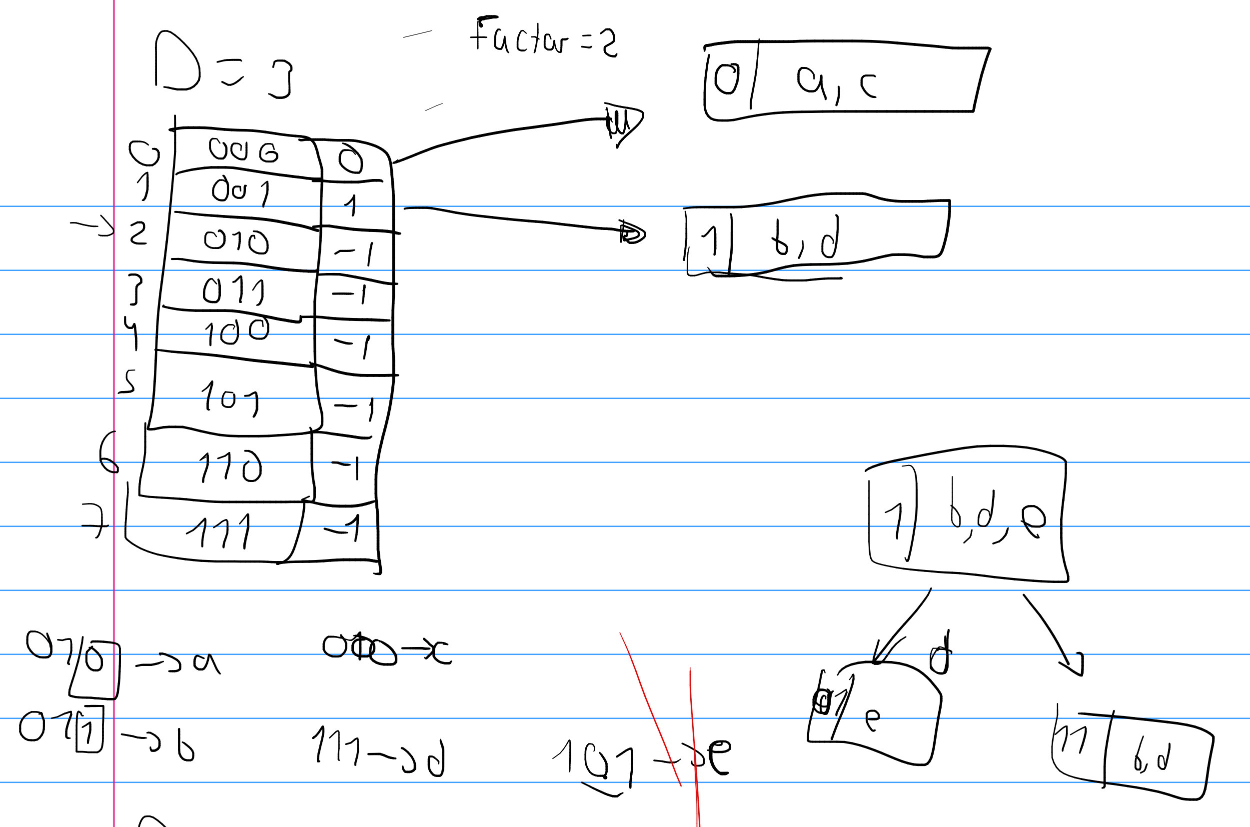
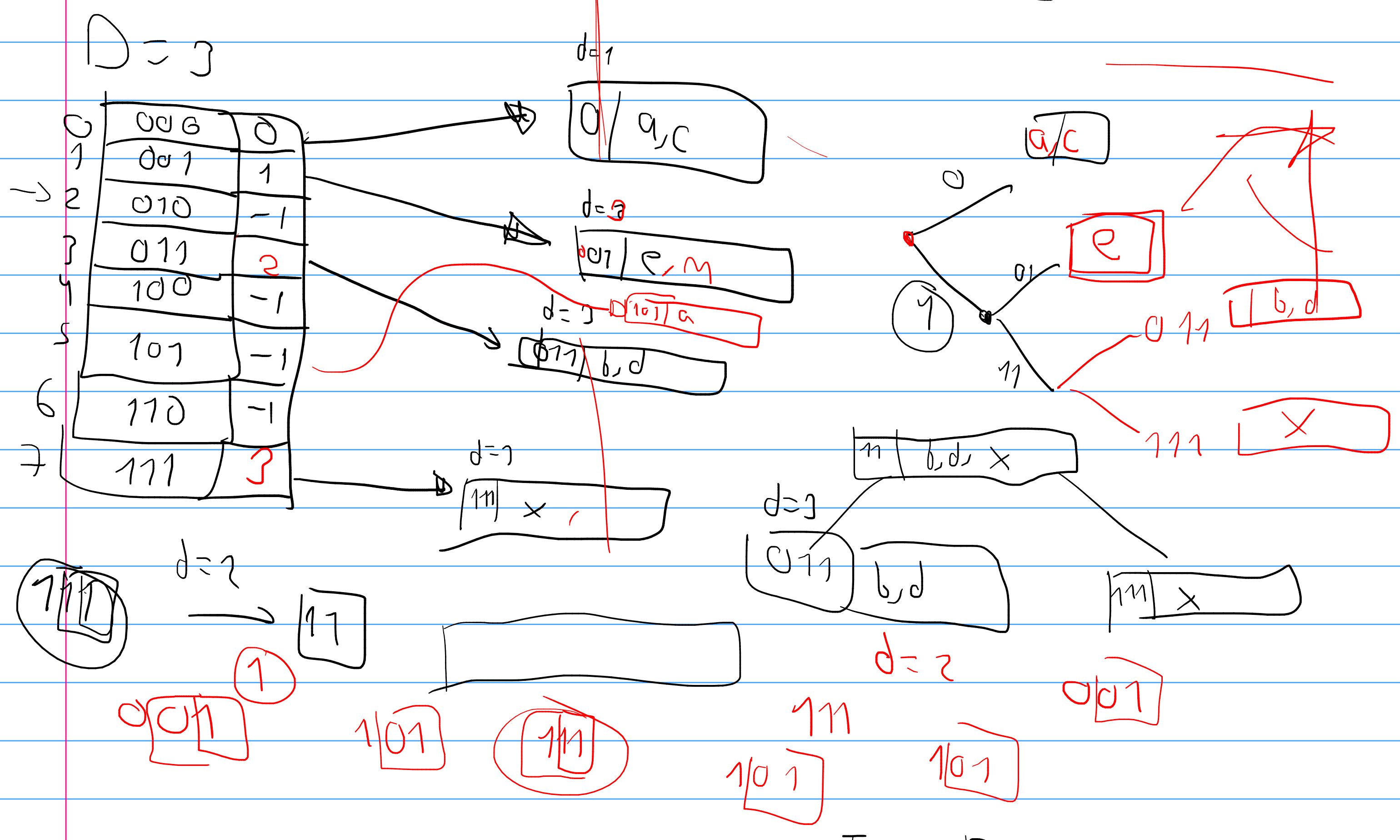
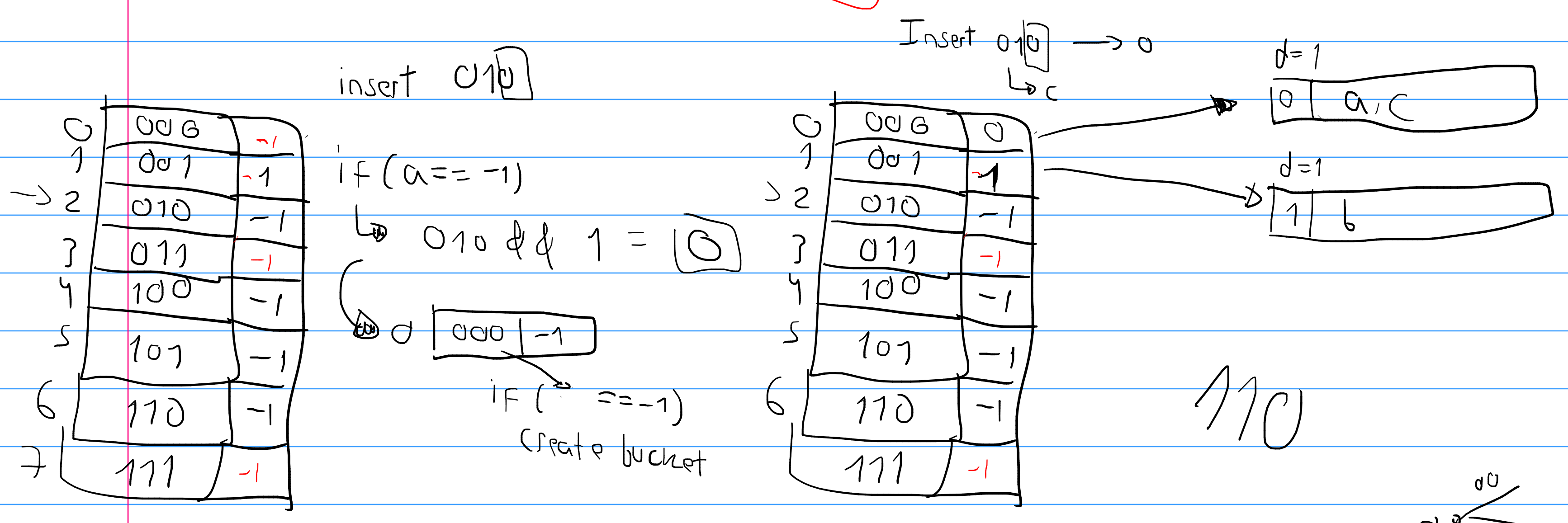
