

NEURAL  
NETWORKS

# ACTIVATION FUNCTIONS

WHY???





**ML for Nerds**

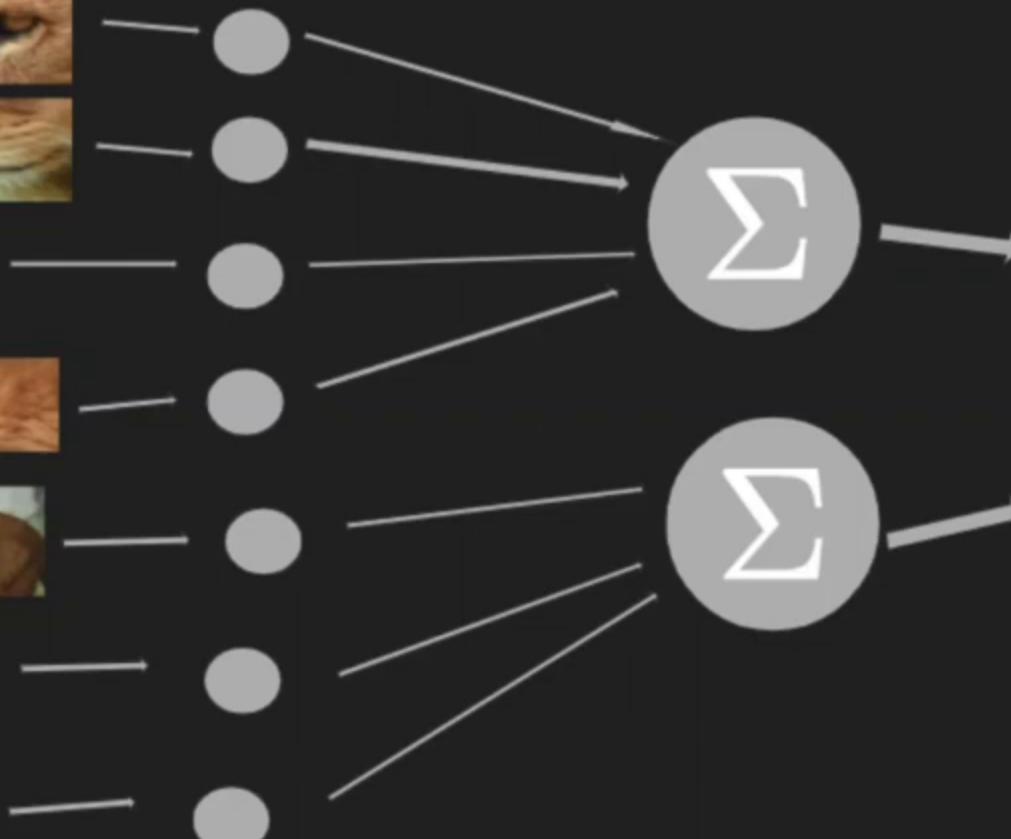
# Activation Functions

ML For Nerds

