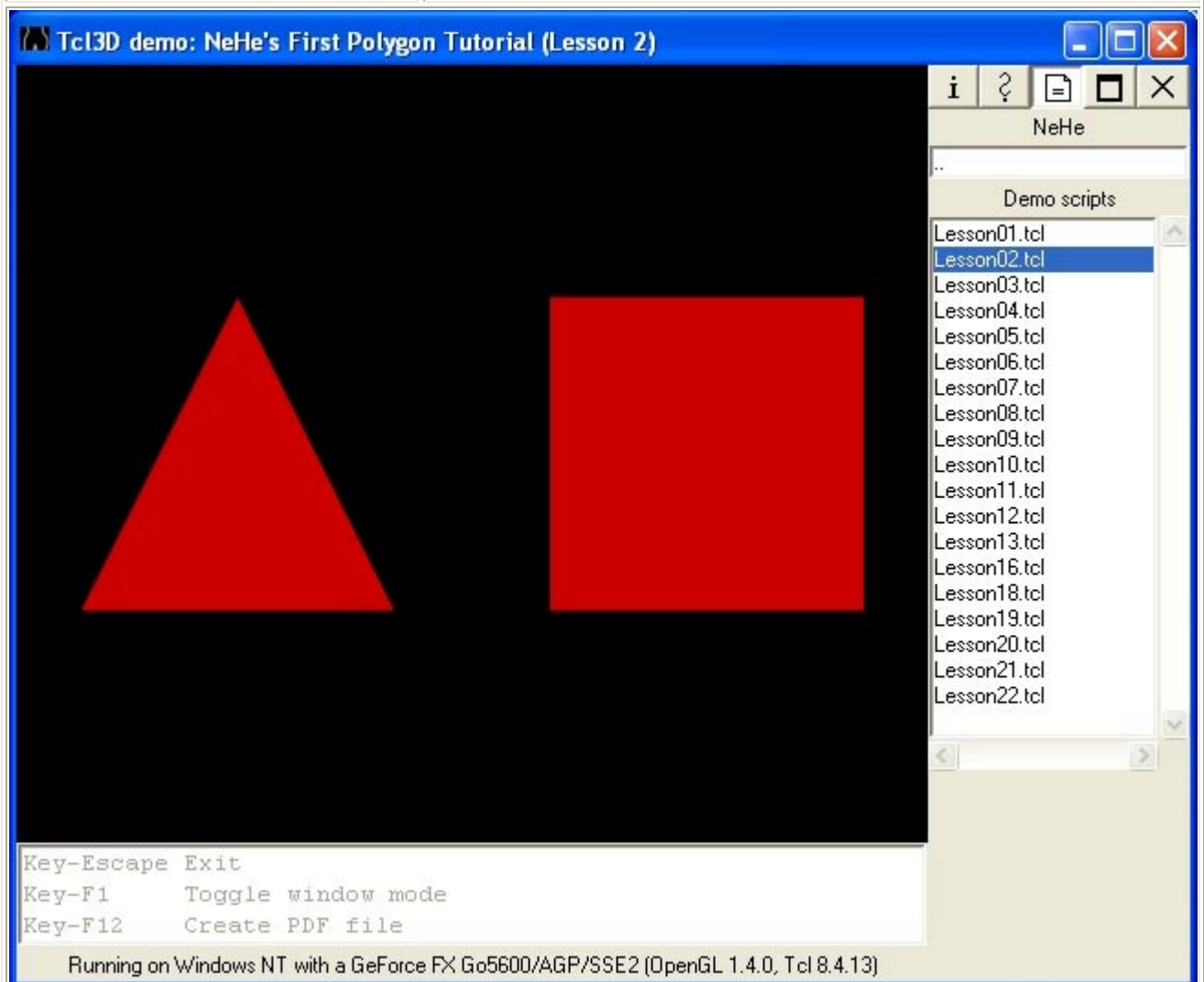

```
Lesson02.tcl

NeHe's First Polygon 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:	Lesson03
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents
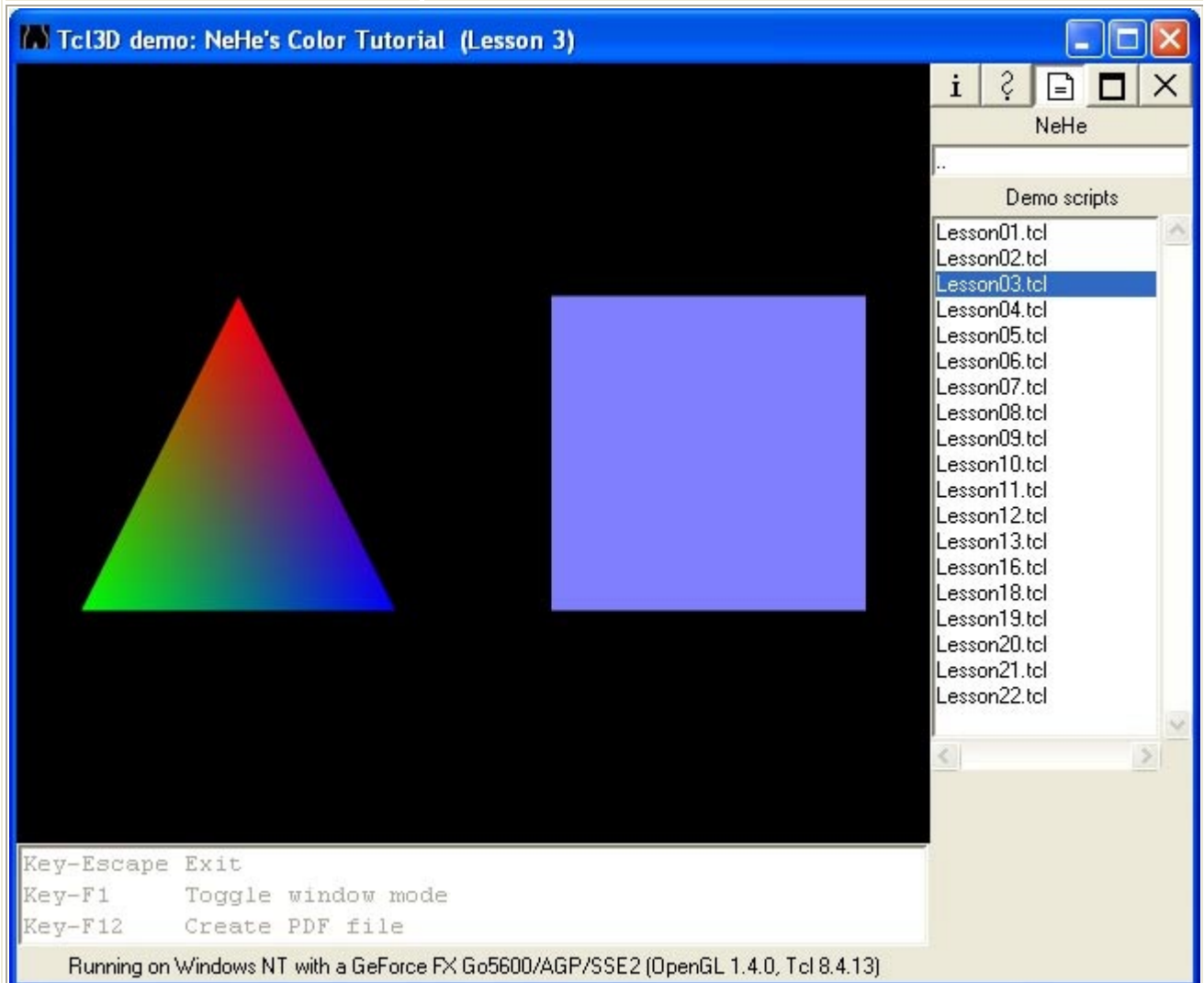

```
Lesson03.tcl

NeHe's Color 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.
```

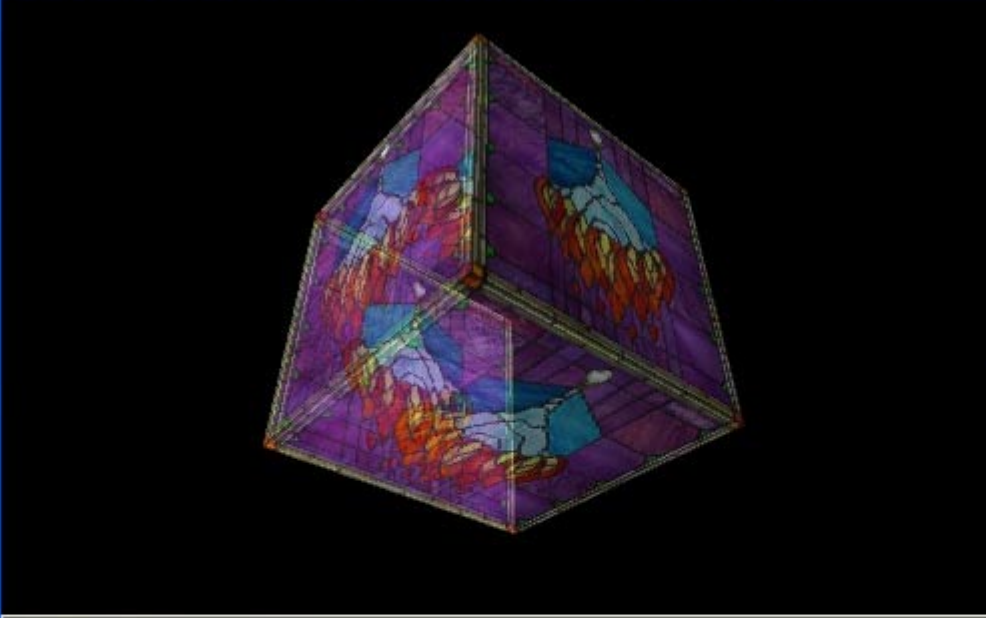| **Demo:**	**Lesson04**
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson04.tcl

NeHe's Rotation 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:	Lesson05
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: NeHe's Solid Object Tutorial (Lesson 5)

```
i  ?  ▤ ▢ ✕
        NeHe
..

     Demo scripts
Lesson01.tcl
Lesson02.tcl
Lesson03.tcl
Lesson04.tcl
Lesson05.tcl
Lesson06.tcl
Lesson07.tcl
Lesson08.tcl
Lesson09.tcl
Lesson10.tcl
Lesson11.tcl
Lesson12.tcl
Lesson13.tcl
Lesson14.tcl
Lesson16.tcl
Lesson18.tcl
Lesson19.tcl
Lesson20.tcl
Lesson21.tcl
Lesson22.tcl
```

```
Key-Escape  Exit
Key-F1      Toggle window mode
Key-F12     Create PDF file
Mouse-1|2   Start|Stop animation
```

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```
Lesson05.tcl

NeHe's Solid Object 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:	Lesson06
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson06.tcl

NeHe's Texture Mapping 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:	Lesson07
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson07.tcl

NeHe's Textures, Lighting & Keyboard 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:	Lesson08
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson08.tcl

Tom Stanis & NeHe's Blending Tutorial

This Code Was Created By Tom Stanis / 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.
```

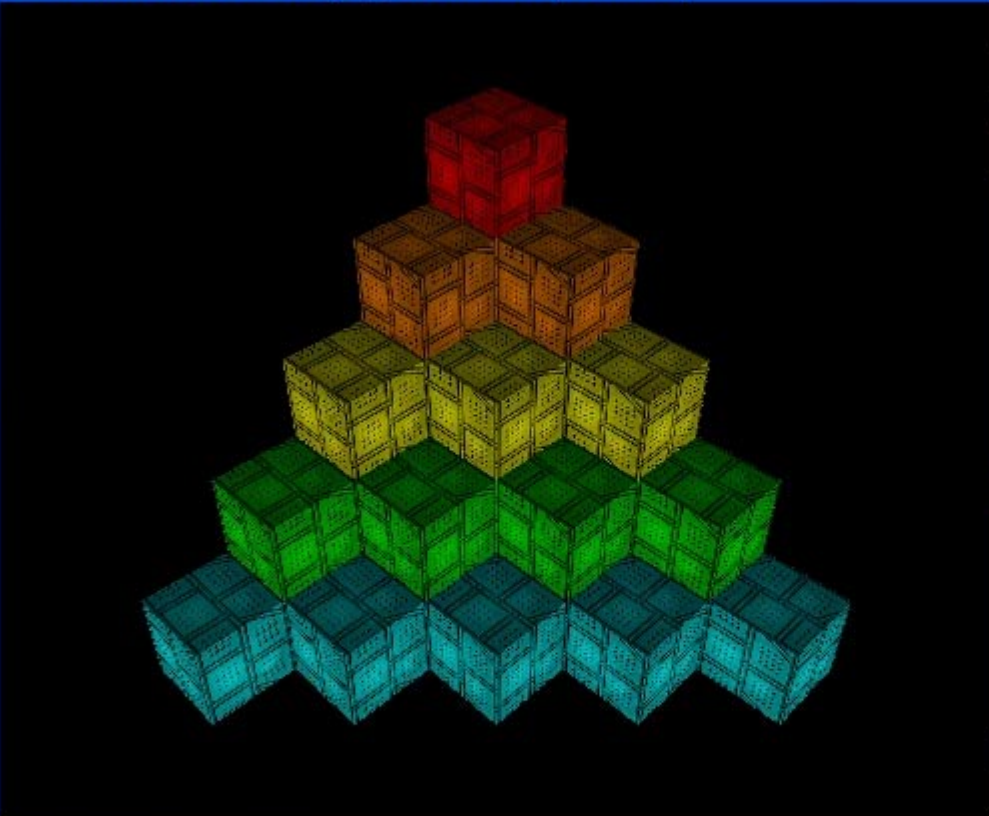| Demo:	Lesson09
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson09.tcl