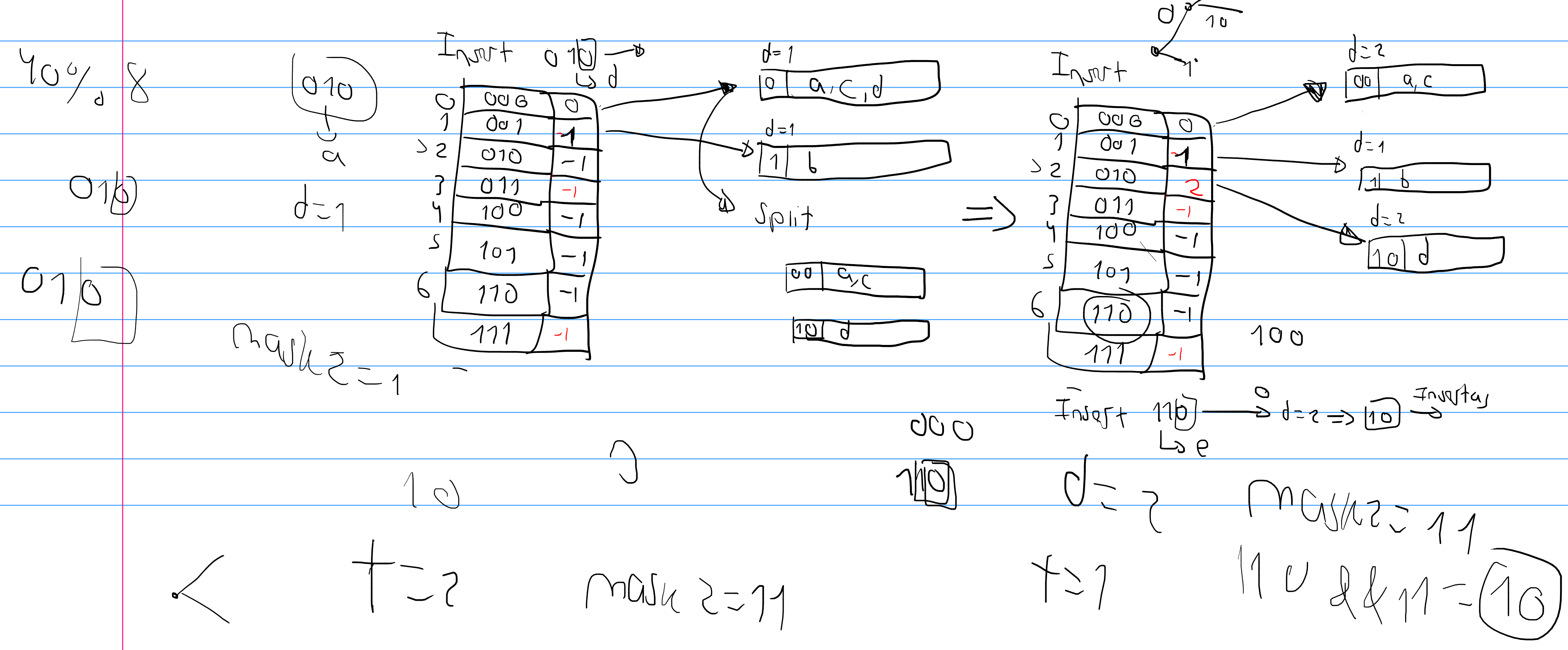
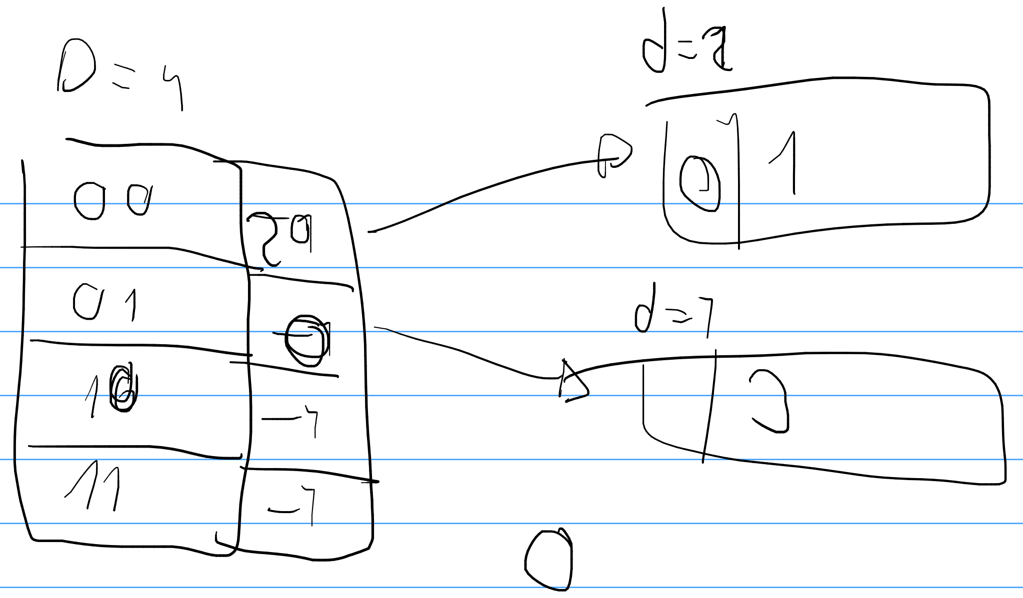