# Activation Functions

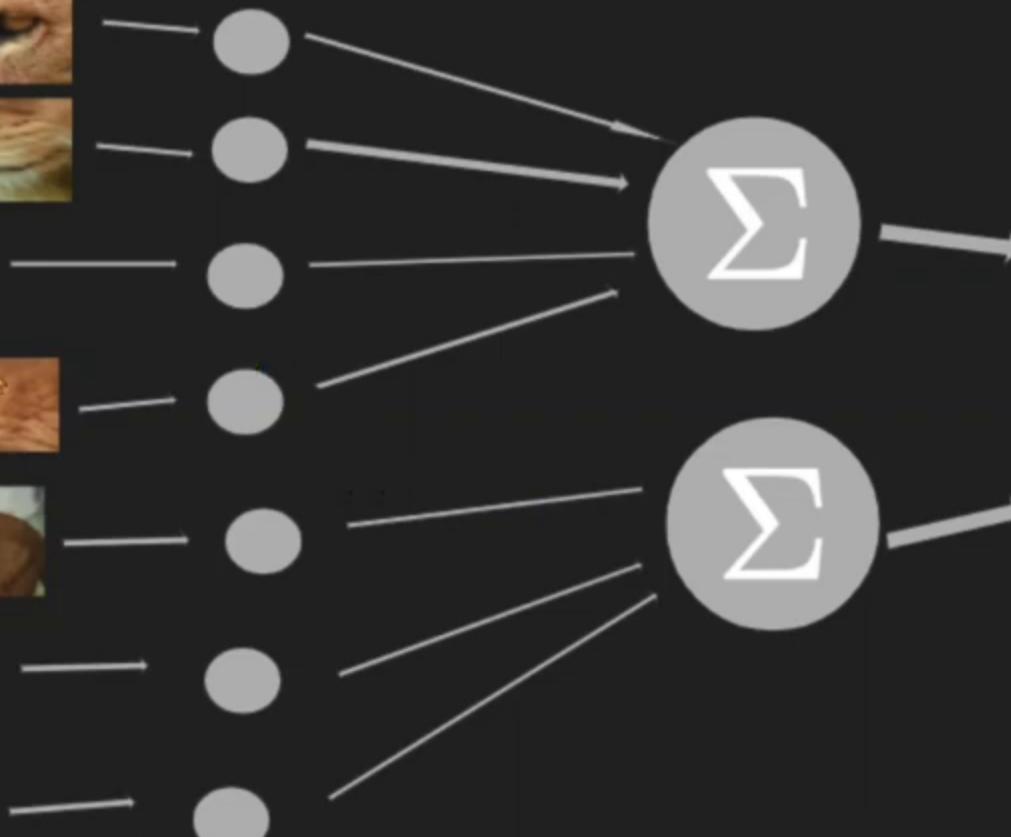
ML For Nerds

# Network



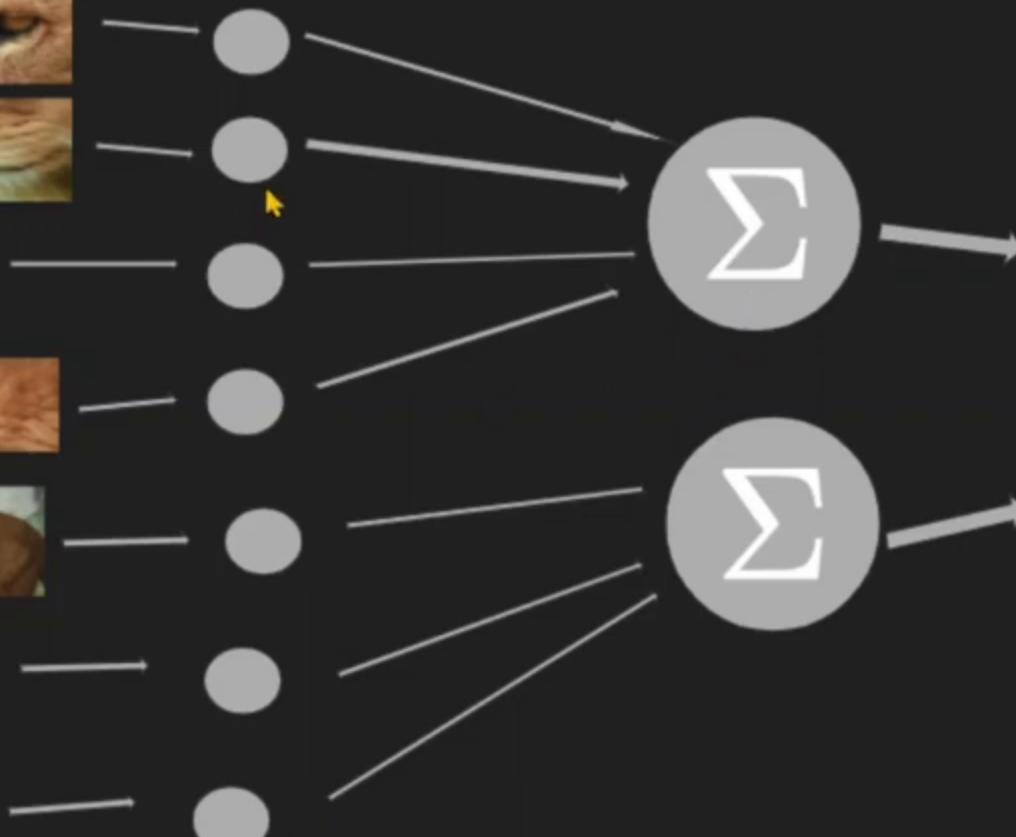
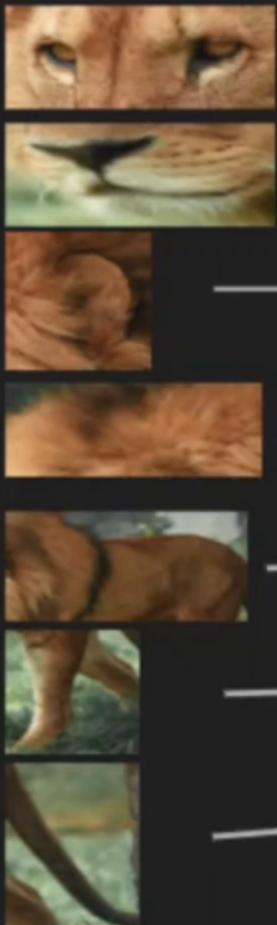
Lion  
Or  
Not

