EE 360C - ALGORITHMS
The University of Texas at Austin
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Efficient Recruiting: Suppose you're helping to organize a summer sports camp, and the following problem comes up. The camp is supposed to have at least one counselor who is skilled at each of the n sports covered by the camp (baseball, volleyball, etc.). They have received job applications from m potential counselors. For each of the n sports, there is some subset of the m applicants qualified in that sport. The question is: For a given number $k < m$, is it possible to hire at most k of the counselors and have at least one counselor qualified in each of the n sports? We'll call this the *Efficient Recruiting* Problem. Show that *Efficient Recruiting* is NP-Complete by reducing from the Vertex Cover Problem.

The Vertex Cover Problem. *Given a graph $G = (V, E)$ and a non-negative integer k, does G contain a vertex cover of size at most k? (Recall that a vertex cover $V' \subseteq V$ is a set of vertices such that every edge $e \in E$ has at least one of its endpoints in V'.)*