D = 3
Factor = 2
0 | a, c
1 | b, d
1 | b, d, e
010 → a
011 → b
000 → c
111 → d
101 → e


D = 3
d=1
0 | a, c
d=3
001 | e, m
d=3
101 | a
011 | b, d
d=1
111 | x
d=2
11 | b, d, x
011 | b, d
111 | x
d = 2
001
101
111

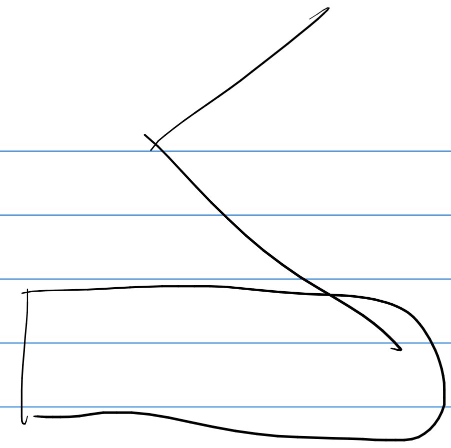

insert 010
if (a == -1)
010 && 1 = 0
000 | -1
if (== -1)
Create bucket
Insert 010 → 0
↳ c
d = 1
0 | a, c
d=1
1 | b
110


10 % 8
010
d=1
mask = 1
Insert 010
↳ d
d=1
0 | a, c, d
d=1
1 | b
Split
00 | a, c
10 | d
⇒
Insert
d=2
00 | a, c
d=1
1 | b
d=2
10 | d
100
Insert 110 → d=2 ⇒ 10 → Insertar
↳ e
000
110
d = 2
mask = 11
110 && 11 = 10
t = 2
t = 1
mask = 11

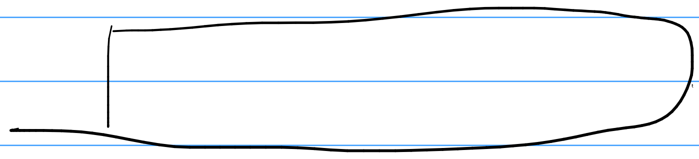


2

0



10



0 10

for(buckets)

a b c
00 10 10

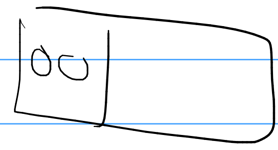
[a, b, c]

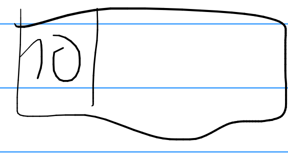
Split (bucket, ~~inde~~ mask, t)