NeHe's Animated Blended Textures 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:	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
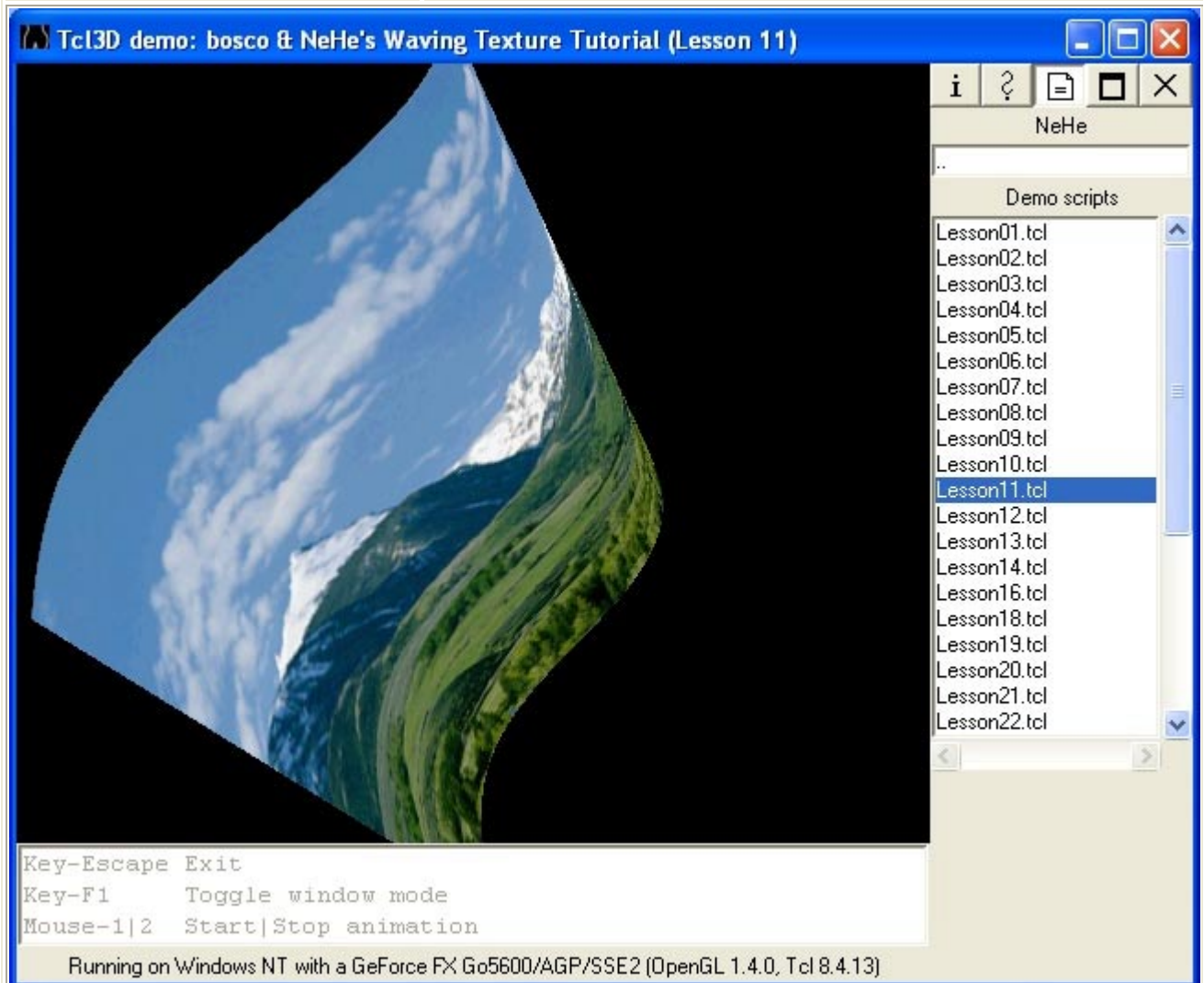

```
Lesson11.tcl

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
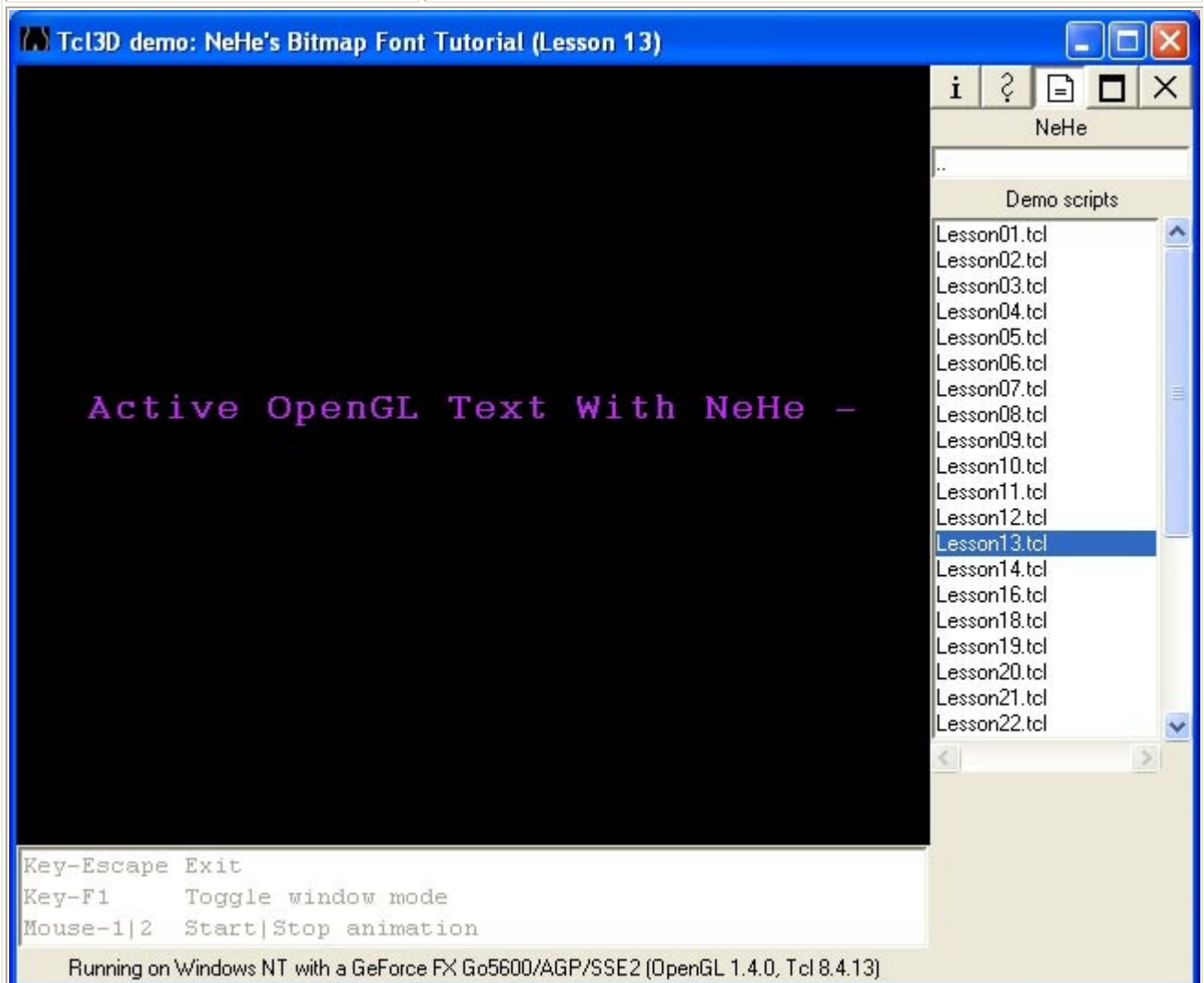

```
Lesson13.tcl

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.
```

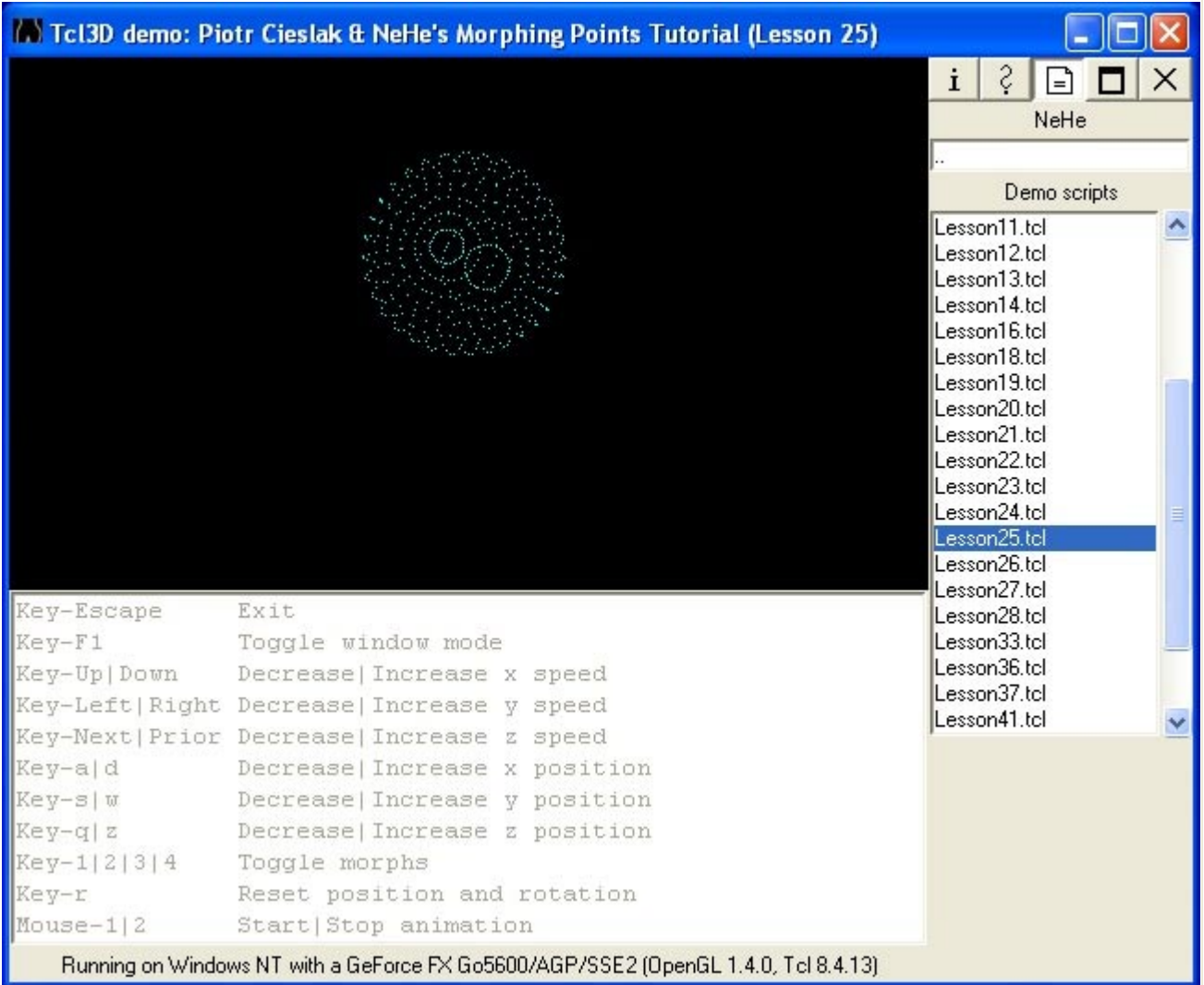| Demo:	Lesson24
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
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:	Lesson25
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson25.tcl

Piotr Cieslak & NeHe's Morphing Points Tutorial

This Code Was Created By Pet & Commented/Cleaned Up By Jeff Molofee
If You've Found This Code Useful, Please Let Me Know.
Visit NeHe Productions At http://nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2007/03/03
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.

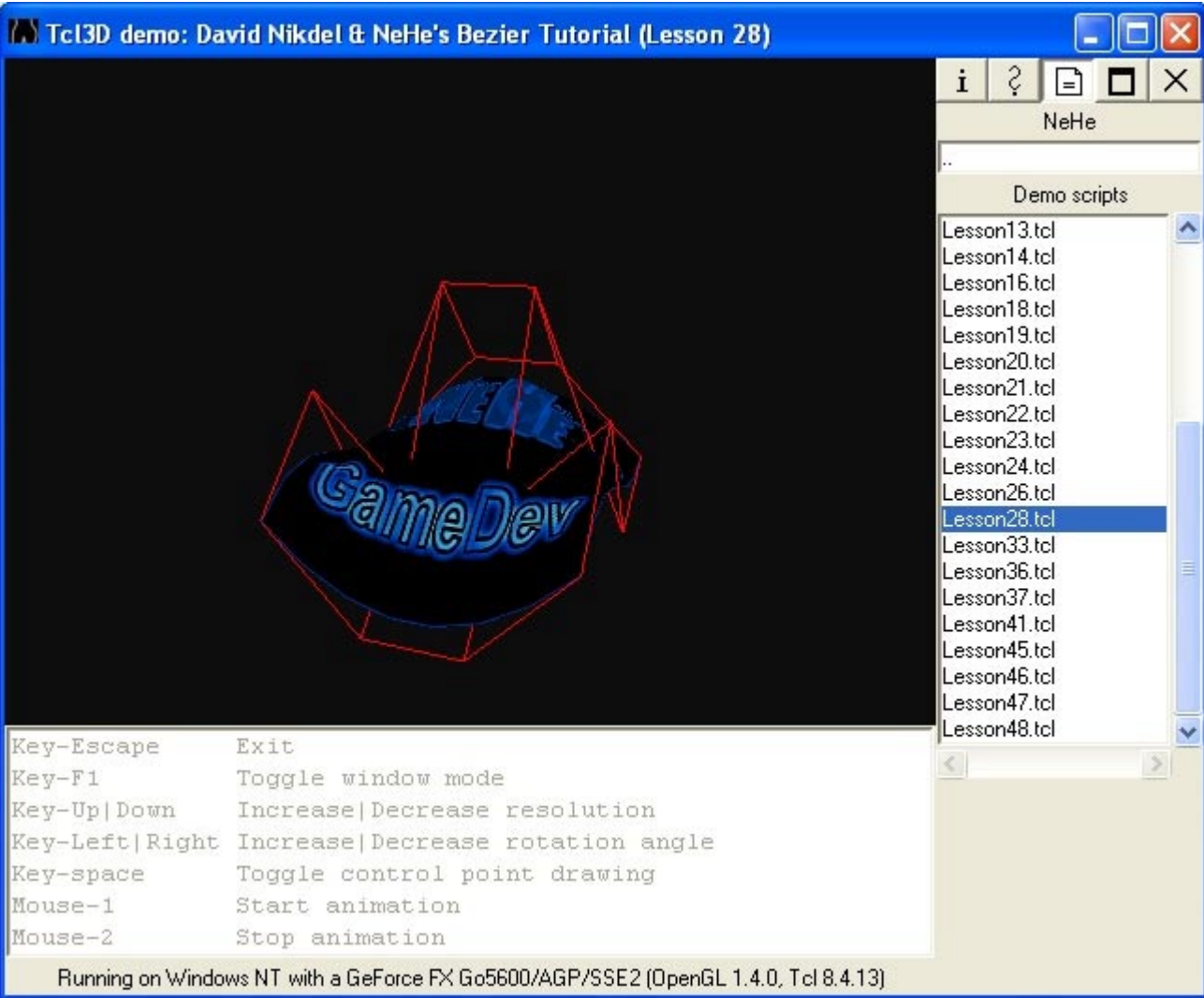| Demo:	Lesson27
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
Lesson27.tcl

"Banu Octavian & NeHe's Shadow Casting 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
Attention!!! This code is not for beginners.

Modified for Tcl3D by Paul Obermeier 2007/02/27
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.
```

