

Hello Triangle

Brigham H.
Keys, Esq.,
Dane
Christensen

What is
OpenGL?

What am I going
to need?

Libraries used

Hello world
Triangle

Setting up the
compiler

Intro to Opengl

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What is OpenGL?

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OpenGL is the industry's foundation for high performance graphics, from games to virtual reality, mobile phones, and supercomputers. It is a cross-language, cross-platform application programming interface for rendering 2D and 3D vector graphics. The API is typically used to interact with a graphics processing unit (GPU), to achieve hardware-accelerated rendering. It does not handle windows, keyboard, mouse or any other kind of input from the user. However there are other APIs that work next to OpenGL to accomplish these tasks.

Libraries used in this course

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OpenGL

Chances are you already have the OpenGL installed as it is often bundled with your graphics card driver. However you also do not likely have the development files we are going to use installed.

The OpenGL Utility Library (GLU)

Is a collection of functions that do drawing on a higher level, and has functions that generally make our lives easier. It is bundled with OpenGL and uses OpenGL directly.

FreeGlut

Another collection of functions that have high level drawing. But it's main purpose for us is to handle the keyboard, mouse and window handling. This will likely need to be installed.

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To compile code containing OpenGL functions, we need to let the compiler know that we are calling them in the first place by linking the libraries to our binary. Below are the individual flags we need to give to the compiler to use these utilities. Here is the syntax to compile the code from the command line:

Compiler	File	OpenGL	GLU	FreeGlut
g++	main.cpp	-lGL	-lGLU	-lGLUT

Initialize OpenGL

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Verbatim

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Example (Theorem Slide Code)

```
\begin{frame}  
\frametitle{Theorem}  
\begin{theorem}[Mass--energy equivalence]  
$E = mc^2$  
\end{theorem}  
\end{frame}
```

Figure

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Uncomment the code on this slide to include your own image from the same directory as the template .TeX file.

Citation

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An example of the `\cite` command to cite within the presentation:

This statement requires citation [Smith, 2012].

References

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John Smith (2012)

Title of the publication

Journal Name 12(3), 45 – 678.

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The End