t = 2

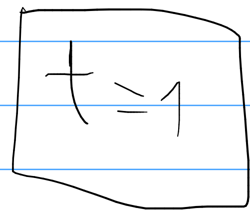
11

bucket





Mask = 0



10 → 0

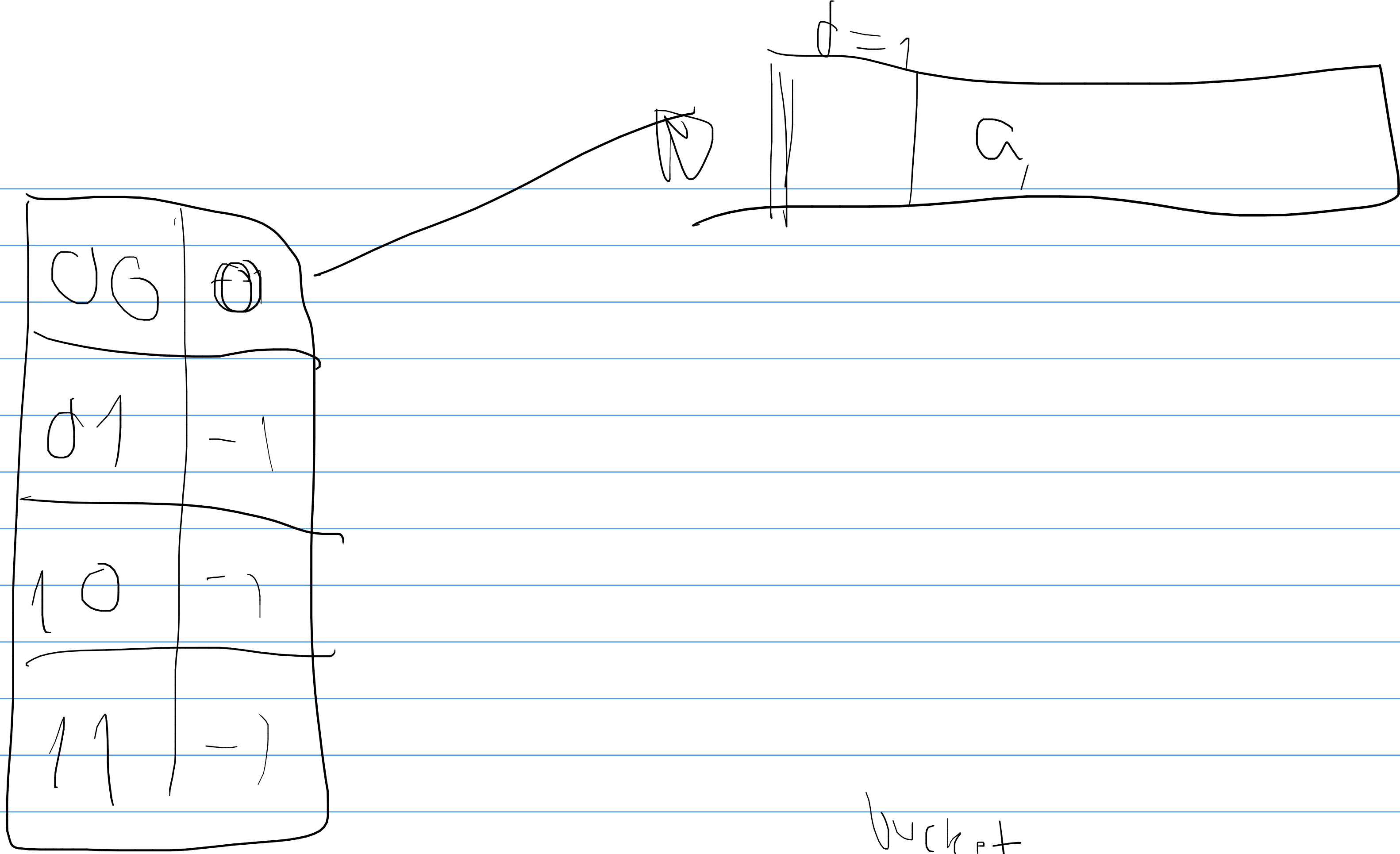
d = 1
t = 1

00

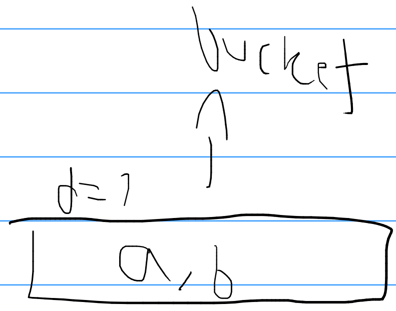
10

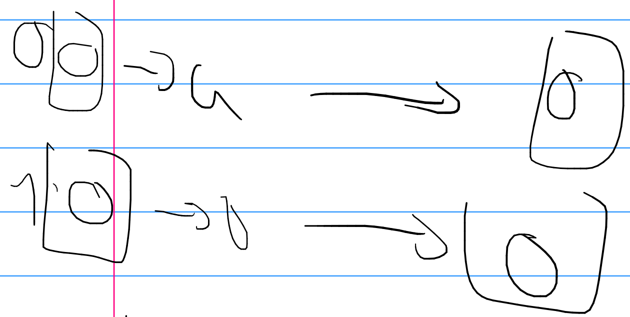
00

mask



Abrimos





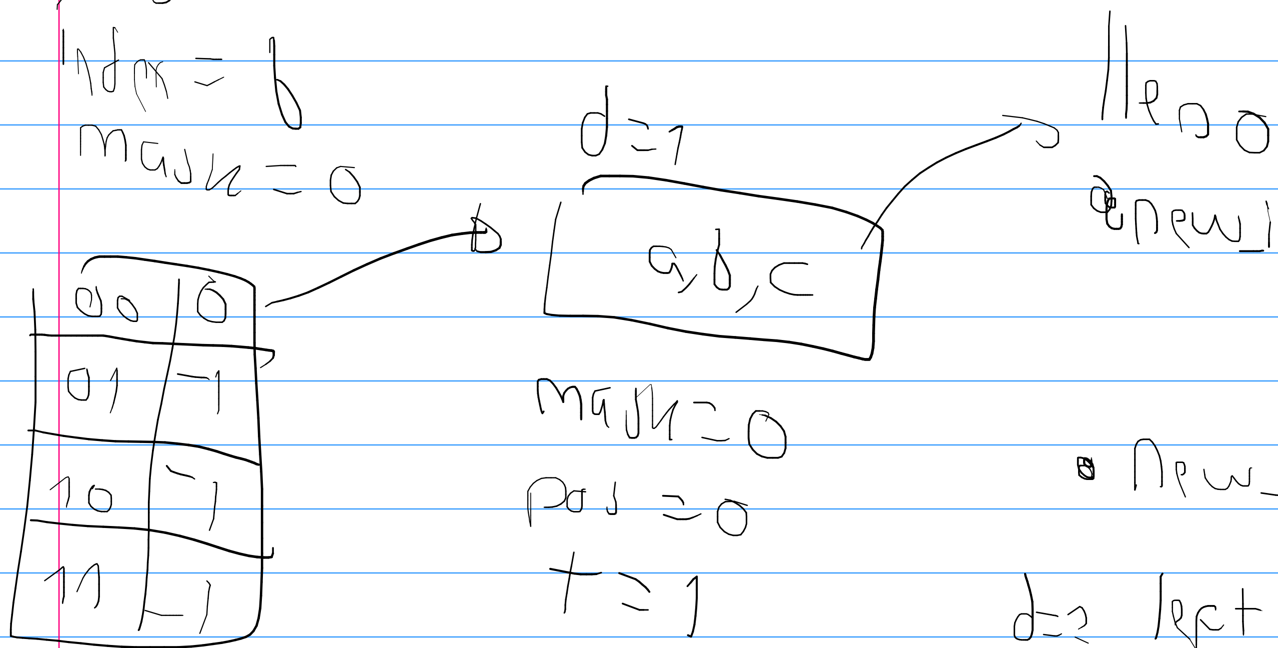
int pos= mask=0

t=1

key= b

index = b

mask=0



mask=0

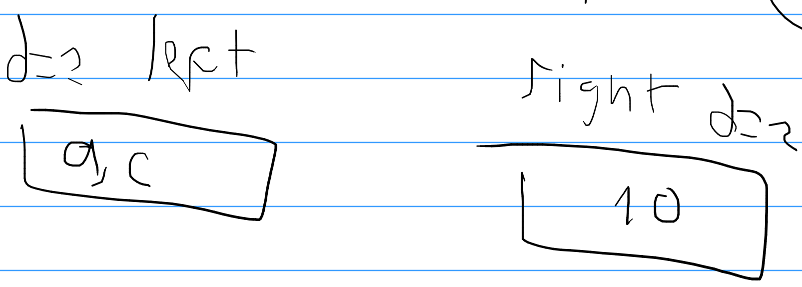
pos=0

t=1

