**This quiz has been regraded; your new score reflects 2 questions that were affected.**

# Midterm Exam

- Due No due date
- Points 100
- Questions 23
- Available Apr 5 at 12:59pm - Apr 5 at 3pm 2 hours and 1 minute
- Time Limit 120 Minutes

This quiz was locked Apr 5 at 3pm.

## Attempt History

| | Attempt | Time | Score | Regraded |
|---|---|---|---|---|
| **LATEST** | Attempt 1 | 70 minutes | 61.58 out of 100 | 68.08 out of 100 |

Score for this quiz: 68.08 out of 100
Submitted Apr 5 at 2:09pm
This attempt took 70 minutes.

Question 1
4 / 4 pts

a. Bezier Curve of Degree 5 given by

answers :

1. $(1-t)^5p_0 + 5t(1-t)^4p_1 + 10t^2(1-t)^3p_2 + 10t^3(1-t)^2p_3 + 5t^4(1-t)p_4 + t^5p_5$
2. $(1-t)^4p_0 + 5t(1-t)^3p_1 + 10t^2(1-t)^3p_2 + 10t^3(1-t)^2p_3 + 5t^3(1-t)p_4 + t^4p_4$
3. $(1-t)^5p_0 + 5t(1-t)^4p_1 + 10t^3(1-t)^2p_2 + 10t^2(1-t)^3p_3 + 5t^4(1-t)p_4 + t^5p_5$
4. $(1-t)^5p_5 + 5t(1-t)^4p_4 + 10t^2(1-t)^3p_3 + 10t^3(1-t)^2p_2 + 5t^4(1-t)p_1 + t^5p_0$

Correct!

- (●) 1
- ( ) 4
- ( ) 3
- ( ) 2

Question 2
4 / 4 pts

b. The Binomial Coefficients of degree 7 Bezier curve given as

- 1 21 20 35 20 21 1

Correct!

- 1 7 21 35 35 21 7 1
- 1 5 10 10 5 1
- 1 6 15 20 15 6 1

Question 3
0 / 5 pts

if an equation given as

$(t^5-t^4+2t^3+t^1)p_0 + 5(t^4-t^2)p_1 + (t^2-t^1+2)p_2 + (1-t)p_3 + (t^4-t^3+t^2)p_4 + t^5p_5$ : the $4^{th}$ row of the matrix M given as (Note: Row 1 indexed as 1)

$[P_0\ p_1\ p_2\ p_3\ p_4\ p_5]\ M\ [t^5\ t^4\ t^3\ t^2\ t\ 1]^T$

You Answered

- 1 0 -1 -1 -1 0
- 0 -1 -1 -1 0 -1
- 0 0 0 -1 -1 2

Correct Answer

- 0 0 0 0 -1 1

Question 4
Original Score: 0 / 4 pts Regraded Score: 4 / 4 pts

**This question has been regraded.**

Find the equation of line passing (2,-1,5) and (4,8,0)

Correct Answer

- None of these
- x = 2-t , y = -1-9t , z =5+5t

You Answered

- x = 2+2t , y = -1+9t , z =5+5t

- x = 2(1+t) , y = -(1+9t) , z =5(1-t)

Question 5
5 / 5 pts

Given Matrix X and Y

$$X = \begin{bmatrix} 3 & 5 & 2 \\ 7 & 6 & 8 \\ 5 & 1 & 3 \end{bmatrix} \qquad y = \begin{bmatrix} 2 & 6 & 3 \\ 9 & 3 & 8 \\ 5 & 0 & 0 \end{bmatrix}$$

Diagonal values of resulting matrix of X x Y is (Note: diagonal is top left most to bottom right most column)

- 61 39 65

Correct!

- 61 60 23
- 29 23 0
- 29 23 17

Question 6
3 / 3 pts

Construct a matrix sequence for a triangle that rotates around the y - axis

- Through θ = 30 degrees counter clockwise about its point B = (1 0 -1)
- Let C = cos (30◦), S = sin(30◦ ).

What is the diagonal values 4 x 4 Matrix after multiplying first 2 Matrices.

(Nate : First is left most matrix and diagonal is top left most to bottom right most ...)

- C 1 C -1

Correct!

- C 1 C 1
- C 1 C 3

C 1 S 1

Question 7

0 / 5 pts

if above Triangle repeat the rotation for 3 times what is the value of B?

(answer in format: (3, 0, -3 )

You Answered

(3, 0 , -3)

(1, 0,1)

Correct Answer

(1, 0 , -1)

(3, 0, -1)

Question 8

0 / 5 pts

The resulting distance of (2+2i)*(2-3i) answer

You Answered

sqrt(102)

Correct Answer

sqrt(13)*sqrt(8)

None of the statements

sqrt(13)*2

Question 9

0 / 3 pts

Find right order for Model View Projection Matrix

Correct Answer

Projection Matrix *View Matrix *Model Matrix* Model Coordinates

View Matrix *Model Matrix * Projection Matrix * Model Coordinates

You Answered

Model Matrix * View Matrix * Projection Matrix + Model Coordinates

Model Coordinates * Model Matrix * View Matrix * Projection Matrix

Question 10

4 / 4 pts

eye at (0, 0, 1), Center at (0,0,0), up at Oy axis (0,1,0)

If right = 3, left = 1, top = 5, bottom = 3, near = 12, far = 10

Product of Orthographic Projection Matrix and View Matrix given by

Correct!

