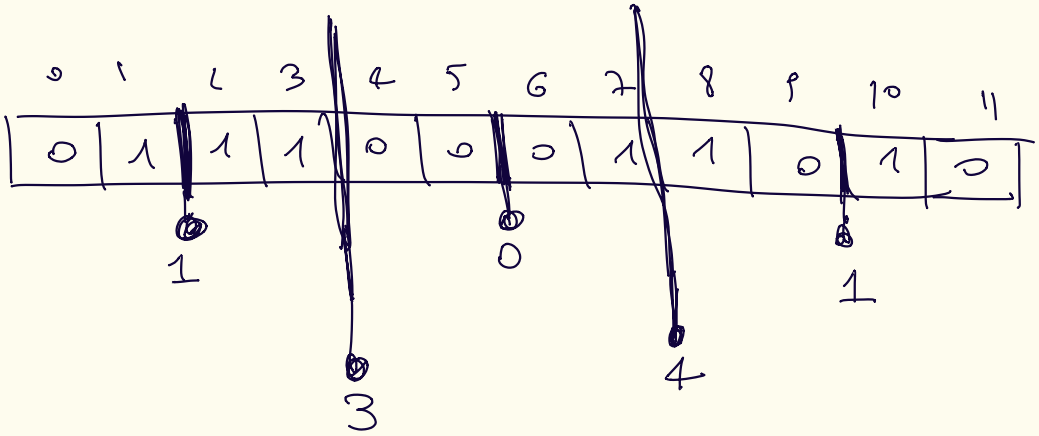
RANK

- given an array of 12 positions, with the content
  - need ARRAY
  - & TABLE

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B: | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |

- In RANK => 2 parameters: $z$ → stores: ABSOLUT COUNING of the 1 (rank), $z$ → stores relative counting (rank) of 1

$z = 4$; $z = 2$ => 2-level partitioning




- TABLE: STORE THE RANK according to the positions: data for each small block ($z$)

| T | 0 | 1 |
|---|---|---|
| 00 | 0 | 0 |
| 01 | 0 | 1 |
| 10 | 1 | 1 |
| 11 | 1 | 2 |

small Blocks

Positions

$2^z$ rows

$z$ columns

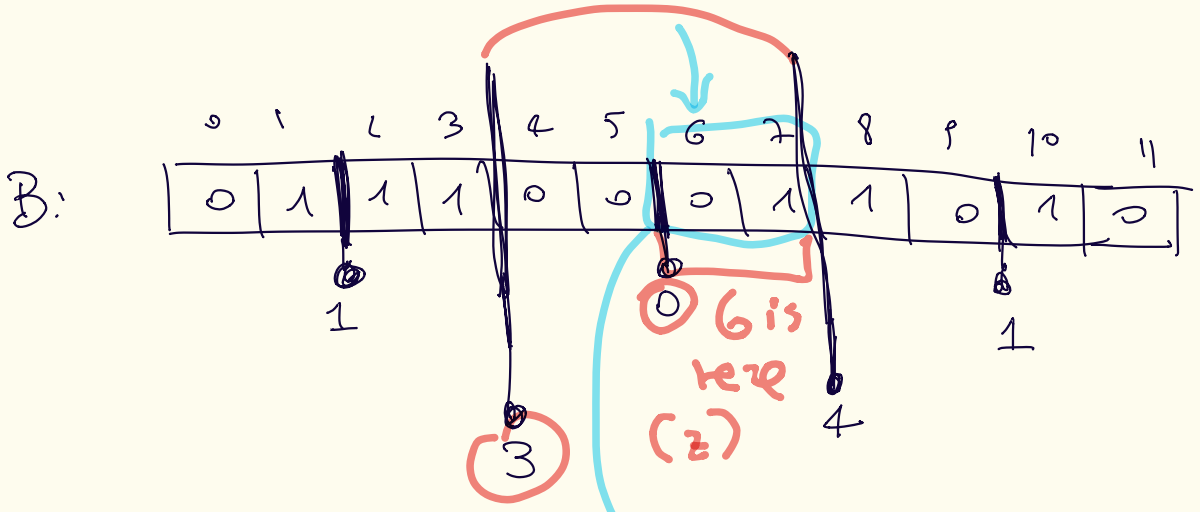
∀ small block ($z$) configuration $x$ and ∀ position $y \in [1, z]$ STORE # of 1 in $x[1, y]$

- compute $rank_1(6)$:

Detail how algorithm do this

1) Sum value regarding $z$ (sp block)
2) " " " $z$ )
3) " " " Table

6 is in this Big block 2
=> pick 3




=> 3 + 0 + small block 01

T['01', 0] = 0.

= 3 + 0 + 0 = 3

| T | 1: 0 | 2: 1 |
|---|---|---|
| 00 | 0 | 0 |
| 01 | 0 | 1 |
| 10 | 1 | 1 |
| 11 | 1 | 2 |

pos cuz

2

| 6 | 7 |
|---|---|
| 0 | 1 |

6 = 0

$Rank_1(7) = 3 + 0 + 1 = 4$