|  |  |
| --- | --- |
| \* Why do we need a web server running our pages?  Can't we just use a local browser (note: instructor access is not the answer here)? | \* Assume you want to animate a WebGL program.  What JavaScript function call do you need to make in your application to call gl.drawArrays multiple times?  (Note, we looked at a couple of different approaches for this). |
| \* Describe two benefits for using WebGL over traditional OpenGL. | \* Describe one method of detecting if two squares have collided with each other. |
| \* Describe the purpose of:   \* The application   \* The vertex shader   \* The fragment shader | \* What does frames per second (FPS) actually mean with respect to animation?  What are some concerns we have when managing this with WebGL (i.e., in a browser)? |
| \* What is the key difference between raster and vector graphics? | \* What does it mean to pick something?  Describe one method for handling a pick event. |
| \* What does it mean to be CPU-bound?  How do we overcome this problem? | \* Describe the differences between incremental and positional (i.e., direct) devices. |
| \* What are three purposes of the libraries we include (note that other frameworks provide similar functionalities)? | \* What is an event queue? |
| \* Why do graphics tend to center around triangles for drawing graphics? | \* Describe the difference between request-based and event-based input. |
| \* Describe each step of "the pipeline." | \* What is the purpose of a callback function? |
| \* What is a projection? | \* What is the purpose of the buffer flip (i.e., double buffering)?  How does this happen in WebGL? |
| \* We have talked about the clipping plane (or clipping volume).  What does this mean and why is it advantageous for us? | \* Assume we have a Boolean variable direction.  Write a small application script to handle flipping the direction variable on a button click.  For example, if it is defined to be true, clicking the button will flip it to false (and vice versa if it were set to false). |
| \* Why do we need an API for graphics? | \* Describe two HTML elements you can use to interact with a WebGL application. |
| \* What is a "pass-through" shader? | \* What do we need to do if we want to figure out where our mouse cursor is if we are handling mouse clicks in our WebGL viewport? |
| \* Describe the difference between a gl.TRIANGLE, gl.TRIANGLE\_FAN, and gl.TRIANGLE\_STRIP.   \* Given a set of points, draw each. | \* What is a mesh? |
| \* What is a fractal? | \* What is a shared edge in a mesh?  Why can this be a problem? |
| \* What do we modify if we want to make our object transparent?  To what value should that parameter be set? | \* If you are using the right hand rule (to go counter-clockwise around a polygon), what does the \*outward pointing normal\* imply? |
| \* What is the difference between a uniform variable and a varying variable? | \* What is the difference between a topology and a geometry? |
| \* Given some boilerplate code, draw a 2-D hexagon. \*\*I can guarantee a variant of this question will appear on the exam. | \* What is the purpose of storing either an edge list or a face list (i.e., why do we add layers of indirection for model building)? |
| \* How would you change from a single-colored object to an object where each vertex can have a different color? | \* Describe a key difference between the parallel and perspective views |
| \* What is selection with respect to matrices? |  |
| \* What is triangularization and why do we do it? | \* Describe an example of when you would use a parallel and when you would use a perspective view. |
|  | \* What is the purpose of the 'up' vector in the lookAt function? |
|  | \* Why do we keep our transformation matrices in 4D as long as possible? |