mask2=1

new_index = 0 | 10 = 10

new_mask = 1 | 10 = 11



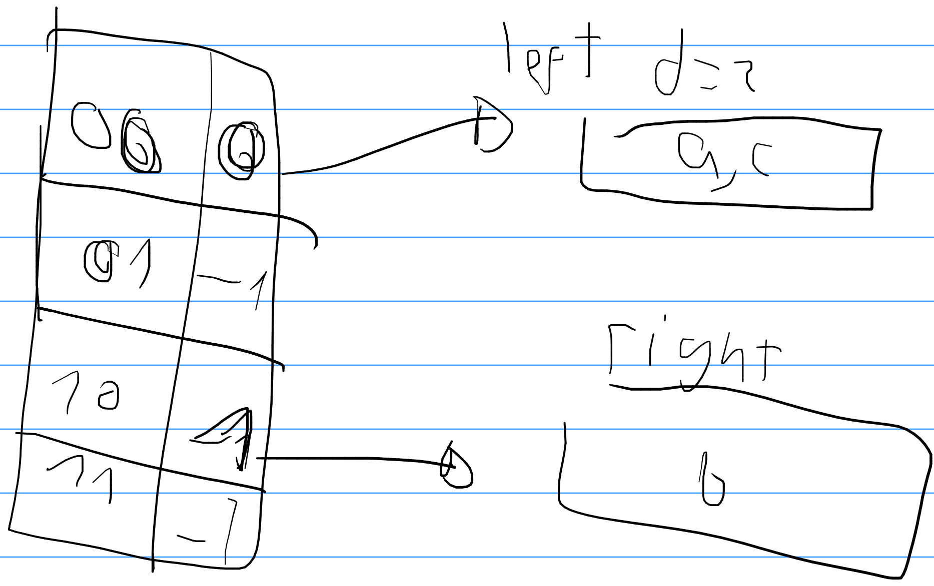
value

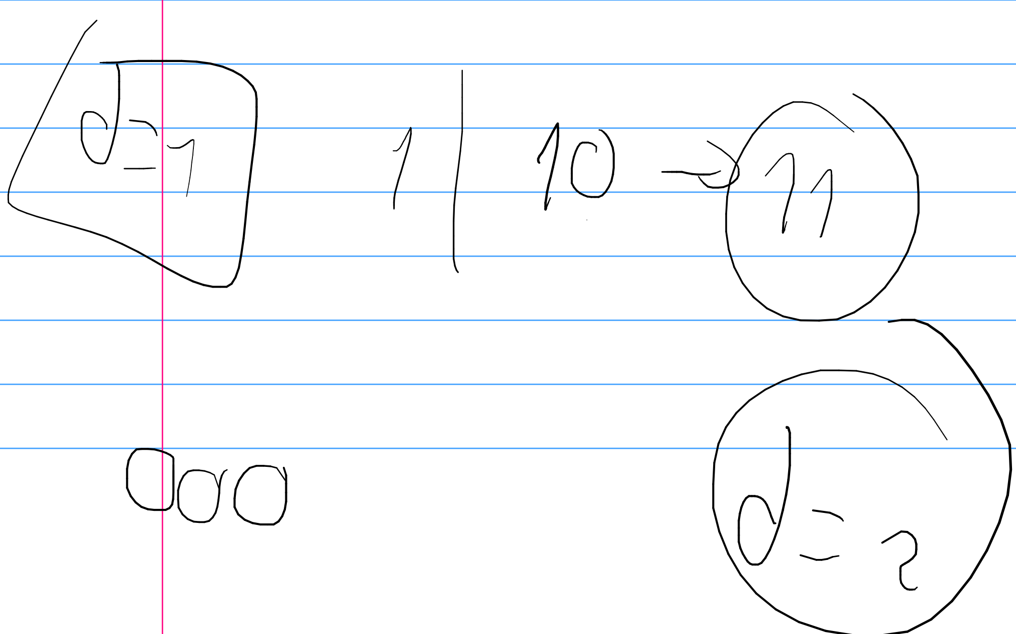
a -> 00 -> 00

b -> 10 -> 10

c -> 00 -> 00

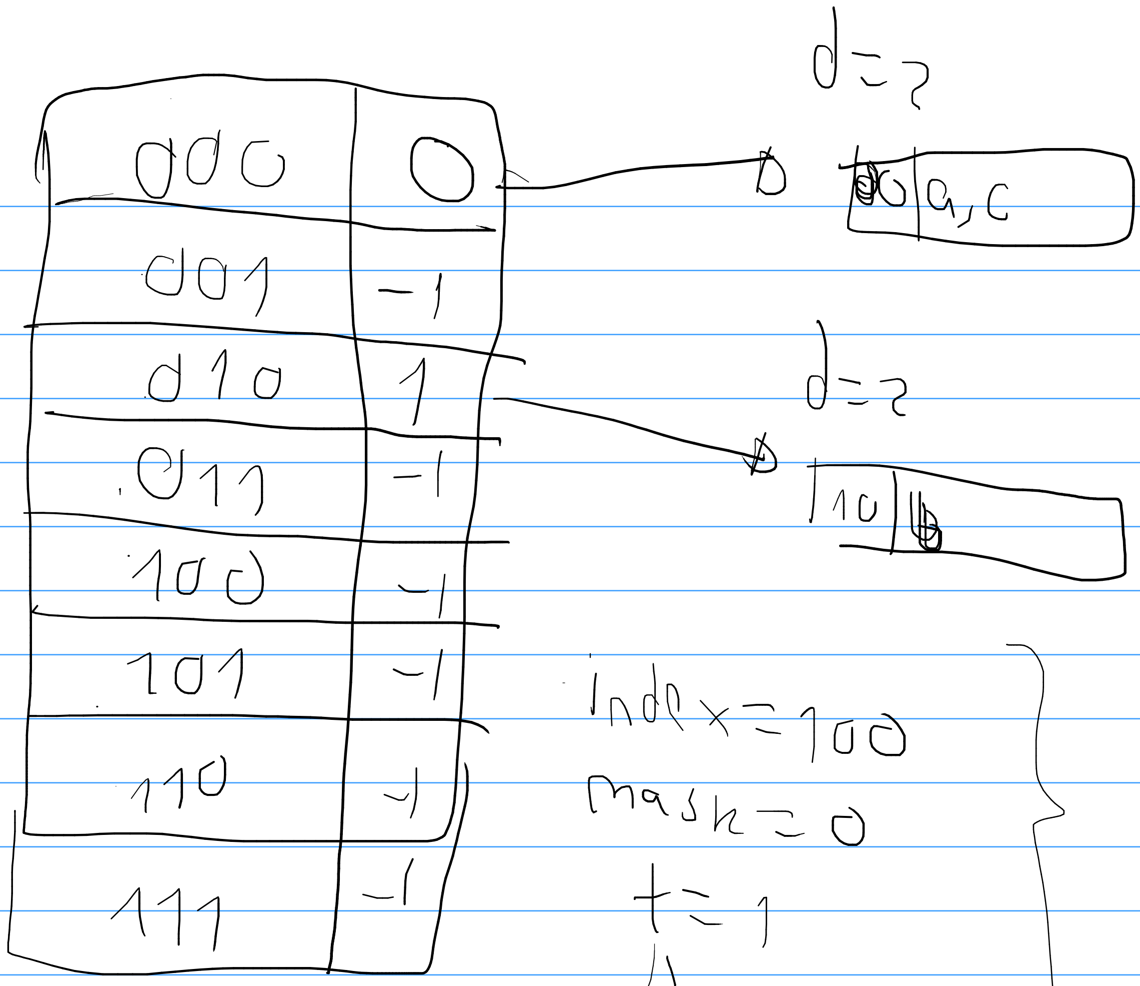
=>





000

Insut 100 → "d"



index = 100
mask = 0
t = 1
d = 2
pos = 0
mask2 = 1

while ( )
1ª Iteración
mask2 = 11
mask = 100 & 11
mask = 00
Pos = 0
d = 2
t = 2
sale del bucle

