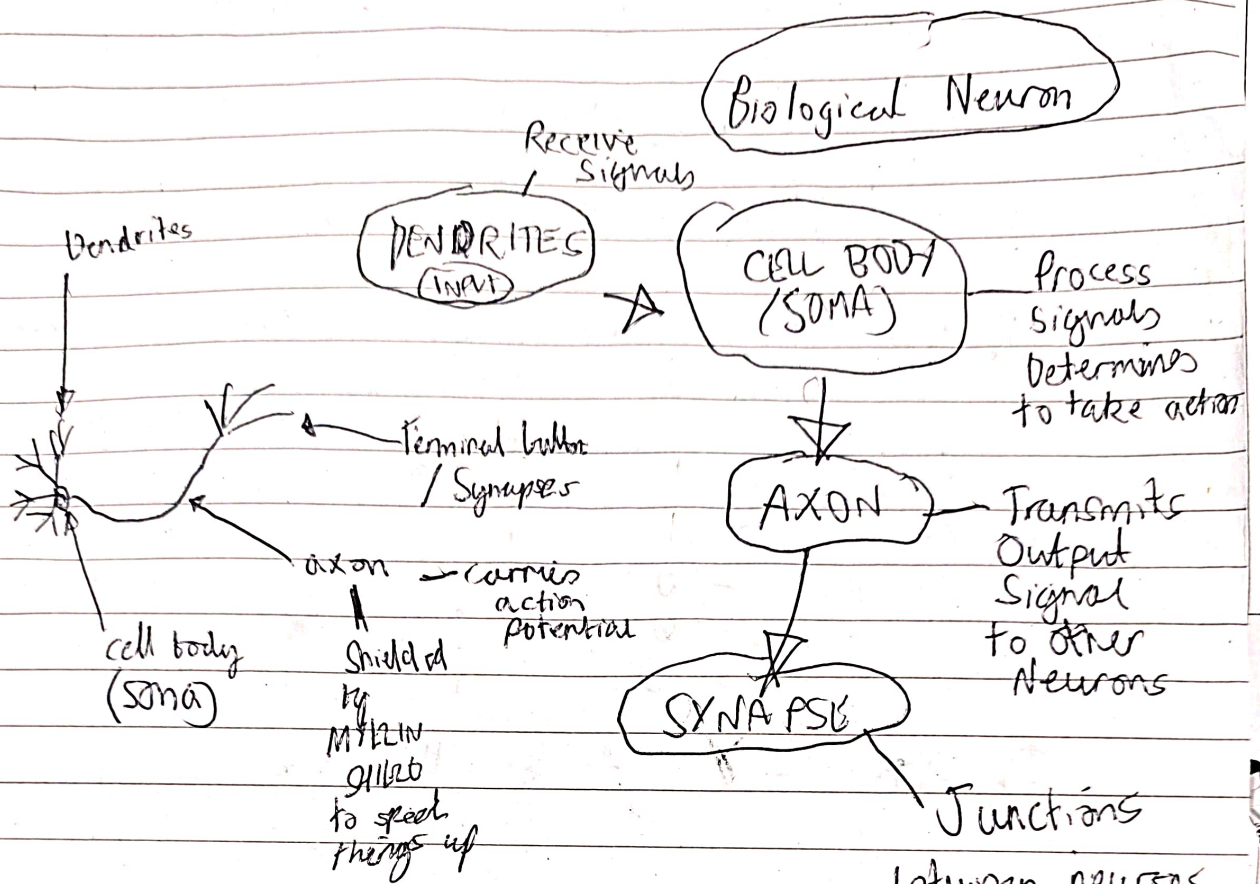


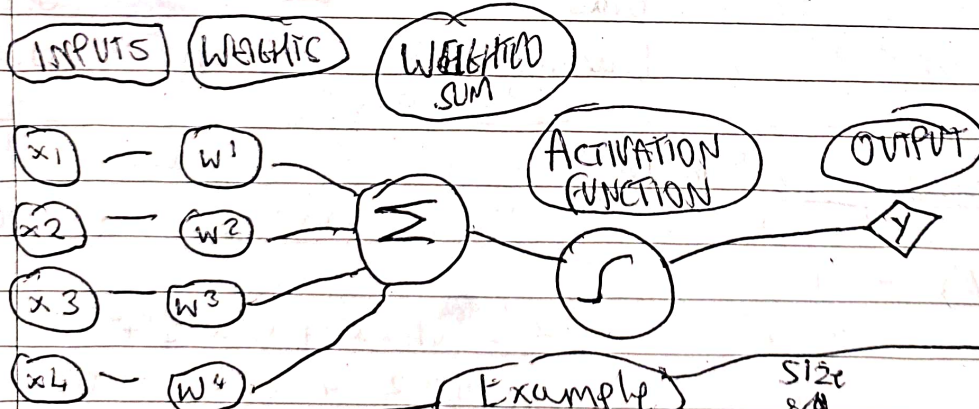
①

# Neural Networks in Javascript



## The Perception

## ARTIFICIAL NEURONS



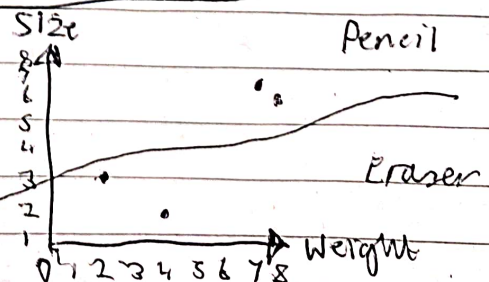
## Example

**OUTPUT** pencil - 0  
erasers - 1

**INPUTS**  
[Weight, size]  
grams, 1 to 9

Dataset

- $[7, 7] = 0$
- $[8, 6] = 0$
- $[2, 3] = 1$
- $[4, 2] = 1$



Binary Classification  
Class

②

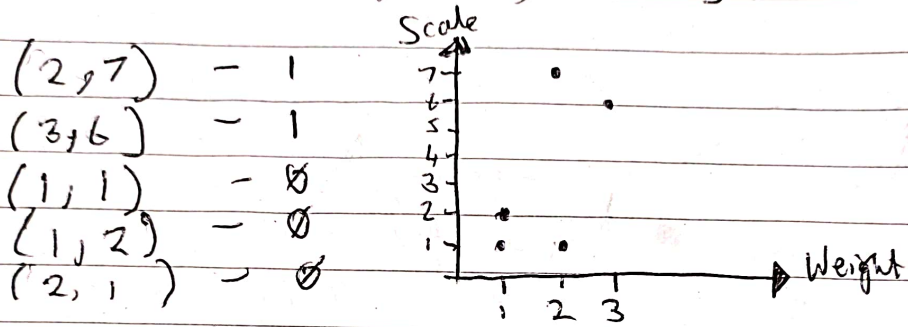
~~ARTIFICIAL~~

~~NATURAL~~

# Project 1

Pencil or Eraser?

i) INPUTS (Weight, Scale)  
( $x_1$ ,  $x_2$ )      Weight - grams  
Scale - 1-10



② OUTPUT =  $y$  - be either 0 or 1      classification!  
Eraser      Pencil

③ - Includes      Weights -  $w$       0.1, 0.3  
Bias -  $b$       0.5  
Learning Rate -  $\eta$       0.1

## Training the model

(2, 7) - 1

INPUT      OUTPUT  
 $x$        $y$

Using weights 0.1, 0.3      bias = 0.5

$$z = w_1 \times x_1 + w_2 \times x_2 + b$$

$$0.1 \times 2 + 0.3 \times 7 + 0.5$$

$$0.2 + 2.1 + 0.5$$

Weighted Sum = 2.8

$$z = w_1 \times x_1 + w_2 \times x_2 + b$$

Activation function }  $F(x) = \begin{cases} 1 & \geq 0 \\ 0 & \leq 0 \end{cases}$