Exercise – Hash Table

Exercises:

1. Implement your own templated Hash Table to store data of any type. You will need to add the following features to your Hash Table:
    a. Add a new value at a location specified by a key
        i. You may hard-code your table to use a string as the key
        ii. Your table will need to make use of a hash function to hash the key into an array index
    b. Access a value using a specified key
        i. You should overload the sub-script operator [] to accept your key
    c. Remove a value using a specified key
    d. Clear the Hash Table

2. CHALLENGE: add extra functions:
    a. A way to iterate through the table
    b. A way to get an array of all the keys in the table

3. CHALLENGE:
    a. Implement a method for dealing with Hash Collisions
    b. Large hash tables that use open addressing can slow down as the internal array fills up (if they don't immediately find the key, they have to keep searching until they find an empty index or get back to their starting point). To prevent this, implement dynamic resizing of the internal array so that it's never more than 70% full.