Discrete Mathematics 21-228: Spring 2002
Homework.
HW10 due Monday 4/22/02

Q1: The k-cube C_k is the graph with vertex set $\{0,1\}^k$ and an edge joining $(x_1, x_2, \ldots, x_k)$ to $(y_1, y_2, \ldots, y_k)$ iff $x_i = y_i$ for all but one index i. Show that C_k, $k \geq 2$ has a Hamilton cycle.
(Hint: use induction on k.)

Q2: Show that if a connected graph has $2k > 0$ vertices of odd degree, then there are k edge disjoint walks $Q_1, Q_2, \ldots, Q_k$ in G such that $E(G) = E(Q_1) \cup E(Q_2) \cup \ldots \cup E(Q_k)$.

Q3: Show that if G has a Hamilton path then, for every proper subset S of V, $G \setminus S$ has at most $|S| + 1$ components.