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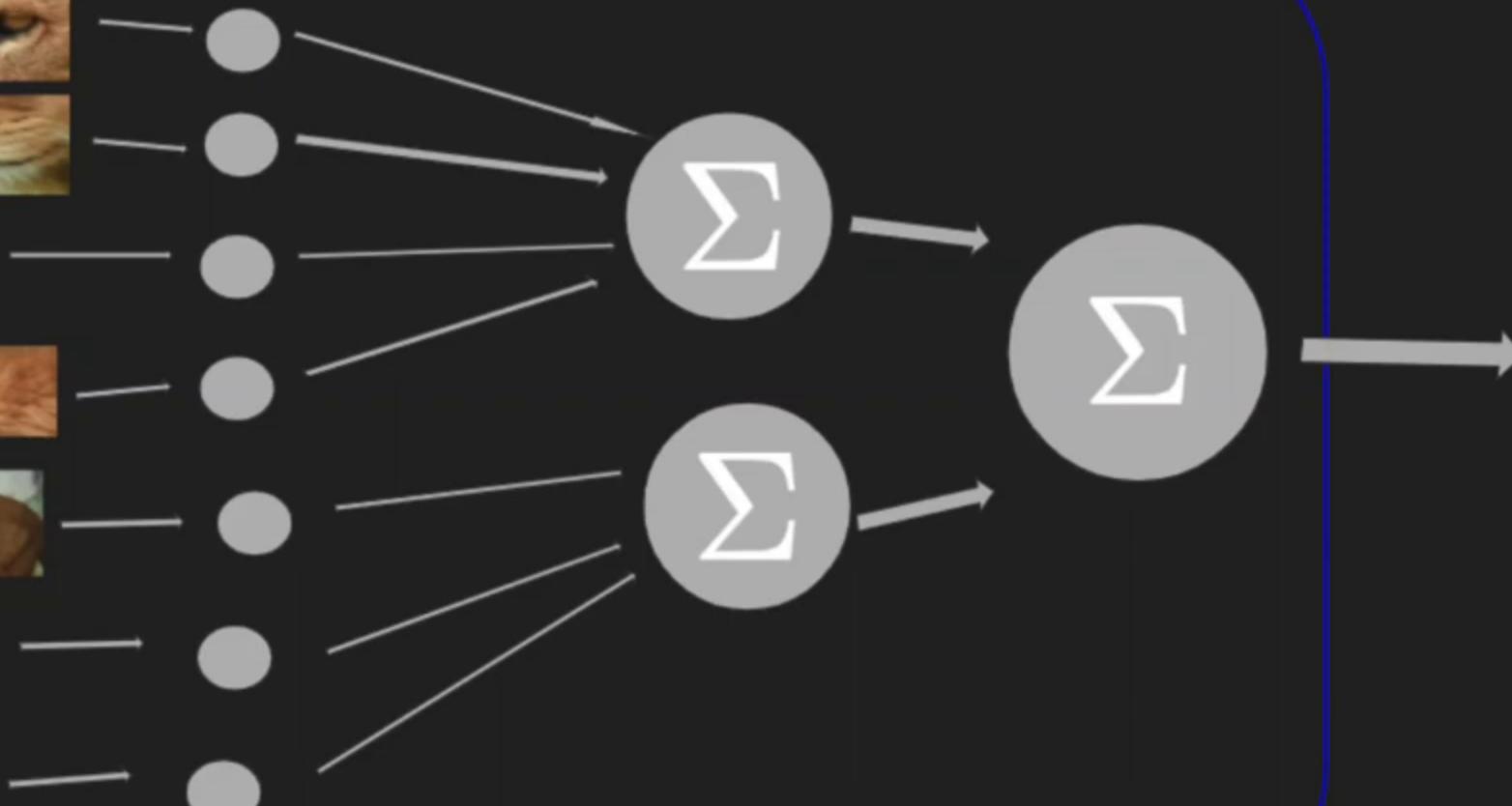
