

Programming 3D Graphics with OpenGL

By:

Bryson R. Payne, Ph.D.

Programming 3D Graphics with OpenGL

By:

Bryson R. Payne, Ph.D.

Online:

< <http://cnx.org/content/col10246/1.3/> >

C O N N E X I O N S

Rice University, Houston, Texas

This selection and arrangement of content as a collection is copyrighted by Bryson R. Payne, Ph.D.. It is licensed under the Creative Commons Attribution 1.0 license (<http://creativecommons.org/licenses/by/1.0>).

Collection structure revised: November 5, 2004

PDF generated: February 4, 2011

For copyright and attribution information for the modules contained in this collection, see p. 5.

Table of Contents

1 Introduction to Programming 3D Graphics in OpenGL	1
2 Drawing simple shapes with perspective	3
Index	4
Attributions	5

Chapter 1

Introduction to Programming 3D Graphics in OpenGL¹

The eight tutorials below are a representative sampling of the necessary algorithms for programming realistic 3D virtual worlds in OpenGL C++. Each tutorial includes a brief description, commented sample C++ code, and an executable demo.

To run the executables, you may need the file `opengl32.dll`, and to compile the source files, you will need the GL, GLU, and GLUT header files. All of these are included on the CD that accompanies Wright and Sweet's *OpenGL SuperBible* (2000, Waite Group Press). They can also be found through <http://www.opengl.org>² online. Click on the provided file link³ to download the entire tutorial and all source/executables as a single ZIP file (1.34 MB).

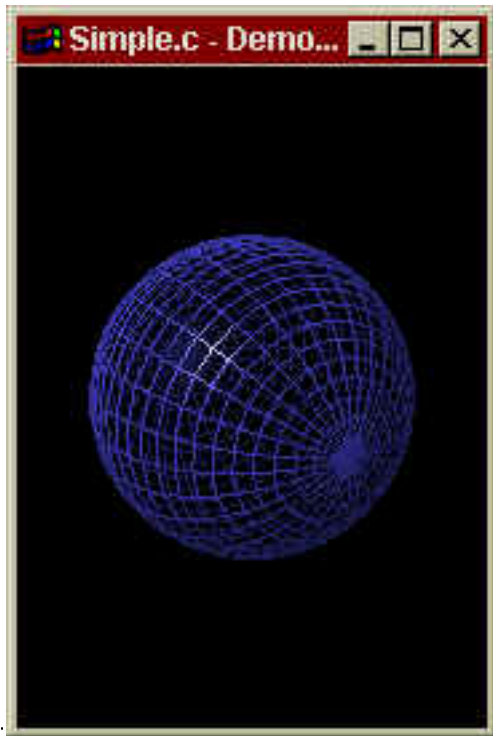
¹This content is available online at <http://cnx.org/content/m12425/1.3/>.

²<http://www.opengl.org>

³<http://cnx.org/content/m12425/latest/gradproj.zip>

Chapter 2

Drawing simple shapes with perspective¹



Discussion The first example in this set of tutorials is a program to draw a simple wireframe sphere. We will take this first step and go further in the tutorials that follow, but this serves as a simple test bed for us to try displaying any object or figure. Simply change the line that draws the `glutWireSphere` with the line(s) for your object to easily test your coding for errors.

Sample code: Click here to see the sample code: [simple.c](#)²

Executable example: Click here for a running demo: [simple.exe](#)³

¹This content is available online at <http://cnx.org/content/m12426/1.4/>.

²<http://cnx.org/content/m12426/latest/simple.c>

³<http://cnx.org/content/m12426/latest/simple.exe>

Index of Keywords and Terms

Keywords are listed by the section with that keyword (page numbers are in parentheses). Keywords do not necessarily appear in the text of the page. They are merely associated with that section. *Ex.* apples, § 1.1 (1) **Terms** are referenced by the page they appear on. *Ex.* apples, 1

3 3-D, § 1(1)
3D, § 1(1), § 2(3)

C c, § 1(1)
c++, § 1(1)
computer, § 1(1)

G graphics, § 1(1)

I interactive, § 1(1)

O opengl, § 1(1), § 2(3)

P programming, § 1(1)

Attributions

Collection: *Programming 3D Graphics with OpenGL*

Edited by: Bryson R. Payne, Ph.D.

URL: <http://cnx.org/content/col10246/1.3/>

License: <http://creativecommons.org/licenses/by/1.0>

Module: "Introduction to Programming 3D Graphics in OpenGL"

By: Bryson R. Payne, Ph.D.

URL: <http://cnx.org/content/m12425/1.3/>

Page: 1

Copyright: Bryson R. Payne, Ph.D.

License: <http://creativecommons.org/licenses/by/1.0>

Module: "Drawing simple shapes with perspective"

By: Bryson R. Payne, Ph.D.

URL: <http://cnx.org/content/m12426/1.4/>

Page: 3

Copyright: Bryson R. Payne, Ph.D.

License: <http://creativecommons.org/licenses/by/1.0>

Programming 3D Graphics with OpenGL

A brief set of sequential tutorials with source code included to enable users to program 3D interactive graphics in OpenGL and C/C++.

About Connexions

Since 1999, Connexions has been pioneering a global system where anyone can create course materials and make them fully accessible and easily reusable free of charge. We are a Web-based authoring, teaching and learning environment open to anyone interested in education, including students, teachers, professors and lifelong learners. We connect ideas and facilitate educational communities.

Connexions's modular, interactive courses are in use worldwide by universities, community colleges, K-12 schools, distance learners, and lifelong learners. Connexions materials are in many languages, including English, Spanish, Chinese, Japanese, Italian, Vietnamese, French, Portuguese, and Thai. Connexions is part of an exciting new information distribution system that allows for **Print on Demand Books**. Connexions has partnered with innovative on-demand publisher QOOP to accelerate the delivery of printed course materials and textbooks into classrooms worldwide at lower prices than traditional academic publishers.