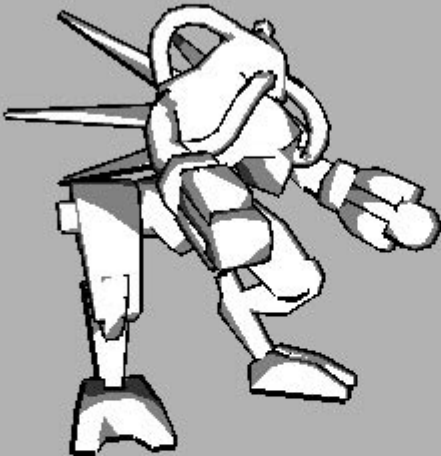| Demo:	Lesson36
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
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
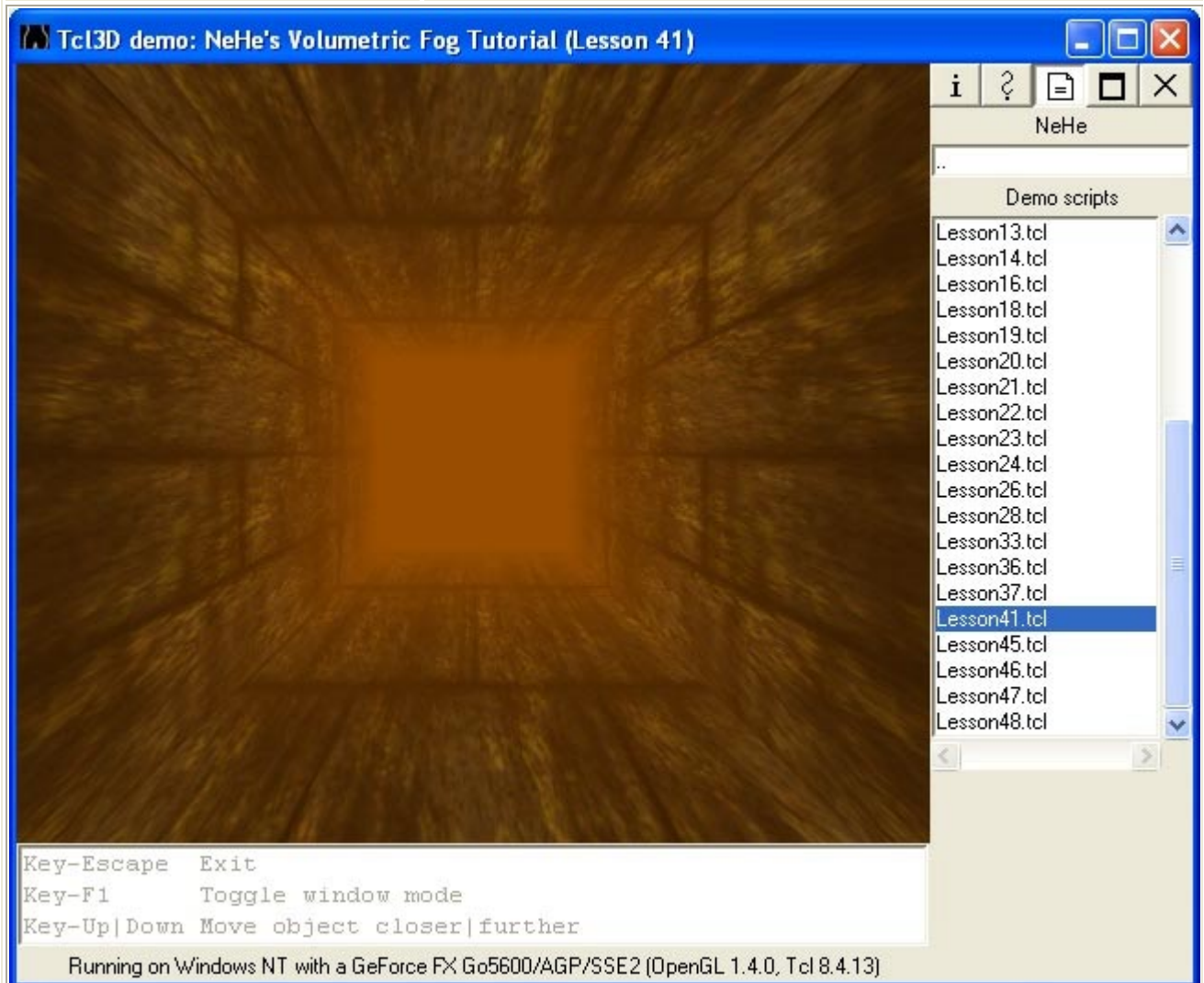

```
Lesson41.tcl

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
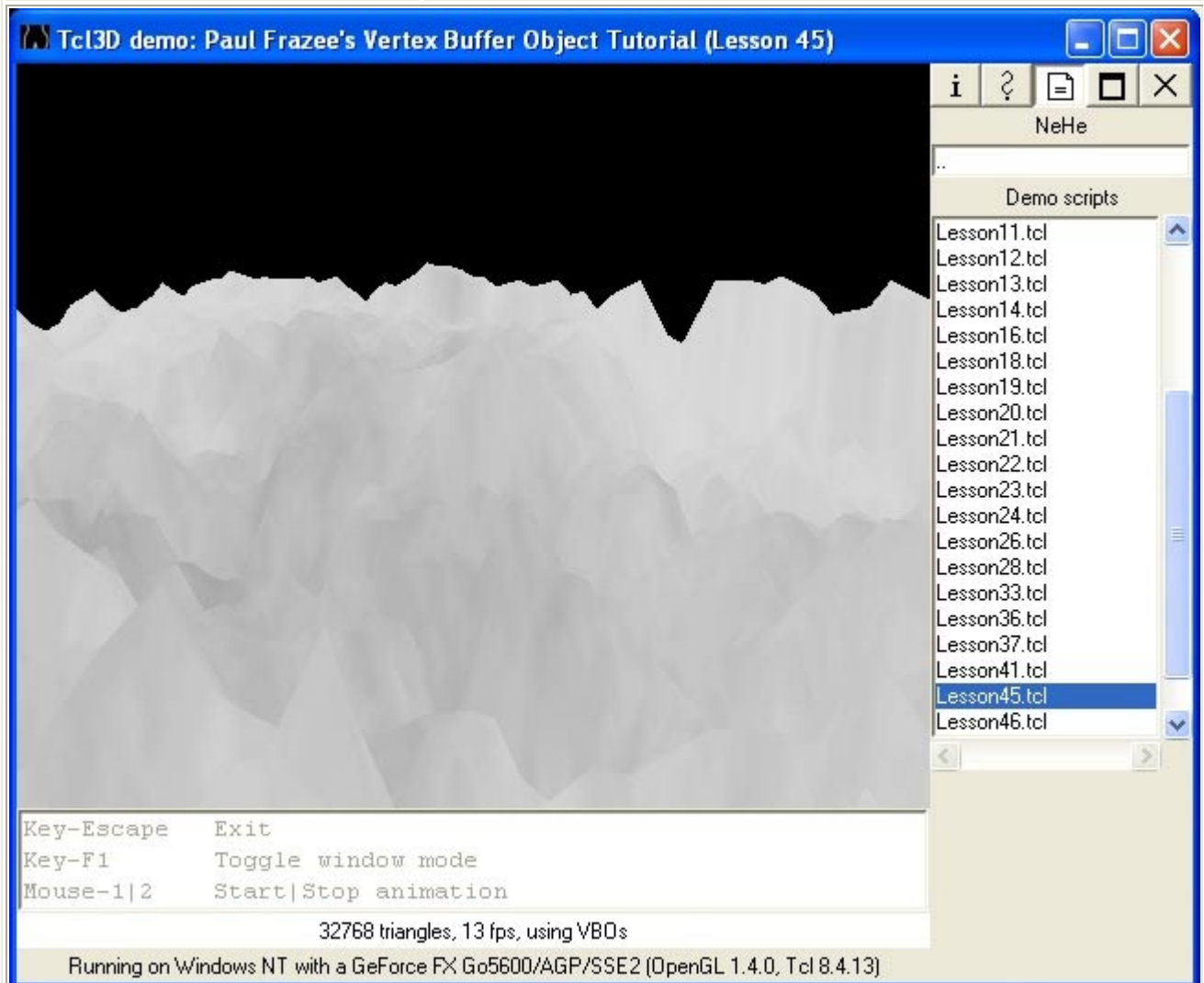

```
Lesson45.tcl

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.
```

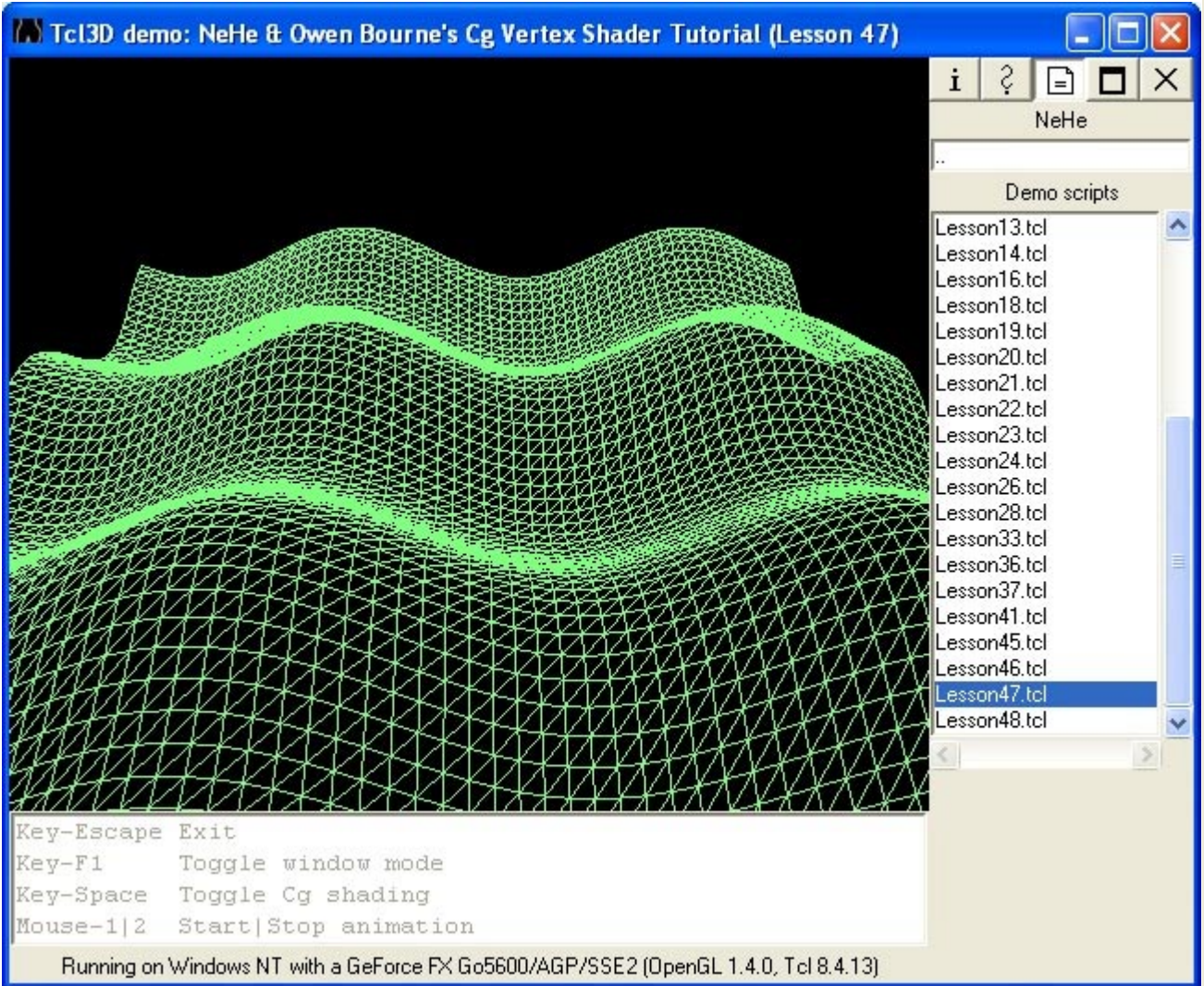| Demo:	Lesson46
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents


