Additional Problem on March 2, 2009

Suppose that X is a topological space and that D is a topological space with the discrete topology. Let $f\colon X \to D$ be a function. Prove that f is continuous if and only if for all $x \in X$ there exists an open set $U_x \subset X$ containing x such that f is constant on U_x. (In other words, for all $z \in U_x$, $f(z) = f(x)$.)