CS 340 Spring 2017
Homework 1

Due 11:59 Tuesday January 31
Homework 1

- Implement the LinearProbingHashTable class shown on the following slides.
- The implementation must use a linear probing hashing. When the table becomes more than half full the table size should be doubled.
import java.util.*;
public class LinearProbingHashTable {

    private enum Status {
        DELETED, EMPTY, FULL
    }

    private String keys[];
    private Status status[];
    private LinkedList<String> data[];
    private int size;
    //add additional instance variables as needed

    public LinearProbingHashTable(int s) {
        //create a linear probing hashing table with room for s keys
    }
}
Linear Probing 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
}
Linear Probing 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();
}
```
public class LPIterator implements Iterator<String> {  
//Implements an iterator for LinearProbingHash Table  
//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
public boolean hasNext() {
    // return true if there are more keys to return otherwise return false
}

public void remove() {
    throw new UnsupportedOperationException();
}
Homework 1

• You will need to develop a driver class to test your implementation
• I will use my own driver when I test your class
Homework 1 Submission

• Send me **only 1 Java file**. The file should be called LinearProbingHashTable.java
• In the subject field of the email put the value CS340 H1
• The first line of LinearProbingHashTable.java must be a comment with your name.
• Add comments to each private method or additional instance variables you add