Assignment 11

R-2.19 Draw the 11-item hash table resulting from hashing the keys 12, 44, 13, 88, 23, 94, 11, 39, 20, 16, and 5, using the hash function $h(i) = (2i + 5)$ mod 11 and assuming collisions are handled by chaining.

R-2.20 What is the result of the previous exercise, assuming collisions are handled by linear probing?

R-2.21 Show the result of Exercise R-2.19, assuming collisions are handled by quadratic probing, up to the point where the method fails because no empty slot is found.

R-2.22 What is the result of Exercise R-2.19 assuming collisions are handled by double hashing using a secondary hash function $h'(k) = 7 - (k \bmod 7)$?

Give the pseudo-code description for performing a removal from a hash table that uses linear probing to resolve collisions. Why is it necessary to use a special marker to represent deleted elements?

C-4.10 Suppose we are given an n-element sequence S such that each element in S represents a different vote in an election, where each vote is given as an integer representing the ID of the chosen candidate. Without making any assumptions about who is running or even how many candidates there are, design an efficient algorithm to see who wins the election S represents, assuming the candidate with the most votes wins. Handle the possibility of **multiple winners** and **do this using a Dictionary**. Today specify your solution using pseudo code (tomorrow we will implement in JavaScript after discussing today's pseudo code solution).