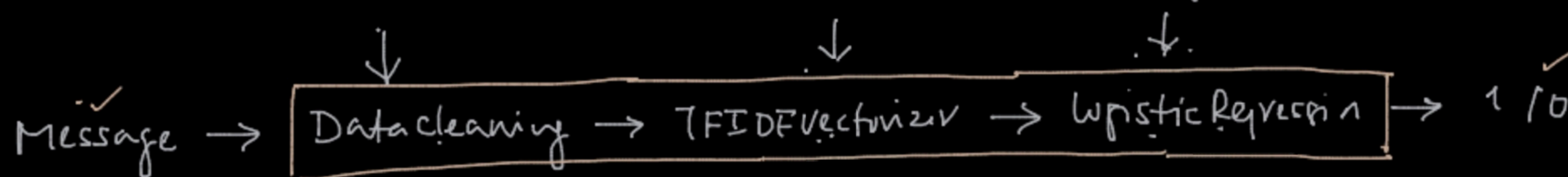


Pipeline

\hookrightarrow train/test

fit, transform.

fit, transform.



Pipeline \rightarrow model.

$x_1 =$ 'I loved the product' ✓
 \hookrightarrow cleaned, new ✓
 \rightarrow TFIDF Vector \rightarrow \boxed{m} \rightarrow 1.



model.predict(x_1).

class cleaner.

—

—

—

fit().

transform().

Apple → fruit.
Company

3 Million words



Spacy 3 → 10K
↓

90 contexts

Bow
TFIDF

Words → Numbers → Any models

13 81.3 40 73.5

The child is cute

The kid is cute,

-1.35

Lion → Leadership → ✓

→ Warriors — ✓

→ influential — ✓

→ animal ✓

→ Carnivore ✓

→ Wild ✓

→ Strength ✓

→ Pet ✓

30 verbs.

