Practice Problems for Computational Geometry and Image Processing

1. Given a set $|S| = n$ of planar points, determine the convex hull of S.
2. Given a labeled set $|S| = n$ of planar points, determine the convex hull of each set of uniquely labeled points.
3. Given a set $|S| = n$ of planar points, determine the smallest enclosing box of S.
4. Given a labeled set $|S| = n$ of planar points, determine the smallest enclosing box of each uniquely labeled set of points.
5. Given a set $|S| = n$ of planar points, solve the all-nearest-neighbor problem.
6. Given an $n \times n$ digitized image of 1's and 0's, determine the convex hull of the set of 1's.
7. Given an $n \times n$ digitized image of 1's and 0's, label the maximally connected components.
8. Given an $n \times n$ digitized image of 1's and 0's, label the maximally connected components, assuming that the diameter of any maximally connected component is $\Theta(1)$.