```
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.
```
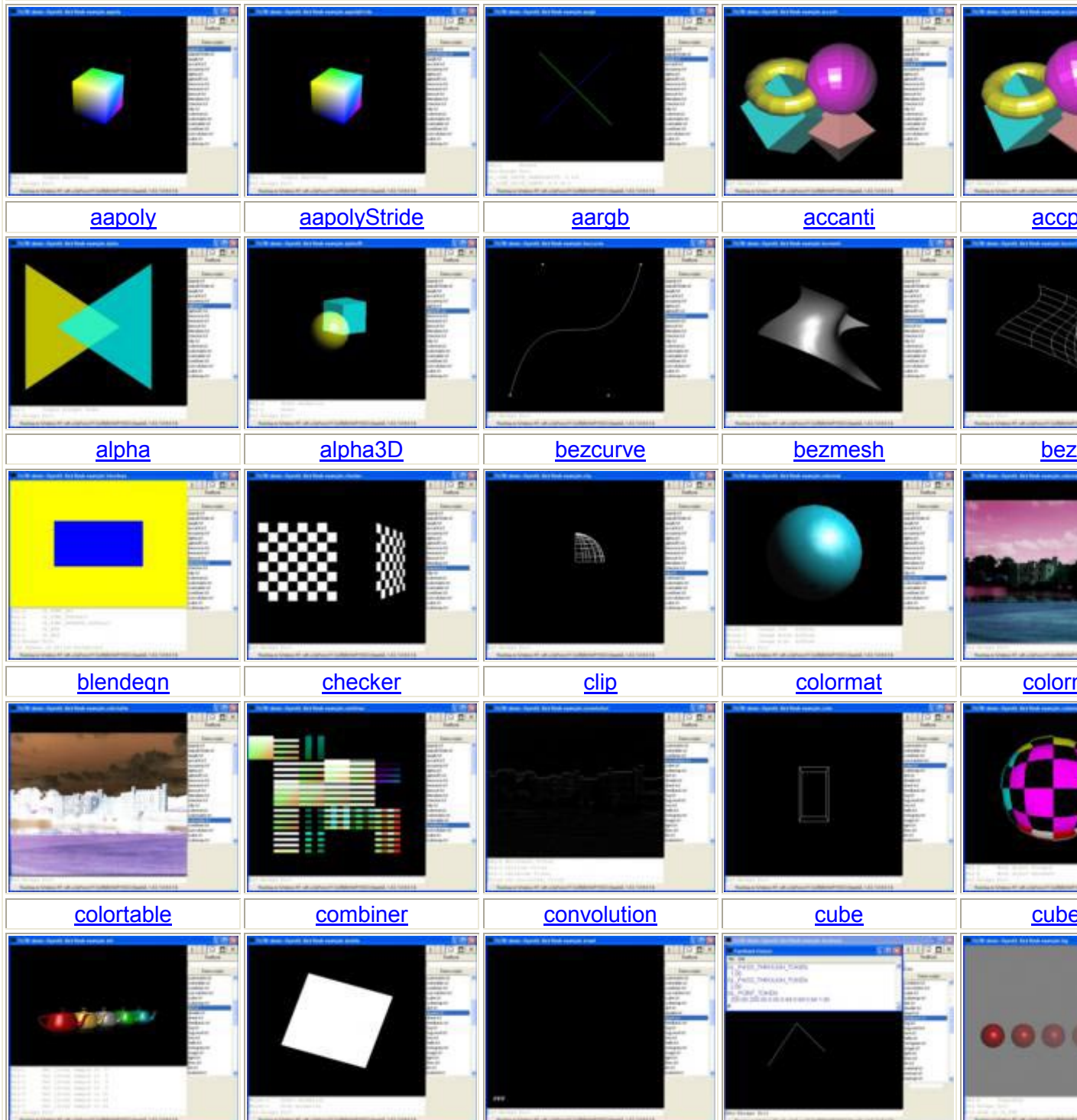
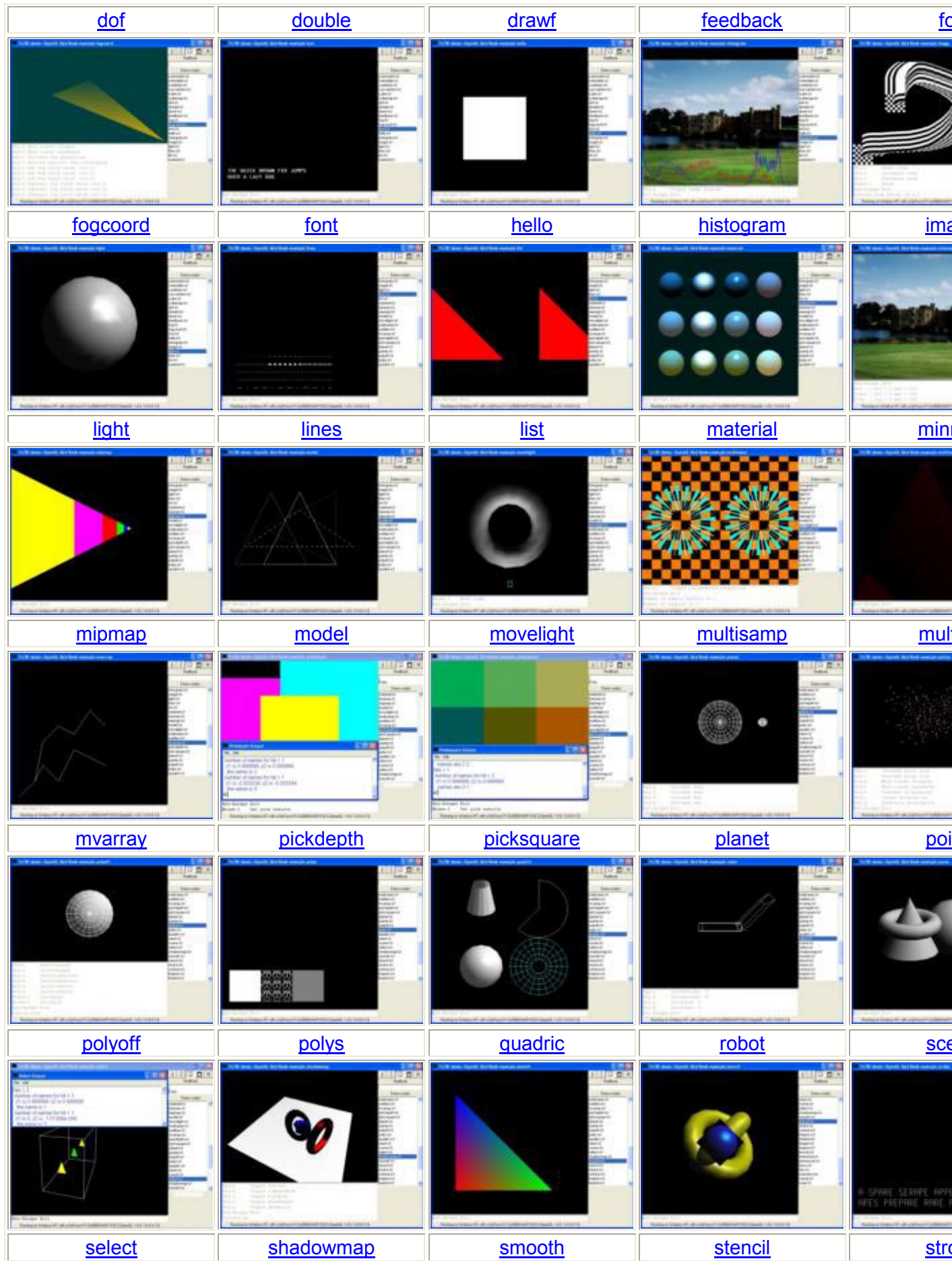| Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The Redbook describing OpenGL Version 1.4 contains 72 examples written in C. 67 of them have been s
converted into equivalent Tcl3D scripts and the results compared on several operating systems and compu
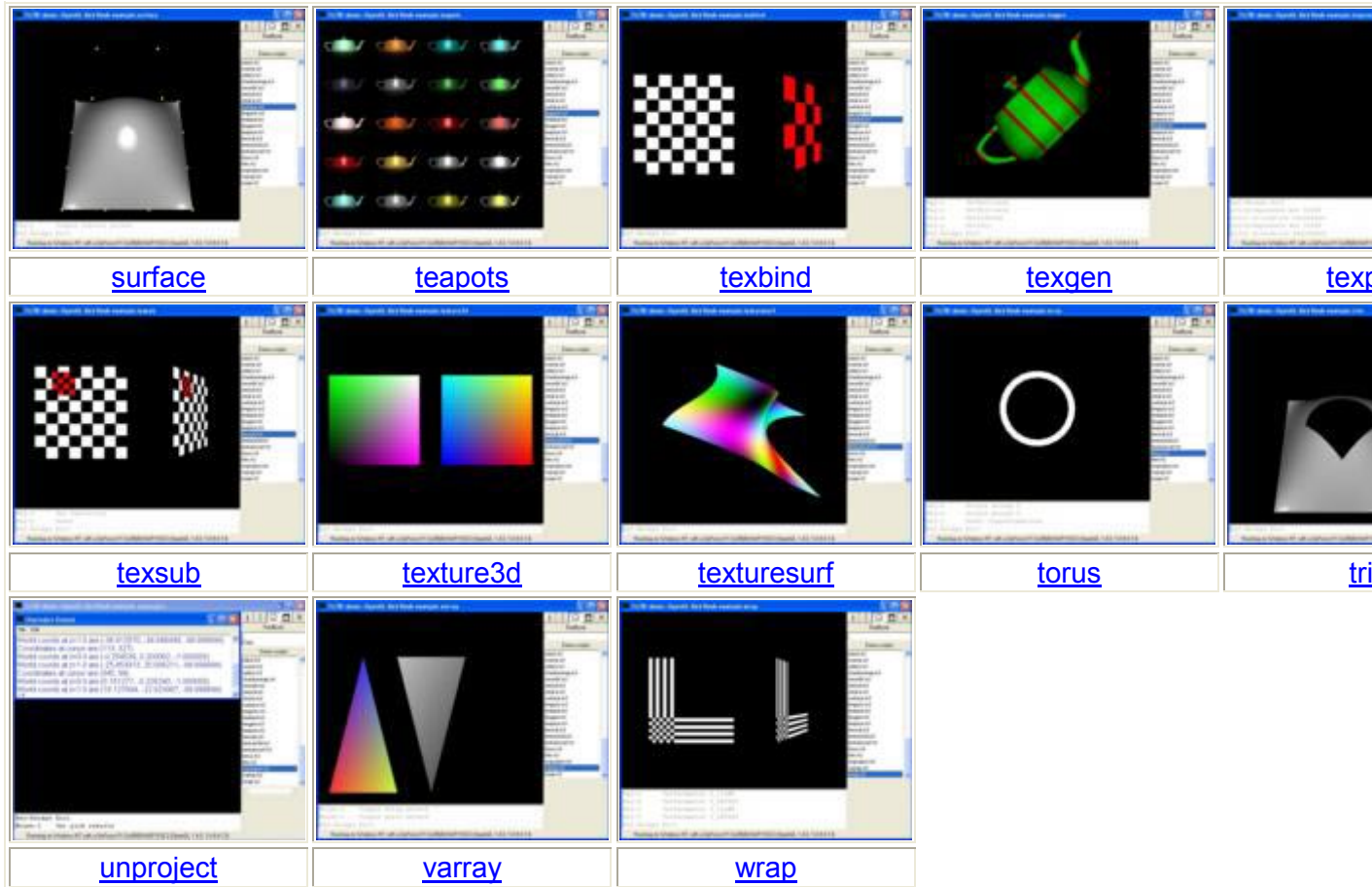the C version.

Three of the missing five examples (surfpoints, tess, tesswin) deal with tesselation, which is currently not
The other two test programs (aaindex, fogindex) not yet ported deal with color index mode, which
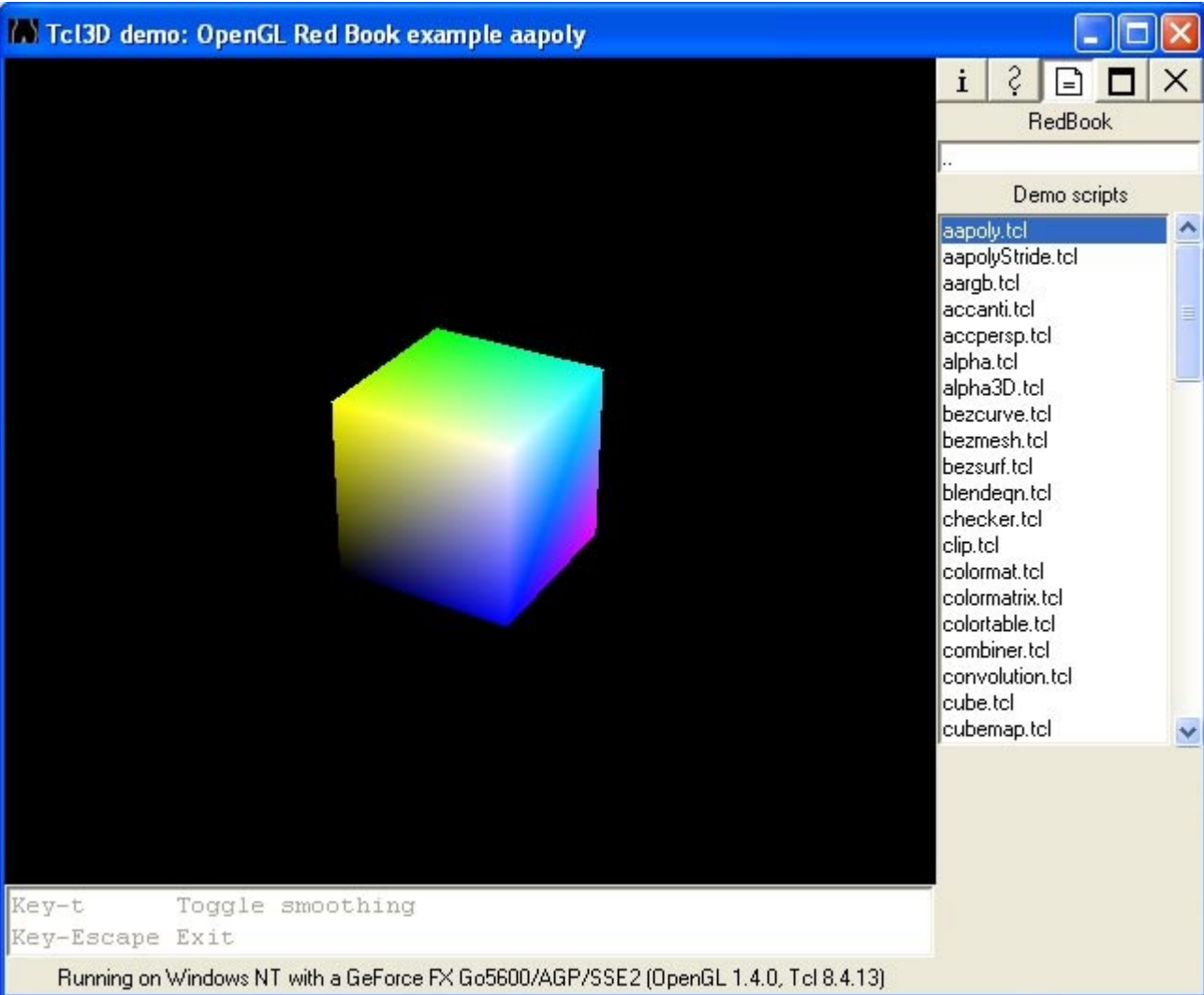implemented in the tcl3dTogl widget.

Original sources available at: http://www.opengl-redbook.com/source/

Available demos

aapoly	aapolyStride	aargb	accanti	accp
alpha	alpha3D	bezcurve	bezmesh	bez
blendeqn	checker	clip	colormat	color
colortable	combiner	convolution	cube	cube

dof	double	drawf	feedback	fo

fogcoord	font	hello	histogram	ima

light	lines	list	material	mirr

mipmap	model	movelight	multisamp	mul

mvarray	pickdepth	picksquare	planet	poi

polyoff	polys	quadric	robot	sce

select	shadowmap	smooth	stencil	str

surface	teapots	texbind	texgen	tex
texsub	texture3d	texturesurf	torus	tri
unproject	varray	wrap		

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

aapoly.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.
See file LICENSE for complete license information.

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

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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.
```
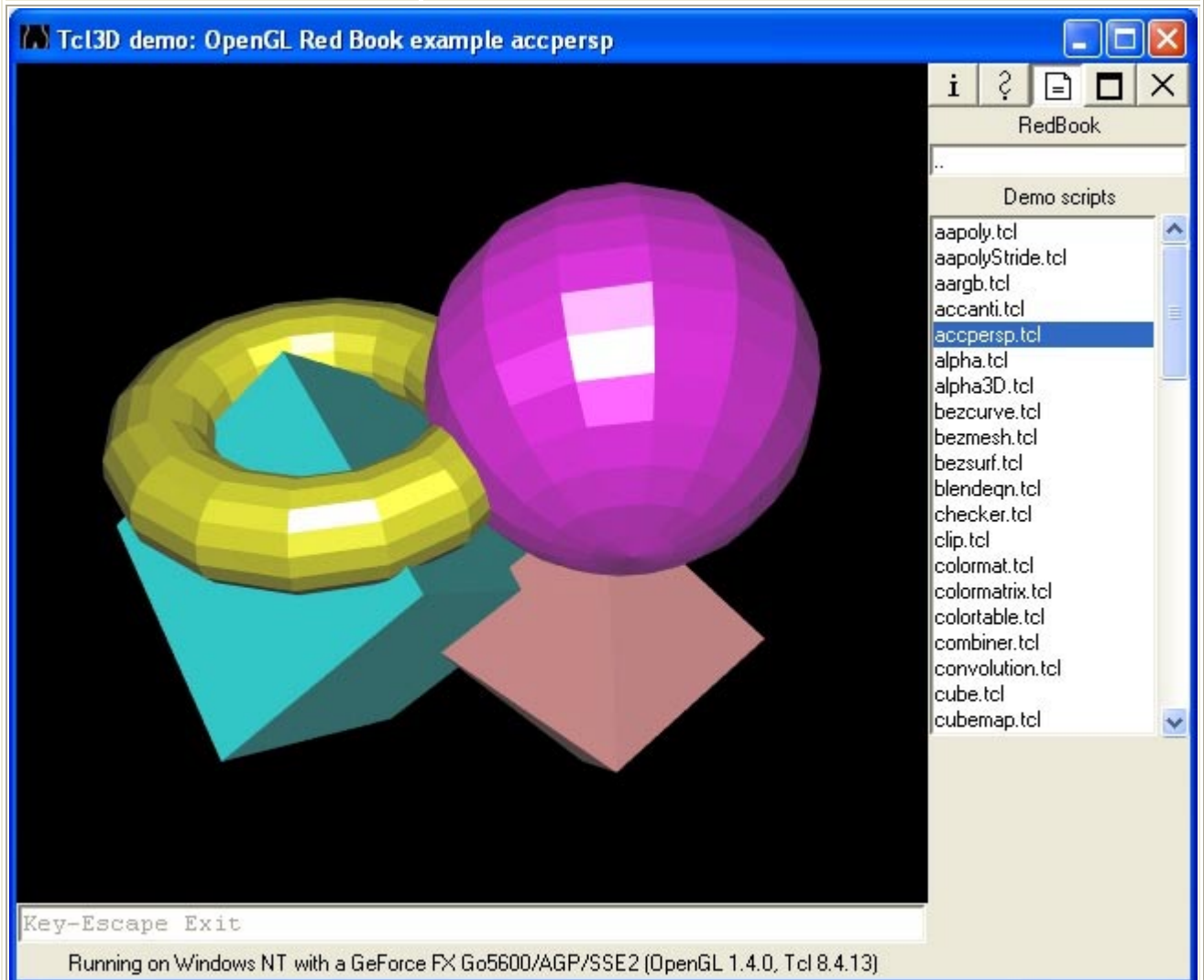
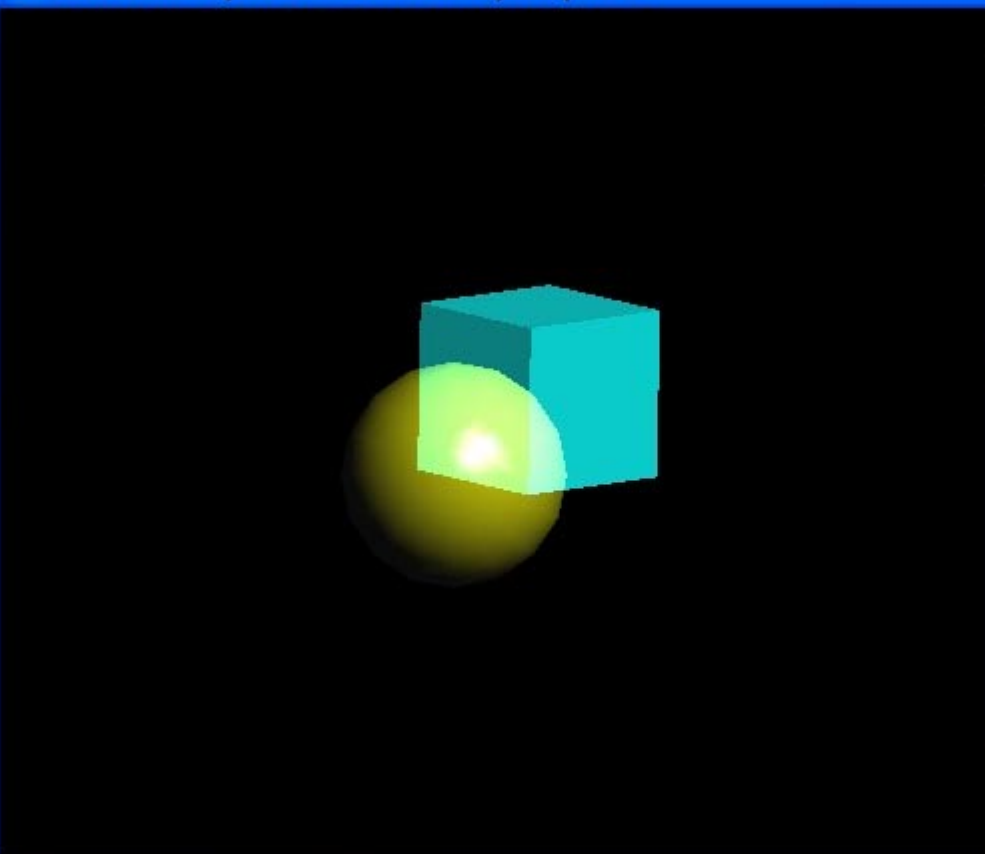| Demo:	accanti
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents
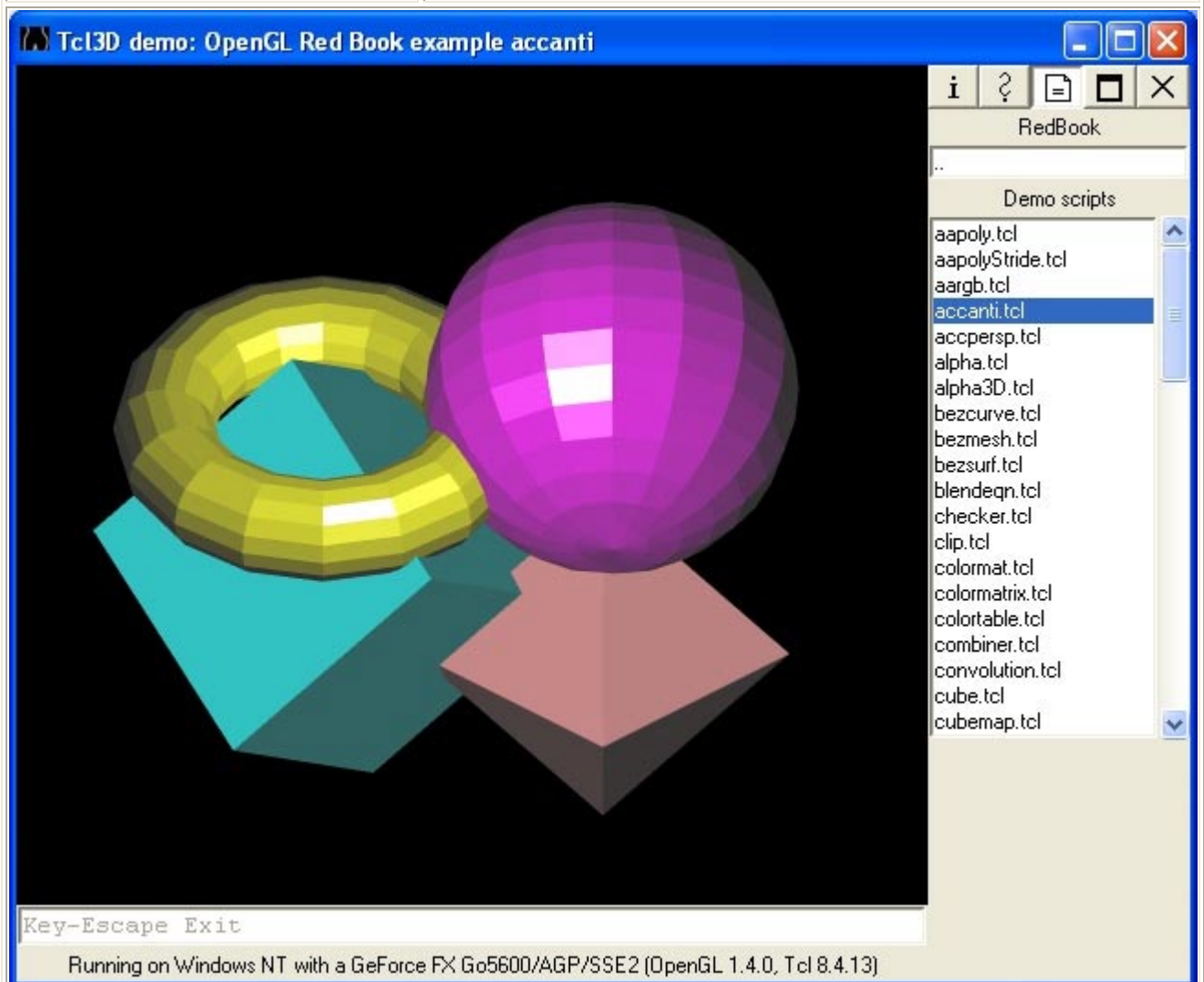

```
accanti.tcl

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.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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.
See file LICENSE for complete license information.

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.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005-2008, Paul Obermeier.
See file LICENSE for complete license information.

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
```

