This homework is due Thursday, February 27th at the beginning of class.

**Problem 1.** Show that no priority queue data structure will allow Dijkstra’s single-source shortest path algorithm to run in $o(|V| \log |V|)$ time. *Hint:* sorting $n$ integers takes $\Omega(n \log n)$ time.

**Problem 2.** Starting with a completely balanced splay tree whose elements are the integers 1, 2, …, $n$, design a sequence of FIND($i$) calls to the splay tree that results in the tree being a left spine (i.e. tree where no node has a right child). What operations increase the “messiness” of the splay tree?