- $\begin{bmatrix} 0 & 0 & 1 & -2 \\ 0 & 0 & 0 & -4 \\ 0 & 1 & 0 & 11 \\ 0 & 0 & 0 & 1 \end{bmatrix}$
- $\begin{bmatrix} 1 & 0 & 1 & -2 \\ 0 & 1 & 0 & -4 \\ 0 & 1 & 1 & -9 \\ 0 & 0 & 0 & 1 \end{bmatrix}$
- Not any of these
- $\begin{bmatrix} 1 & 0 & 1 & -2 \\ 0 & 0 & 0 & -4 \\ 0 & 1 & 1 & 9 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

Question 11

5 / 5 pts

If right = 3, left = 1, top = 5, bottom = 3, near = 12, far = 10

Sum of values in the right most column of a Orthographic Projection Matrix give by

Correct!

- 6
- 5
- 0
- -6

Question 12

3.75 / 5 pts

Which of the statement are true?

Correct!

- [x] VAO handles one or more Vertex Buffer Objects

Correct!

- [x] EBO helps to organize elements

Correct Answer

- [ ] Accumulation Buffer is a combination of VBO, VAO and PBO

Correct!

- [x] PBO mostly used to store texture data

Question 13

4 / 4 pts

A 3D model translate to the center and performing a rotation known as

Correct!

- Affine Transformation
- Translation
- Rotation
- Center Mapping

Question 14

5 / 5 pts

Find p' after translate point p= (10,20,30) by t = [5,-6,3] $^{T}$

- p' = (50, -60, 90)

Correct!

- p' = (15, 14 33)
- p' = (15, 26, 27)
- p' = (5, 14, 27)

Question 15

5 / 5 pts

The composite Matrix that rotates a triangle in the 2d plane through angle  on clockwise direction about it's  point c =(5,5) given by:

Let cos  = C and sin = S

- $\begin{bmatrix} C & -S & -Cc_x + Sc_y + c_x \\ S & C & -Sc_x - Cc_y + c_y \\ 0 & 0 & 1 \end{bmatrix}$
- $\begin{bmatrix} C & -S & 5 \\ S & C & 5 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 & -5 \\ 0 & 1 & -5 \\ 0 & 0 & 1 \end{bmatrix}$

Correct!

- $\begin{bmatrix} 1 & 0 & 5 \\ 0 & 1 & 5 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} C & S & 0 \\ -S & C & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 & -5 \\ 0 & 1 & -5 \\ 0 & 0 & 1 \end{bmatrix}$
- $\begin{bmatrix} 1 & 0 & -5 \\ 0 & 1 & -5 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} C & -S & 0 \\ S & C & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 & 5 \\ 0 & 1 & 5 \\ 0 & 0 & 1 \end{bmatrix}$

Question 16

0 / 5 pts

Set camera at +10 on z Axis

Center at (0,0,0)

up at Oz axis (0,0,1)

Find the sum of diagonal values of View Matrix  When it is applied to x,y,z,w coordinates

(Note : First is left most matrix and diagonal is top left most to bottom right most ...)

You Answered

- (●) 11
- ( ) Not any of these

Correct Answer

- ( ) 2
- ( ) 1

Question 17

5 / 5 pts

What is **NOT** the main purpose of the Vertex Buffer Object

- ( ) VBO uses to connect the vertex data to the vertex shader
- ( ) None of the statements

Correct!

- (●) Vertex Buffer Object mainly handles pixel data
- ( ) VBO uses to control over the vertex shader data

Question 18

Original Score: 2.5 / 5 pts Regraded Score: 5 / 5 pts

**This question has been regraded.**

True statements relate to buffers

Correct Answer

- [ ] Not any of these except Stencil buffer facilitates masking

You Answered

- [x] The accumulation buffer used for accumulating a series of images into a final, composite image
- [ ] Depth Buffer only uses for shadow mapping
- [ ] Contains only Color Index or only RGB color data

Question 19

5 / 5 pts

Match test operations

Correct!

Scissor test

Restrict drawing of some po

Correct!
Alpha test

Accept or Reject Frame

Correct!
Stencil test

Restrict drawing of some po

Correct!
Accumulation Buffer

Uses for depth fields and m

Question 20
3.33 / 5 pts
What is true about Barycentric coordinates on a triangle

- [ ] α, $\beta$, $\lambda$ are zero means P is in center

Correct!
Can use to determine a given point locate inside a triangle

- [x]

Correct Answer
If $\beta$ =0 means P is on Edge

- [ ]

Correct!
Point in a triangle can be define as P = a + $\beta$(b-a)+ $\lambda$(c-a)

- [x]

Question 21
0 / 3 pts

One way to pass variables between shaders?

- Using Attribute variable type
- shaders cannot pass variables each other

You Answered

- Using uniform variable type

Correct Answer

- Using varying variable type

Question 22
3 / 3 pts

Find the intersection point of a line and a plain

where plain 2x + 2y +5z -2 =0

and line move from (0,0,0) to (2, 3, 1)

- -1*(0.6, 0.9, 0.3)
- t = 3/10
- (4/14, 6/14, 2/14)

Correct!

- (4/15, 6/15, 2/15)

Question 23
0 / 3 pts

The sum of diagonals of a composite Matrix that rotates a triangle in the 2d plane through angle $\Theta$ on clockwise direction about it's point c =(-5,-5) and scale by 3 keeping point (0,0) unchanged given by:

Let cos = C and sin = S

(Note: diagonal is top left most to bottom right most column)

You Answered

- 6C + S
- 3S+1
- 6S+3

Correct Answer

- 6C+1

Quiz Score: 68.08 out of 100