Graphics Coordinates and the Pipeline

The Basic Computer Graphics Pipeline

- Vertex, Normal, Color
- MC = Model Coordinates
- WC = World Coordinates
- EC = Eye Coordinates
- CC = Clip Coordinates
- NDC = Normalized Device Coordinates
- SC = Screen Coordinates
The Basic Computer Graphics Pipeline, Shader-style

**Vertex Shader**
- gl_Vertex, gl_Normal, gl_Color: Per-vertex in variables
- Uniform Variables: gl_ModelViewMatrix, gl_ProjectionMatrix, gl_ModelViewProjectionMatrix

**Projection Transform**
- gl_Position, Per-vertex out variables

**Fragment Shader**
- Fragment Processing, Texturing, Per-fragment Lighting
- Uniform Variables: gl_ModelViewMatrix, gl_ProjectionMatrix, gl_ModelViewProjectionMatrix

**Framebuffer**
- gl_FragColor

**Rasterization**

**MC** = Model Vertex Coordinates
**WC** = World Vertex Coordinates
**EC** = Eye Vertex Coordinates
The Shaders’ View of the Basic Computer Graphics Pipeline

- In general, you want to have a vertex and fragment shader as a minimum.
- A missing stage is OK. The output from one stage becomes the input of the next stage that is there.
- The last stage before the fragment shader feeds its output variables into the rasterizer. The interpolated values then go to the fragment shaders.

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**Oregon State University**
Computer Graphics