Submissions: This assignment is due on the 18th of Feb, 2019. Please note:

1. Each student must submit his or her own assignment.
2. Solutions should preferably be typed in Latex, MSWord or other such word processing software, or printed clearly. In either case, submit a hard copy of your solution.
3. You must write your name and UUID clearly on your submitted assignment.
4. Staple the pages together. Write your name and UUID on top of each page.
5. It is preferable that you submit solutions to me in class, but it is ok if you can’t do that - just make sure to submit solutions by end of day (i.e., 11:59 PM) by sliding it under my office door (DH 307).

Academic Integrity: You are encouraged to work in groups, but everyone must write out their own solutions. Absolutely no word to word copying is allowed. If you have worked with other students on the assignment or referred to external sources, please mention all names and sources on your assignment.

Partial solutions: Document your efforts at solving a problem even if you cannot solve it. Write why your approach failed.

Problem 1 [10 pts]: In the algorithm for partitioning a polygon into $y$-monotone polygons, and in the subsequent triangulation algorithm for a $y$-monotone polygon, we have encountered the situation of the addition of diagonals, repeatedly. Provide more details how this is to be implemented using DCEL’s. Your solution should detail the pointer manipulations involved, how the DCEL looks before such an addition and what changes upon addition of a diagonal. Also indicate, how after dividing a polygon into monotone pieces we will recover all the pieces so that we can triangulate them.

Problem 2 [20 pts]: Problem 2.12 from the textbook.
Problem 3 [25 pts]: Problem 2.13 from the textbook.
Problem 4 [10 pts]: Problem 3.1 from the textbook.
Problem 5 [10 pts]: Problem 3.2 from the textbook.
Problem 6 [5 pts]: Problem 3.3 from the textbook.
Problem 7 [10 pts]: Problem 3.6 from the textbook.
Problem 8 [10 pts]: Problem 3.11 from the textbook.