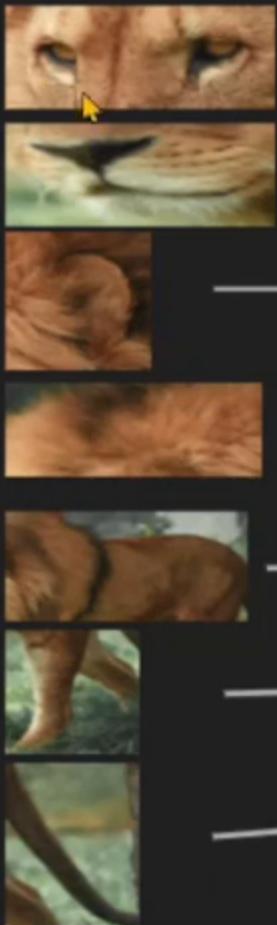
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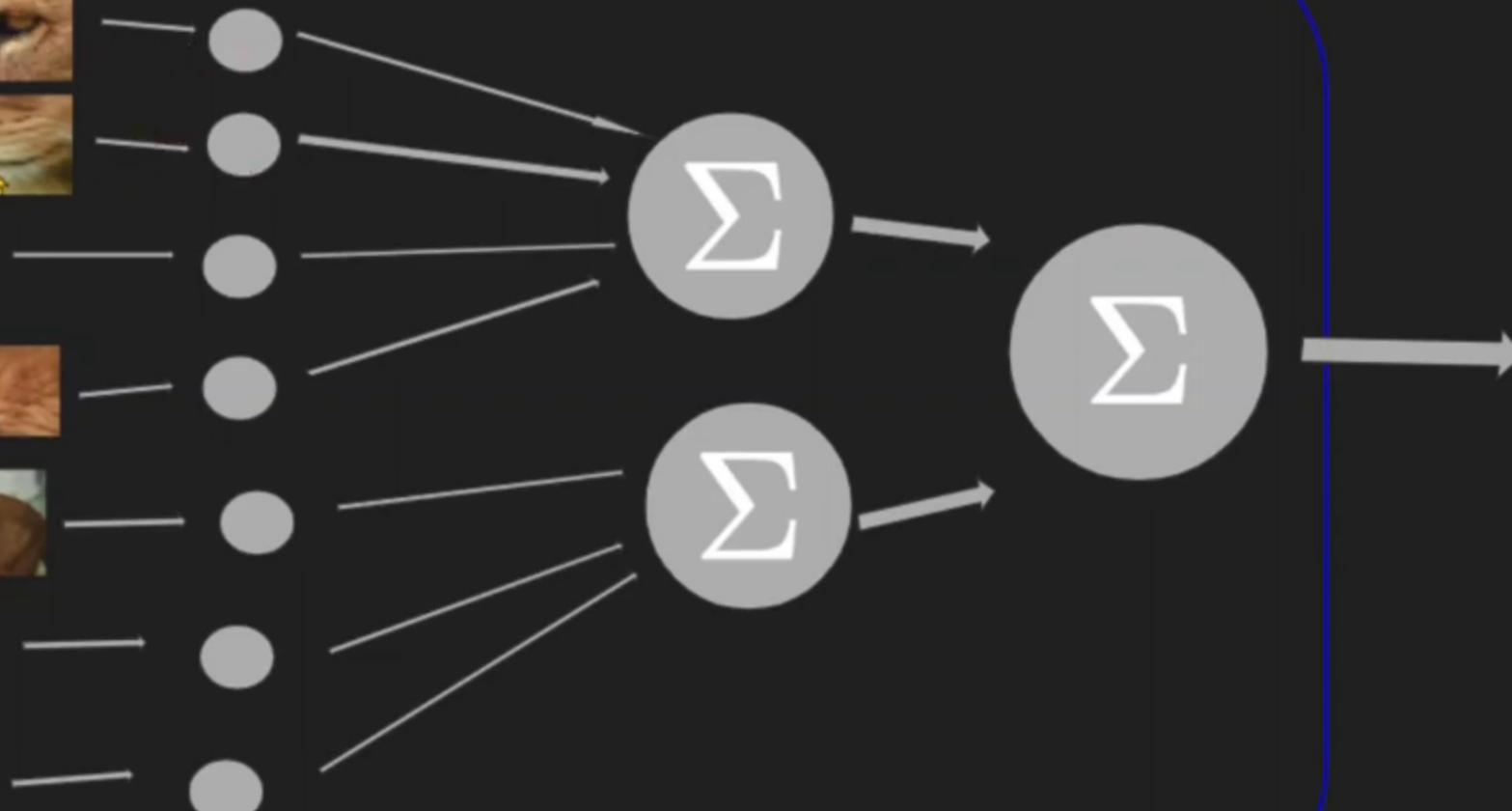
