

CMPSC122 In-Lab 14 –Hashing

Submit the solution files of the Exercises online before the due date/time. Fill in the hash tables on this document, and submit.

Exercise 1 (Non-programming exercise): Submit pictures showing your work.

This exercise considers a (initially empty) hash table that stores strings. The size of the table is 11. You should use the hash function: $h(x) = (\text{Sum of } x\text{'s characters' position in the English alphabet}) \% 11$. For example, consider the word “BEE”, the hash value should be $h(\text{"BEE"}) = (2 + 5 + 5) \% 11 = 12 \% 11 = 1$.

Now we insert some strings into the table in the following order:

EXAM SHARE NOT GOOD HELP TEXT AND ANY BAD

What will the table look like after we have inserted the above strings?

Note that in the class we have discussed two kinds of hash tables. In this exercise, you will fill in both of them. One using **open addressing** with linear probing and the other using **separated chaining** for collision resolution. Use the template for linked list node "BEE", copy and paste multiple copies, fill in the words and place them at its appropriate locations for separated chaining hash table.

Linked list node template: \rightarrow

BEE

Show your answers below:

open addressing:

Key	
0	AND
1	ANY
2	BAD
3	TEXT
4	
5	NOT
6	
7	SHARE
8	GOOD
9	HELP
10	EXAM

separated chaining:

Key	
0	
1	
2	
3	→ TEXT
4	
5	→ NOT
6	
7	→ SHARE → ANY → BAD
8	→ GOOD → HELP → AND
9	
10	→ EXAM