CS 340 Spring 2017
Homework 2

Due 11:59 PM Friday February 10
Homework 2

• Implement the SeparateChainingHashTable class shown on the following slides.

• The implementation must use separate chaining hashing. When the number of keys in the table is more than 3 times the table size the table size should be doubled.
import java.util.*;
public class SeparateChainingHashTable {
    private Item table[];
    private int size;

    private class Item {
        private String key;
        private LinkedList<String> data;
        private Item next;

        private Item(String k, Item n) {
            key = k;
            next = n;
            data = new LinkedList<>();
        }
    }

    public SeparateChainingHashTable(int s) {
    }
}
Separate Chaining Hash Table

private int hash(String k) {
    return Math.abs(k.hashCode());
}

public boolean insert(String k, String d) {
    //if k is in the table add d to the data associated with k and return false
    //if k is not in the table insert k into the table, add d to the data associated with k
    //and return true
}
Separate Chaining Hash Table

```java
public LinkedList<String> find(String k) {
    //if k is in the table return a linked list of the data associated with k
    //if k is not in the table return null
}

public boolean remove(String k) {
    //if k is in the table remove k and the data associated with k and return true
    //if k is not in the table return false
}

public Iterator<String> iterator() {
    return new LPIterator();
}
```
Separate Chaining Hash Table

public class LPIterator implements Iterator<String> {
  //Implements an iterator SeparateChainingHashTable
  //No assumption can be made about the order in which the keys are returned by
  //the iterator

  public LPIterator() {
  }

  public String next() {
    //returns a string that includes the next key and the data associated with the key
    //the format of the string is the key followed by a tab character followed by
    //the data. Data items are separated by colons
    //Below is an example string where the key is color and the data associated
    //with color include purple, red and yellow
    //color   purple:red:yellow
Separate Chaining Hash Table

```java
public boolean hasNext() {
    //return true if there are more keys to return otherwise return false
}

public void remove() {
    throw new UnsupportedOperationException();
}
```
Homework 2

• You will need to develop a driver class to test your implementation
• I will use my own driver when I test your class
Homework 2 Submission

• Send me **only 1 Java file**. The file should be called SeparateChainingHashTable.java

• In the subject field of the email put the value CS340 H2

• The first line of SeparateChainingHashTable.java must be a comment with your name.

• Add comments to each private method or additional instance variables you add