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HW6
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CS549

1.
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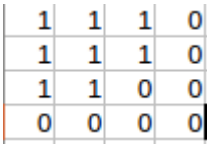
2.
    1. 

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

    2. (0011)(0001)1(1000) (assuming zeros fill in space)
    3. Depends on what fills the space of where the image was shifted. Assuming wrapping around (no dropping of the edges) an image represented as: 1(1101)(1011)(1011) when shifted down becomes 1 1 (1010)(1110) Here the number of 1's does not stay constant. Assuming anything. The above question is also another example.
3. Given Images I and J such that all points of J are RI+T. Points (x0,y0), (X0,Y0) from image I and (x1,y1), (X1,Y1) from image J are the same distance apart.
   $D(I) = \text{sqrt}((X-x)^2+(Y-y)^2)$
   $D(J) = \text{sqrt}((RX+T - Rx+T)^2+(RY+T-Ry+T)^2)$
   $= \text{sqrt}((RX - Rx)^2+(RY-Ry)^2)$
   $= \text{sqrt}((R(X - x))^2+(R(Y-y))^2)$
   $= \text{sqrt}((R^2(X - x)^2)+(R^2(Y-y)^2))$
   $= \text{sqrt}(I(X - x)^2+I(Y-y)^2)$
   $= \text{sqrt}((X-x)^2+(Y-y)^2) = D(I)$
   Therefore distance between two points of rotated image J and image I is equal
4.
    1.

Edge	Regions
0	-1, 0
1	0,1
2	0,3
3	1,-1
4	2,-1
5	3,-1
6	0,2
7	2,3
8	0,2,3

Region	Class
-1	-1
0	1
1	0
2	0
3	2

2. 13 vertices

5. SUM from 0 to 1 (s * SUM (X1 – s(RX0 - T))^2)