| Computer Science III | Lab 16A – HASHTABLE | Lab Value - 100 |
|---|---|---|

**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
```