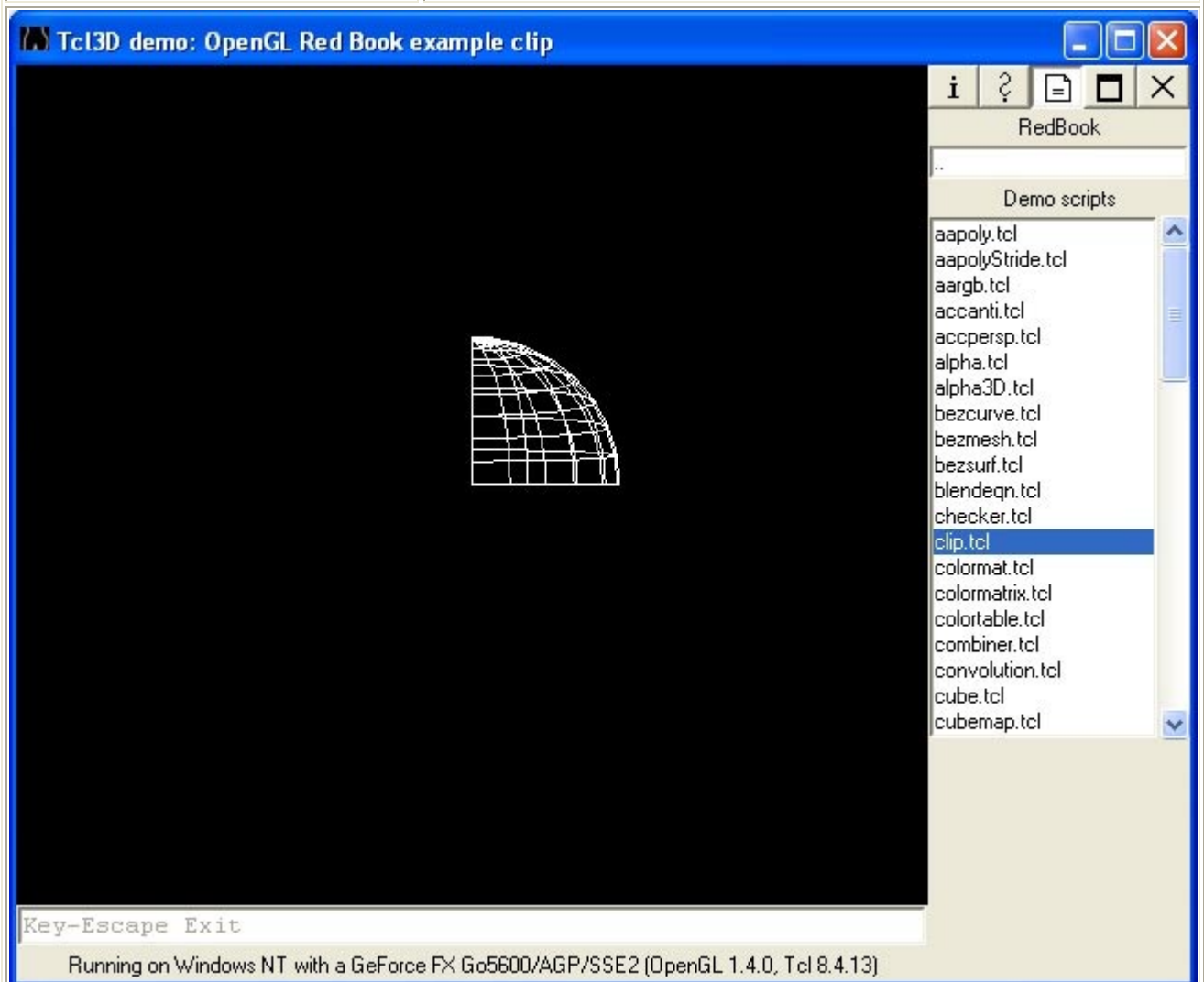| Demo:	checker
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
checker.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


This program texture maps a checkerboard image onto
two rectangles.

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

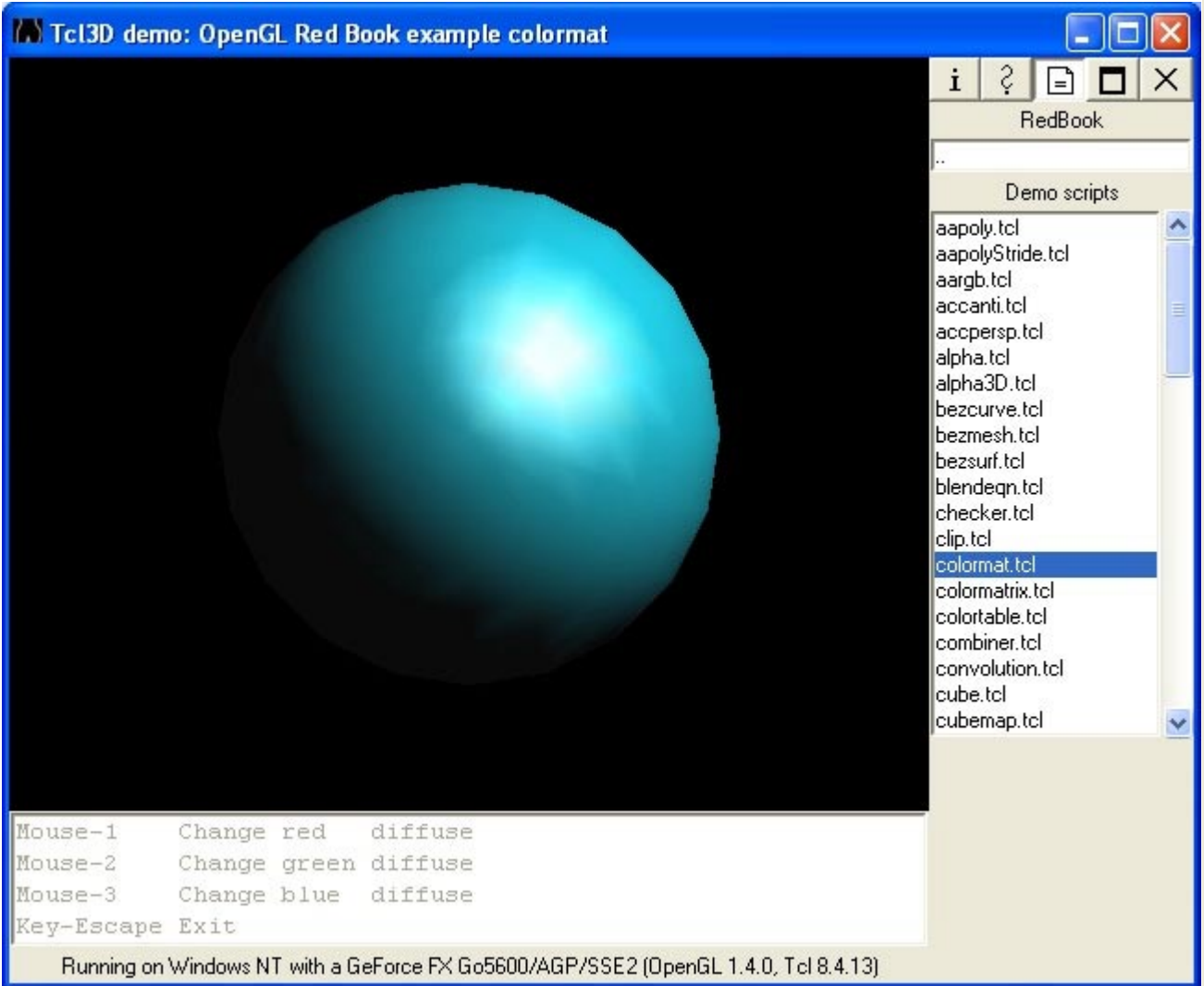| Demo:	clip
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
clip.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

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.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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
dend 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

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.
See file LICENSE for complete license information.

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

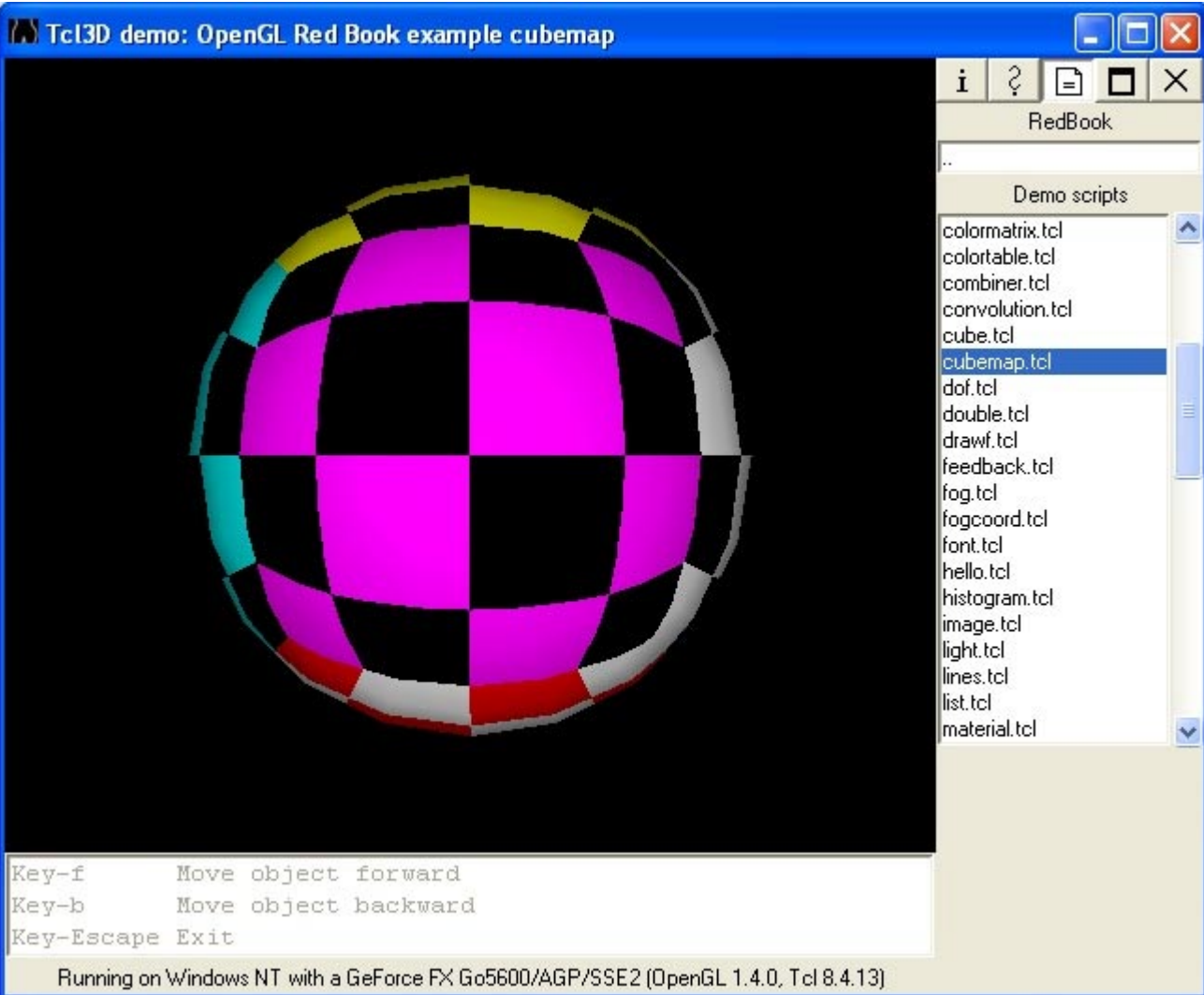| Demo:	cube
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
cube.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.
See file LICENSE for complete license information.


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

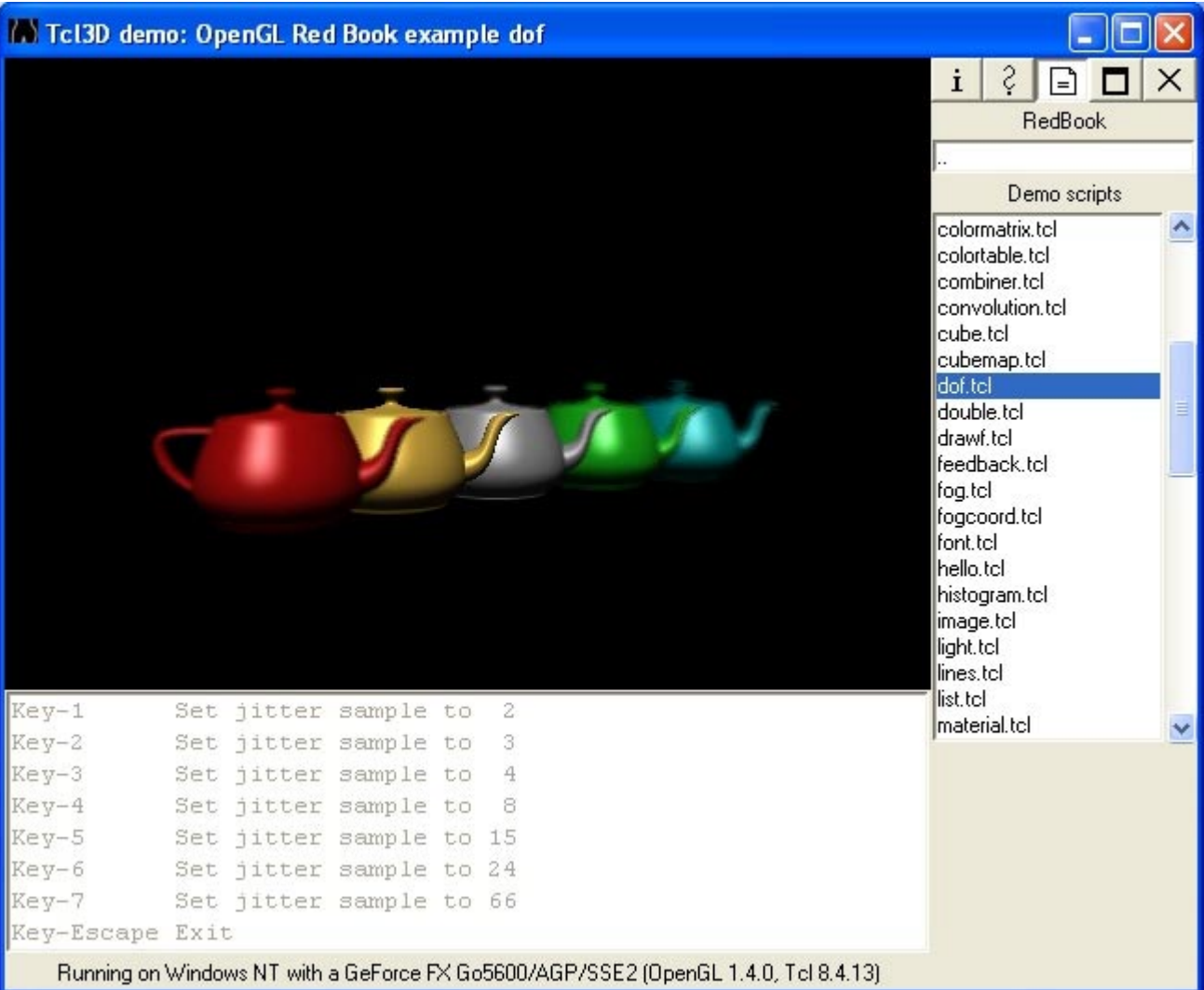| Demo:	cubemap
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
cubemap.tcl

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.
See file LICENSE for complete license information.