a, c, d

Split

new_index = 00 | 100 = 100
New_mask = 111

left d=3

a, c

Right d=3

d

d

000

a = 110
b = 010
c = 010

00 | a, b, c

010 →

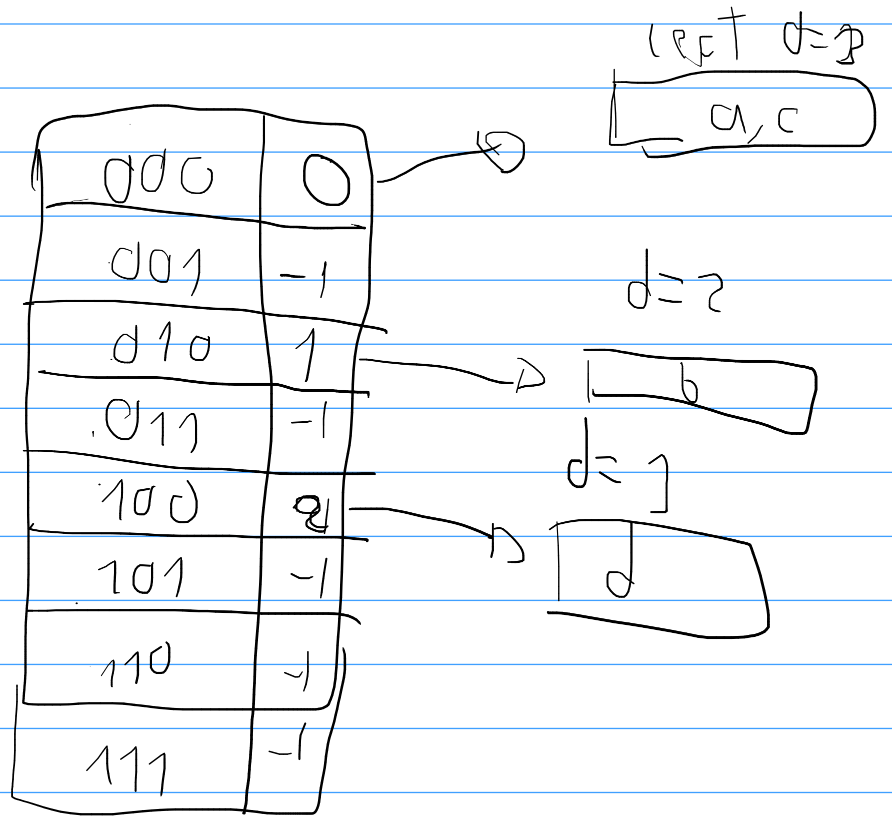
d=2

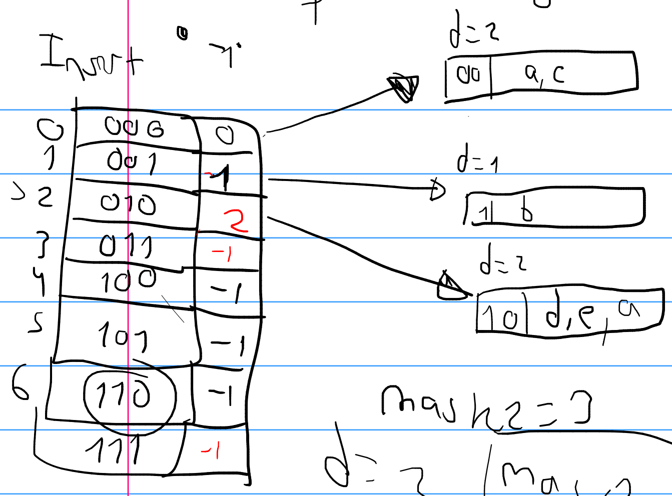
010
010

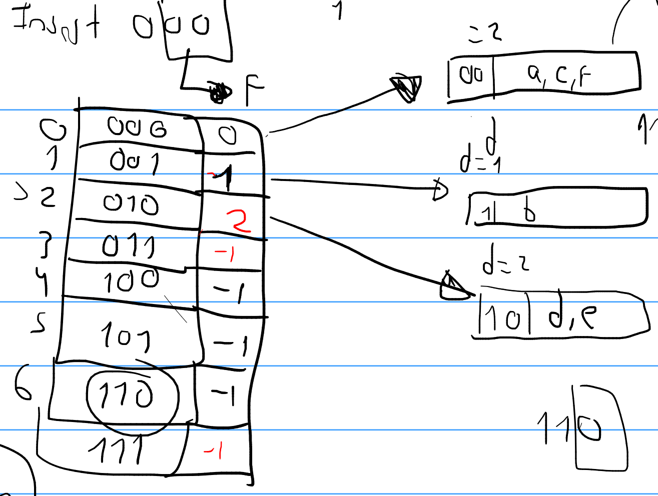
010 | 100 = 110

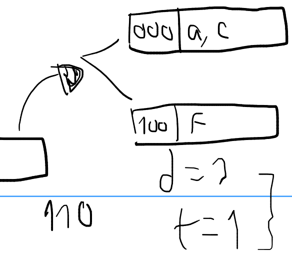
2

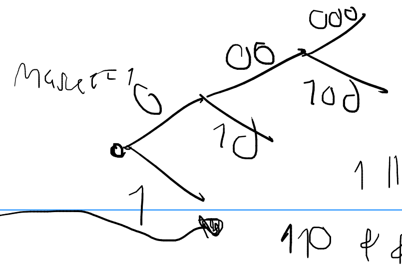
new_index = 010 | 100 = 110





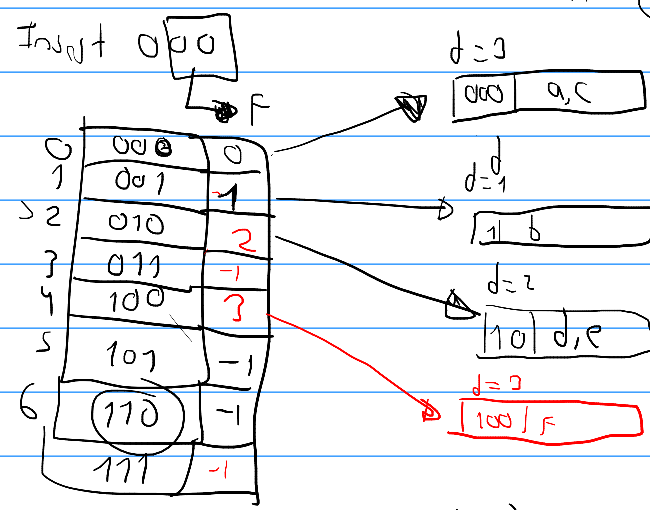






1 || 10 = 11

110 && 11 = 10



mask2=3

d=2 mask2=3

t=1

t=2

100

110

110

110

Mask 110 & 11

10

11 || 100

2^2+2^1+1

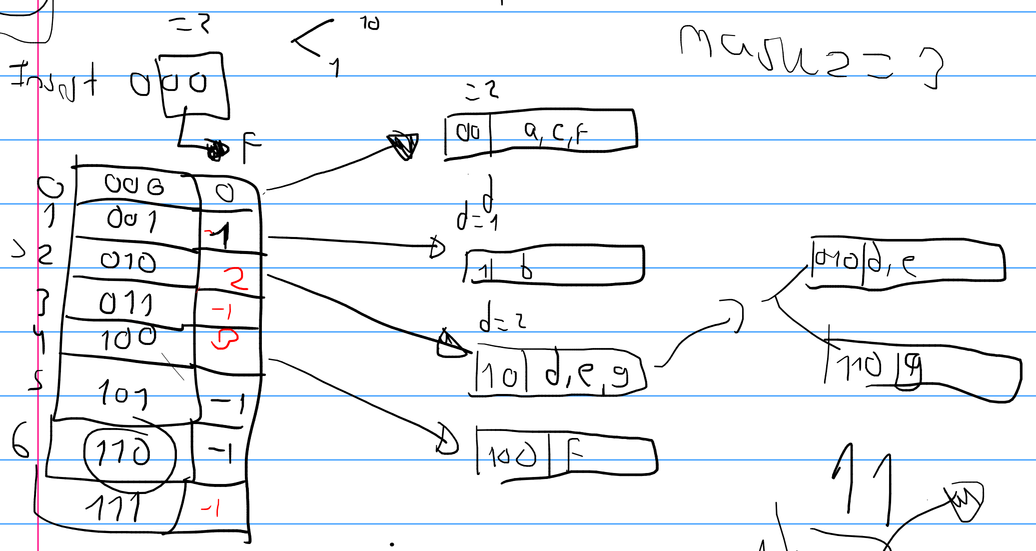
110 → 000 d≠1

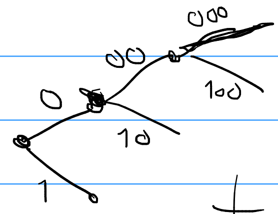
t=1 t≠d

