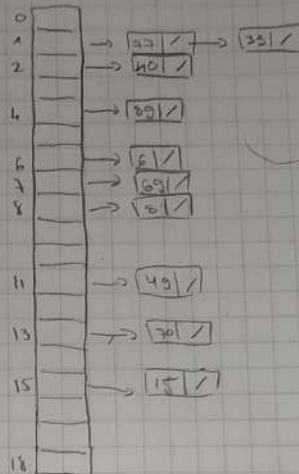


① ključevi: 77, 69, 29, 40, 6, 8, 49, 89, 49, 15

a)  $m=19$

$h(k) = k \bmod m$

$$\begin{aligned} h(77) &= 77 \bmod 19 = 1 \\ h(69) &= 7 \\ h(29) &= 10 \\ h(40) &= 2 \\ h(6) &= 6 \\ h(8) &= 8 \\ h(49) &= 11 \\ h(89) &= 13 \\ h(49) &= 11 \\ h(15) &= 15 \end{aligned}$$



b)  $i = 0, 1, 2, \dots, m-1$   
dvostruko prebranje

$$h(k, i) = (h_1(k) + i \cdot h_2(k)) \bmod m \Rightarrow h(k, i) = (k \bmod m + i \cdot (1 + (k \bmod (m-1)))) \bmod m$$

$$\begin{aligned} h_1(k) &= k \bmod m \\ h_2(k) &= 1 + (k \bmod (m-1)) \end{aligned}$$

0		
1	77	
2	40	
3		
4		
5	29	$i=1$
6		
7		
8	8	$i=2$
9		
10		
11	89	$i=2$
12	69	
13	49	
14		
15	49	$i=3$
16		
17		
18		

- ako je nij sedamsto postavi ključ,  
ako ne pokušavaj dok ne dođeš  
do sedamstog upisa

②  $f(x)$  nije univerzalna,  $p$  mora biti prost br. ( $p=e$ )

Kontrolprimjer  $a_i = 0, \forall i = 1, \dots, n$   
 $f(x) = 0, \forall x$

2) zad

$n$  razl. klj. u tablici duljine  $m$ , uniformno raspoređivanje

$$E[\{i, k, e\} : k \neq e, n(k) = n(e)] = \sum_{i=1}^n P(n(k) = n(e)) = \sum_{i=1}^n \frac{1}{m} = \frac{n(n-1)}{2m}$$