

CS770/870 Spring 2017

Some GLSL Drawing Options Related to P3

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Buffers Shared by Class

- **bu**a: unshared apart (separate) buffers
 - Each object has separate buffer for each kind of vector data (position, normal, color, texture coord)
 - What we've been doing
- **bs**a: shared apart buffers
 - All objects of a class use the same buffer for positions (or normals or default texture coords)
 - As long as all objects in class use same data
 - Create and download buffer on 1st instantiation
 - Buffer id variable becomes class variable (*static*)

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Joint Attribute Buffers

- Two or more vector attributes (e.g., position/normal) stored in a single **joint** buffer.
 - **blocked**: Stored by attribute (**bsj/buj + ab**)
 - All positions stored first, then all normals
 - **interleaved**: Stored by vertex (**bsj/buj + ai**)
 - $p_{x0}, p_{y0}, p_{z0}, n_{x0}, n_{y0}, n_{z0}, p_{x1}, p_{y1}, p_{z1}, n_{x1}, n_{y1}, n_{z1}, \dots$
 - Might help with low-level cache-like efficiency in GPU

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glDrawArrays

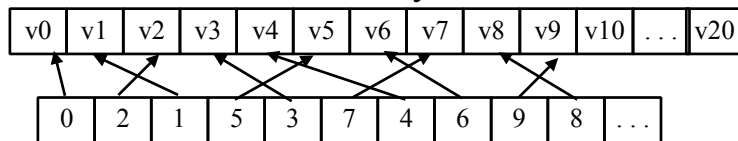
- *glDrawArrays* is called an “ordered draw”
 - Multiple options specifying predefined ordering
 - Triangles defined by groups of 3 vertices
 - *GL_TRIANGLE*: each group of 3 vertices in order is a triangle
 - *GL_TRIANGLE_FAN*: vertex 0 is shared by all triangles $v_0.v_1.v_2, v_0.v_2.v_3, v_0.v_3.v_4 \dots$
 - *GL_TRIANGLE_STRIP*: 1st triangle is first 3 vertices; next triangle is made from last 2 vertices of previous plus 1 more vertex. Odd number triangles are CCW; even numbered are CW.

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glDrawElements

- *glDrawElements* defines an “indexed” draw
 - There are 2 arrays:
 - vertex array has exactly 1 copy of each vertex
 - index array contains consecutive sets of 3 indexes that define triangles, where the index identifies a vertex in the vertex array



EvalDemo

- Lots of code, but you can ignore most of it
- Shape3D.java is where lots of your code goes
 - setData method is set up to be the director to select which methods to call under which conditions
- SceneManager
 - only builds 1 scene, but framework is there for more
 - only builds scene from Boxes, but can change that