Homework Set #8

1. Exercise 9.3-5 (page 223) (20 points)
2. Problem 9-1, page 224. (30 points)
3. Consider inserting keys 3,4,2,5,1 in the order given into a hash table of length m= 5 using hash function $h(k) = k^2 \bmod m$. (20 points)

   a) Using $h(k)$ as the primary hash function, illustrate the result of inserting these keys using open addressing with linear probing.

   b) Using $h(k)$ as the primary hash function, illustrate the result of inserting these keys using open addressing with quadratic probing, where c_1=1 and c_2=2.

   c) Using $h(k)$ as the hash function, illustrate the result of inserting these keys using chaining. Compute the load factor α for the hash table resulting from the insertions.

   d) What different values can the hash function $h(k) = k^2 \bmod m$ produce when m = 11? Carefully justify your answer in detail.