

Handouts: Raster Graphics Hardware

OpenGL Basics



- OpenGL structure
- More basic graphics information
- Assignment #1

OpenGL



- 3D graphics library
 - Output only: render graphics
 - | Only knows about "graphics contexts"
- Platform independent: No support for
 - Window creation
 - | GLX
 - | GLW
 - Input

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OpenGL is an "Immediate-mode" 3D Library



- Immediate vs. retained
 - command/primitive sequence vs. models
 - ie. OpenGL vs. OpenInventor
- Primitives
 - lines, points, polygons
- Commands
 - transformations, color, line style, etc.

The Screen Buffers



- Pixels
- Bitplanes
- Framebuffer
 - Color
 - Depth
 - ...

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Data Types



- Platform independent types
 - GLbyte (8b, byte)
 - GLshort (16b, short)
 - GLint, GLsizei (32b, int)
 - GLfloat, GLclampf (32bf, float)
 - GLdouble, GLclampd (64bf, double)
 - GLubyte, GLboolean, GLushort, GLuint

OpenGL Pipeline (p. 11)



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Initialization: Coordinate Systems

- `gluOrtho2D (l, r, b, t);`

Miscellaneous initialization

- `glClearColor (r, g, b, a);`
- `glMatrixMode(m);`
 - `GL_PROJECTION`
 - `GL_MODELVIEW`
- `glLoadIdentity ();`

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Display Functions



- `glClear (buffer)`

- `glColor3f (r, g, b);`

- `glIndexi (i)`

Creating fragments



- `glBegin (type)`
 - `GL_LINES, GL_POINTS, GL_TRIANGLES, GL_QUADS, GL_POLYGON, ... (p.43)`

- `glEnd ();`

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Specifying points



- `glVertex{234}{sifd}(TYPE coords);` (p.41)

Moving on ...



- Assignment #1
 - Due Friday Sept. 1st
 - Purpose:
 - | learn how to write GLUT/OpenGL programs
- Read sections on Syllabus