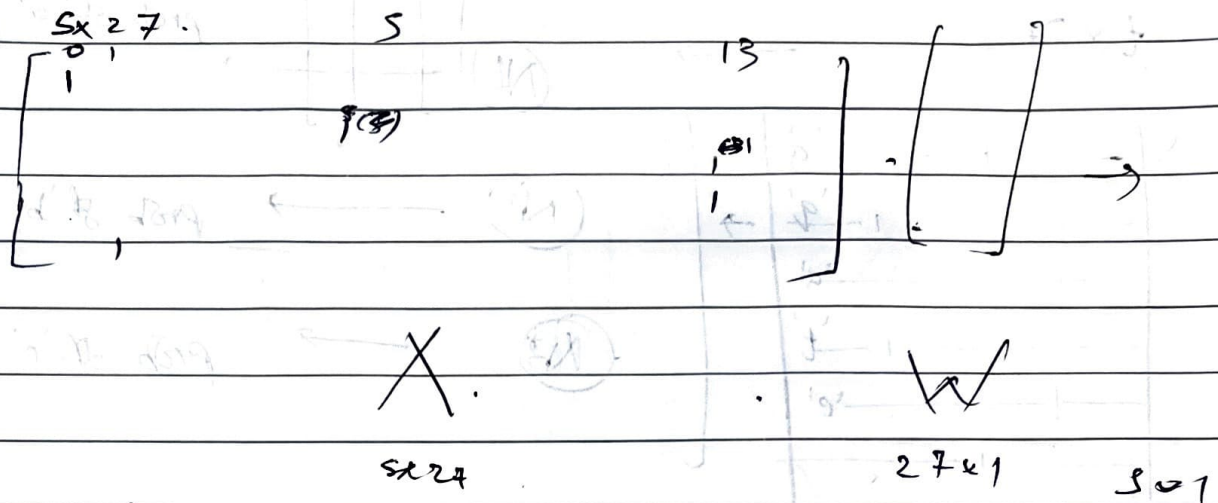


# Karpathy lec-2

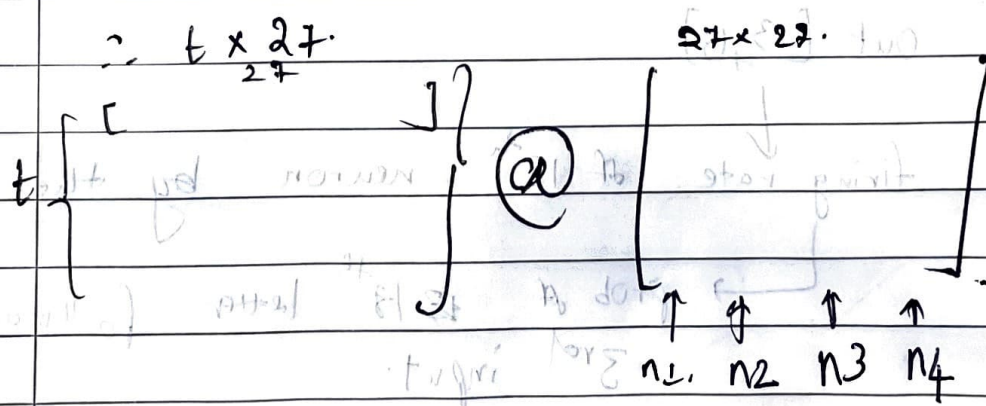
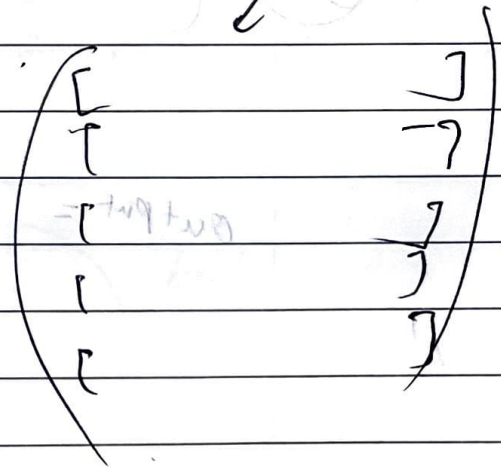
## # X-encoding:

emma  
= . e  
mem  
mn  
ma  
a .



$$S \times 27 \quad @ \quad 27 \times 27 \quad \rightarrow \quad S \times 27$$

prob for  
next letter for  
each of the inputs.



each neuron gives out prob of its letter coming next

emma.