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.
```

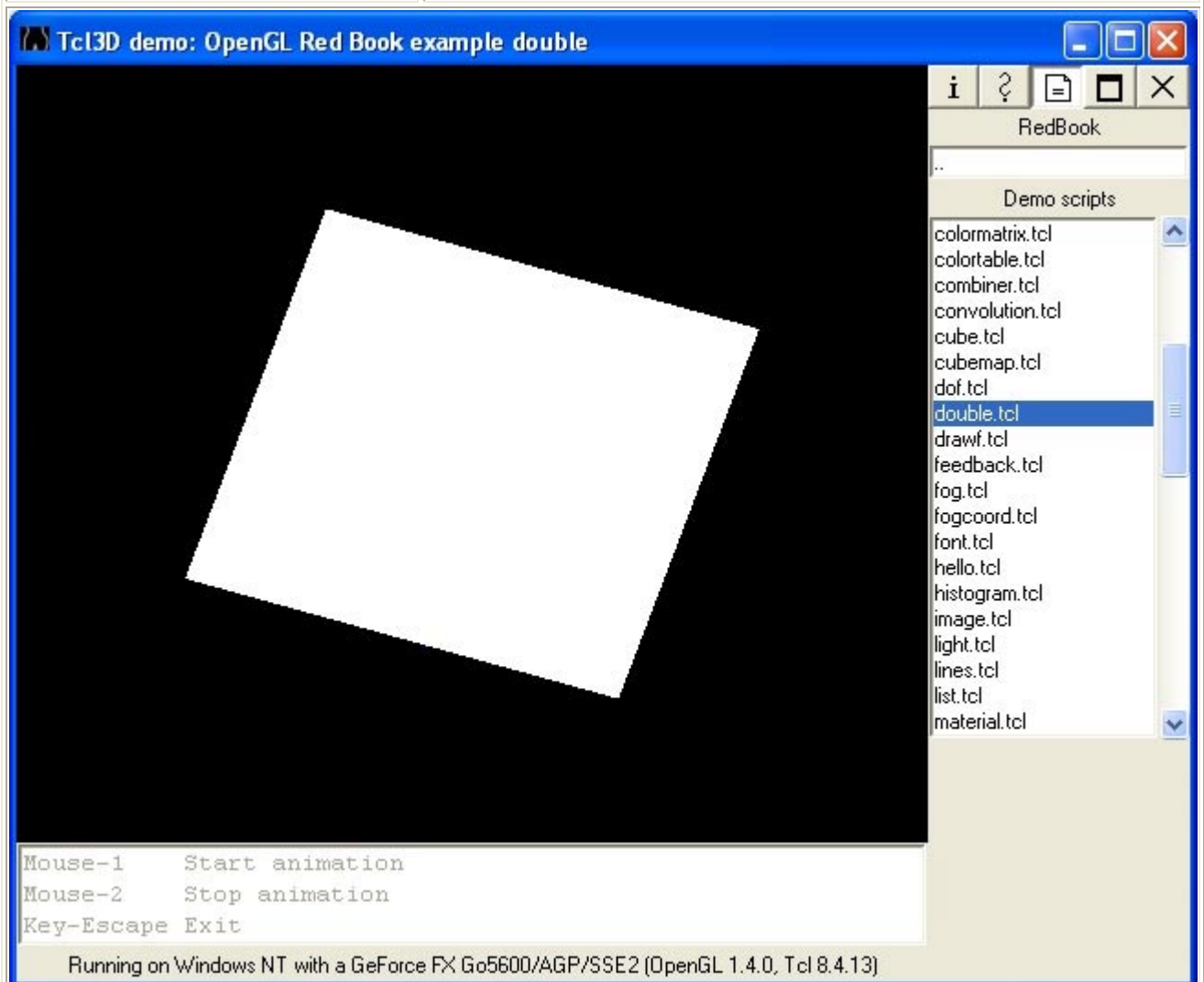| Demo:	dof
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
dof.tcl

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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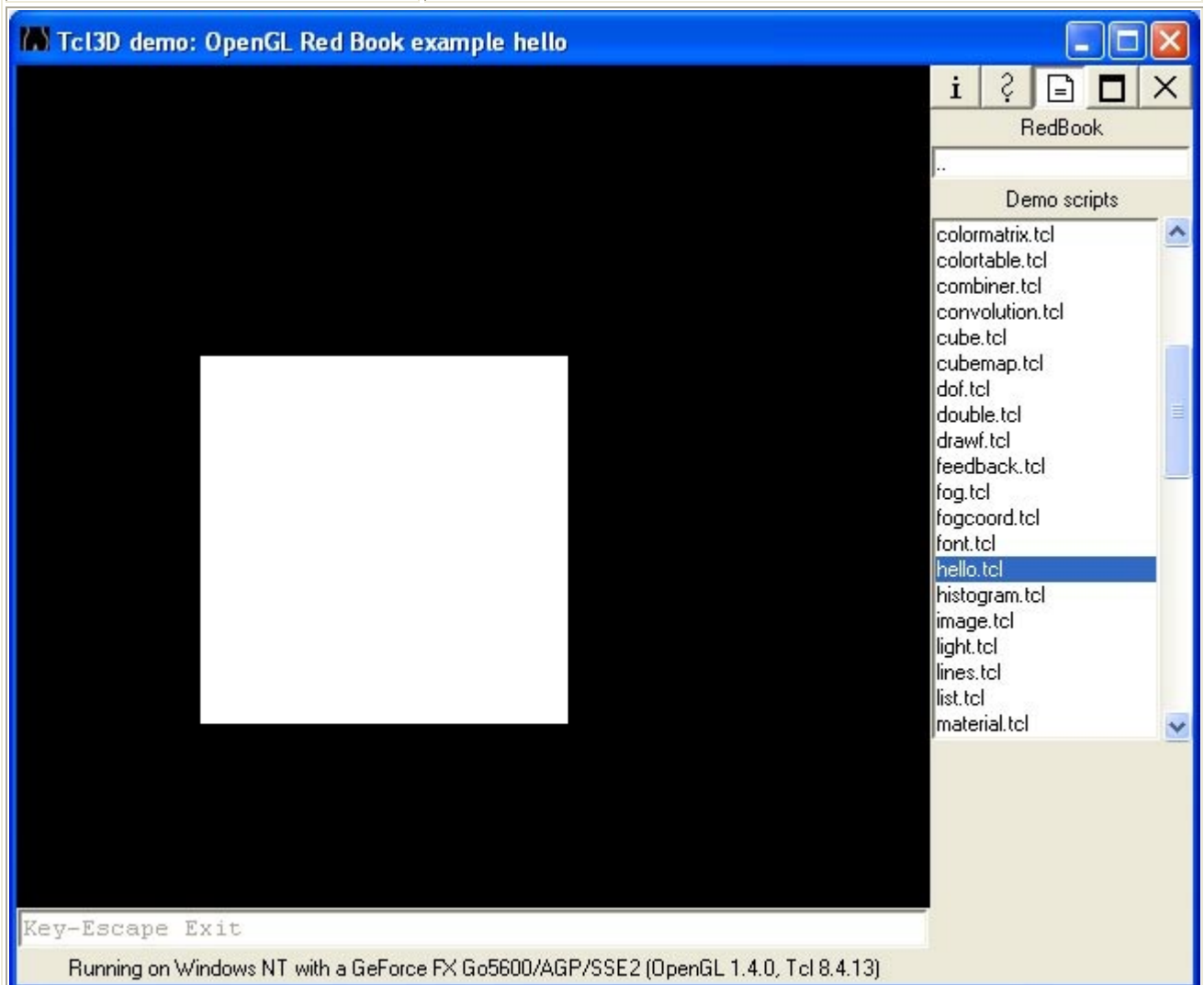
Demo:	font
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
font.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

This is a simple, introductory OpenGL program.
```

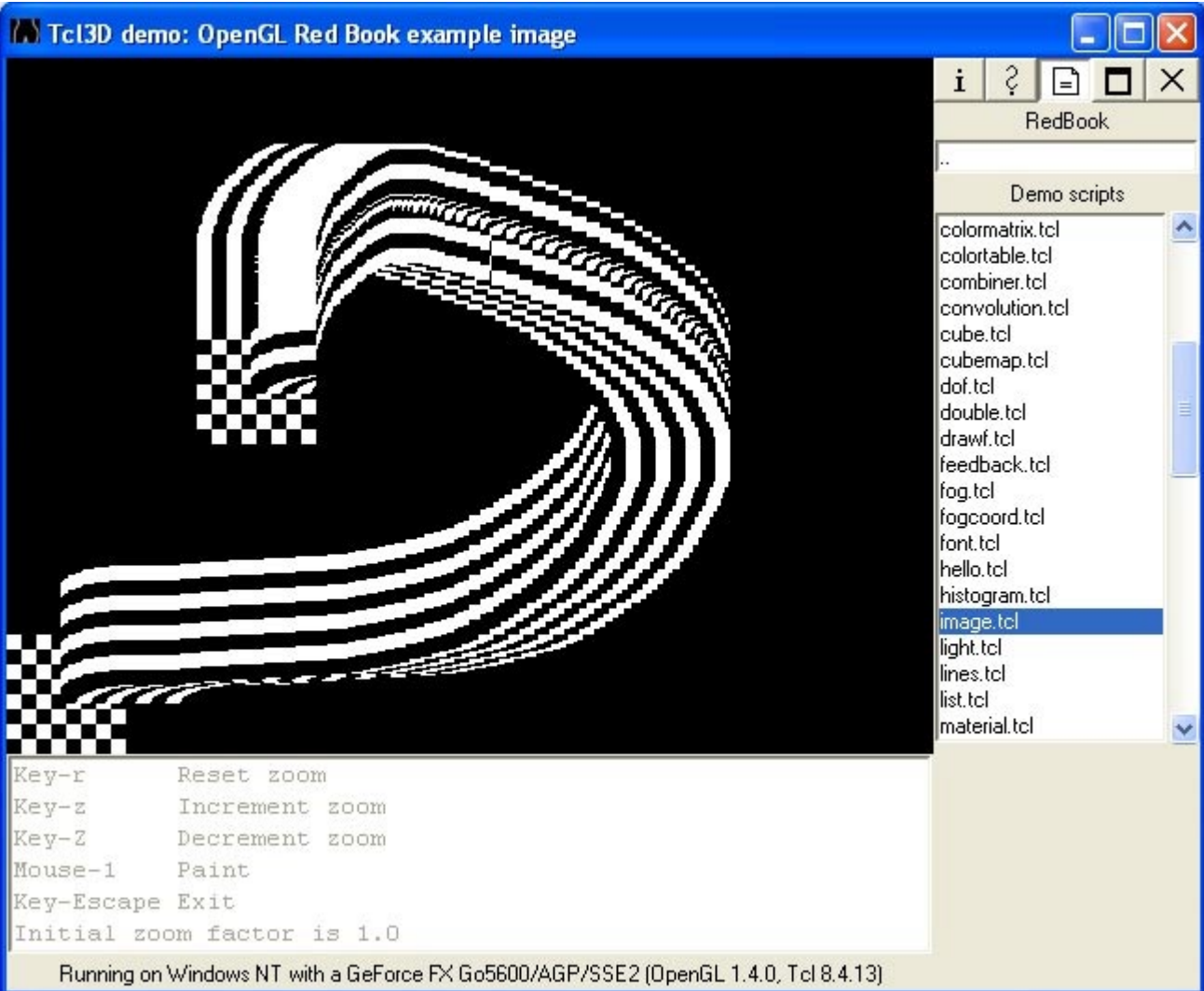| Demo:	histogram
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
histogram.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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.

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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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.
```
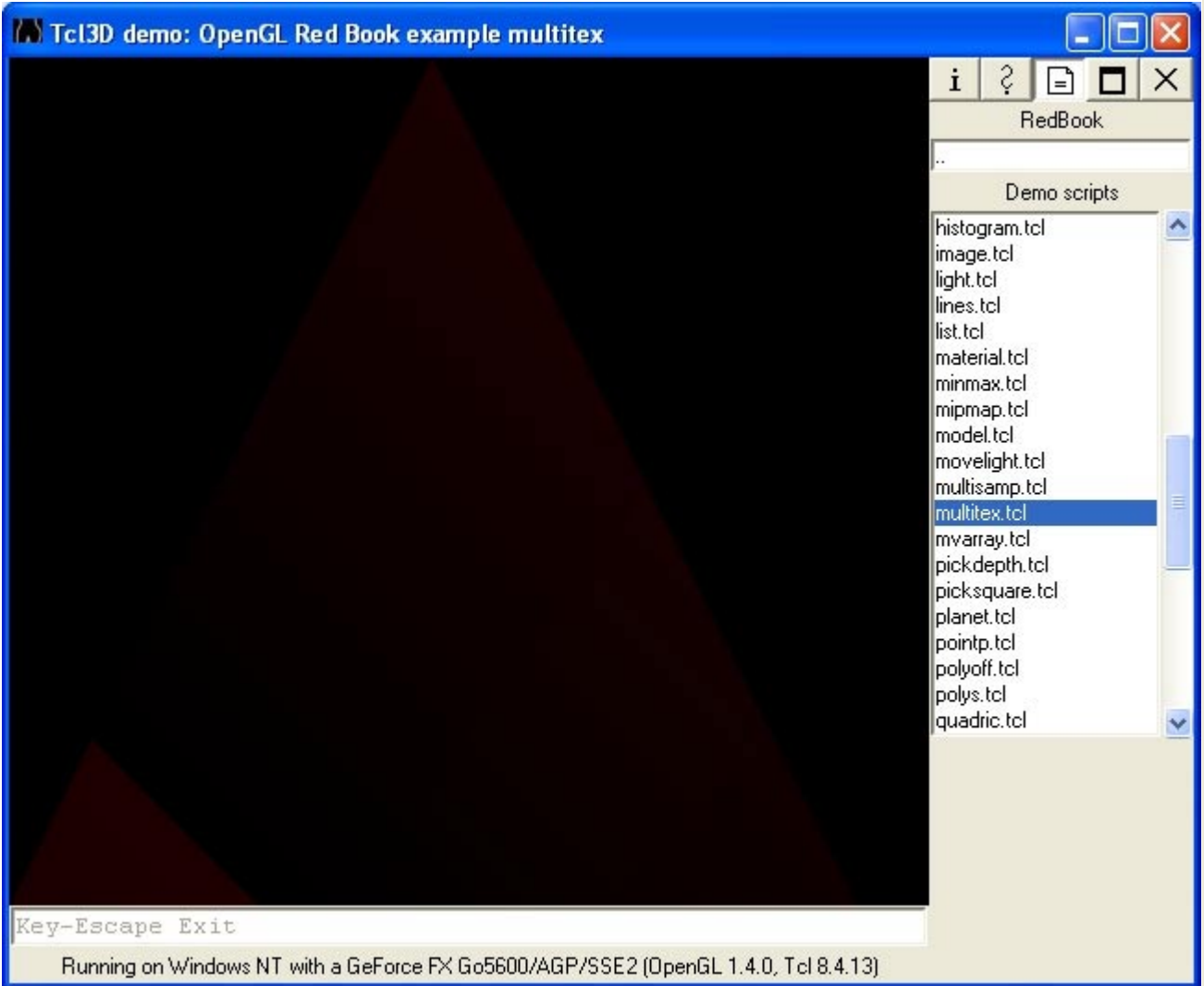
Demo:	multitex
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
multitex.tcl

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.
See file LICENSE for complete license information.
```

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


```
mvarray.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.
See file LICENSE for complete license information.


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

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


```
pickdepth.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.
See file LICENSE for complete license information.

