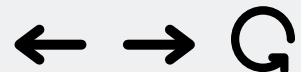




Lesson 1



Bukidnon State University

# Lesson 1 - OpenGL

**OPENGL FUNDAMENTALS**



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# What is OpenGL

## Open Graphics Library

- Graphics rendering API
- Software interface to graphics software

## Benefits of using OpenGL

- Windows system independent
- Operating system independent
- Standard for graphics programming
- Available on various platforms





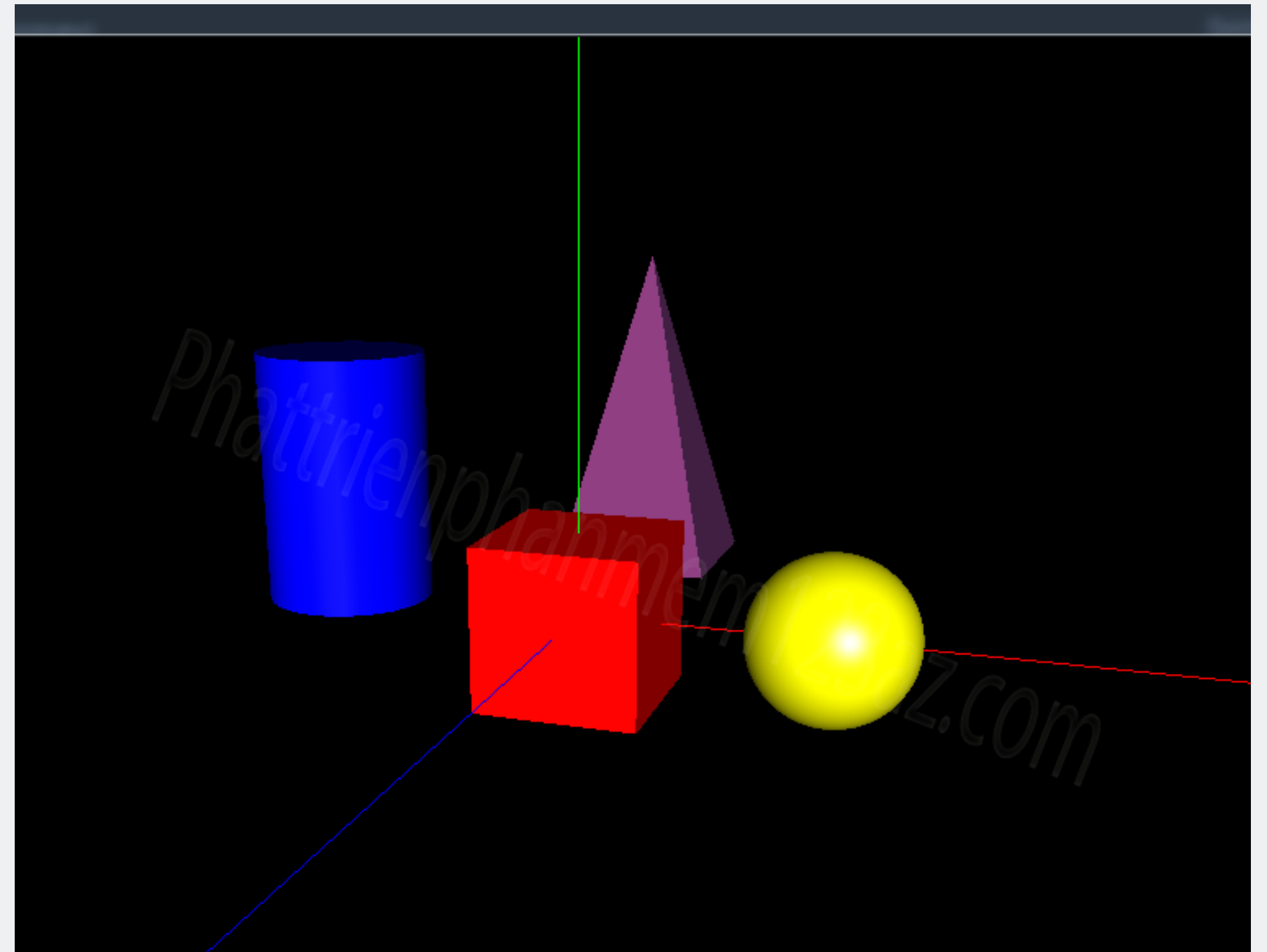
# Related API

## GLU(OpenGL Utility Library)

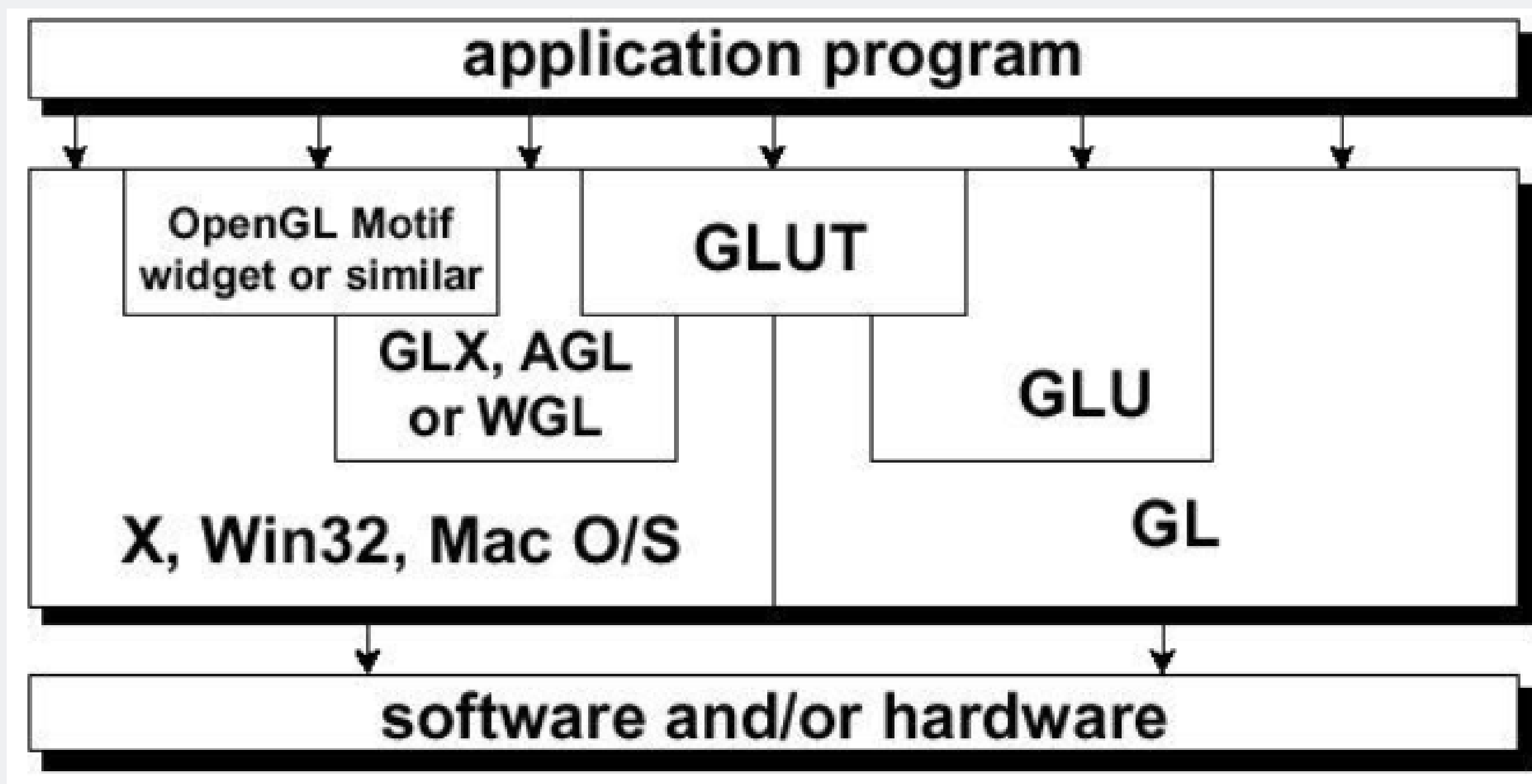
- Many modeling features: quadric surfaces, NURBS, tessellators

