USING **OBJ**ECT FILES WITH VULKAN

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3D MODEL FORMATS

- Many different formats (.STL, .AMF, .X3D, .OBJ, .3DS, .BLEND, .SKP, .OFF, .PLY)
- Hold all data necessary to produce a model
- We care about: vertices, normals, texture coordinates, faces

WAVEFRONT **OBJ**ECT FILE STRUCTURE

- Plain text ASCII (.obj) or binary (.mod)
- Simple and well documented format
- Scales with complexity

Source: http://paulbourke.net/dataformats/obj/

WAVEFRONT **OBJ**ECT FILE STRUCTURE: CUBE

Source: http://paulbourke.net/dataformats/obj/
SETUP

1. Move Vertex struct into separate header VERTEX.H
2. Create model struct MODEL.H
3. Parse OBJ file with LOADOBJFILE.CPP
4. Modify sample code
5. Choose a model

STEP 1:

STEP 2:

STEP 3: PARSING OBJ FILE

Original code written by Professor Bailey, sourced from CS450
STEP 4: MODIFY SAMPLE CODE

1. REMOVE struct vertex from sample.cpp (under STRUCTS FOR THIS APPLICATION section)
2. INCLUDE vertex.h
3. REMOVE #include "SampleVertexData.cpp"
4. UNDER APPLICATION-RELATED GLOBAL VARIABLES ADD
   - 'struct model model;
   - 'struct vertex vertexData;
5. IN 'InitGraphics()' ADD
   - model = loadModel("RESOURCES/CUBE.OBJ");
   - int VERTEX_DATA_SIZE = sizeof(VERTEX_DATA);
   - VERTEX_DATA = model.vertexData.size();
   - FOR (int i = 0; i < VERTEX_DATA_SIZE; i++) { VERTEX_DATA[i] = model.vertexData[i];

Original code written by Professor Bailey, sourced from CS419v Vulkan

STEP 5: CHOOSE A MODEL

- 3D Models you can download:
  - Free 3D Models: [http://3dmodels.com](http://3dmodels.com)
  - Florida State: [Free]: [http://people.cs.fsu.edu/~miller/3d_data/3d.html](http://people.cs.fsu.edu/~miller/3d_data/3d.html)
  - Buy 3D Models (but they are free): [http://www.3dmodels.com/free/3dmodels.php](http://www.3dmodels.com/free/3dmodels.php)
  - ChromeSphere: [http://www.chromeSphere.com/3dmodels.html](http://www.chromeSphere.com/3dmodels.html)
  - Remnants of the old Av/ion site (free): [http://hg.murphy.cc/av/ion/av/ionviewpoint.com/objects](http://hg.murphy.cc/av/ion/av/ionviewpoint.com/objects)
  - Digimon (costs money): [http://www.digimon.com](http://www.digimon.com)

RESULTS

THIRD PARTY LIBRARIES & SOURCE

- Source Code:
  - [https://github.com/CarvellWakeman/Vulkan_loadObjFile](https://github.com/CarvellWakeman/Vulkan_loadObjFile)
- Third Party Library:
  - [https://github.com/SYOYO/TINYOBJLOADER](https://github.com/SYOYO/TINYOBJLOADER)
- Create an OBJ model in Blender:
  - [https://media.oregonstate.edu/media/1f0_41x6a5](https://media.oregonstate.edu/media/1f0_41x6a5)