CS 200SU21 - Quiz 1 (cs200su21-a.es)

1

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★ ★ ★ ★ ☆

2

The Main purpose of the Geometry Stage is to *

- (●) Select which vertices are to be rendered.
- ( ) Transform the vertices to frame buffer space.
- ( ) Compute additional geometry for the rasterizer.
- ( ) Scan convert the vertices.

3

What are the TWO main steps of the rasterization stage? *

Scan conversion and shading

4

What is the frame buffer? *

A 2D array of pixels

5

What is the range for x when the pixel position is its center in a frame buffer of width W? *

(0.5, W+0.5)

6

What is the range for x when the pixel position is its bottom-left corner in a frame buffer of width W? *

(0, W)

7

What is the maximum o-based pixel index in a frame buffer of dimensions 8x8? *

- 64
- 63
- 49
- 48

8

What is the only function we will use to draw things on screen? *

SetPixel()

9

What is a pipeline? *

A set of actions for which the output of one is the input for the next

10

What is the purpose of the rendering pipeline? *

To alter the pixels on a screen in order to show an image

11

What is the value of x? *

$x = [3.8]$

4

12

Which one is more expensive? *

- [x] Using Pixel Center as the pixel position
- [ ] Using Pixel Bottom-Left as the pixel position?

13

Give the equation to retrieve the index of a pixel (x,y) in a frame buffer of dimensions (W,H). Assume that each pixel is RGB (24-bit). *

x = (w - w/2)*3; y = (h - h/2)*3

14

What is the typical format of a color? *

- [ ] 32-bit RGBA
- [ ] 64-bit RGBA
- [ ] 32-bit ARGB
- [x] 8-bit RGBA

15

In which corner is the origin of the frame buffer located? *

Bottom-left

16

What is the input to the rendering pipeline? *

The output of the previous frame

17

The Rendering Pipeline is sometimes called the Renderer *

- (●) True
- ( ) False

18

The Application Stage is usually implemented on the hardware *

- ( ) True
- (●) False

19

Which primitives are most commonly accepted by the renderer? *

Vertices

20

What is the difference between vertex space and pixel space? *

The pixels depend on the ammount of bits the type of coloring has (e.g: RGBA...), and the vertex spa

21

What is the value of x? *

$x = \lfloor 3.8 \rfloor$

3

22

What is this equation? *

$y = mx + b$

The normal equation of a line

23

What does m represent in the equation below? *

$y = mx + b$

The slope of the line

24

How do we compute m given two points P1 (x1,y1) P2(x2, y2)? *

$m = ?$

$\frac{dy}{dx} = \frac{(y2-y1)}{(x2-x1)}$

25

What relationship does m describe in? *

$y = mx + b$

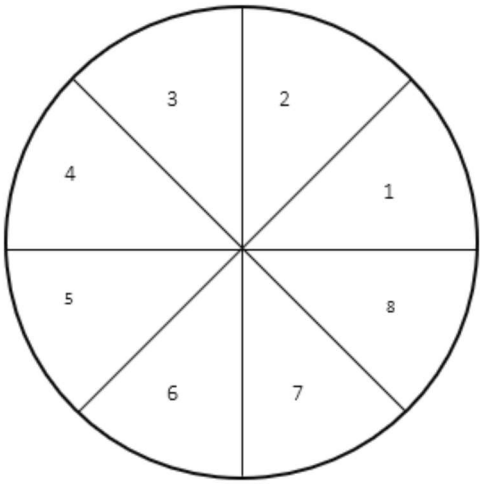
The proportion between the difference of y and the difference of x

26

Which equation should we choose when |m| > 1 *

- $x = \frac{(y-b)}{m}$
- $y = mx + b$
- $x = y - \frac{b}{m}$
- $x = \frac{y}{m} - b$

27



Select the correct answer for each one of the rows of the table below. Each line case is referred to by a number quadrant in the following image. *