mask2=3

t=1

d=2





while ( ) t=2

110

110 && 11 = 10

t=2

0 | 100 = 7

t=1 d=1

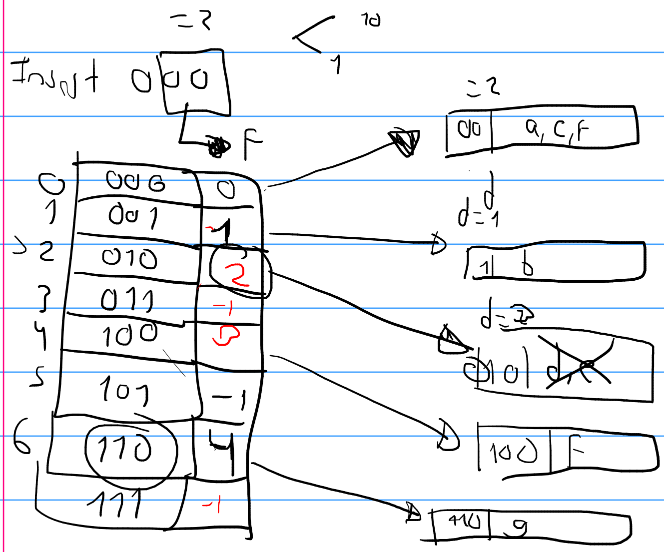
011 t==d

Mask2=3

11

110

Input 110



mask2=11

Parada del arbol

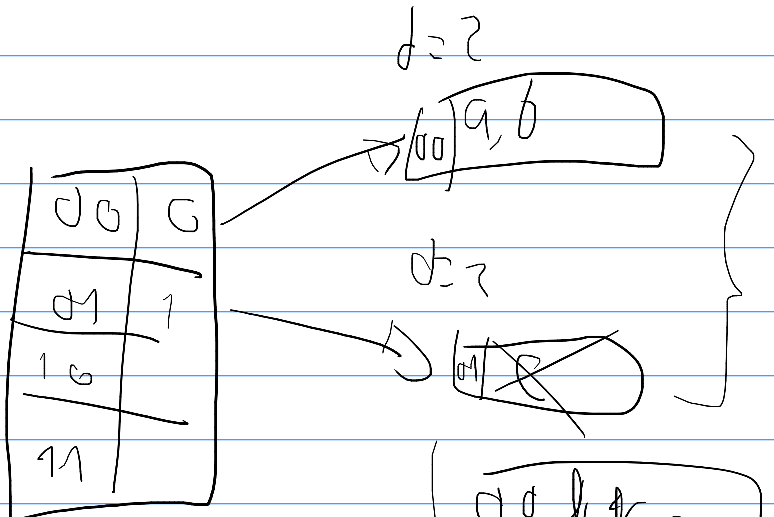
t==d

Merge

d=1 d=1

010 && 110

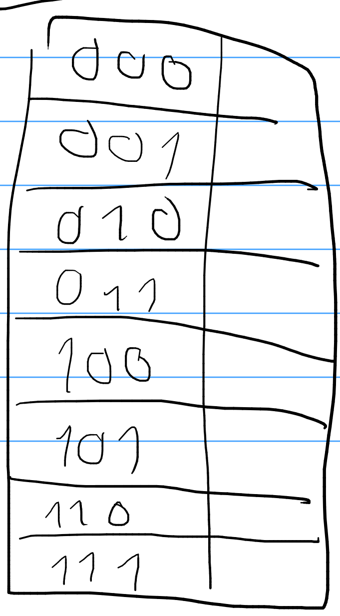
010 d=2

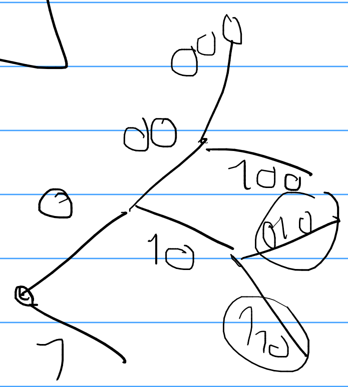


d=1

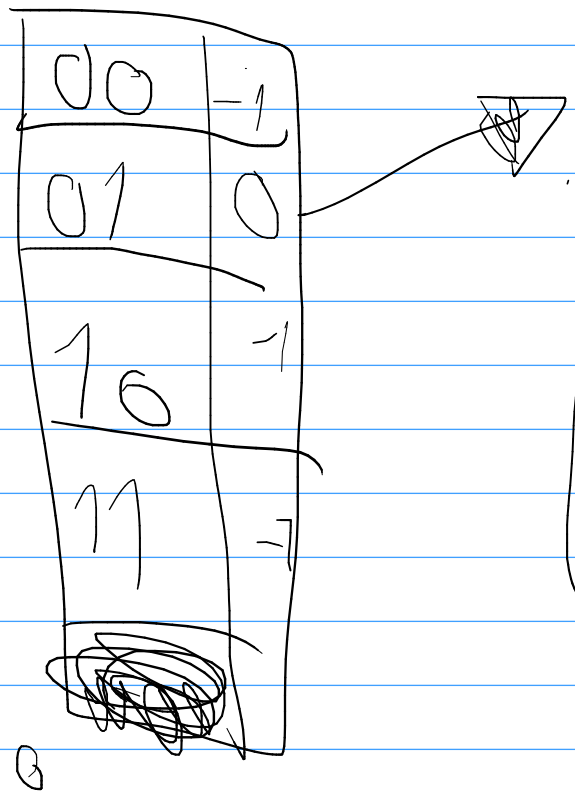
a, b

00 && 01 = 00

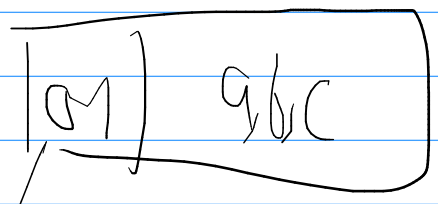




101



d=2



a -> 1 -> 001
b -> 5 -> 101
c -> 1 -> 001

101 001

01

split

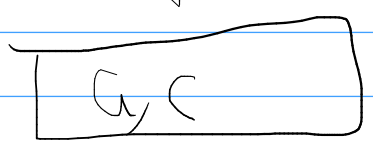
bucket

index = 001

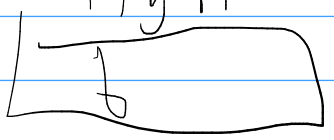
t = 2

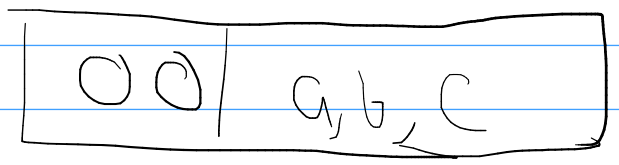
