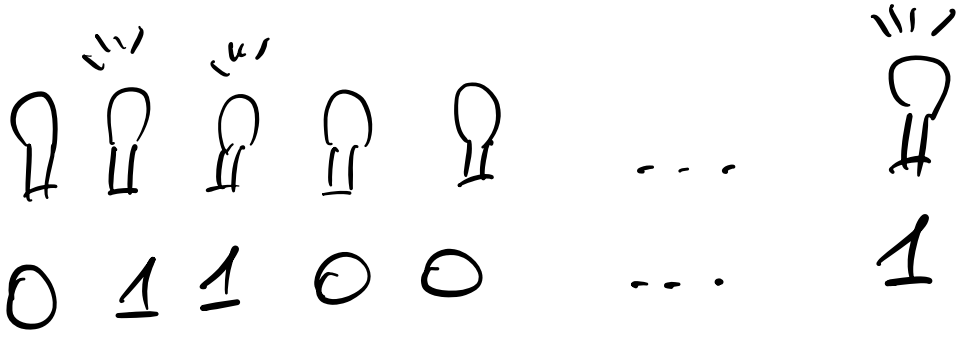
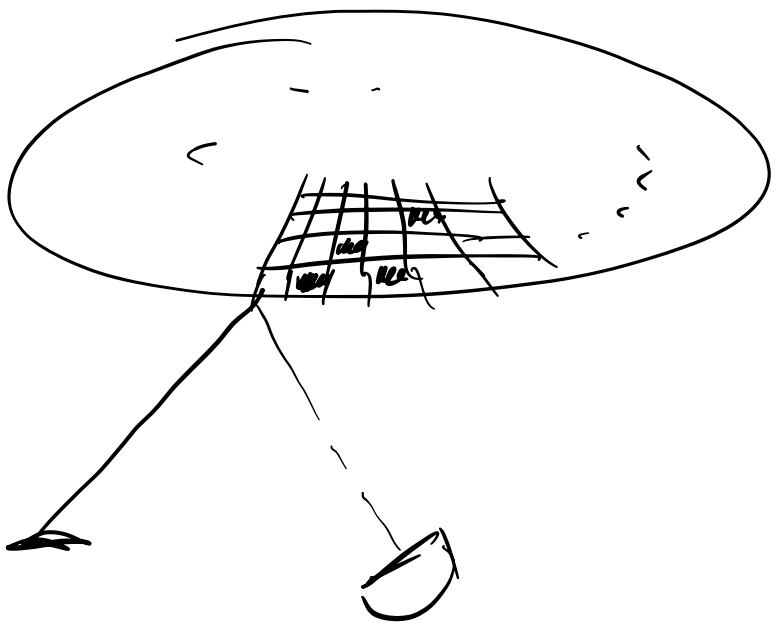
