What is the size of the table? Prove it?

Modifying my parser code from previous assignments, I was able to conclude that there were 101 unique words in the given data set. The prime number that when used as the table size will give a table that is 80%-90% full is 113. A prime number is used to ensure that an even distribution is given by from the mod function used in the hash functions.

What fields will the table need to represent?

The table will need to represent the String (word), the number of occurrences in the table, and a flag for whether or nat the word has been deleted.

Design a primary hash function which will distribute the keys (strings) as evenly as possible. Can you prove that the distribution adheres to the principles of good hash functions?

The primary hash function I chose to use is simply the key mod the table size of 113. The integer key will be sufficiently large if a getInt function is defined as Sum((CharIndex+1)*ASCIICharValue) that this should give a sufficient distribution of the keys.

Design a secondary functions which will be used in the event of a collision. Show that this function will adequately produce the desired results.

The secondary hash function i will use to produce the probe sequence will be (key+43)/43. This will give a good and mostly unique probe sequence to the keys to avoid coalescence given the use of the prime numbers 43 and the prime number 113 table size.