

# INF102 18H

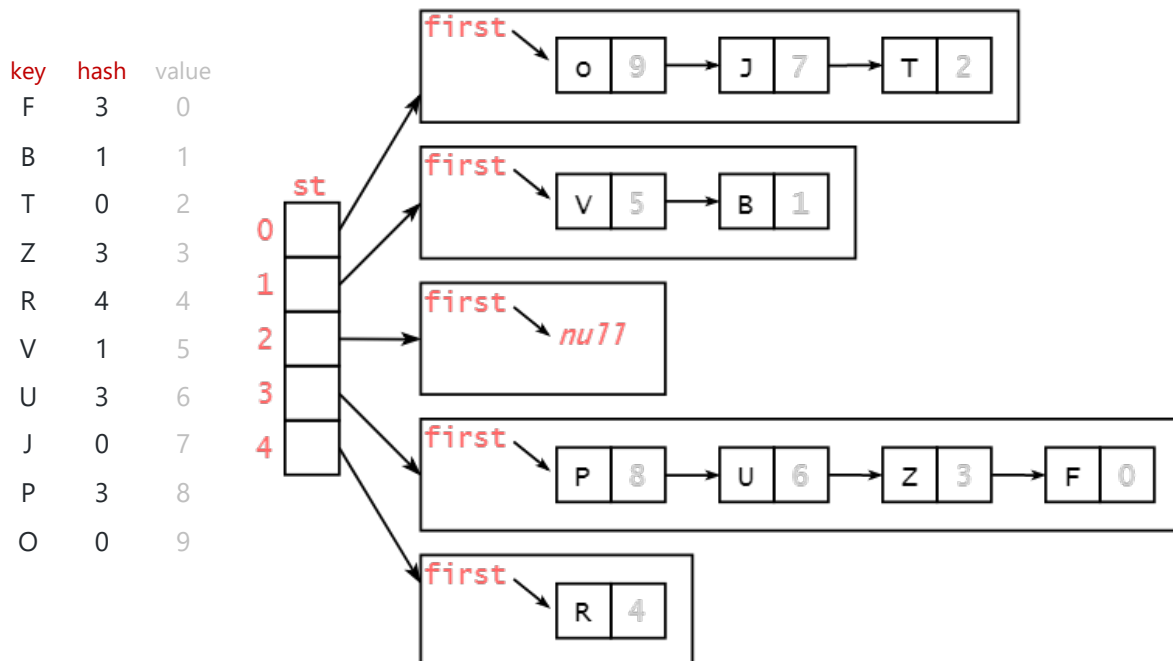
## Algoritmar, datastrukturar og programmering

### Mandatory assignment 2

Student – Andrey Belinskiy (zur008)

## Hash maps

- a) Insert the keys **F B T Z R V U J P O** into an initially empty table of  $m = 5$  lists, using separate chaining. Use the hash function  $h(k) = (13 * k) \% m$  to transform the  $k$ 'th letter of the alphabet into a table entry



- b) Insert the keys **F B T Z R V U J P O** into an initially empty array of size  $m = 16$  using linear probing. Use the hash function  $h(k) = (13 * k) \% m$  to transform the  $k$ 'th letter of the alphabet into a table entry. Show the contents of the array on a single line

After inserting the keys into the array its content will look like this:

[ P, U, Z, J, T, O, null, null, null, null, B, R, null, null, F, V ]

## Big-O Quiz part II

Function	f	O
a	$2n + m$	$O(n + m)$
b	$n + nm$	$O(nm)$
c	$\min(n, m)$	$O(\min(n, m))$
d	$m + \log(n) * m$	$O(\log(n) * m)$
e	1	$O(1)$
f	$1 + \frac{n}{2} + nm$	$O(nm)$
g	$n + nm$	$O(nm)$
h	$n + m$	$O(n + m)$
i	$\frac{mn^2}{2} + \frac{mn}{2}$	$O(mn^2)$
j	$2n^2 + 2mn + m^2$	$O(n^2 + m^2)$
k	$n + m$	$O(n + m)$
l	$n + m$	$O(n + m)$
m	$1 + \frac{m-1}{n}$	$O(\frac{m}{n})$
n	$1 + \frac{n}{m}$	$O(\frac{n}{m})$
o	$1 + \frac{n-1}{2m}$	$O(\frac{n}{m})$
p	???	$O(m * n!)$

- Function  $n$  runs infinitely if  $n = 1$  &&  $m = 1$