Universität Erlangen-Nürnberg
Department of Computer Science 7
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Introduction to Data Structures and Algorithms

Exercise sheet 10

Exercise 29:

We use a hash function *h* to hash *n* distinct keys into a hash table with *m* slots, assuming simple uniform hashing. What is the expected number of collisions ?
In other words: What is the expected number of elements of the set

$$Coll = \{\{k,l\} / k \neq l \text{ and } h(k) = h(l)\}$$

(*Coll* is a set whose elements are sets of two keys)

Exercise 30:

Consider keys which are character strings interpreted as natural numbers in radix 2^p. We use the following hash function

$$h(k) = k \bmod m$$

(division method) where $m = 2^p - 1$. Show that if string *x* is a permutation of string *y*, then both *x* and *y* hash to the same slot.

Exercise 31:

Open addressing:
Write pseudocode for *Hash_Delete* and modify our procedure *Hash_Insert* to handle the special value DELETED.