## GLUT(OpenGL Utility Toolkit)

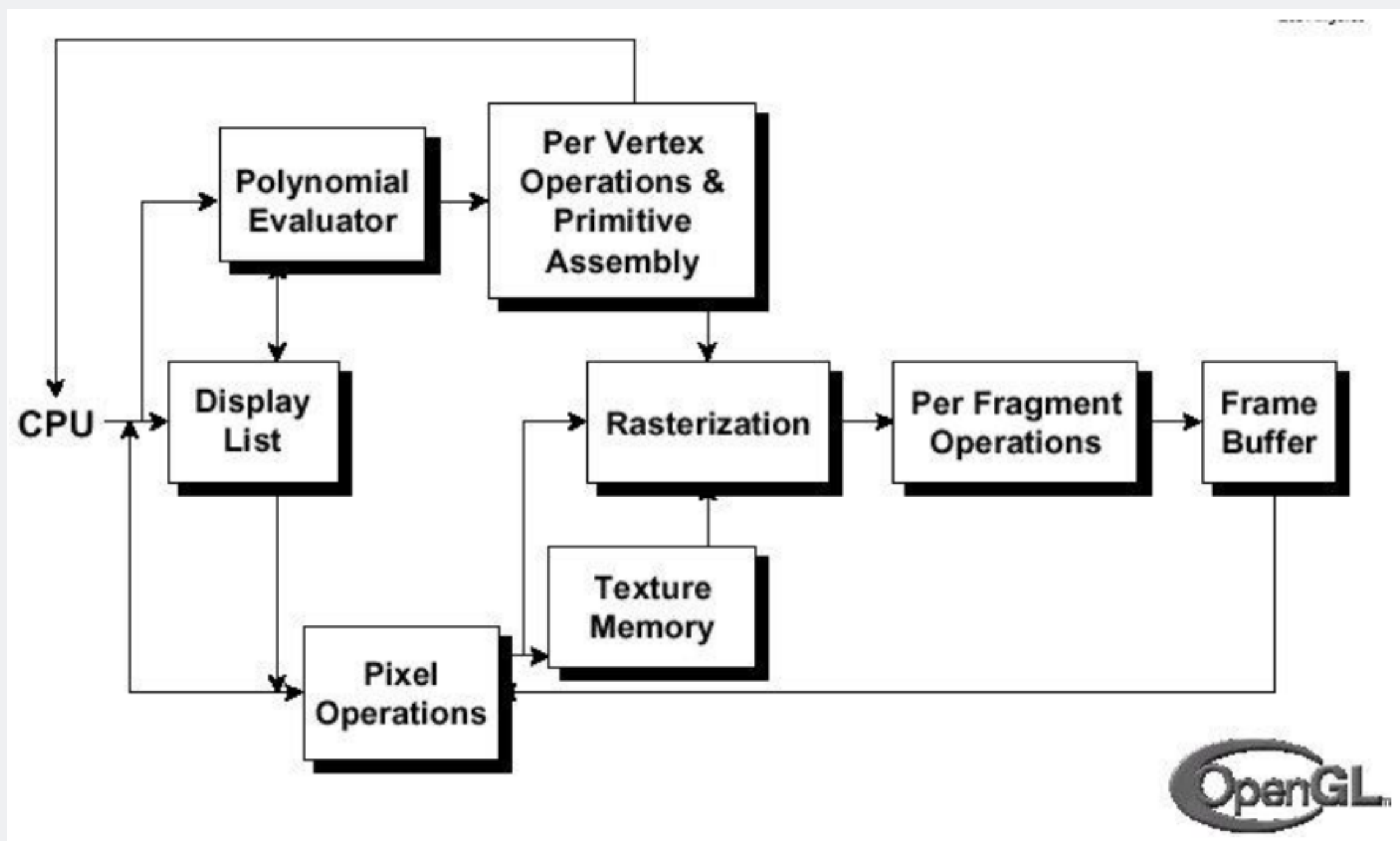
- Windowing and user interface API
- Provides handy shape primitives(torus, teapot, cube)