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

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.
See file LICENSE for complete license information.

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

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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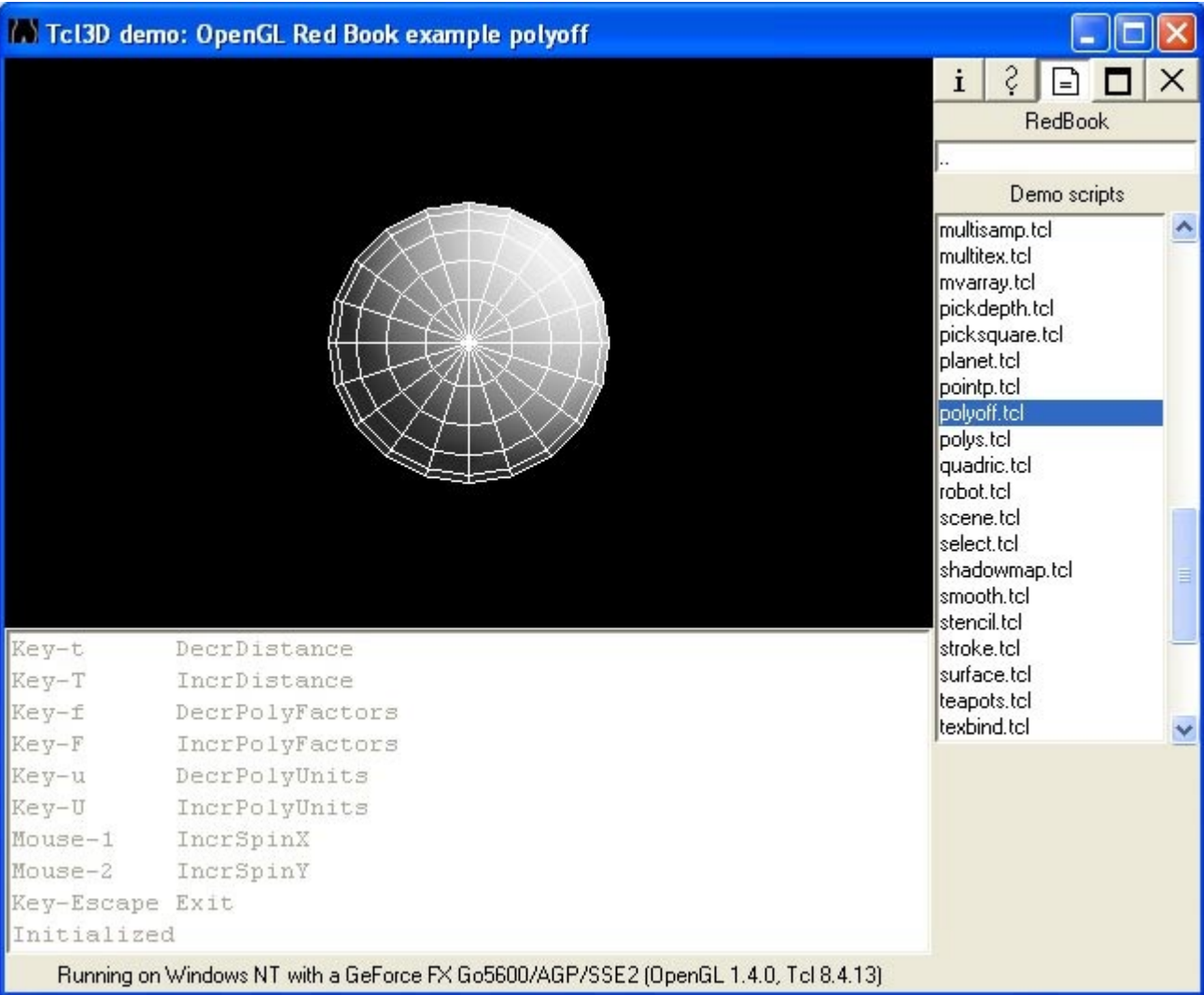
```
will not get less than 2.0, nor greater than GL_POINT_SIZE_MAX.
```

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


```
polyoff.tcl

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.
See file LICENSE for complete license information.


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
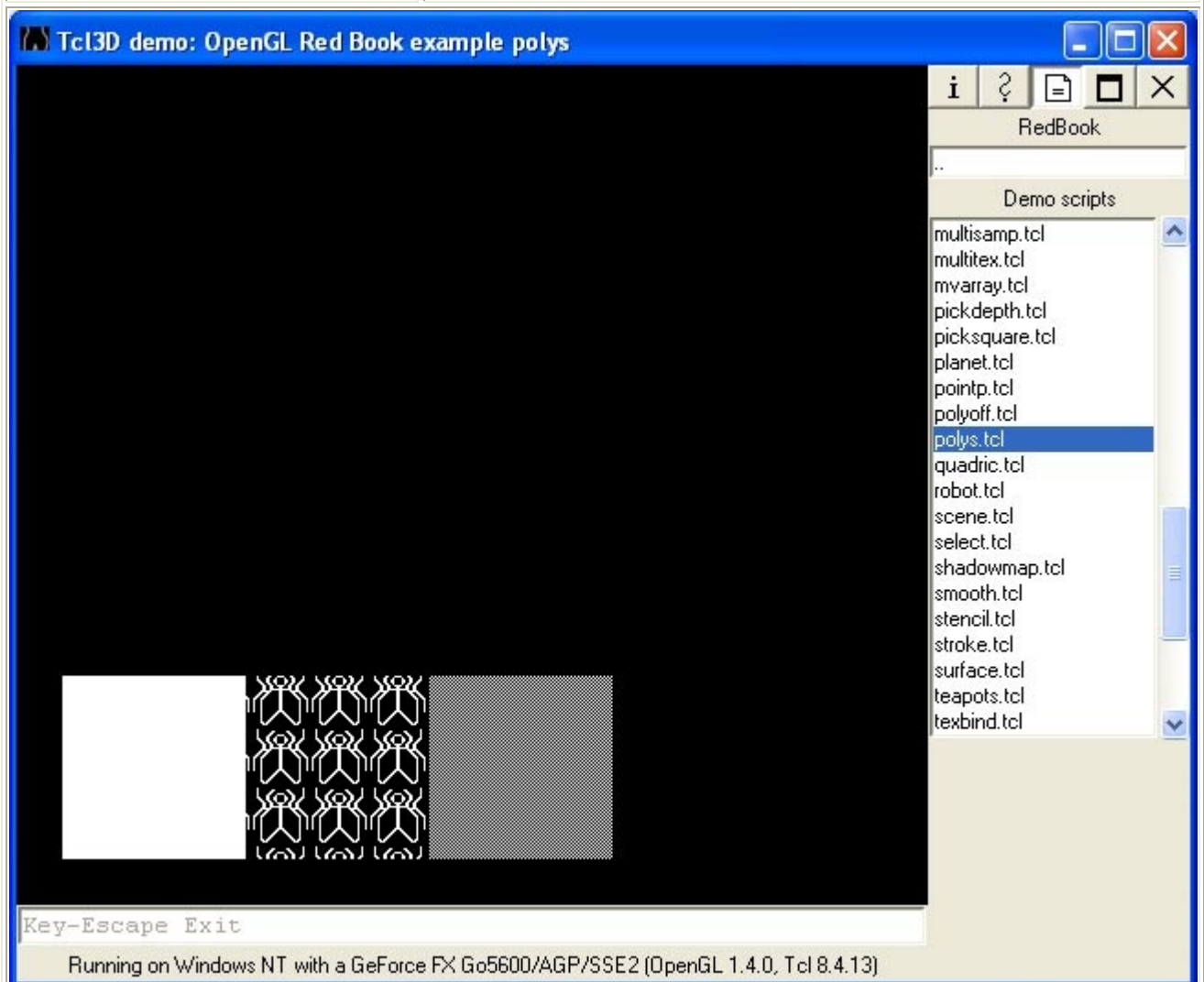

```
polys.tcl

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.
See file LICENSE for complete license information.

This program demonstrates polygon stippling.
```

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


```
quadric.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.
See file LICENSE for complete license information.


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.
```

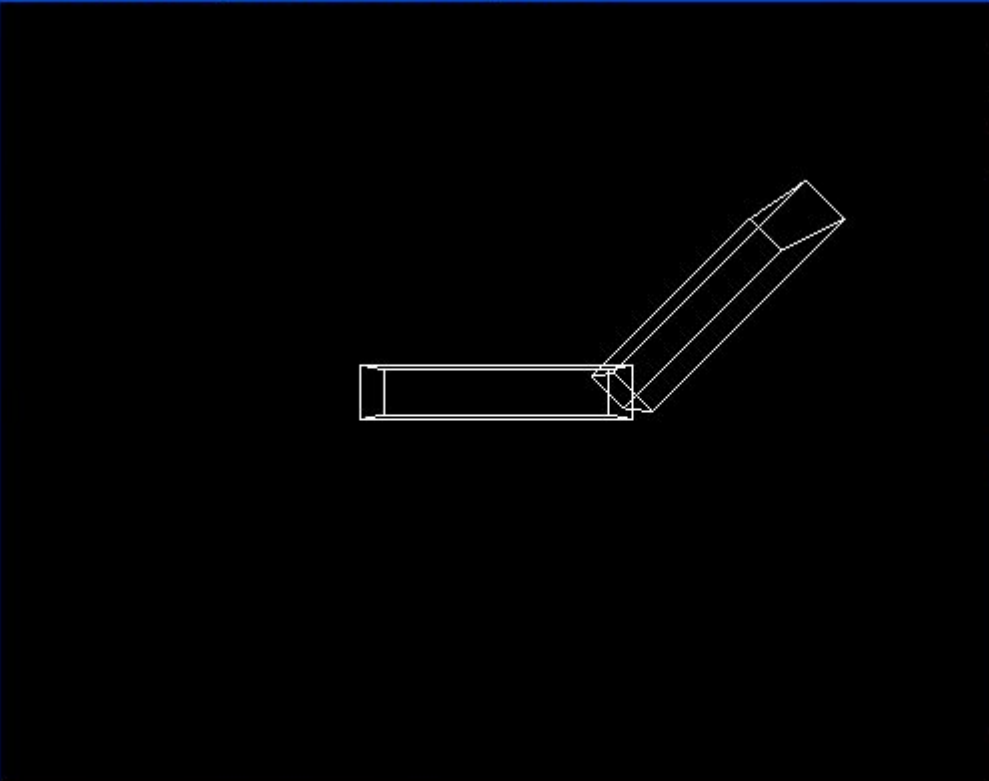| Demo:	robot
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
robot.tcl

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.
See file LICENSE for complete license information.


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
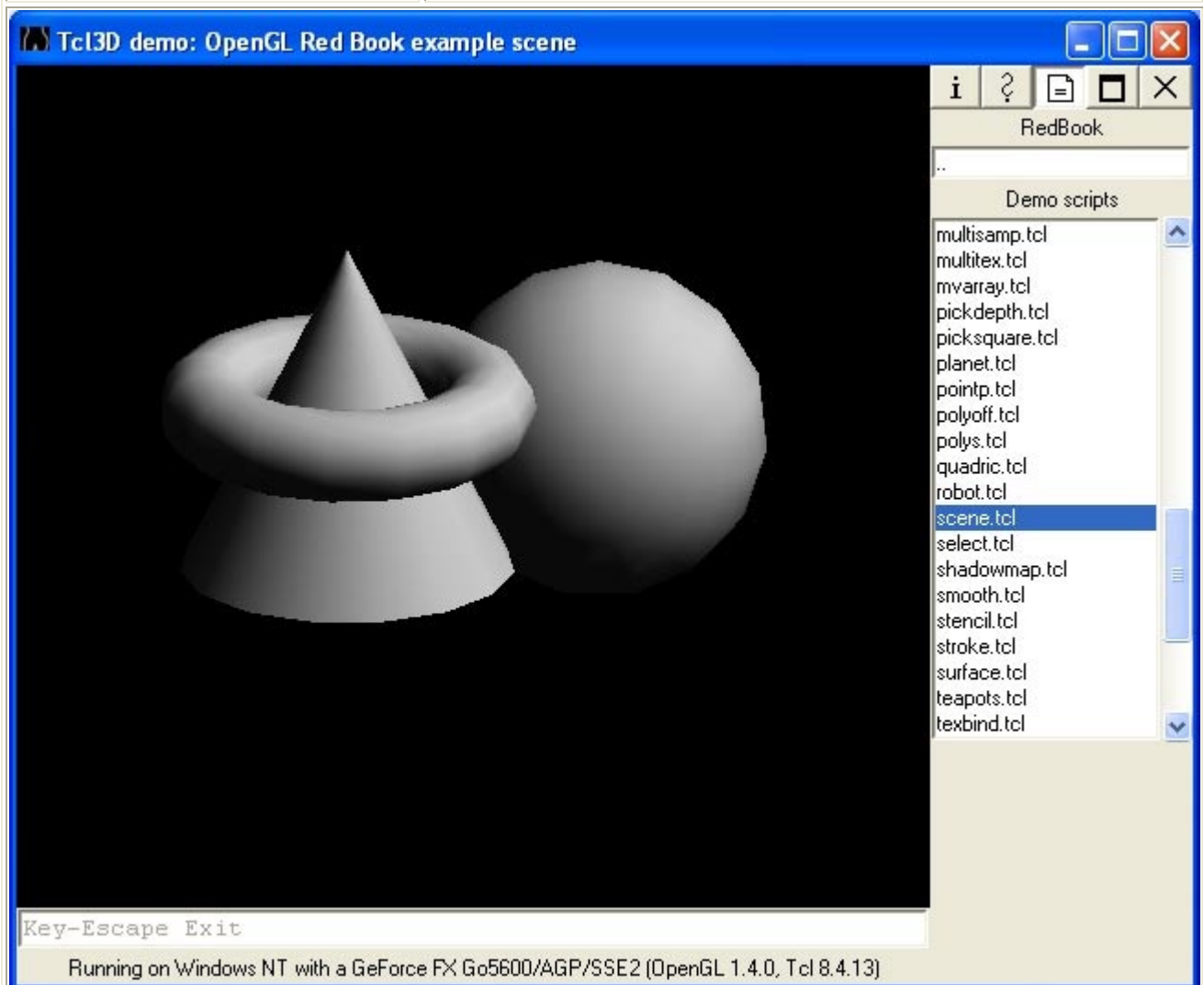

```
scene.tcl

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.
See file LICENSE for complete license information.