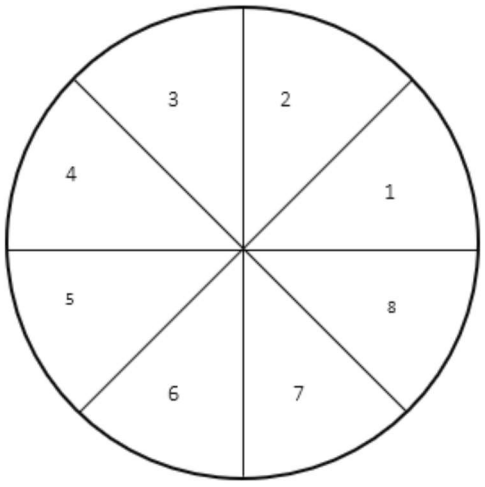
	> 0	< 0	> 1	< 1
case 1: dX	○	○	◉	○
case 4: |m|	○	◉	○	○
case 8: dX	○	○	◉	○
case 4: dY	○	○	◉	○
case7: |m|	○	◉	○	○
case 3:|m|	◉	○	○	○
case 5: dY	○	○	○	◉

28

How is the DDA algorithm different from the Naive algorithm? *

Both the x and y values get increased by a set value (step x or step y) to avoid calculating y every time

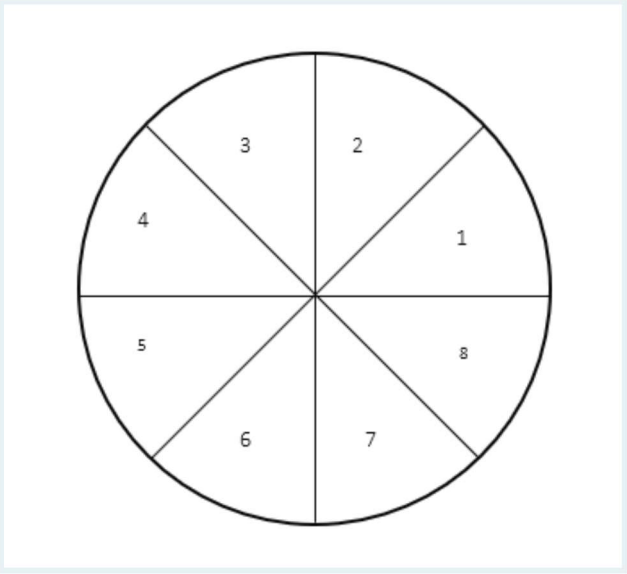
29



For line case 5 (|m| < 1, dX < 0 dY <0). What is the value of the increment stepY used in the DDA algorithm to compute the value of the pixel's x-coordinate? *

-|m|

30



For line case 7 (|m| > 1, dX > 0 dY <0). What is the value of the increment stepX used in the DDA algorithm to compute the value of the pixel's x-coordinate? *

|mInverse|

31

Given a line formed by two points P1(x1,y1) and P2(x2,y2) how can you determine if the line is horizontal? *

$If\ y1\ =\ y2,\ the\ line\ is\ horizontal$

32

Given a line formed by two points P1(x1,y1) and P2(x2,y2) how can you determine if the line is vertical? *

If $x1 = x2$, *the line is vertical*

33

What type of line do we have when |m| = 1? *

A diagonal line (45°)

34

Why is the Bres algorithm better than the DDA or Naive algorithms? *

Because it does simpler operations

35

NW	N	NE
W	P	E
SW	S	SE

For line case 7 (|m| > 1, dX > 0 dY <0). What are the next possible pixels from a pixel P (xp, yp)? *

Write the letter and the corresponding coordinates with respect to (xp, yp), as shown in class.

S: (xp, yp - 1)
SE: (xp + 1, yp - 1)

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Which axis should we use to compute the distances from the real line? *

- X
- Y

37

What is the value of the real line coordinate for that axis, expressed as an increment from xp or yp? *

yp += -1

38

What is the value of the initial decision parameter? *

2*dY + dX

39

What is the value of the decision parameter assuming that we have chosen the pixel of 1 coordinate change in the previous step? *

Express your answer with respect to dX and dY (delta X and delta Y)

$dp + 2 \times dy - 2 \times dx$

40

What is the value of the decision parameter assuming that we have chosen the pixel of 2 coordinate changes in the previous step? *

Express your answer with respect to dX and dY (delta X and delta Y)

$dp - 2 \times dy + 2 \times dx$

41

What is the value of the d_dp1 and d_dp2 (delta dp1 and delta dp2), the increments of dp1 and dp2, respectively? *

Express your answer with reespect to dX and dY (delta X and delta Y)

qwe

You're Done!

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How difficult was this quiz, where 1 is EXTREMELY EASY and 5 is EXTREMELY DIFFICULT *

1 2 3 4 5