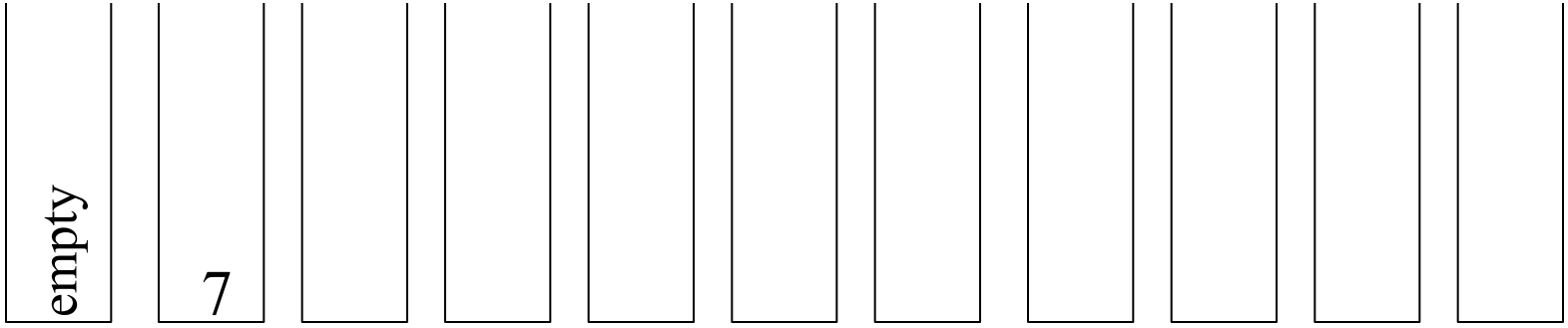
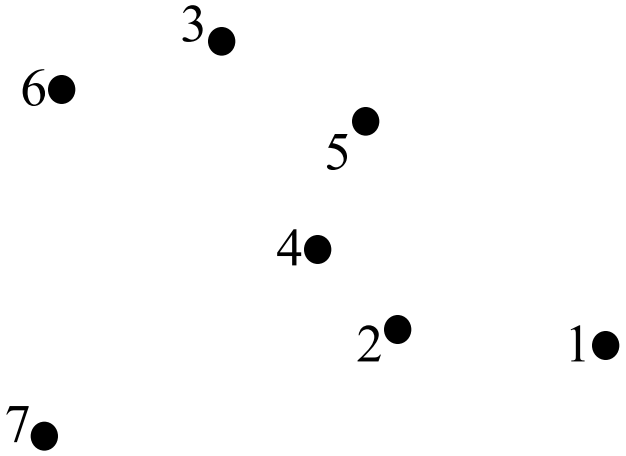
2. For Graham's scan finding convex hull of the point set given below:

- Give the sorted sequence of points for Graham scan _____

- Show the content of the stack after each change



- Give the convex hull of this point set _____



3. Below given a point set in the **rectilinear** metric (the height/width of any cell=1) where the closest pair of points should be found using divide and conquer. Show

- the first partition of the point set (draw a line)

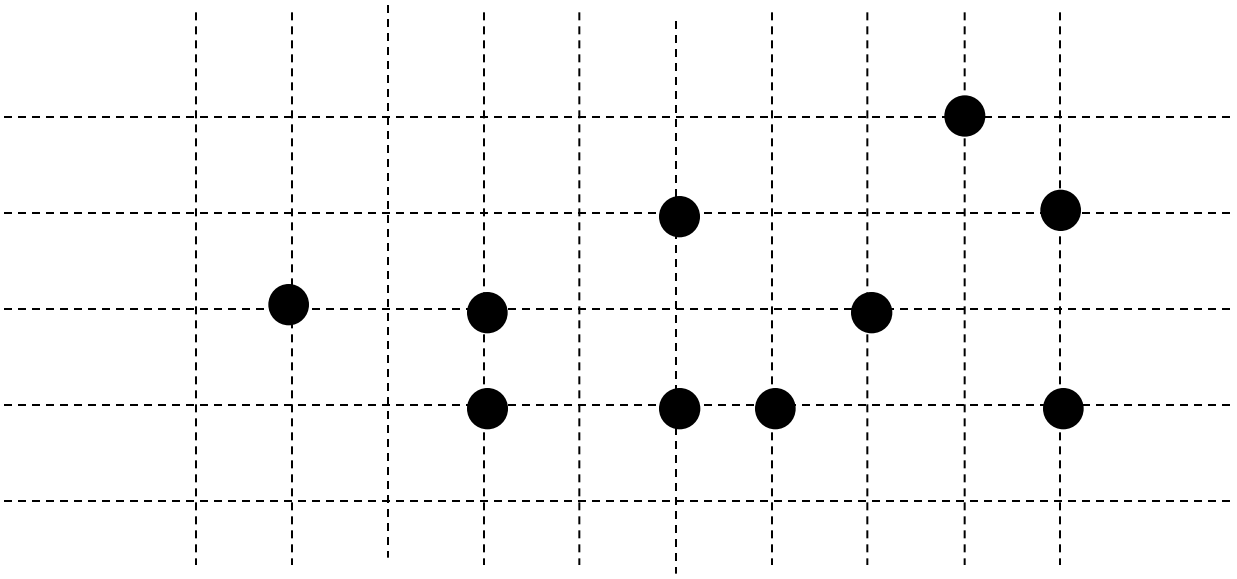
-the closest pair in the left part (connect solid), δ_{left} = _____ ,

