Algorithms
Computer Science 140 & Mathematics 168
Instructor: B. Thom
Spring 2004
Homework xx
Due on in class exercise

1. **[20 Points] Some Prim and Kruskal Games!** In these exercises you'll explore what happens when you know that all weights are integers in the range $[0, W]$.

   (a) **Kruskal and Prim Games!** Suppose that all the edges in a graph are *integers* in the range from 1 to $|V|$. How fast can you make Kruskal's algorithm run? What about Prim's? How about if the edge weights are integers in the range from 1 to W for some *constant* W? Use the table below to guide you in filling out your results. Note that:

   - The top row in this table makes no restrictions: run-times there are the ones derived in class.
   - A sparse graph means that $E \in O(V)$.
   - A connected graph means that $E \in O(V^2)$.

	Prim		Kruskal	
	Sparse Graph	Connected Graph	Sparse Graph	Connected Graph
$w \in \mathcal{R}$				
$w \in \{1, 2, \cdots, W\}$				
$w \in \{1, 2, \cdots, V\}$				