Pattern Recognition And Image Processing

Notes For Final Exam

Prepared By

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Final Exam

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Segment-7

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1 Define Run code, chain code and signature?

Ans: Runcode :

Runcode represents each row of an image by a sequence of length that describe successive runs of black and white pixel.

0	0	0		1	1	1				
1	1	1		0	0	0				
0	0		1	1	1	1		1		

Runcode represents as (3, 6, 5, 4)

chain code

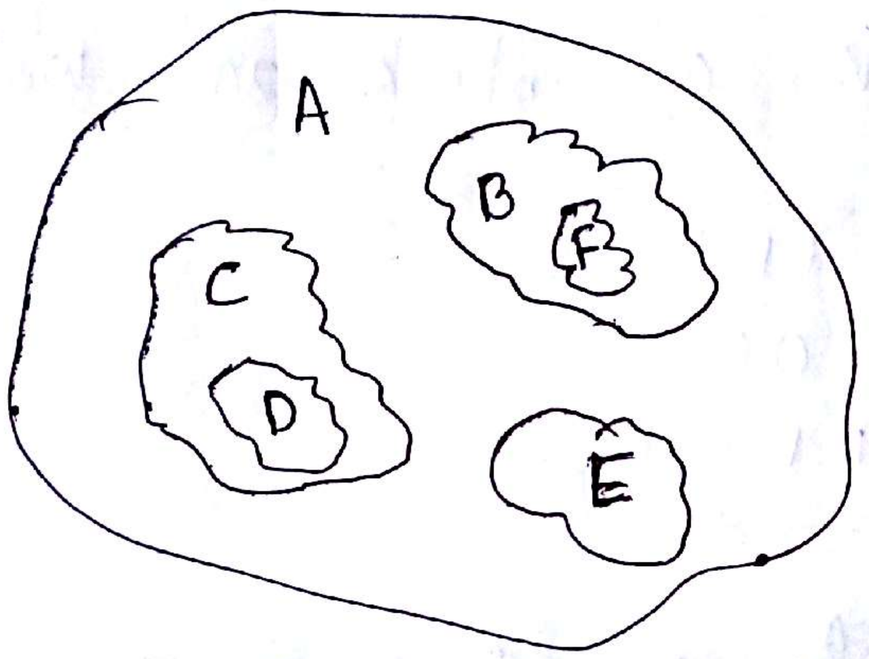
chain codes are used to represent a boundary by a connected sequence of straight line segments of specified length and direction.

Typically, this representation is based on 4 or 8 connectivity of the segments.

Signature :

A signature is a 1-D functional representation of a boundary and can be generated in various way.

[2] Describe the following regions using tree.



Ans:

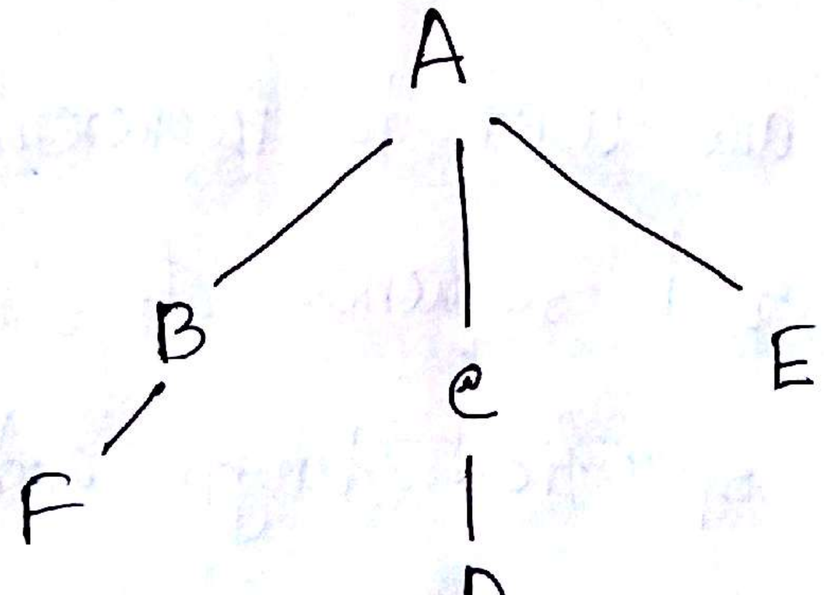
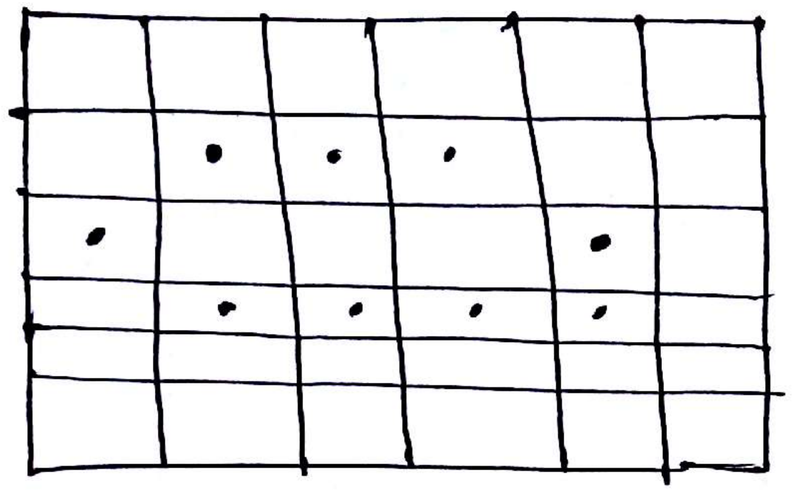
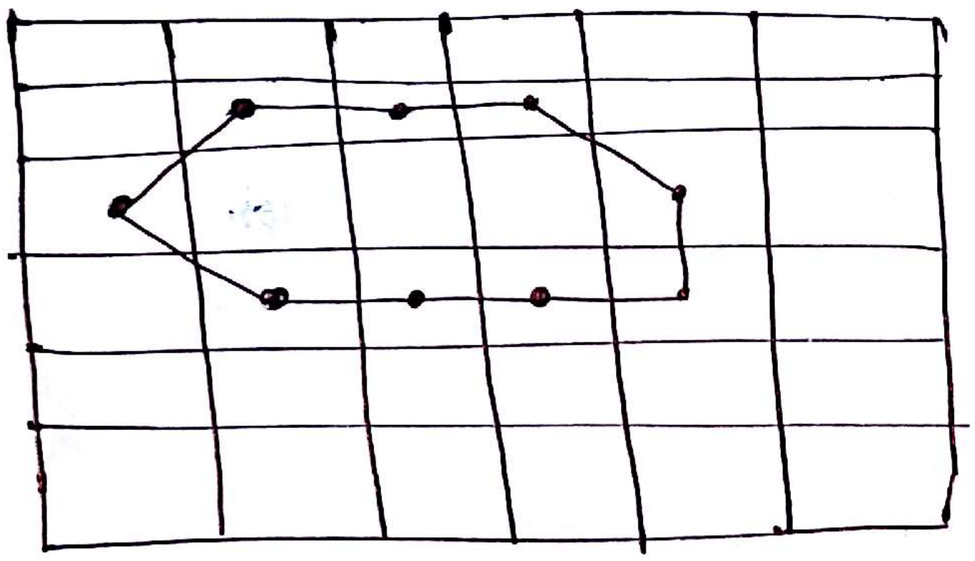


