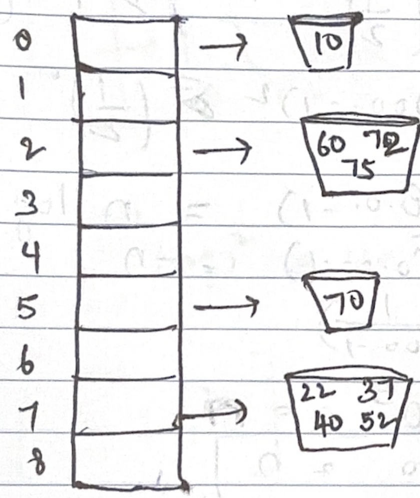
2. $h_{a,b}(k) = ((ak+b) \bmod p) \bmod m$

Level 1

$a=3$, $b=42$, $p=101$, $m=9$

$\therefore h_{3,42}(k) = ((3*k+42) \bmod 101) \bmod 9$



// No of elements = 1 (n_0)

// No of elements = 3 (n_2)

// No of elements = 1 (n_5)

// No of elements = 4 (n_7)

$$\therefore \sum_{j=0}^{m-1} (n_j)^2 = 1^2+0^2+3^2+0^2+0^2+1^2+0^2+4^2+0^2$$
$$= 1+9+1+16$$
$$= 27$$

$$4n = 4*9$$
$$= 36$$

$\sum_{j=0}^{m-1} (n_j)^2 \le 4n$, we can use this hashing for level 1

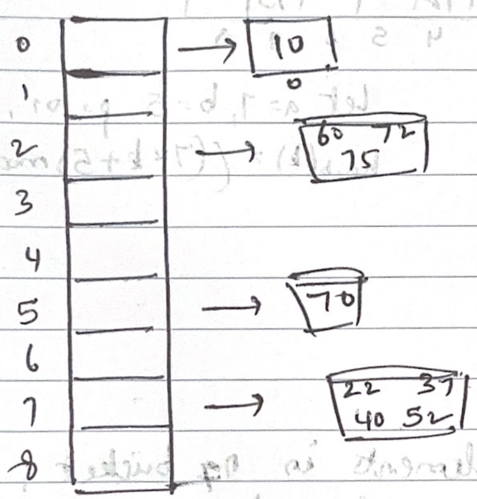
Level 2 :-

n_0

Since there's only one element in n_0, the size of level 2 hash table of n_0 would be 1^2

Let $a = 7$, $b = 5$, $p = 101$, $m = 1$

$h_{a,b}(k) = ((7*k + 5) \bmod 101) \bmod 1$

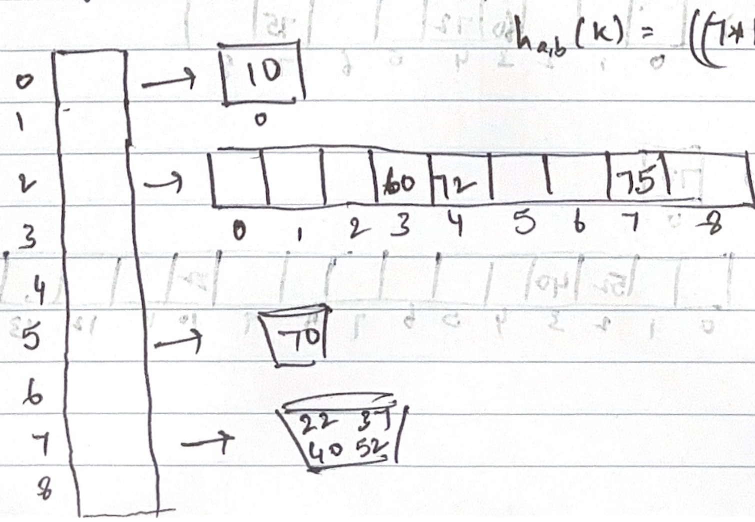


n_2

Since ~~there's~~ ~~one~~ are 3 elements in n_2, the size of level 2 hash table of n_2 would be 3^2.

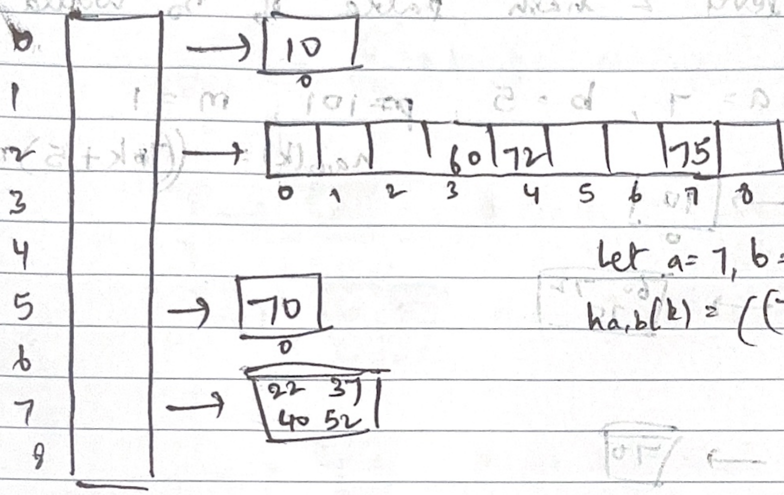
Let $a = 7$, $b = 5$, $p = 101$, $m = 9$

$h_{a,b}(k) = ((7*k + 5) \bmod 101) \bmod 9$



n_5

Since there's only 1 element in n_5, the size of level 2 hash table at n_5 would be 1^2.



let $a=7, b=5, p=101, m=1$

$h_{a,b}(k) = ((7 * k+5) \bmod 101) \bmod 1$

n_7

Since there are 4 elements in n_7 bucket, the size of level 2 ~~hst~~ hash table at n_7 would be 4^2.

Let $a=7, b=5, p=101, m=16$

$h_{a,b}(k) = ((7 * k+5) \bmod 101) \bmod 16$