CSE100 Algorithm Design and Analysis — Lab 10, Fall 2020
Last update: October 26, 2020 — Deadline: Friday, Nov 6, 5:00pm

Hash table with open addressing

In this assignment you are requested to implement insert, search, and delete operations for an **open-addressing hash table with double hashing**. Create an empty hash table of size $m = 13$. Each integer of the input will be a key that you should insert into the hash table. Use the double hashing function

$$h(k, i) = (h_1(k) + ih_2(k)) \mod 13$$

where

$$h_1(k) = k \mod 13 \quad \text{and} \quad h_2(k) = 1 + (k \mod 11).$$

The input terminates when the key -1 is read (such a key must not be inserted in the hash table). At that point, write `++++table printout++++` and then print the content of the hash table to the screen (see sample input/output below for the printing format). Then, write `++++searching++++` once and read integers from the input until the number -2 is found (do not process that number). For each number inputted, print the index of the element in the hash table. If the number is not inside the hash table, print `NOT_FOUND`. Finally, write `++++deleting++++` to the screen once, and read integers from the input until the number -3 is found (do not process that number). For each number inputted, delete it from the hash table (note that the integer might not be in the table). Once the integer -3 is found, write `++++table printout++++` print the hash table.

Examples of input and output

Input t1:

```
1
2
3
4
5
6
7
8
9
10
11
12
13
-1
1
2
100
-2
3
4
-3
```

Output o1:

```
++++table printout++++
13
1
2
3
4
5
6
7
8
9
10
11
12
++++searching++++
1
2
NOT_FOUND
++++deleting++++
++++table printout++++
13
1
2


5
6
7
8
9
10
11
12
```