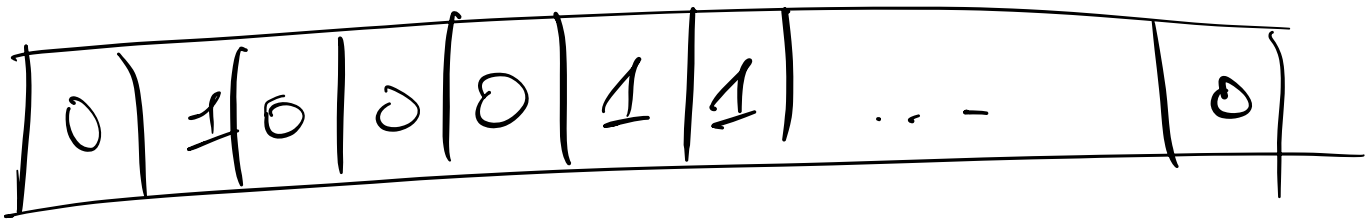
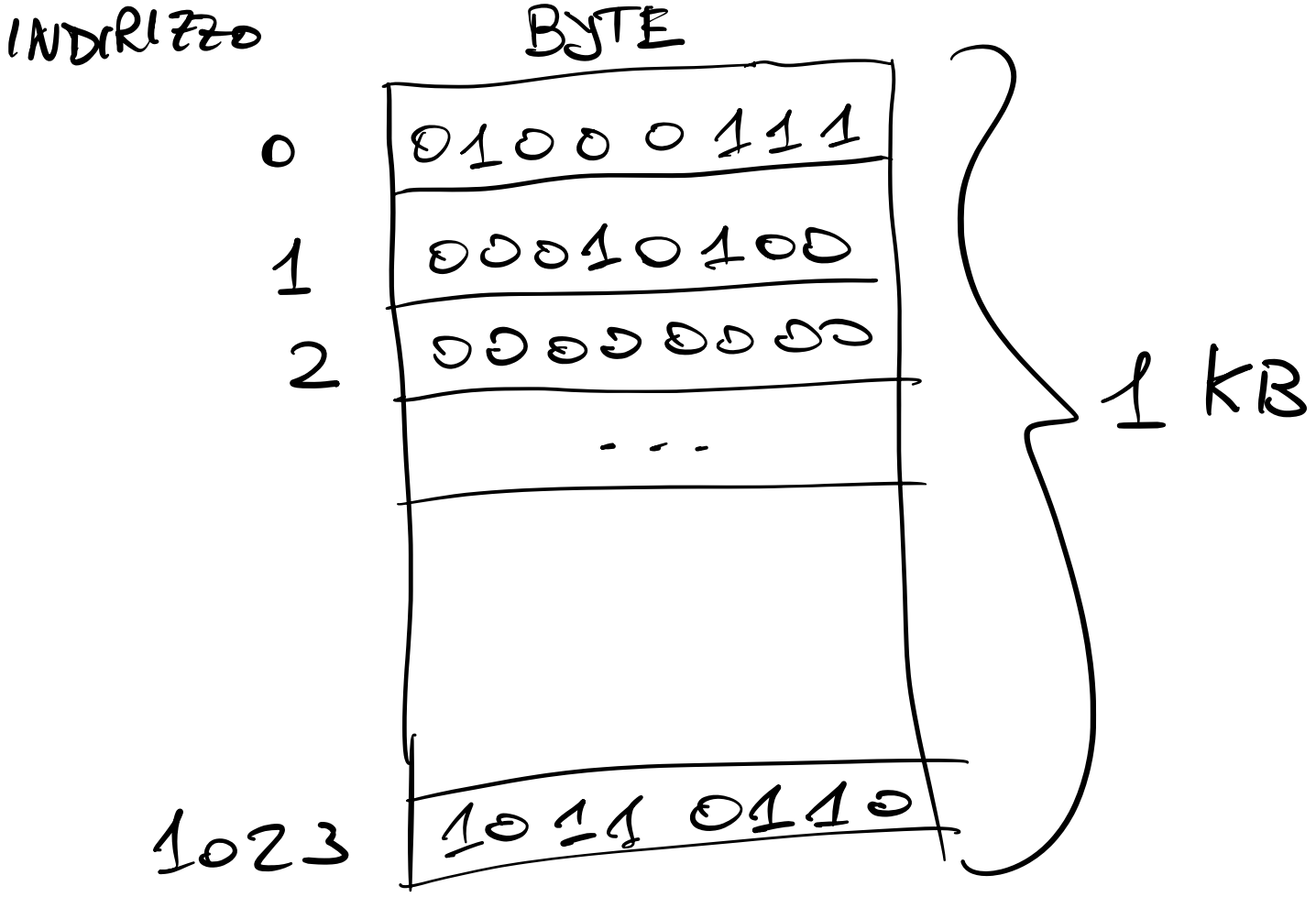
MEMORIE DIGITALI

