

Lab Goal : The lab was designed to teach you more about hash tables.

Lab Description : Write a hash table program. A hash table can be implemented using an array of linked lists. Use an array of Java LinkedLists.

Use int values to construct Number objects. Organize the Number objects in the proper bucket using the hashCode of each Number.

The hash formula for Number consists of taking the value and moding(%) it by 10(which in most cases will be the size of the table). There are no duplicates in this hash table.

Sample Data :

```
30
34
56
78
09
12
23
43
45
78
98
76
65
54
43
21
1
2
3
4
5
6
7
8
9
11
10
1
2
3
4
```

Files Needed ::

```
Number.java
NumberTester.java

HashTable.java
HashTableRunner.java
numbers.dat
```

EXTENSION :

Rewrite the HashTable class using an array of `ListNode` instead of an array of `LinkedList`.

```
//change the instance variable declaration
private ListNode[] table;
```

Sample Output :

```
HASHTABLE
bucket 0 10
bucket 1 21 1 11
bucket 2 12 2
bucket 3 23 43 3
bucket 4 34 54 4
bucket 5 45 65 5
bucket 6 56 76 6
bucket 7 7
bucket 8 78 98 8
bucket 9 9
```