and the right part (connect solid), δ_{right} = _____

- the middle strip (shade)

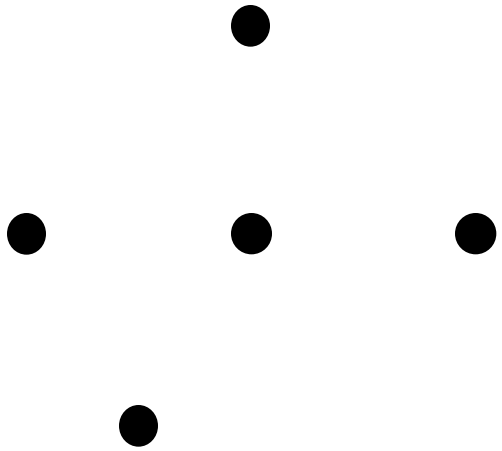
- pairs in the middle strip for which distances should be computed (connect dashed)

- closest pair in the middle strip (connect solid)



4. Below given a point set in the **Euclidean** metric. Draw

- Voronoi regions (dashed edges)
- Voronoi graph / Delanau triangulation (solid edges)
- minimum spanning tree (double edges)

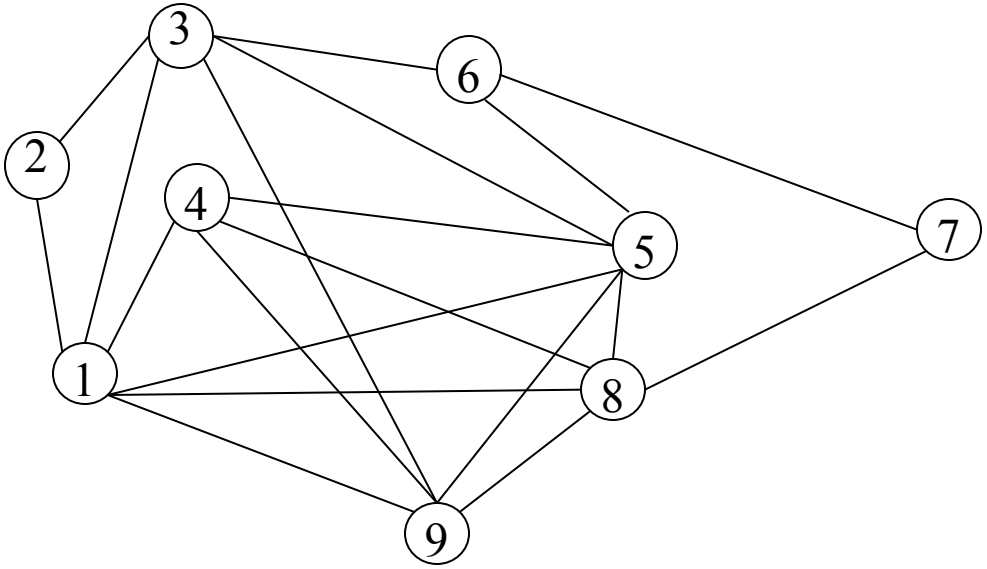


6. In the following graph find

- Maximum Independent Set_____

- Minimum Vertex Cover_____

- Maximum Clique _____



7. For the 3-CNF

f = (x' +y+z)& (x+y'+z')&(x+y+z')& (x'+y'+z)&(x'+y+z') &(x+y+z)

- give 0-1 assignment to variables such that f=1 _____

- give 0-1 assignment to variables such that f=0 _____

-Draw the corresponding graph and mark the maximum independent set

8. Prove, that the Steiner Tree problem, (finding shortest tree connecting n points in the plane) is in class NP

a) Optimization formulation

b) Decision formulation

c) Polynomial-size certificate

d) Polynomial time verification algorithm