Please work on these problems and be prepared to share your solutions with classmates in class. Assignments will not be collected for grading. Please read Chapter 3. sections 3.2 and 3.3 of CGAA. I presented algorithms from the book by Joseph O’Rourke, Computational Geometry in C. Chapter 2, section 2.3.

**From last week.**

1. The algorithm that I sketched in class and that is described in more detail in CGAA Chapter 2, may have an event queue that is large. Can you show an example where the event queue can grow so that its space complexity is in $\Omega(n^2)$.

**New this week.**

2. Prove that every binary tree can be realized as the triangulation dual of a monotone mountain.

3. Give an algorithm that computes in $O(n \log n)$ time a diagonal that splits a simple polygon with $n$ vertices into two simple polygons each with at most $\left\lfloor \frac{3n}{4} \right\rfloor$ vertices. Hint: Use the dual graph of a triangulation.

4. **Programming fun.** Develop code to generate random monotone mountains.