- BIT






0 1 0 0 0 1 1 . . . 0


INDIRIZZO
BYTE
0
01000111
1
00010100
2
00000000
. . .
1 KB
1023
1011 0110

b BIT

B BYTE

KiB

MiB

GiB

TiB

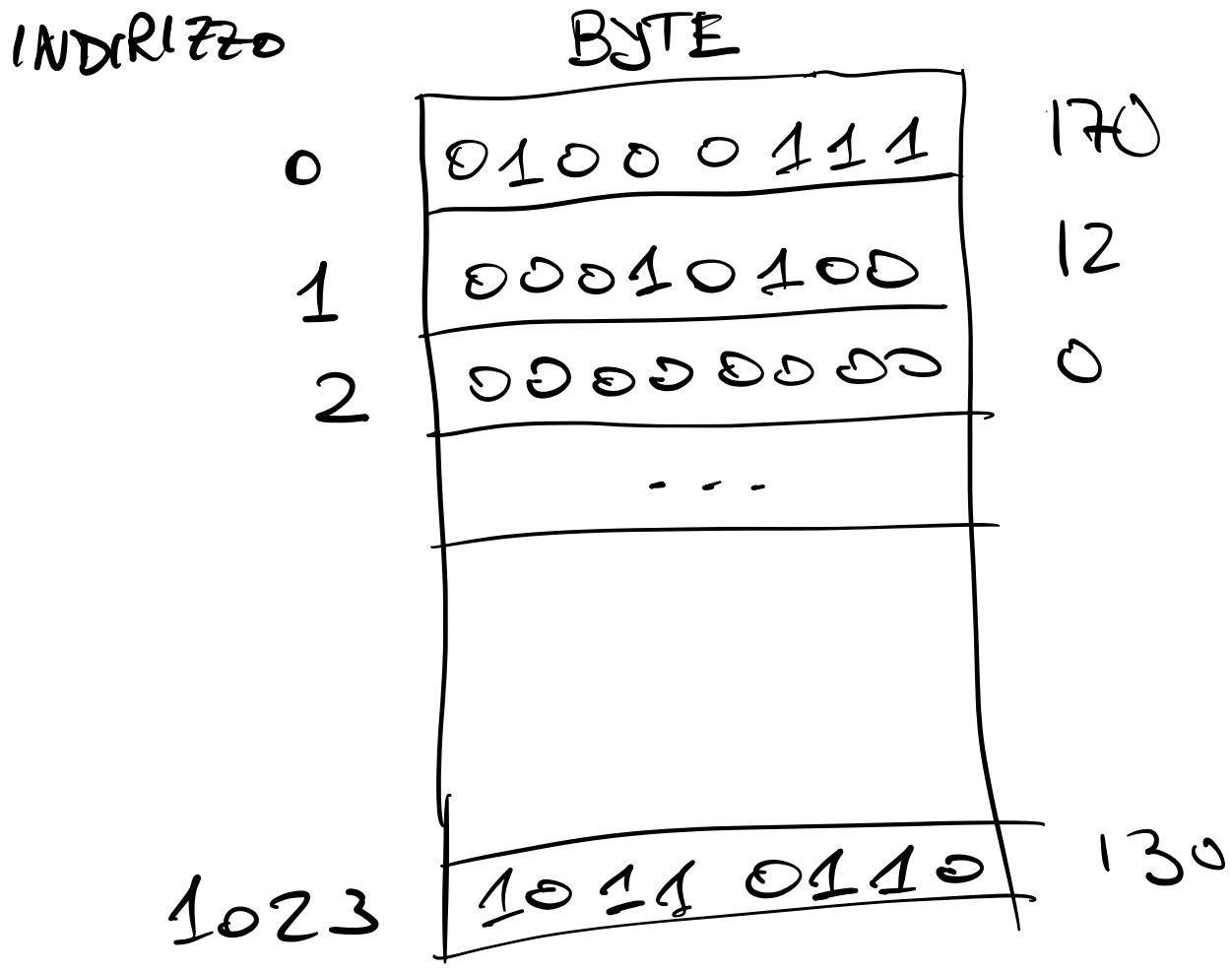
$2^{10} = 1024$ B

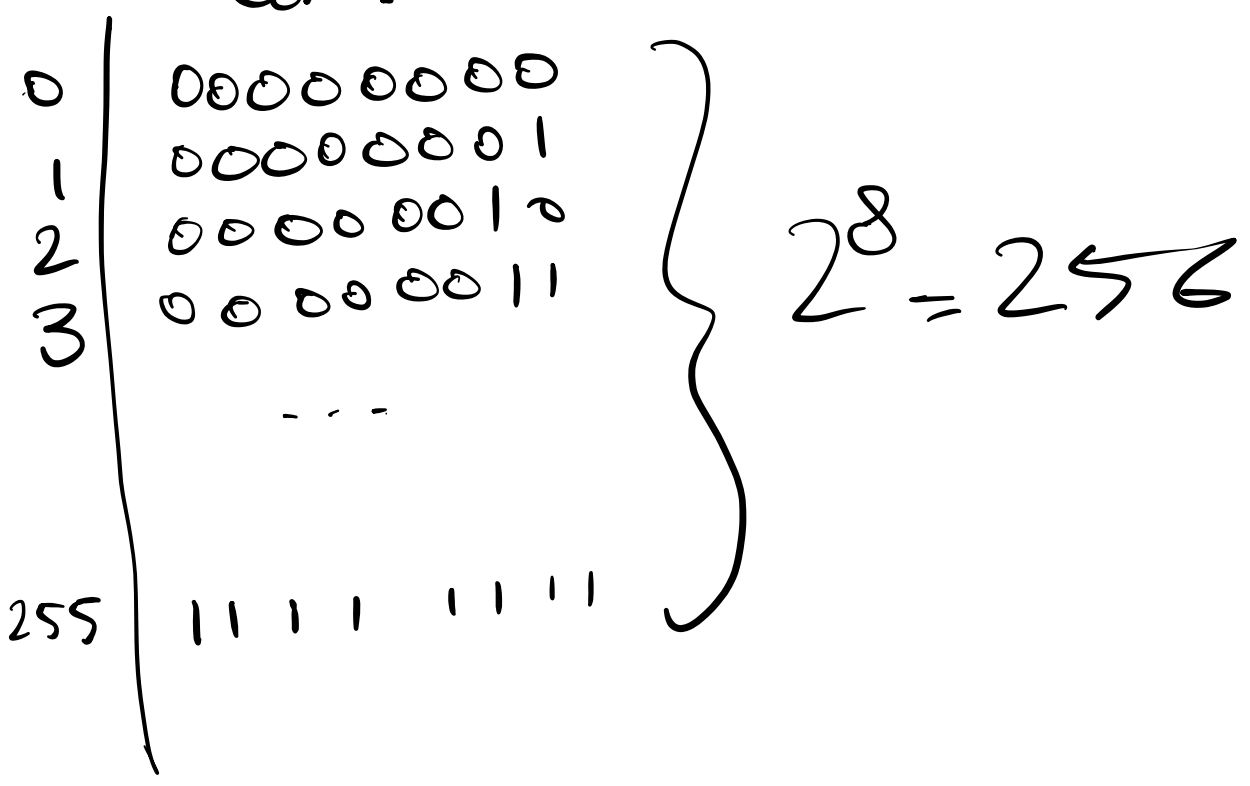
$2^{20} = 1048576$ B

$2^{30} = 1073741824$ B

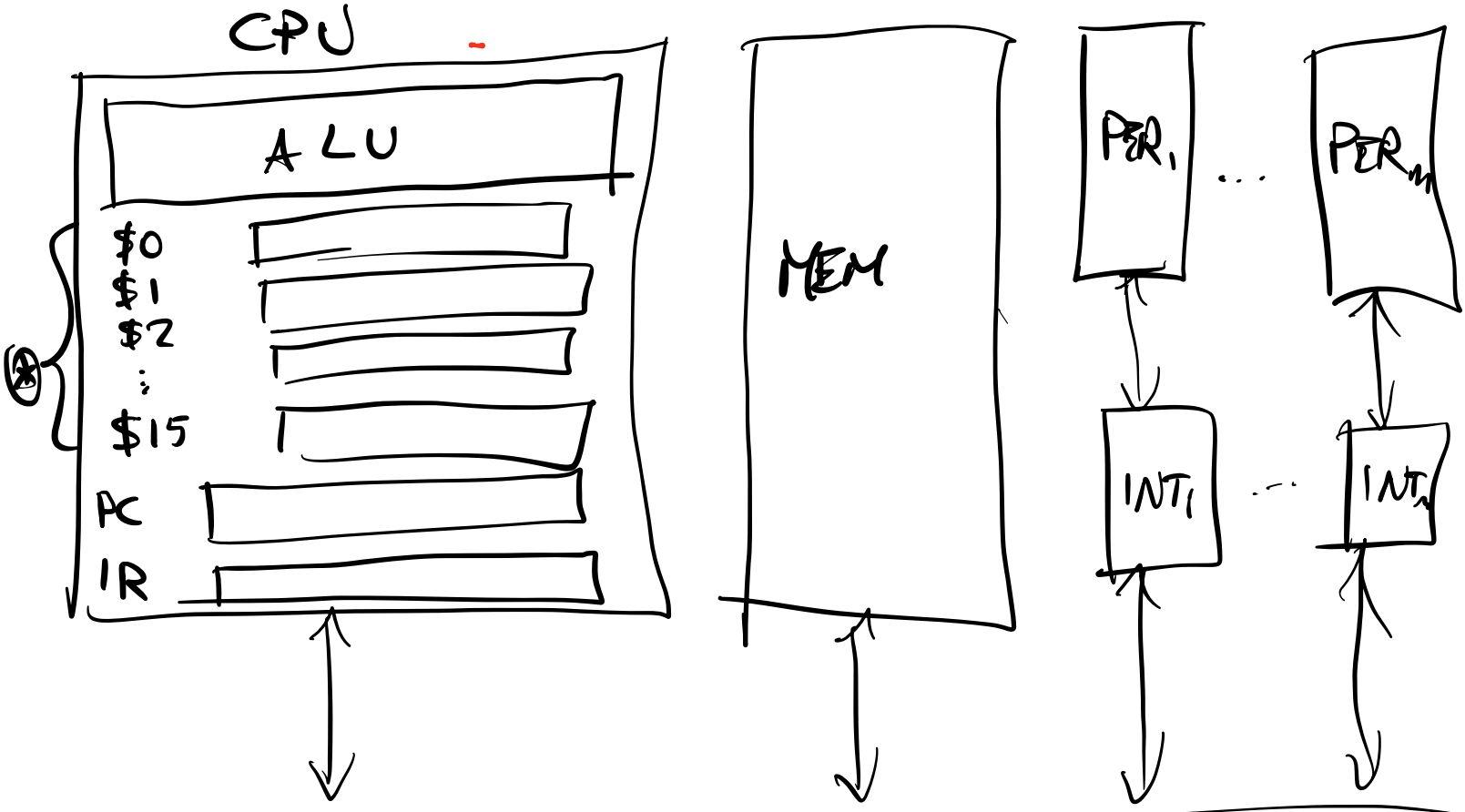
$2^{40} = 1099511627776$ B

COMPRESSIONE
- LOSSLESS
- LOSSY


INDIRIZZO
