


Austin Spencer
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Lab 10 - Lab Report
04 - 18 - 2023

1.
 - a) The concepts explored in this lab are hash tables and the measure of their efficiency. This is important to a career in cs because hash tables are widely used within the industry because they are easy to implement and can provide very efficient performance. Especially when a chained implementation is used, which was supported by our findings in task 5 where our chained hash table vastly outperformed our hash table that implemented linear probing.
3. We needed to implement a new way of checking whether the parts were actually equal or not considering that collisions only take place if sku's match, so we also matched the descriptions up in the overload of our '==' operator.
4. The results for task 5 favored the chained implementation of the hash table because it does not have any blank spots in between collisions since all collisions exist within the same linked list at a certain cell within the table.

Task 3 Screenshots:

```
Microsoft Visual Studio Debu x + v - _ o x
| Enter the desired size of the hash table: 5
|-----
| (1): Add an item
| (2): Remove an item
| (3): Get the length
| (4): View the items in the table
|-----
| Pick one of the preceeding choices: 1
|-----
| Enter the item's sku: 74
| Enter the item's description: Hairbrush
| Enter the item's price: 15
| Enter the item's unit of measurement: inches
| Enter the item's quantity on hand: 54
| You added the following item to the list:
|-----
| Hairbrush
|-----
| $15.00
|-----
| SKU: 74
|-----
| QOH: 54
|-----
|-----
| Would you like to continue (y/n): y
|-----
| (1): Add an item
```




```
Microsoft Visual Studio Debu x + v
-----
| Enter the desired size of the hash table: 5
-----
| (1): Add an item
| (2): Remove an item
| (3): Get the length
| (4): View the items in the table
-----
| Pick one of the preceeding choices: 1
-----
| Enter the item's sku: 3
| Enter the item's description: flip flops
| Enter the item's price: 10
| Enter the item's unit of measurement: inches
| Enter the item's quantity on hand: 7
-----
| You added the following item to the list:
-----
| flip flops
| $10.00
| SKU: 3
| QOH: 7
-----
| Would you like to continue (y/n): y
-----
```

```
-----
| (1): Add an item
| (2): Remove an item
| (3): Get the length
| (4): View the items in the table
-----
| Pick one of the preceeding choices: 1
-----
| Enter the item's sku: 3
| Enter the item's description: Sandals
| Enter the item's price: 15
| Enter the item's unit of measurement: inches
| Enter the item's quantity on hand: 5
-----
| You added the following item to the list:
-----
| Sandals
| $15.00
| SKU: 3
| QOH: 5
-----
| Would you like to continue (y/n): y
-----
```

```
(1): Add an item
(2): Remove an item
(3): Get the length
(4): View the items in the table
-----
| Pick one of the preceeding choices: 3
-----
| Length: 2
-----
| Would you like to continue (y/n): y
-----
(1): Add an item
(2): Remove an item
(3): Get the length
(4): View the items in the table
-----
| Pick one of the preceeding choices: 2
-----
| Enter the sku of the item to remove: 3
| Enter the description of the item to remove: flip flops
-----
| You have removed the item below:
-----
| flip flops
| $10.00
| SKU: 3
| QOH: 7
| -----
-----
| Would you like to continue (y/n): y
-----
(1): Add an item
(2): Remove an item
(3): Get the length
(4): View the items in the table
-----
| Pick one of the preceeding choices: 4
-----
-----
| Sandals
| $15.00
| SKU: 3
| QOH: 5
| -----
-----
| Would you like to continue (y/n): n
-----
C:\Users\tommy\OneDrive\Documents\GitHub\Lab10\x64\Debug\Lab10.exe (process 21276) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . . |
```

Task 5 screenshot:

```
Microsoft Visual Studio Debu  X + ~
Linear probing (size 100): 648
Linear probing (size 150): 575
Linear probing (size 200): 607
Linear probing (size 250): 607

chaining (size 100): 20
chaining (size 150): 21
chaining (size 200): 21
chaining (size 250): 21

C:\Users\tommy\OneDrive\Documents\GitHub\Lab10\x64\Debug\Lab10.exe (process 36688) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```