

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 Integer objects. Determine the proper bucket for each Integer object using its hashCode method and then doing % size.

There are no duplicates in either list. The second list contains all of the numbers from 1 to 999.

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 ::

```
HashTable.java
Lab16a.java
lab16a.dat
lab16a999.dat
```

EXTENSION :

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

Use the AP AB `ListNode` class. Paste `ListNode.java` into your Lab16 folder.

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

Sample Output :

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