Introduction to Computer Graphics with WebGL

THE UNIVERSITY of NEW MEXICO

Ed Angel

Square Program
Part 3

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Square Program

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WebGL

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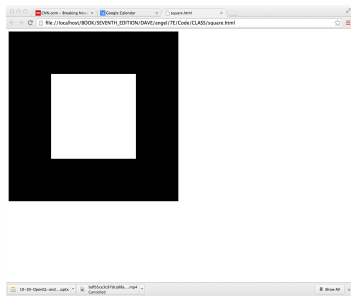
• Five steps
- Describe page (HTML file)
    • request WebGL Canvas
    • read in necessary files
- Define shaders (HTML file)
    • could be done with a separate file (browser dependent)
- Compute or specify data (JS file)
- Send data to GPU (JS file)
- Render data (JS file)

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square.html

```
<!DOCTYPE html>
<html>
<head>

<script type="text/javascript" src="../Common/webgl-utils.js"></script>
<script type="text/javascript" src="../Common/initShaders.js"></script>
<script type="text/javascript" src="../Common/MV.js"></script>
<script type="text/javascript" src="square.js"></script>
```

webgl-utils.js: Standard utilities for setting up WebGL context in Common directory on website

initShaders.js: JS and WebGL code for reading, compiling and linking the shaders

MV.js: our matrix-vector package

square.js: the application file

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square.html (cont)

```
<script id="vertex-shader" type="x-shader/x-vertex">

attribute vec4 vPosition;   // vertex position from application
void main()
{
    gl_Position = vPosition;
}
</script>

<script id="fragment-shader" type="x-shader/x-fragment">

precision mediump float;
void main()
{
    gl_FragColor = vec4( 1.0, 1.0, 1.0, 1.0 );     // white and opaque
}
</script>
```

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Shaders

- We assign names to the shaders that we can use in the JS file
- These are trivial pass-through (do nothing) shaders that which set the two required built-in variables
  - gl_Position
  - gl_FragColor
- Note both shaders are full programs
- Note GLSL vector type vec4
- Must set precision in fragment shader

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square.html (cont)

```
<body>
<canvas id="gl-canvas" width="512" height="512">
Oops ... your browser doesn't support the HTML5 canvas element
</canvas>
</body>
</html>
```

- canvas id needed for JS file to access
- height and width in pixels
- note canvas is just one element on the document

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