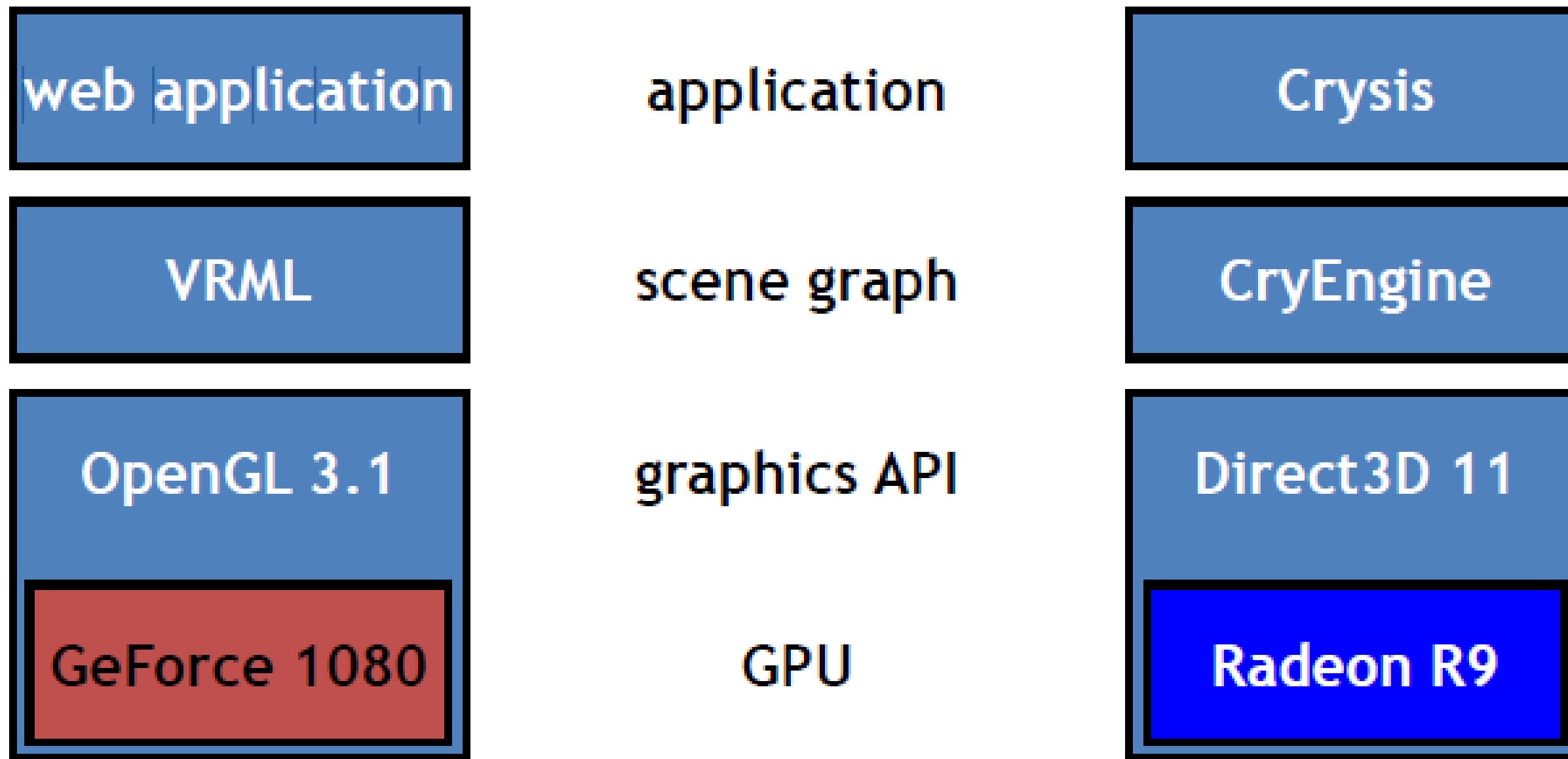
# Graphics HW/SW and API



# OpenGL Pipeline



# Graphics Software Stacks





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# Setting up OpenGL



## Install VS 2010

Install a fresh copy of Visual Studio 2010.



## Copy OpenGL Files

- Copy required files



## Test Program

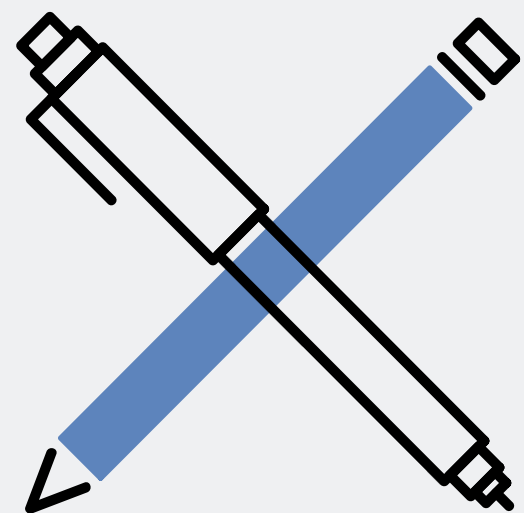
Run the provided code to check if OpenGL is working properly

## Installation Files

<https://drive.google.com/drive/folders/1Nkn-t1NjRyFo48UHtPiE4TDNaAQE0BXr?usp=sharing>



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# Preliminaries

## Header Files

- `#include <gl.h>`
- `#include <glu.h>`
- `#include <glut.h>`

## Libraries

- GL
- GLU
- GLUT

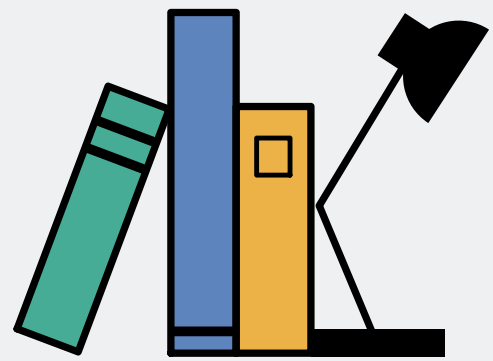
## Built in types

- GLfloat
- GLint
- GLdouble
- GLenum





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# Readings and Links

- |    |  |    |  |
|----|--|----|--|
| 01 | <ul style="list-style-type: none"><li>• OpenGL Documentation:<br/><a href="https://docs.gl/">https://docs.gl/</a></li></ul>                                | 03 | <ul style="list-style-type: none"><li>• <b>OpenGL Book:</b><br/><a href="https://learnopengl.com/book/book_pdf.pdf">https://learnopengl.com/book/book_pdf.pdf</a></li></ul>  |
| 02 | <ul style="list-style-type: none"><li>• <b>Wiki:</b><br/><a href="https://en.wikipedia.org/wiki/OpenGL">https://en.wikipedia.org/wiki/OpenGL</a></li></ul> | 04 | <ul style="list-style-type: none"><li>• OpenGL Examples:<br/><a href="https://www.opengl.org/archives/resources/code/samples/glut_examples/examples/examples.html">https://www.opengl.org/archives/resources/code/samples/glut_examples/examples/examples.html</a></li></ul> |