pos = 0

left

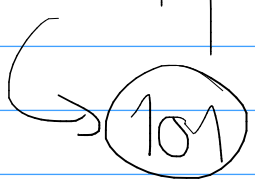


right





new_index = 01 | 100



new_mask = $2^{t+1} - 1$

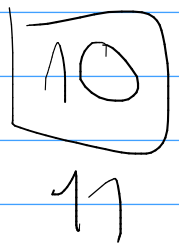
= 7 = 111

a -> 000
b -> 100
c ->

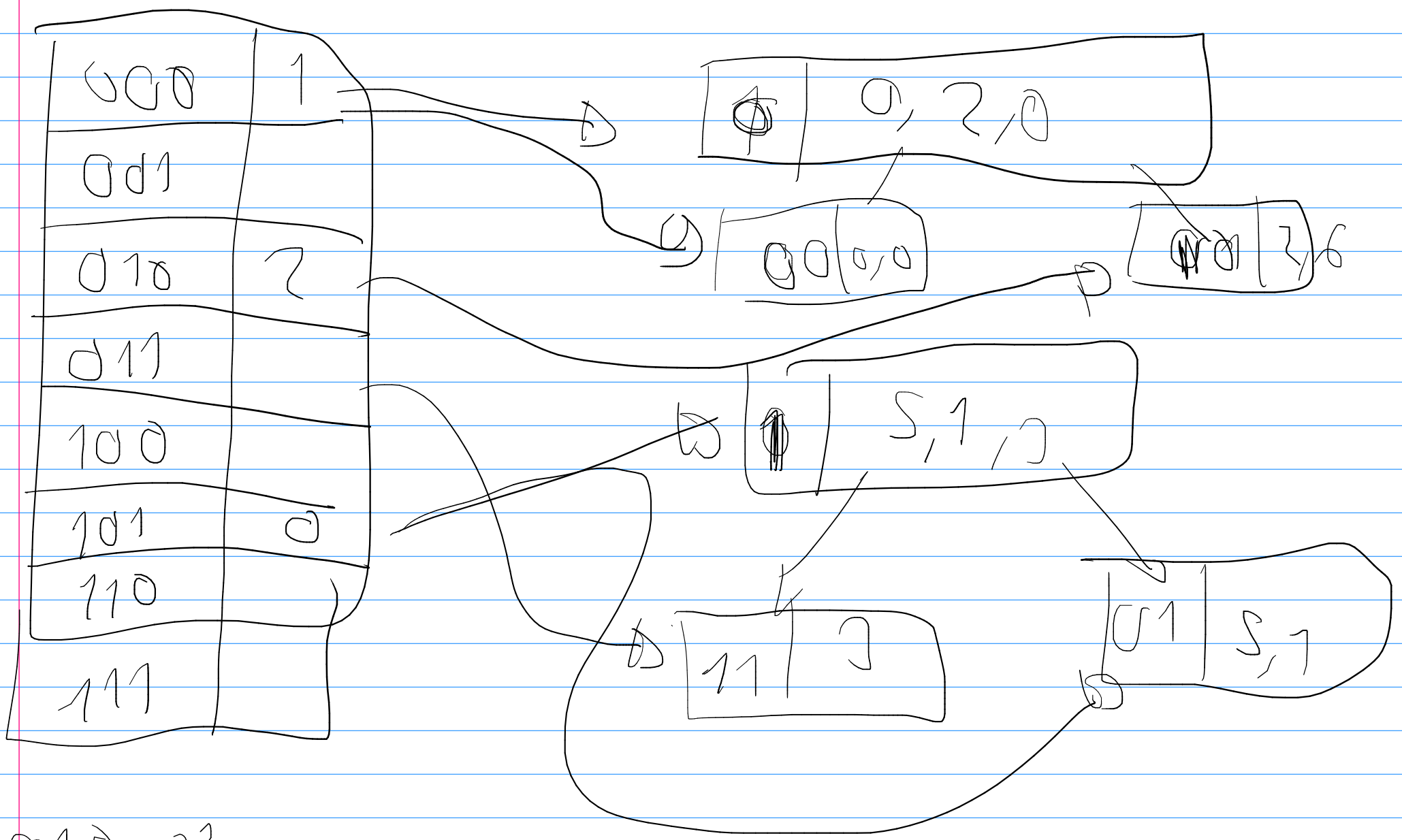
000 = 0
010 = 2
110 = 6

100 -> 4
110 -> 6
100 ->

100 -> 4
000 -> 0
010 -> 2



11

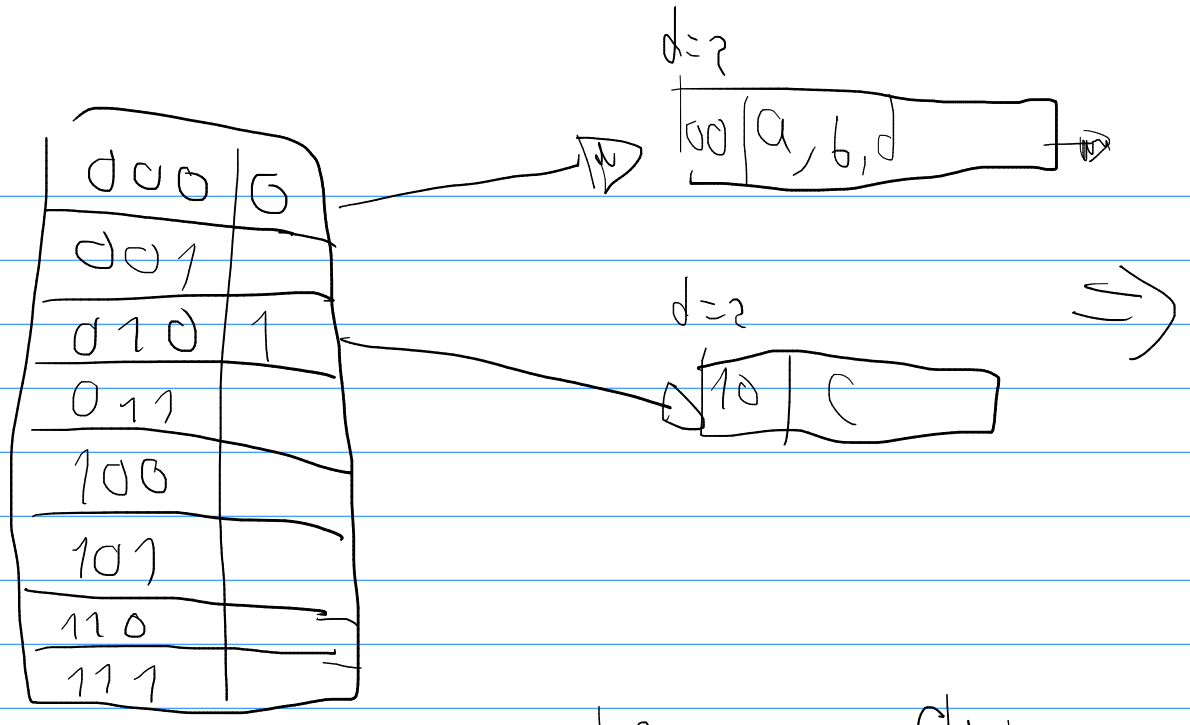


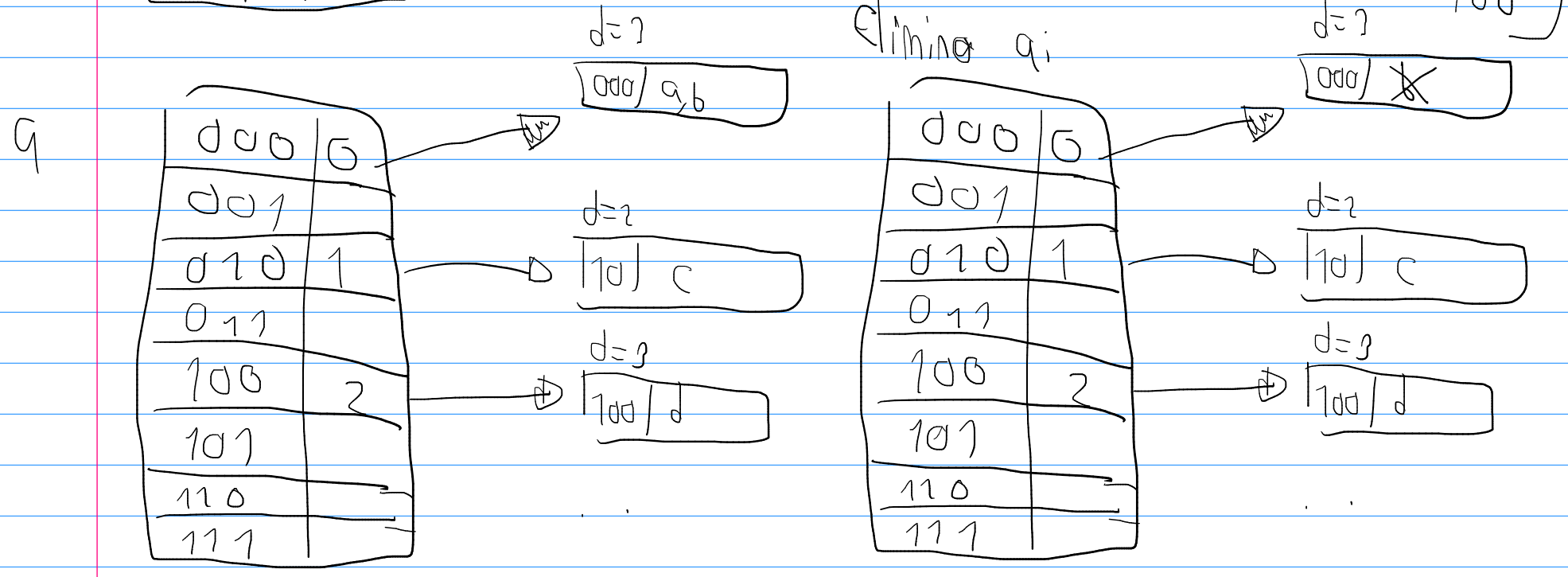
010 -> 2

101 1

001

110


d=?
000 | a, b, d
d=2
10 | c
000 | c
001
010 | 1
011
100
101
110
111


a
000 | c
001
010 | 1
011
100 | 2
101
110
111
d=2
000 | a, b
d=2
101 | c
d=3
100 | d
Elimino a;
000 | c
001
010 | 1
011
100 | 2
101
110
111
d=2
000 | ✗
d=2
101 | c
d=3
100 | d
100