BYTE
0
01000111
170
1
00010100
12
2
00000000
0
...
1023
1011 0110
130


CONF.
0
00000000
1
00000001
2
00000010
3
00000011
...
255
1111 1111
$2^8 = 256$

MACCHINA DI VON NEUMANN



DATI

COMANDI

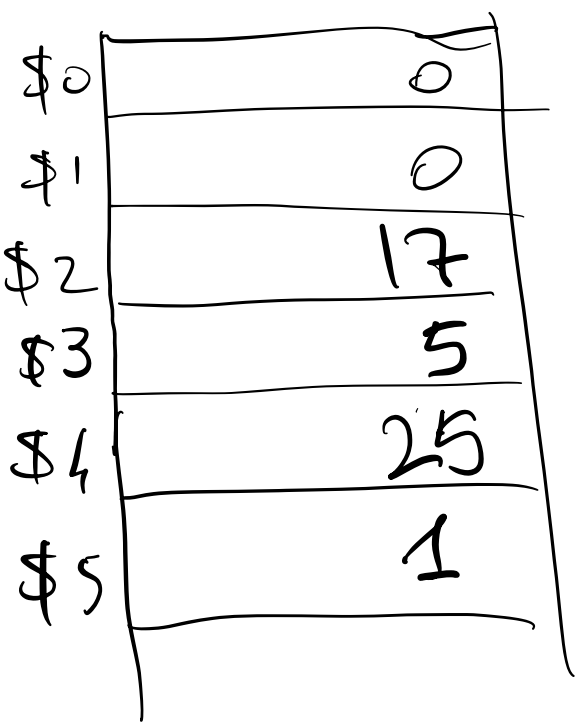
BUS

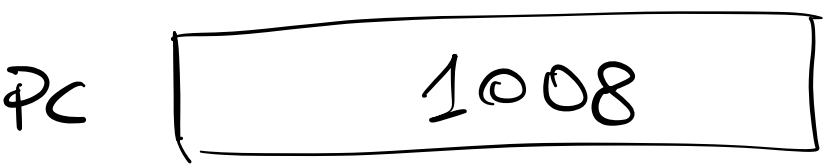
PC = PROGRAM COUNTER

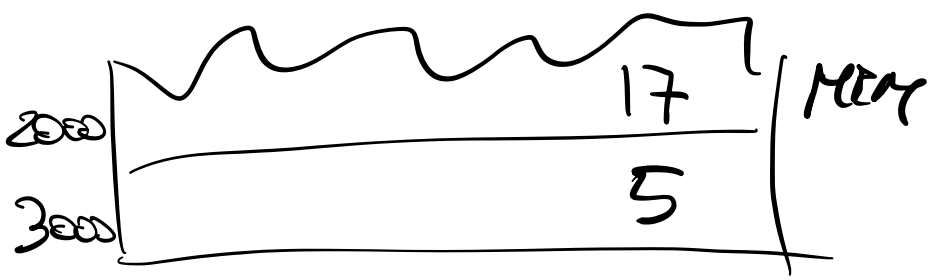
IR = INSTRUCTION REGISTER

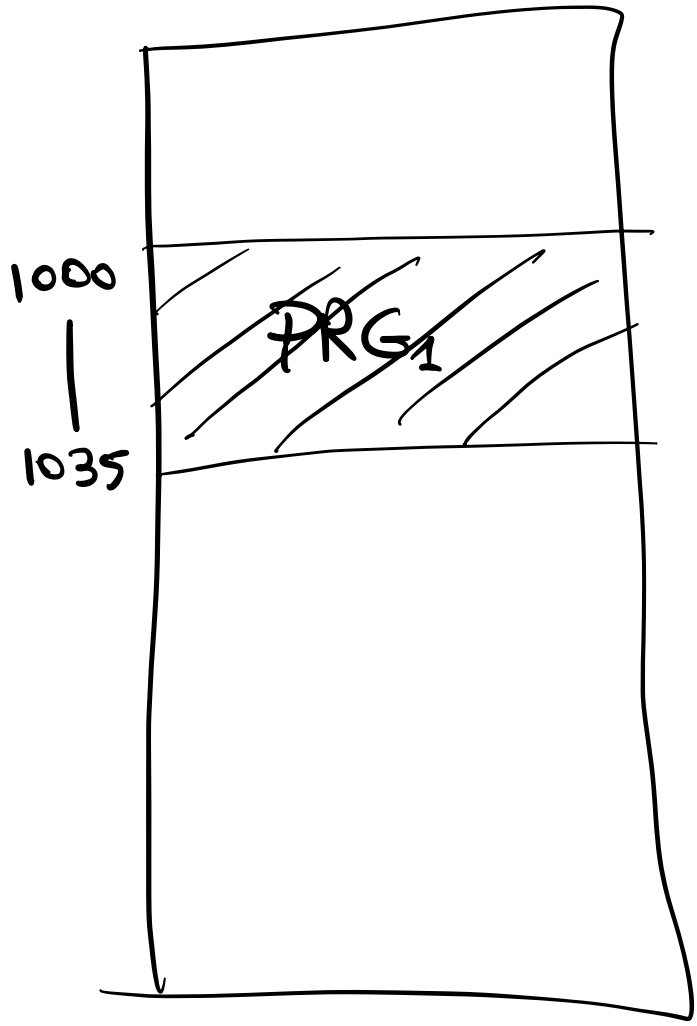
(*) = REGISTRI ORDINARI

```
1000:        lw    $2, 2000($0)
1004:        add   $3, $0, $0
1008: $4←$3  add   $4, $3, $0
1012: $4←$4² mult  $4, $4, $4
1016: if     slt   $5, $4, $2
1020: $4≥$2  beq   $5, $0, +8
      salto
1024:        addi  $3, $3, +1
1028:        j     1008
1032:        sw    $3, 3000($0)
```









1) FETCH

2) DECODE

3) EXECUTE

lw $2, 2000($0)

LOAD WORD
carica il contenuto della locazione 2000 nel registro $2

add(i) x, y, z

$x \leftarrow y + z$

mult x, y, z

$x \leftarrow y * z$

slt x, y, z
SET IF LESS THAN

$$x = \begin{cases} 1 & \text{se } y < z \\ 0 & \text{altr.} \end{cases}$$

beq x, y, z
BRANCH IF EQUAL

z se $x = y$

$PC = \begin{cases} \\ PC \end{cases}$ altrimenti

j x

JUMP

PC=X

sw $2,2000($0)

STORE WORD

Scrivi $2 nella locazione 2000