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.
```

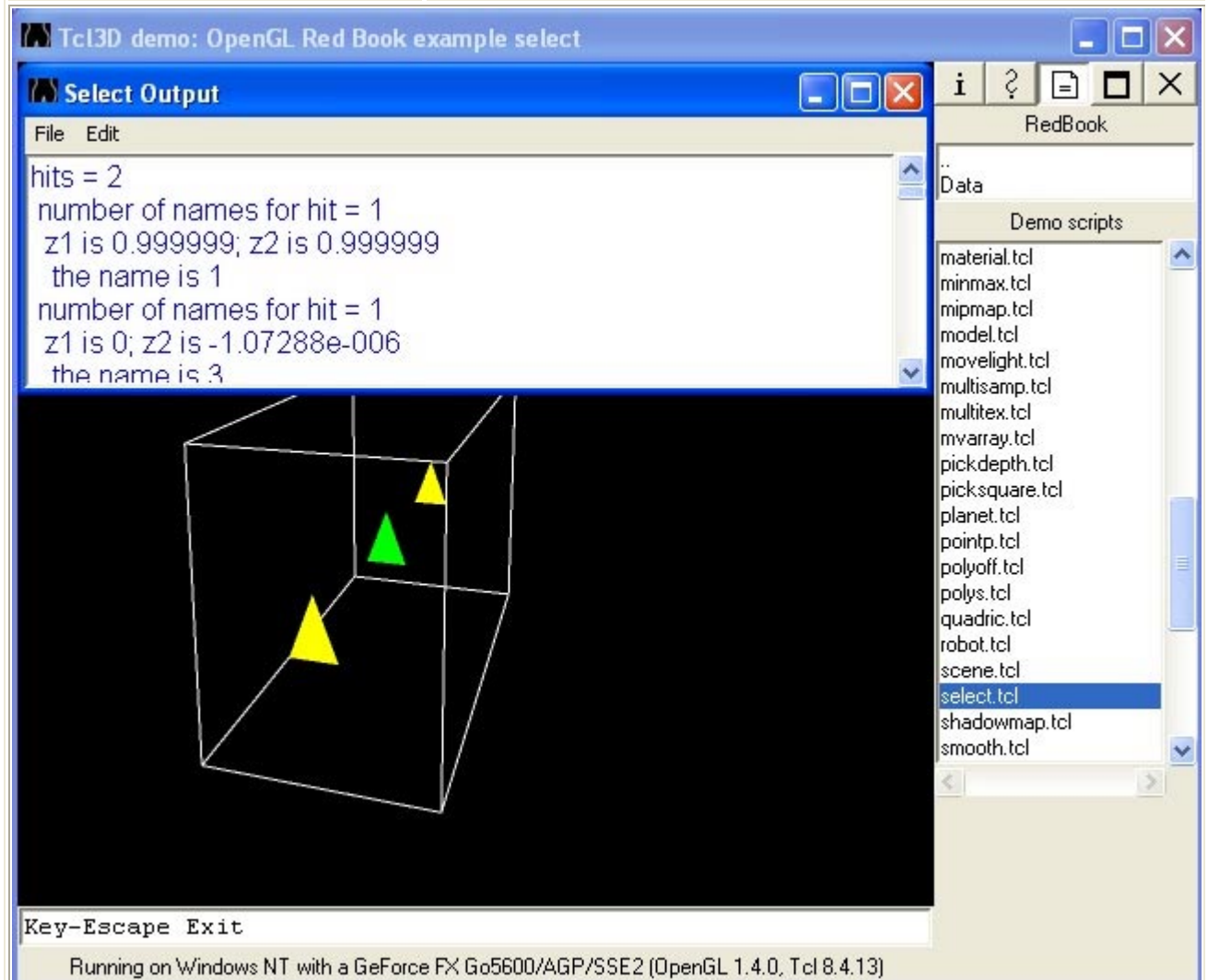| Demo:	select
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
select.tcl

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.
See file LICENSE for complete license information.

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

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.
See file LICENSE for complete license information.
```

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


```
smooth.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.
See file LICENSE for complete license information.


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

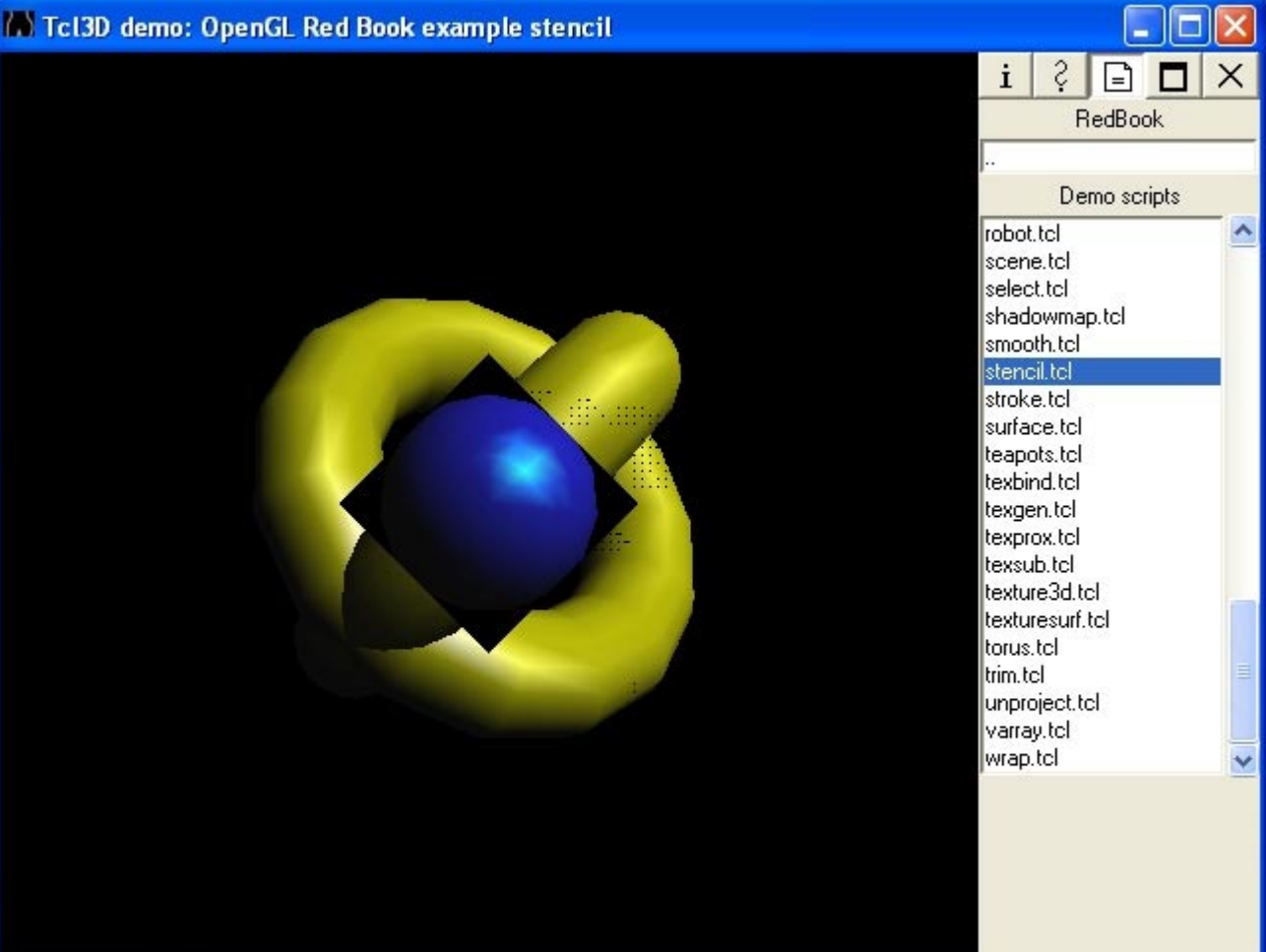| Demo:	stencil
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
stencil.tcl

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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

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

Tcl3D demo: OpenGL Red Book example texbind

RedBook

..

Demo scripts

robot.tcl
scene.tcl
select.tcl
shadowmap.tcl
smooth.tcl
stencil.tcl
stroke.tcl
surface.tcl
teapots.tcl
texbind.tcl
texgen.tcl
texprox.tcl
texsub.tcl
texture3d.tcl
texturesurf.tcl
torus.tcl
trim.tcl
unproject.tcl
varray.tcl
wrap.tcl

Key-Escape Exit

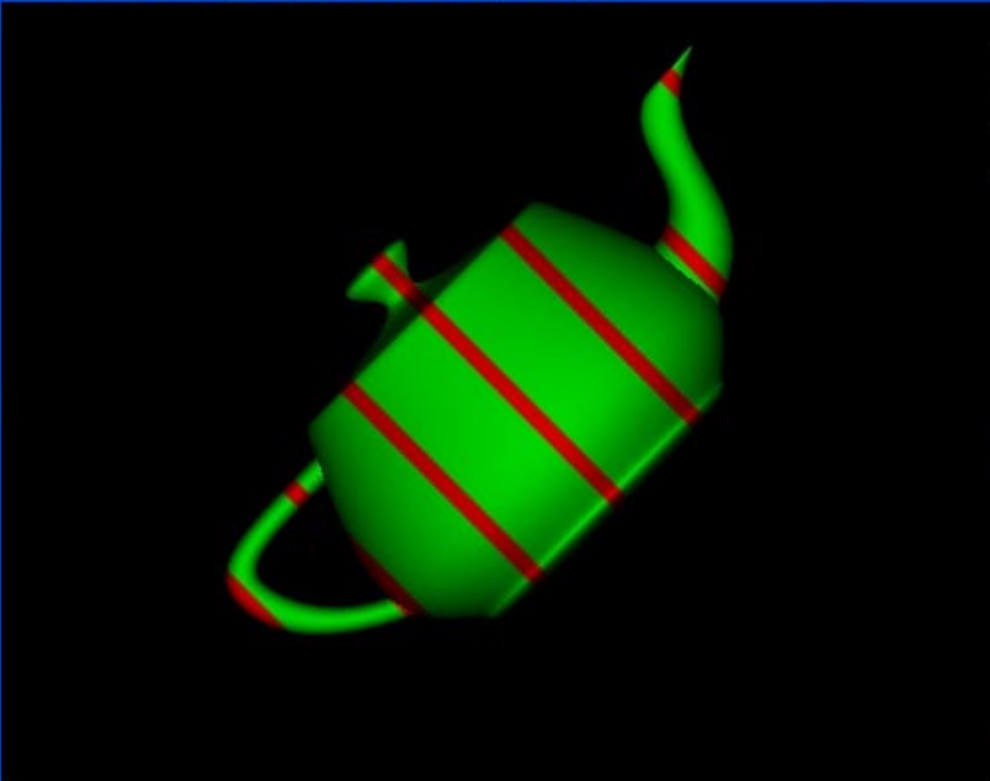Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```
texbind.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.
See file LICENSE for complete license information.


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

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


```
texgen.c

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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

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.
See file LICENSE for complete license information.


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.
See file LICENSE for complete license information.


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.
```

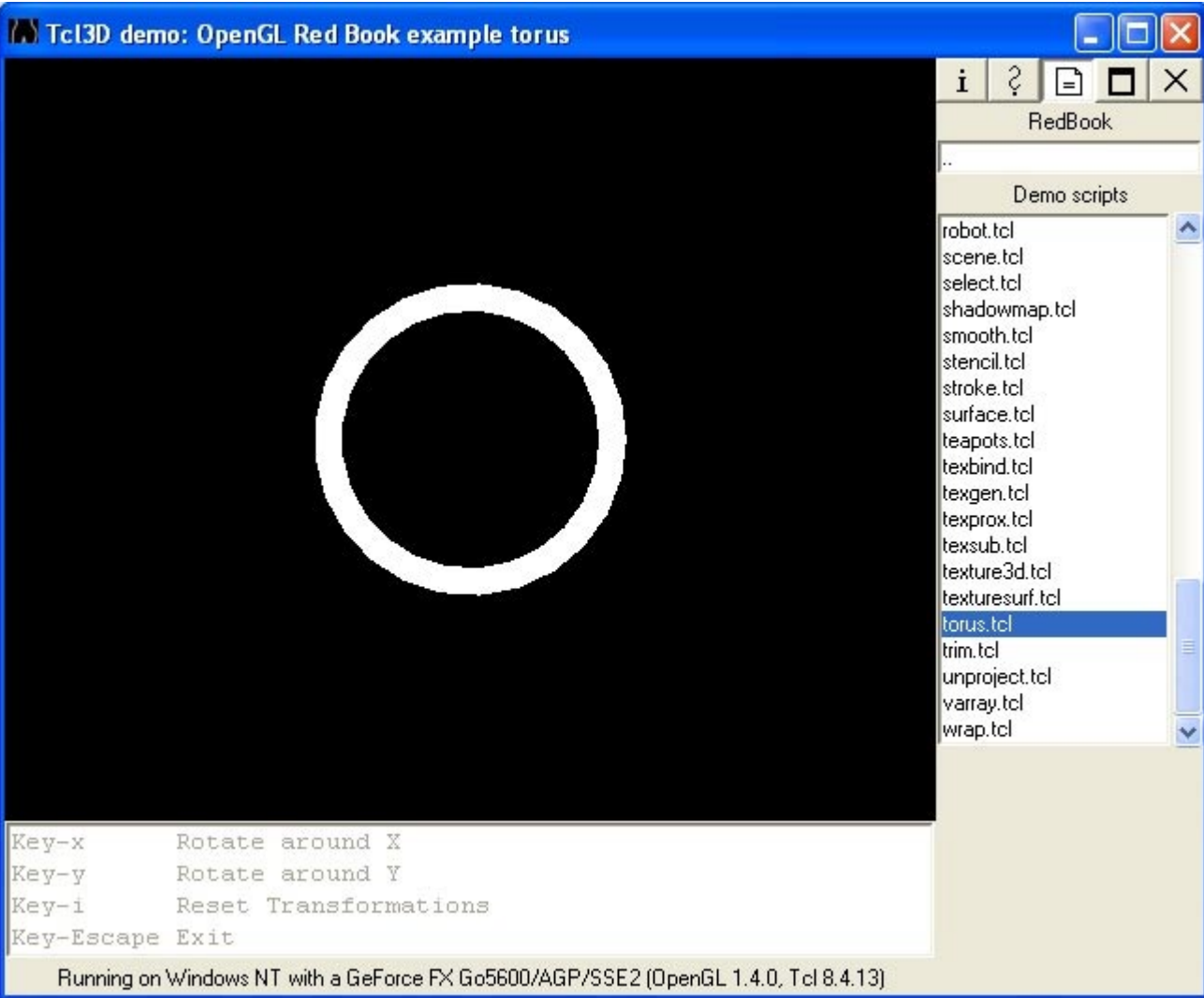| Demo:	texturesurf
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents


```
texturesurf.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

This program demonstrates the creation of a display list.
```

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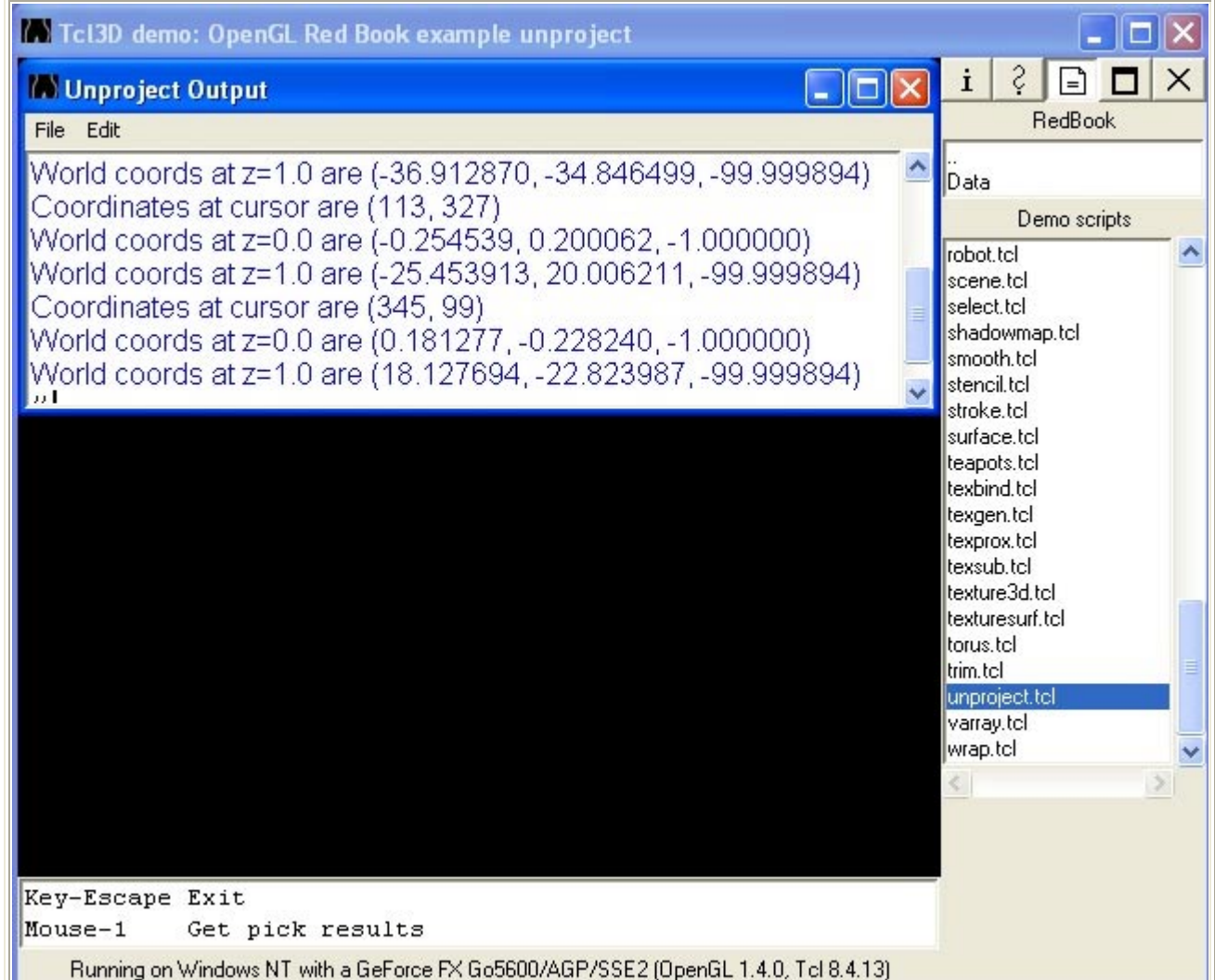

```
trim.tcl

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.
See file LICENSE for complete license information.


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.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

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.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

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.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.


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.
```