in  $\rightarrow 1$   
ma  $\rightarrow 1$

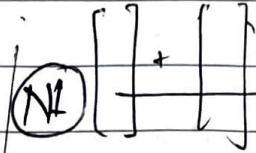
0.19 0.04

0.5

0.45

prob of  
~~each of those letters~~  
being 0.5

x. w. b.



prob of 'a'  $t$   $\left[ \begin{matrix} \vdots \\ \vdots \end{matrix} \right]$

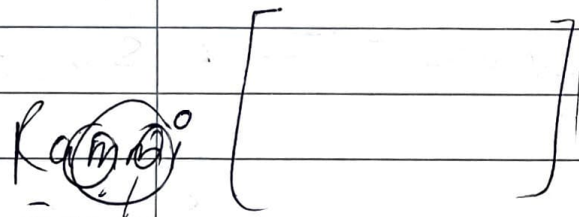


prob of 'b'

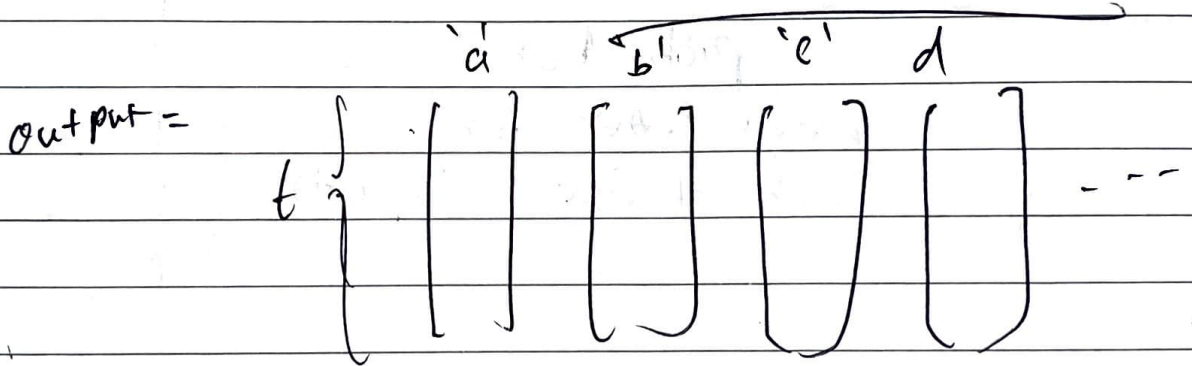


prob of 'c'

$t \times 27$



prob of each of those  
letters being  
followed by an 'a'

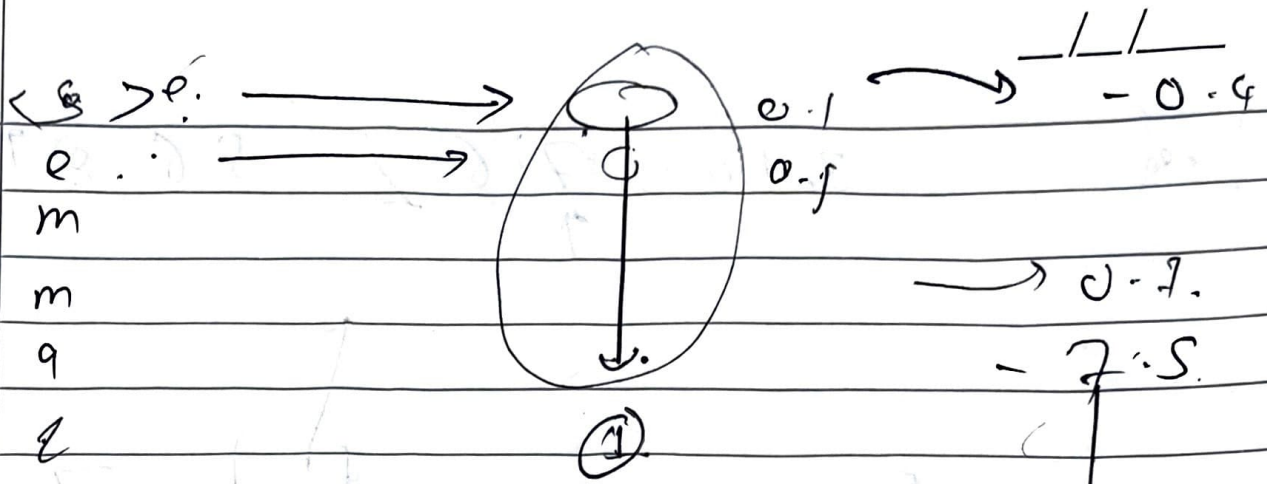


$\therefore$  out  $[3, 13]$

firing rate of 13<sup>th</sup> neuron by the 3<sup>rd</sup> input.  
prob of 13<sup>th</sup> letter following the  
3<sup>rd</sup> input.



