

Excercise 1

- a. $[(k_1, v_1), (k_2, v_2), \dots, (k_n, v_n)]$

Insert \rightarrow Just add at front $\Theta 1$

Lookup \rightarrow Have to go through each pair; Θn

Remove \rightarrow Find it, then take out; Θn

- b. Space complexity: Θn

Excercise 2

- a. Very similar to Associative Array

Insert $\rightarrow \Theta 1$

Lookup $\rightarrow \Theta n$

Remove $\rightarrow \Theta n$

- b. Space Complexity: Θn

Excercise 3

I would say both the list and map are practical mainly for small cases; for the list a large dataset would be annoying to go through since we are looking for every pair, for the map same deal

Excercise 4

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

$k \bmod 13$

k	result
0	0
2	2
4	4
6	6
8	8
10	10
12	12
14	1
16	3
18	5

$k \bmod 16$

k	result
0	0
2	2
4	4
6	6
8	8
10	10
12	12
14	14
16	16
18	2

$k \bmod 16$ starts
reusing bins

Explains why we want prime numbers so
we can have a better spread