child → child is very cute

→ Don't behave like a child



Great → This product is great

→ Ok battery died, great

Sarcastic

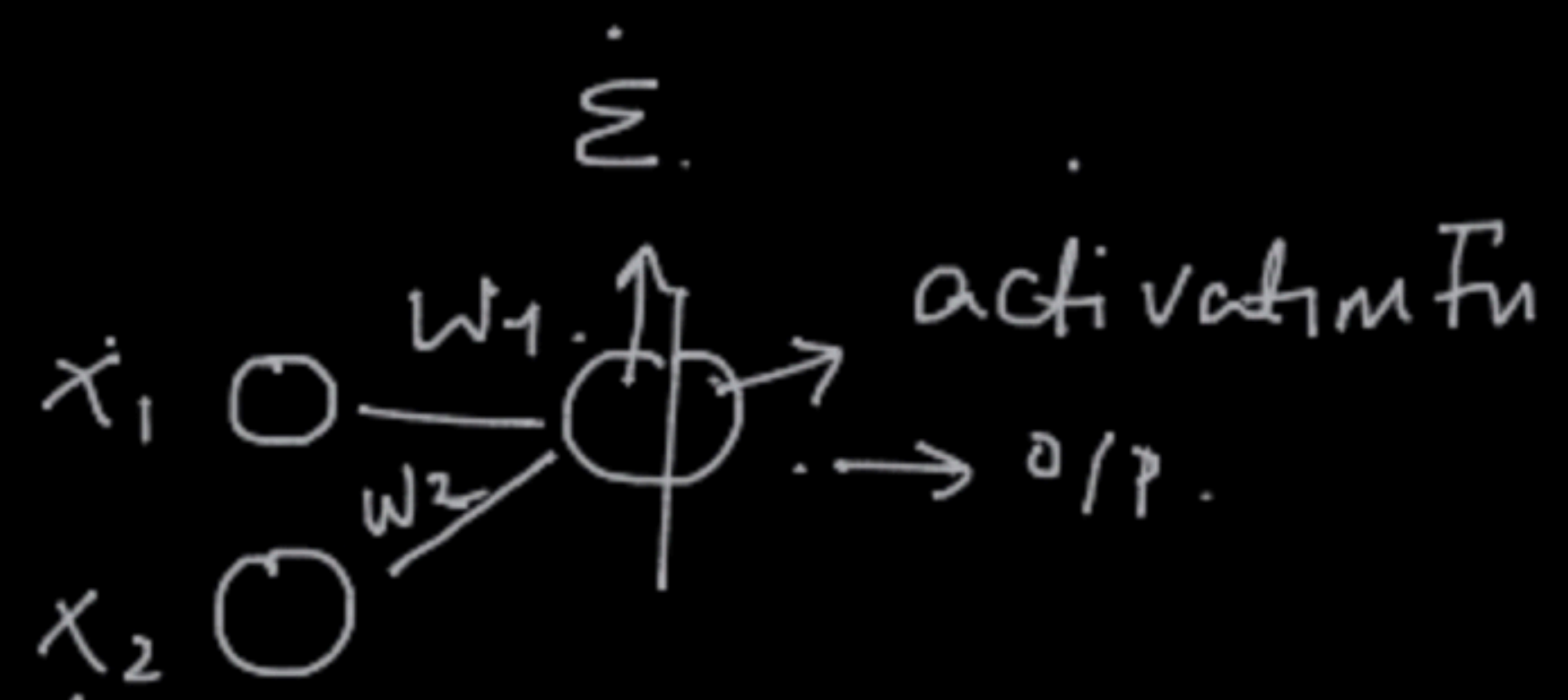
NLU → Natural Language Understanding

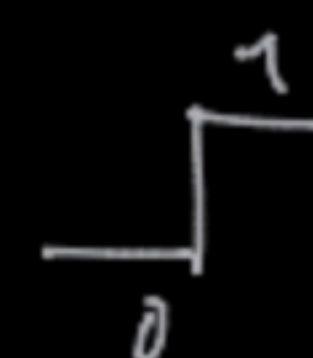
child → 51.3, kid → 80.5

(1) Words which are used in similar contexts should have similar number

(2) Every context in which the word is used should have its own number

Neural networks → Weights.



