Polygons and Filling Algorithms ③

Multiple Choice Questions for Online Exam

Q. 1 In a convex polygon, each of the interior angles is less than ____ degrees.
- (a) 90
- (b) 180
- (c) 360
- (d) 45   **Ans. : (b)**

Q. 2 Which one is not a type of basic fill styles?
- (a) Hollow
- (b) solid color
- (c) Pattern
- (d) Dark   **Ans. : (d)**

Q. 3 The process of filling an area with rectangular pattern is called
- (a) Tiling
- (b) Linear fill
- (c) Tint-fill
- (d) Soft-fill   **Ans. : (a)**

Q. 4 The algorithm which repaints an area that was originally painted by merging a foreground color F and background color B where F! = B.
- (a) Tint fill
- (b) Flood fill
- (c) Linear soft-fill
- (d) Boundary fill   **Ans. : (c)**

Q. 5 The fill color that is combined with the background color is known as____
- (a) Soft fill
- (b) Tint fill
- (c) Both a and b
- (d) None   **Ans. : (c)**

Q. 6 The operator that is used for combining a fill pattern with a background pattern is____
- (a) AND operator
- (b) OR operator
- (c) X-OR operator
- (d) All of these   **Ans. : (d)**

Q. 7 The process of coloring the area of a polygon . is called____
- (a) Polygon filling
- (b) Polygon flow
- (c) Aliasing
- (d) None of these   **Ans. : (a)**

Q. 8 The function of scan line polygon fill algorithm are____
- (a) Find intersection point of the boundary of polygon and scan line
- (b) Find intersection point of the boundary of polygon and point
- (c) Both a & b
- (d) None of these   **Ans. : (a)**

Q. 9 If the pixel is already filled with desired color then leaves it otherwise fills it. this is called____
- (a) Flood fill algorithm
- (b) Boundary fill algorithm
- (c) Scan line polygon filling algorithm
- (d) None of these   **Ans. : (b)**

Q. 10 A chain of connected line segments is called a ____.
- (a) Polyline
- (b) Polysegments
- (c) Polygon
- (d) Polychain   **Ans. : (a)**

Q. 11 A closed polyline is called a ____.
- (a) Polychain
- (b) Polygon
- (c) Polyclosed
- (d) Closed chain   **Ans. : (b)**

Q. 12 A polygon in which the line segment joining any two points within the polygon lies completely inside the polygon is called ____ polygon.
- (a) Convex
- (b) Concave
- (c) Closed
- (d) Complete   **Ans. : (a)**

Q. 13 ____ is a method for testing a pixel inside of a polygon.
- (a) even-odd method
- (b) winding number method
- (c) A and B
- (d) None of these   **Ans. : (c)**

Q. 14 ____ is a basic approach used to fill the polygon.
- (a) seed fill
- (b) scan fill
- (c) A and B
- (d) None of these   **Ans. : (c)**

Q. 15 The seed fill algorithm for filling polygon is classified as ____ fill algorithm and ____ fill algorithm.
- (a) flood, boundary
- (b) even, odd
- (c) edge, flood
- (d) boundary, scan   **Ans. : (a)**

Q. 16 Polygon filling algorithms those fill interior-defined regions are called ____ algorithms.
- (a) flood fill
- (b) boundary fill
- (c) scan line
- (d) edge fill   **Ans. : (a)**

Q. 1 A polygon is called ____ if the line joining any two interior points of the polygon lies completely inside the polygon.
- (a) Convex
- (b) Concave
- (c) Positively oriented polygon
- (d) Negatively oriented polygon

Ans. : (a)

Explanation : If we take any two points which are surely inside the polygon and join them by a straight line and if all the points of this new line are also inside the polygon then the polygon is called as Convex polygon.

Q. 2 To determine whether a point is inside the polygon or outside, which of the following method is used ____.
- (a) Even-odd test
- (b) Winding number method
- (c) Both a and b
- (d) Four connected method

Ans. : (c)

Explanation : Both Even-Odd method and winding Number methods are used. Four connected method is a polygon filling method.