2.

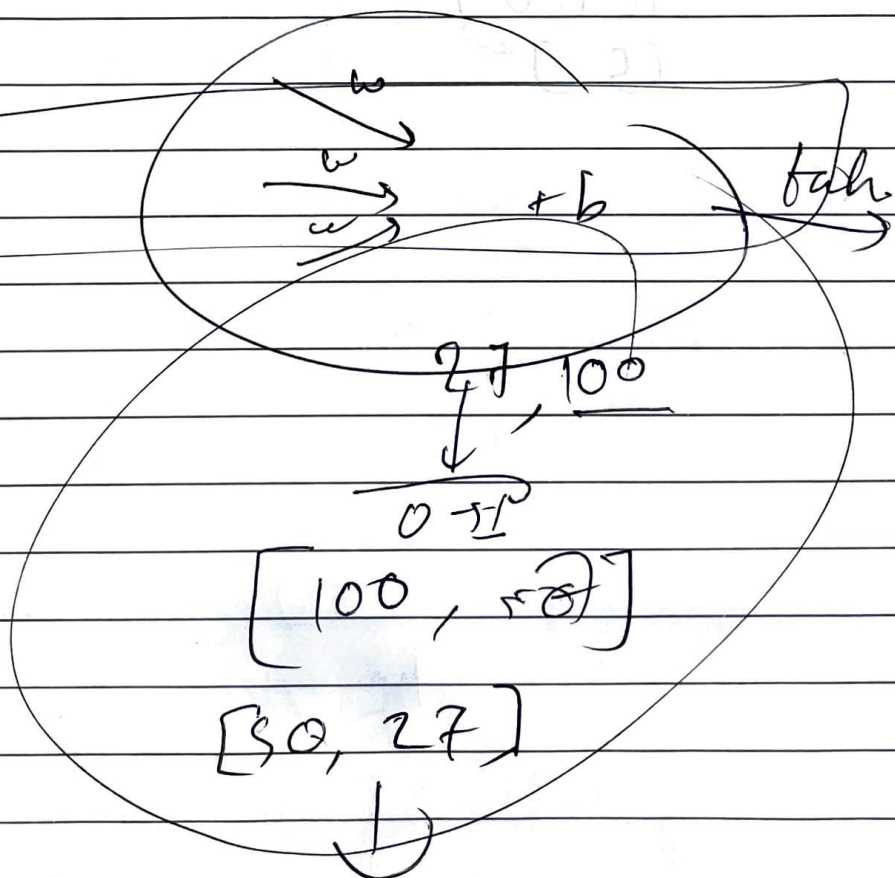


$$\text{loss} = \frac{1}{n} \sum$$

$$w, \text{adata} \leftarrow w, \text{grad} \leftarrow 0.01$$

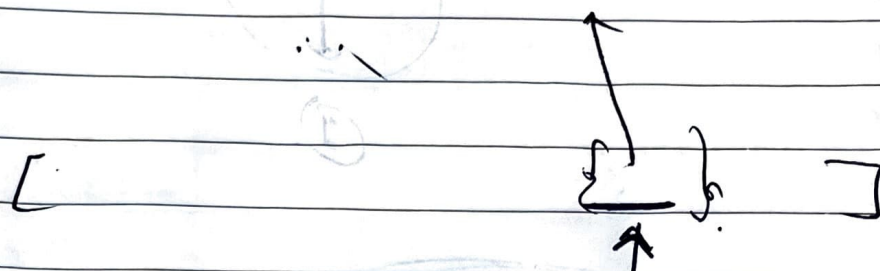
$$[0 \ 0 \ 0 \ \dots \ 1 \ 0 \ 0 \ 0]$$

$$\begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}^T$$



Seed.

3 0 1 4 5 (7) 6 2 5 6 8 9 10  
↑



[ cat  
dog. ] →

e m m a .

ix = 5

[0 6 0] )  
[5 ] ↗



$x \rightarrow 32 \quad [ \dots, \dots, e, -em, \dots ]$

$32 \quad [e, m, m, \dots]$

$\frac{10}{22} \quad 0.45$

$\zeta(x) = [ \dots ]$

$em \quad x$

$e^k \quad x \cdot 10$

$\frac{1}{10}$

$ea \quad 0$

$cf$

$cl(0) = [ \dots ]$

$em \quad x$

$\frac{1}{10} \quad \frac{1}{10}$

$\frac{1}{10} \quad \frac{1}{10}$

$em$

$3 \quad 3 \quad 3 \quad 10$

$\frac{1}{10}$

