Imperial College London – Department of Computing

MSc in Computing Science

580: Algorithms
Tutorial: Hash Tables

1. An open address hash table T has $m = 12$ slots and uses the hash function $h(k) = k \bmod m$. Assuming collisions are resolved using linear probing, draw the table after inserting the following keys, in this order: 82, 7, 47, 17, 49, 150, 34, 61, 107, 6.

2. A hash table T has a constant load factor, uses a hash function h and the chaining method of collision resolution. Assume the following non-uniform hashing: the probability of a key k hashing to $h(k) = 1$ is $1/2$; the probabilities of k hashing to any other slot are all equal. What is the expected time complexity for an unsuccessful search if T contains N objects?