Q. 3 In even-odd method if the intersection point is a vertex and is said to be as Even then _____.

(a) Other end points of the two segments of a polygon which meet at this vertex should lie on the same side of the constructed line

(b) Other end points of the two segments of a polygon which meet at this vertex should lie on the opposite side of the constructed line

(c) No need to check other end point

(d) None of these

Ans. : (a)

Explanation : If the intersection point is a vertex and is said to be as Even then the other end points of the two segments of a polygon which meet at this vertex should lie on the same side of the constructed line.

Q. 4 In winding number method, if the sum of intersecting edges is non zero then the point lay _____ the polygon.

(a) on the vertex　　　　(b) inside

(c) outside　　　　　　(d) none of these

Ans. : (b)

Explanation : In winding number method, if the sum of intersecting edges is non zero then the point lies inside the polygon and if the sum is zero then the point lies outside of the polygon.

Q. 5 If the given point is (x,y) and we want to access (x−1,y−1) in a single step we need to use _____.

(a) 4-connected method　　(b) 5-connected method

(c) 6-connected method　　(d) 8-connected method

Ans. : (d)

Explanation : In 8-connected method we can access any one of eight neighboring points.

Q. 6 Which of the following is not an example of the polygon?

(a) Triangle　　　　　(b) Rectangle

(c) Pentagon　　　　　(d) Line

Ans. : (d)

Explanation : Line is not a polygon, because for polygon minimum vertices required are three.

Q. 7 In edge fill algorithm the number of pixels addressed ____.

(a) Exactly once　　　(b) More than once

(c) Not even once　　　(d) None of these

Ans. : (b)

Explanation : In edge fill algorithm the number of pixels addressed are more than once because we are selecting one edge at a time and complimenting all the pixels which are on right side of the edge till end of the screen. So while selecting another edge it may happen that we are again accessing some of the pixels which are already referred for another edge.

Q. 8 If we want to fill the polygon having multiple color boundaries then we should use _____.

(a) Fence fill algorithm　　(b) Boundary fill algorithm

(c) Edge fill algorithm　　(d) Flood fill algorithm

Ans. : (d)

Explanation : Flood fill algorithm supports polygons having multi color boundary.

Q. 9 The difference between the Even-odd and Winding number method is _____.

(a) Winding number method covers overlapping area of the polygon

(b) Winding number method deals with only Convex polygons

(c) Both a and b

(d) None of these

Ans. : (a)

Explanation : In overlapping polygons winding number method covers the overlapping area whereas even odd method does not cover the overlapping area.

Q. 10 In which of the polygon filling algorithm we are using following logic : If the pixel is already filled with new color then leave it otherwise fill it with new color.

(a) Boundary fill algorithm

(b) Edge fill algorithm

(c) Scan line polygon filling algorithm

(d) Fence fill algorithm

Ans. : (a)

Explanation : In case of Boundary fill algorithm If the pixel is already filled with new color then we are not changing its color otherwise we will fill it with new color.

Q. 11 While implementing a flood fill algorithm recursively, generally we are using _____ data structure.

(a) Queue　　　　　(b) Trees

(c) Stack　　　　　(d) Linked list

Ans. : (c)

Explanation : Since we are implementing flood fill algorithm recursively we have to use Stack.

Q. 12 In scan line fill algorithm, to find the intersection point we use _____ formula

(a) $Xnew = Xold + 1/slope$, $Ynew = Yold - 1$

(b) $Xnew = Xold - 1/slope$, $Ynew = Yold + 1$

(c) $Xnew = Xold + 1/slope$, $Ynew = Yold + 1$

(d) $Xnew = Xold - 1/slope$, $Ynew = Yold - 1$

Ans. : (a)

Explanation : In scan line fill algorithm, to find the intersection point we use $Xnew = Xold + 1/slope$ and $Ynew = Yold-1$ formula. This formula is same as that of finding an intersection point of any two lines.