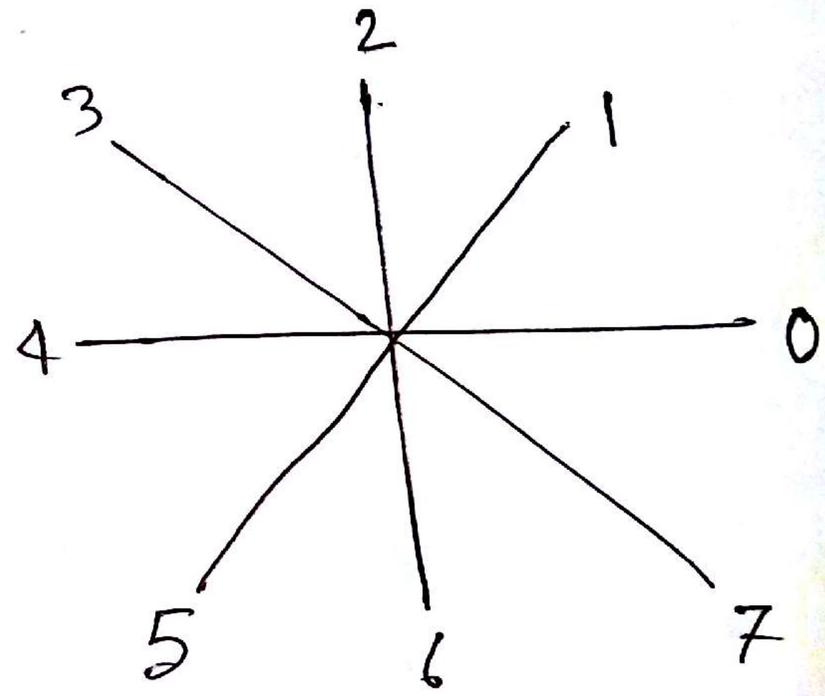
Fig: Tree representation of region.

☐ Calculate the area, perimeter and shape factor using chain code.



Ans:





Chain code : 00764443 1

Perimeter = even count + $\sqrt{2}$. odd count

= $6 + 3\sqrt{3}$

Value of y	code	Area
$y = y$	0	$Area = Area + y$
$y = y + 1$	1	$Area = Area + (y + 0.5)$
$y = y + 1$	2	$Area = Area$
$y = y + 1$	3	$Area = Area - (y + 0.5)$
$y = y$	4	$Area = Area - y$
$y = y - 1$	5	$Area = Area - (y - 0.5)$
$y = y - 1$	6	$Area = Area$
$y = y - 1$	7	$Area = Area + (y - 0.5)$

$$Area = y + y + (y - 0.5) + 0 - (y - 2) - (y - 2) - (y - 2) - (y - 2 + 0.5) + (y - 1 + 0.5)$$

$$= 2y + y - 0.5 - y - y + 2 + y - 2 - y + 2 - y + 2 - 0.5 + y - 1 + 0.5$$

$$= 6.5.$$

Shape factor $= \frac{P^2}{A}$

$= \frac{(6+3\sqrt{2})^2}{6.5}$

$= 16.1402$