Started on	Monday, 14 May 2018, 1:18 PM
State	Finished
Completed on	Monday, 14 May 2018, 1:47 PM
Time taken	28 mins 19 secs
Grade	**9.75** out of 10.00 (**98**%)

Question 1

Correct

Mark 1.00 out of 1.00

In the context of OpenGL-4 programming, a shader is

Select one:

- a. A colour value output by the fragment processor.
- b. A light source.
- c. An illumination model.
- d. A program designed to run on a certain stage of a graphics processor. ✓
- e. A colour palette.

Correct

Marks for this submission: 1.00/1.00.

Question 2

Correct

Mark 1.00 out of 1.00

Which one of the following is NOT a shader stage in the OpenGL-4 pipeline?

Select one:

- a. Fragment Shader
- b. Geometry Shader
- c. Vertex Shader
- d. Tessellation Shader
- e. Depth Shader ✓

Correct

Marks for this submission: 1.00/1.00.

Question 3

Correct

Mark 1.00 out of 1.00

Which of these is the primary function of a vertex shader?

Select one:

- a. Texture storage
- b. Transformations and lighting ✓
- c. Depth testing
- d. Primitive assembly
- e. Vertex culling

Correct

Marks for this submission: 1.00/1.00.

Question 4

Correct

Mark 1.00 out of 1.00

All vertex shaders have a pre-defined output `gl_Position`. What does this output represent?

Select one:

- a. The position of the current vertex in world coordinates.
- b. The position of the current vertex in clip coordinates. ✓
- c. The position of the camera in world coordinates.
- d. The position of the current vertex in eye coordinates.
- e. The position of a light source in world coordinates.

Correct

Marks for this submission: 1.00/1.00.

Question 5

Correct

Mark 1.00 out of 1.00

Vertex shaders require matrices for transforming points and vectors. These matrices are often passed from the application to the shader. Which one of the following storage qualifiers is used here?

Select one:

- a. Static
- b. Out
- c. Constant
- d. In
- e. Uniform ✓

Correct

Marks for this submission: 1.00/1.00.

Question 6

Correct

Mark 1.00 out of 1.00

What is a vertex array object (VAO)?

Select one:

- a. An array defined inside a geometry shader.
- b. An array object passed from the vertex shader to the fragment shader
- c. An array defined inside a vertex shader.
- d. An OpenGL object that stores all transformation matrices required for vertex processing.
- e. An OpenGL object that encapsulates all information about the vertex data of an object. ✓

Correct

Marks for this submission: 1.00/1.00.

Question 7

Correct

Mark 1.00 out of 1.00

What is a fragment?

Select one:

- a. An input to the vertex shader.
- b. A value that is output from the vertex shader.
- c. A part of a primitive that is discarded at the clipping stage.
- d. A pixel-sized element or segment of a rasterized primitive. ✓
- e. A uniform variable that is passed from an application to a vertex shader.

Correct

Marks for this submission: 1.00/1.00.

Question 8

Correct

Mark 1.00 out of 1.00

A vertex shader outputs a value for each vertex using an "out" variable. The same variable is declared inside the fragment shader using the storage qualifier "in". What would be the value obtained inside the fragment shader through this variable?

Select one:

- a. The first value output by the vertex shader.
- b. The sum of the vertex values.
- c. The average of the vertex values.
- d. The last value output by the vertex shader.
- e. The value interpolated across the primitive. ✓

Correct

Marks for this submission: 1.00/1.00.

Question 9

Correct

Mark 1.00 out of 1.00

The following statement is included in a shader:

vec4 light = vec4(10.0, 20.0, 30.0, 1.0);

Which one of the following vectors is produced by light.wxx ?

Select one:

- a. vec4(1.0, 10.0, 10.0, 1.0)
- b. vec3(10.0*w, 20.0*x, 30.0*x)
- c. vec4(10.0*w, 20.0*x, 30.0*x, 1.0)
- d. vec3(w, x, x)
- e. vec3(1.0, 10.0, 10.0) ✓

Correct

Marks for this submission: 1.00/1.00.

Question 10

Correct

Mark 0.75 out of 1.00

The following statement appears inside a vertex shader:

```
mat2 m = mat2(1.0, 4.0, −2.0, 5.0);
```

What would be the value of the following expression?

```
m[1] + vec2(2.0)
```

Select one:

- a. vec4(3.0, 6.0, 0.0, 7.0)
- b. vec2(3.0, 6.0)
- c. vec2(0.0, 7.0) ✓
- d. vec2(3.0)
- e. vec2(6.0)

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.75/1.00**.