OpenGL Object Management and Viewing Basics

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1 Administrivia

Announcements

Demo `maze2d`.

Assignment

Assignment 3 due Friday.

From Last Time

Finished up labs.

Outline

1. OpenGL object management.

2. Viewing basics.

3. Interact with `collision.cpp`.

Coming Up

Discussion of maze project (Project 1).

2 OpenGL Object Management

(Working from the source files for the collision program.)

1. `Ball` object, line 85.

2. `initBalls()`, line 348.

   Note `geometry` and `numVertices` — used by `display()`.

3. `createCircle()`, line 380:

   (a) Vertices being generated for a circle of the given radius. Alternative: circle of radius one, combined with a scaling transformation with the projection matrix.

   (b) `points` and `colors` are local. Why?

   (c) Note the relationships between the VAO, the buffer, the shader programs, and the program attributes.

   This is complicated, but essential.

4. `init()`, line 471 — uniform variables.

5. `display()`, line 433.

   (a) Projection and model view matrices.

   (b) Binding the current vertex array and drawing.

6. Vertex and fragment shader programs.

3   Viewing Basics

1. In `main()` — double buffering, reshape callback.

   Use of `#define` — the pre-processor.

2. Maintaining the aspect ratio between the world and the window:

   (a) Viewports.

   (b) Changing the clipping region (projection matrix).

4   Interact with `collision.cpp`

Build and run (class exercise).