Q. 13 If the given triangle is A(10,10), B(20,20), C(30,10), then the point P(28,20) is _____.

(a) Inside the triangle

(b) Outside the Triangle

(c) On the boundary of Triangle

(d) None of these

Explanation : The system in which the image is displayed is called as Screen coordinate system, whereas the object is displayed in World coordinate system.

Q. 25 _____ method fills the complex or overlapping polygon completely.
(a) Even-odd method　　(b) Winding Number Method
(c) Flood fill　　(d) Scan line fill method
Ans. : (b)
Explanation : Overlapping and complex polygons are completely get filled by winding number method.

Q. 26 In which of the following polygon filling algorithm same pixel is not visited more than once ?
(a) Edge fill algorithm
(b) Boundary fill algorithm
(c) Fence fill algorithm
(d) Scan line fill algorithm
Ans. : (d)
Explanation : In Edge fill, Boundary fill and in fence fill algorithms, same pixel is visited more than once.

Q. 27 The types of polygons are _____.
(a) Convex　　(b) Complex
(c) Both a and b　　(d) None of these
Ans. : (c)
Explanation : Both Convex and Complex are the types of polygons. There is third type of polygon also which is called as concave.

Q. 28 The smallest polygon is having _____ number of vertices
(a) 2　(b) 3　(c) 4　(d) None of these
Ans. : (b)
Explanation : The smallest polygon is a triangle, having 3 number of vertices.

Q. 29 The concept of active edge list is used in _____ algorithm.
(a) Seed fill　　(b) Scan line fill
(c) Pattern fill　　(d) Edge fill
Ans. : (b)
Explanation : The concept of active edge list is used in scan line fill algorithm to activate / select the edges of the polygon for finding out the intersection point with scan line.

Q. 30 Generally a stack is used for implementing _____ algorithm.
(a) Edge fill　　(b) Scan line fill
(c) Boundary fill　　(d) Fence fill
Ans. : (c)
Explanation : Boundary fill and flood fill algorithms are implemented with recursion. So we can use stack for implementing these algorithms.

Q. 31 The smallest polygon is having _____ number of edges
(a) 1　(b) 2　(c) 3　(d) 4
Ans. : (c)

Explanation : The smallest polygon is a triangle, having 3 number of edges.

Q. 32 Which of the following is not true with respect to Fence fill algorithm?
(a) It is a pixel level algorithm
(b) One pixel may be visited more than once
(c) It is faster than Edge fill algorithm
(d) The order of selecting edges of the polygon is fixed
Ans. : (d)
Explanation : In fence fill algorithm we can select edges in random order.

Q. 33 In case of scan line fill algorithm we have to select more than two edges for _____ polygon.
(a) Convex　　(b) Concave
(c) Both a and b　　(d) None of these
Ans. : (b)
Explanation : For Concave polygons we have to activate more than two edges.

Q. 34 Which of the following algorithm is not based on pixel level computing?
(a) Edge fill algorithm　　(b) Scan line fill algorithm
(c) Boundary fill　　(d) None of these
Ans. : (b)
Explanation : Scan line fill algorithm is an example of geometric level computing whereas others are based on pixel level computing.

Q. 35 In winding number method, a point is said to be outside if _____.
(a) the sum of intersecting edges is zero
(b) the sum of intersecting edges is nonzero
(c) the sum of intersecting edges is negative
(d) the sum of intersecting edges is positive
Ans. : (a)
Explanation : In winding number method, if the sum of intersecting edges is zero then the point lies outside the polygon.

Q. 36 In winding number method, if one of the intersection point is a vertex, then it will be considered as zero if_____.
(a) the other end points of the edges are on opposite sides of newly constructed line
(b) the other end points of the edges are on same side of newly constructed line
(c) no need to check other end point
(d) both a and b
Ans. : (b)
Explanation : In winding number method, if one of the intersection point is a vertex, then it will be considered as zero if the other end points of the edges are on same side of newly constructed line.

Q. 37 In Even odd method a point is said to be inside if the number of intersections are _____.
(a) Odd　　(b) Even