Group Laboratory Exercise

Deadline: January 14, 2024
To be included in your group Portfolio.

For this exercise, you will implement an insertion and a deletion of 10-letter words in a hash table with the following parameters:

The size of the hash table is m = 32
The key k is equal to the sum of the ASCII values of each character in the given 10-character string
Three different hash functions will be used:

- Hash function 1: f(k) = k mod m
- Hash function 2: f(k) = ((1731 * k + 520123) mod 524287) mod m
- Hash function 3: default hash method of python

Deletion of a key from the hash table is preceded by the prefix "del " followed by the 10-letter word to be deleted

Input page Format

The input will contain the following:

- Dropdown box with option to select what hash function to used.
- An input textbox that will accept an integer indicates how many commands are be executed on the hash table
- A textarea that for the sequence of commands performed on the hashtable separated by new line

(a "del " prefix before word means that 10-letter word will be deleted from the hash table, otherwise, the 10-letter word should be inserted to the hash table)

Output page Format

The output should list the elements of the hash table. For all indices in the table from 0 to 31, output the list for each slot in the hash table. The list for each slot will be a stack. That is, whenever a collision occurs, new elements will be pushed at the head of the stack. An example is given below.

Sample Input #1

hash function 2 (selected from the dropdown options)

10 -> inputted from the textbox

jtluftrwxs
kppyyilxmi
qfvrtsowpg
uorswghbrw

rdvdndyrxy
virgwincne
qydbomsjlk
ljkvfuigvj
sbehfmevvb
dccfuphern

Sample Output #1

0:
1:
2:
3:
4:
5: dccfuphern ljkvfuigvj
6: jtluftrwxs
7:
8: qfvrtsowpg
9:
10:
11:
12:
13: uorswghbrw
14:
15:
16:
17:
18:
19: virgwincne
20:
21:
22:
23: sbehfmevvb
24:
25: rdvdndyrxy
26:
27:
28:
29:
30:
31: qydbomsjlk kppyyilxmi

Sample Input #2

hash function 2

10

qydbomsjlk
ljkvfuigvj
kppyyilxmi
qfvrtsowpg
uorswghbrw
rdvdndyrxy
del qydbomsjlk
del ljkvfuigvj
sbehfmevvb
dccfuphern

Sample Output #2

0:
1:
2:
3:
4:
5: dccfuphern
6:
7:
8: qfvrtsowpg
9:
10:
11:
12:
13: uorswghbrw
14:
15:
16:
17:
18:
19:
20:
21:
22:
23: sbehfmevvb
24:
25: rdvdndyrxy
26:
27:
28:
29:
30:
31: kppyyilxmi