Exercise 1 Simple training exercises

1. Consider a hash table of size $m = 1000$ and a corresponding hash function $h(k) = \lfloor m(kA - \lfloor kA \rfloor) \rfloor$ for $A = (\sqrt{5} - 1)/2$. Compute the locations to which the keys 61, 62, 63, 64 and 65 are mapped. (CLRS 11.3-4)
2. Consider a hash table with 9 slots and the hash function $h(k) = k \mod 9$. Demonstrate what happens upon inserting the keys 5, 28, 19, 15, 20, 33, 12, 17, 10 with collisions resolved by chaining. (CLRS 11.2-2)
3. Professor Marley hypothesizes that he can obtain substantial performance gains by modifying the chaining scheme to keep each list in sorted order. How does the professor's modification affect the running time for successful searches, unsuccessful searches, insertions, and deletions?

Exercise 2 Fun creative exercises!

Dive into the python script `hash_names.py` on Moodle and try to solve the exercises there!