$$(w_1 x_1 + w_2 x_2) > b \quad \begin{matrix} 1 \\ 0 \end{matrix}$$


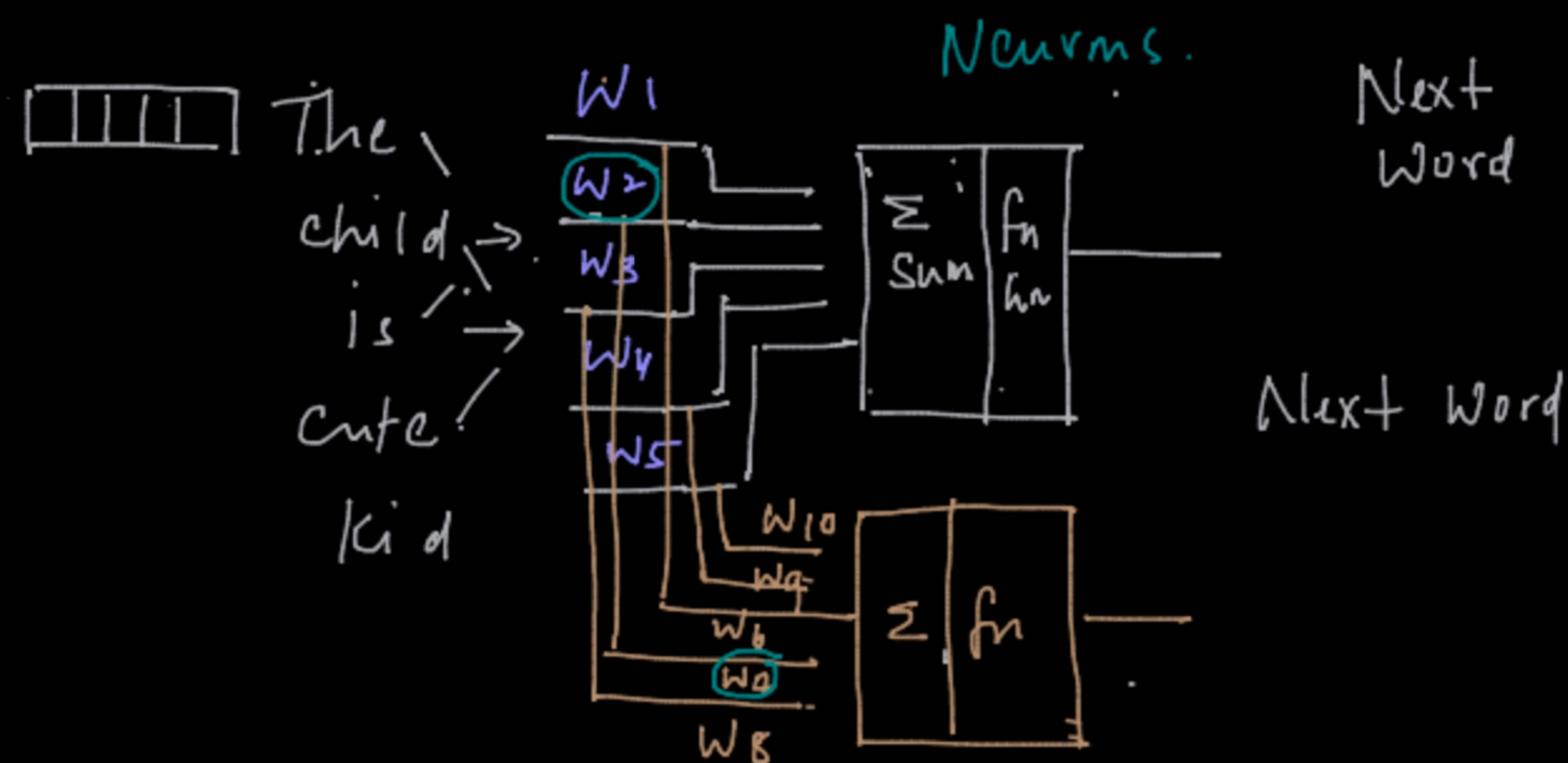
ReLU-
 Sigmoid
 Softmax
 Tanh-
 Step

$x \rightarrow \text{linear} \rightarrow x$
 (identity fn)

$\left\{ \begin{array}{l} \text{The child is cute.} \checkmark \\ \text{The kid is cute.} \checkmark \end{array} \right\}$
 Training data

