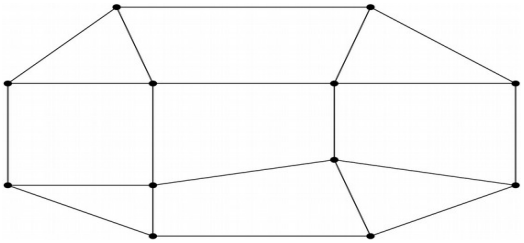
Slot 2 (07/12/2020)
CS 701 Lab Test

Q1. Assume that you have ready DCEL structure (edge, face, vertex tables) for planar subdivisions (use the following figure). Write functions for the following:

1. Given a vertex v, which vertices are the neighbors of v?
2. Given a face f, which other faces are having a common edge with f?



Q2. Write a program for randomized median finding (from a list of integers) with some relaxation d. Here, d is user input. Now, extend this median finding solution to write a Quick-sort procedure.

Q3. Write a nondeterministic program to sort a list of integers. Show, how many permutations have been tried to reach the solution.

Q4. Write/implement a randomized program/algorithm (and implement) to report a vertex cover of a given undirected graph.

Note: A vertex cover of an undirected graph is a subset of its vertices such that for every edge (u, v) of the graph, either 'u' or 'v' is in vertex cover.