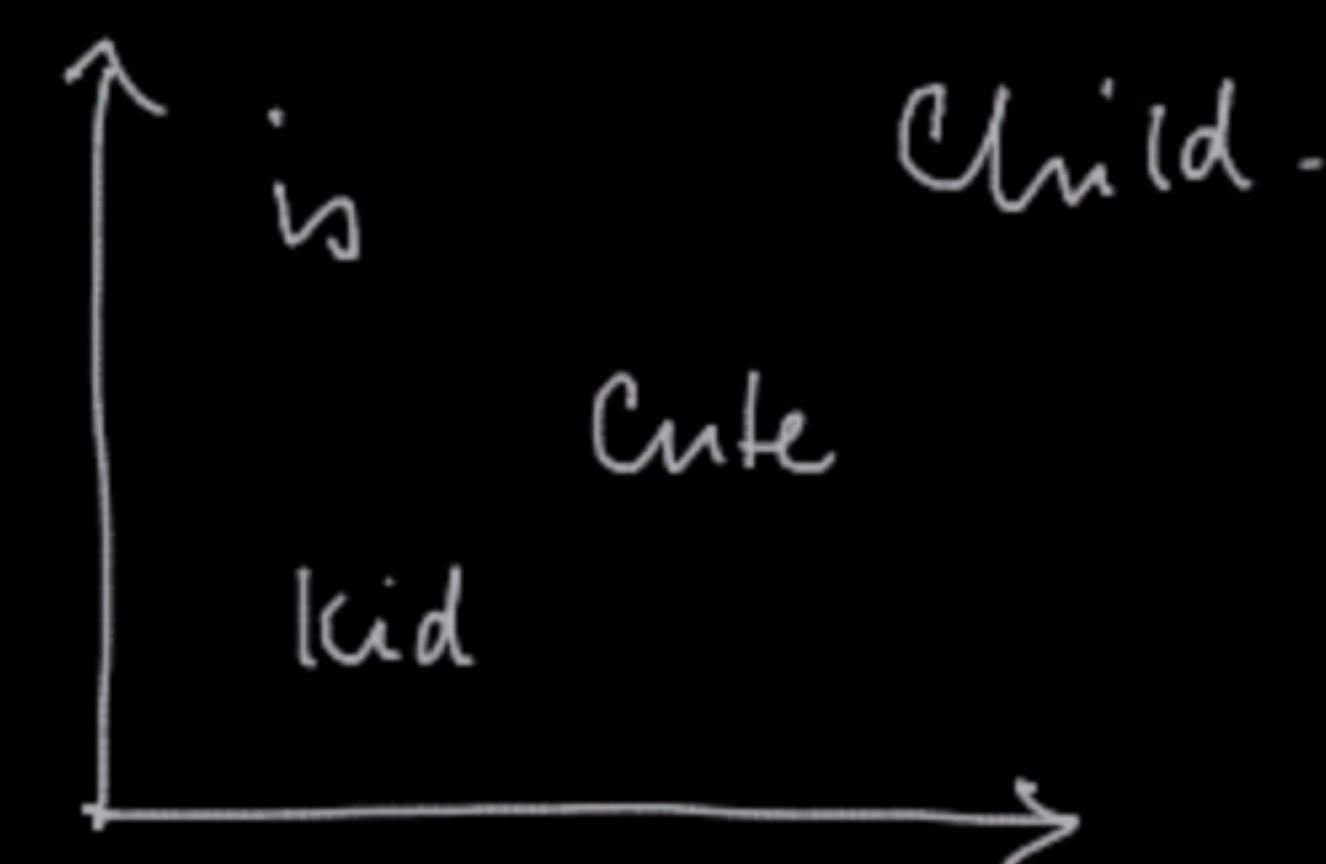
Each word is given \rightarrow 2 activations
2 numbers.

1 activation \rightarrow 1 number for each word



Embedding $\leftarrow 2d \rightarrow$

Child $\rightarrow [W_2, W_7]$
 The $\rightarrow [W_1, W_6]$
 is $\rightarrow [W_3, W_8]$
 Cute $\rightarrow [W_4, W_9]$
 kid $\rightarrow [W_5, W_{10}]$



$y \rightarrow \hat{y} \rightarrow$ loss fun-
 \rightarrow gradient
 \rightarrow weights

Center job in our class is child, cute, kid, fun.

$P_1 \rightarrow [\dots]$
 $P_2 \rightarrow [\dots]$



Bus $\rightarrow 0.2$
 train $\rightarrow 0.60$
 car $\rightarrow 0.2$

← Predict the next word →

Input

0 The ✓
 1 child
 0 is
 0 Cute.
 0 kid

Expected -

The 0
 child 0
is 1
 Cute. 0
 kid 0

Predict -

0.31
 0.20
0.63 → ✓
 0.33
 0.25

The child is Cute.
 The kid is Cute.

Window size → 3.

1. CBOW -

— Continuous BOW.

2. Skip gram -

child 0/1/0/0/0

is 0/0/1/0/0

The quick brown fox jumps over the lazy dog. → training data.

Window size = 3

CBow — Use Surrounding words to predict Central word

← 2d →

[The] [brown]

↙ ↘
[quick]

[quick] [fox]

↙ ↘
[brown] → o/p.

[brown] [jumps]

↙ ↘
[fox]

→ o/p.

Entire Wikipedia.

Skipgram → use a single word to predict surrounding words

[quick]
↙ ↘
The brown

[brown]
↙ ↘
quick fox

[fox] → input.
↙ ↘
brown jumps → o/p.

✓ i/p	o/p	✓ i/p			
Truth	will	set	you	Free	→ Vocab = 5
1	0	0	0	0	→ Truth
0	1	0	0	0	→ will
0	0	1	0	0	→ set
0	0	0	1	0	→ you
0	0	0	0	1	→ Free