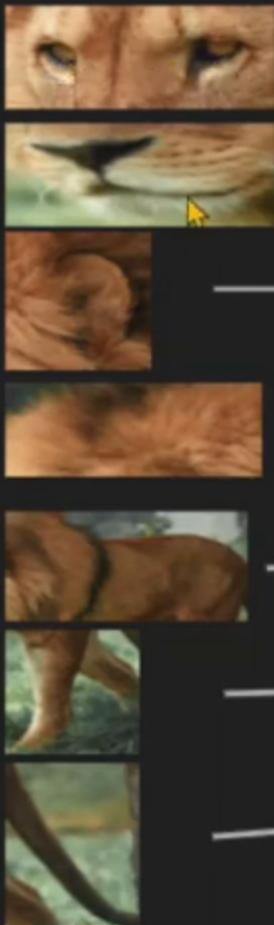
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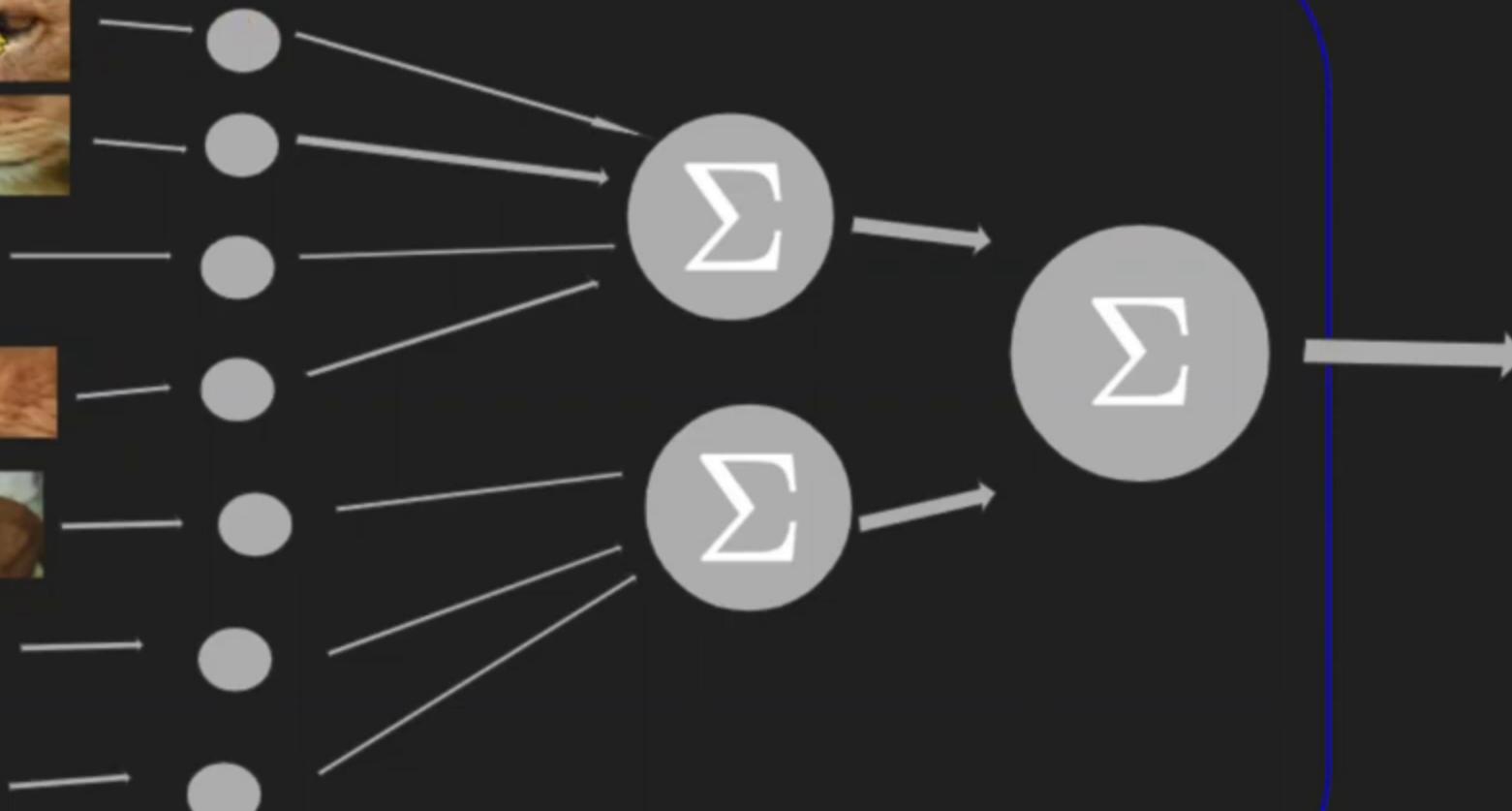
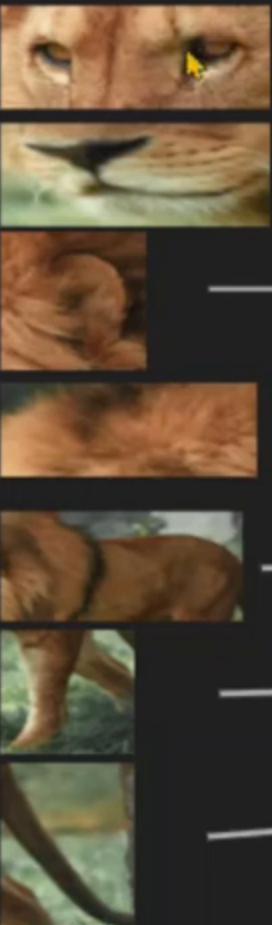
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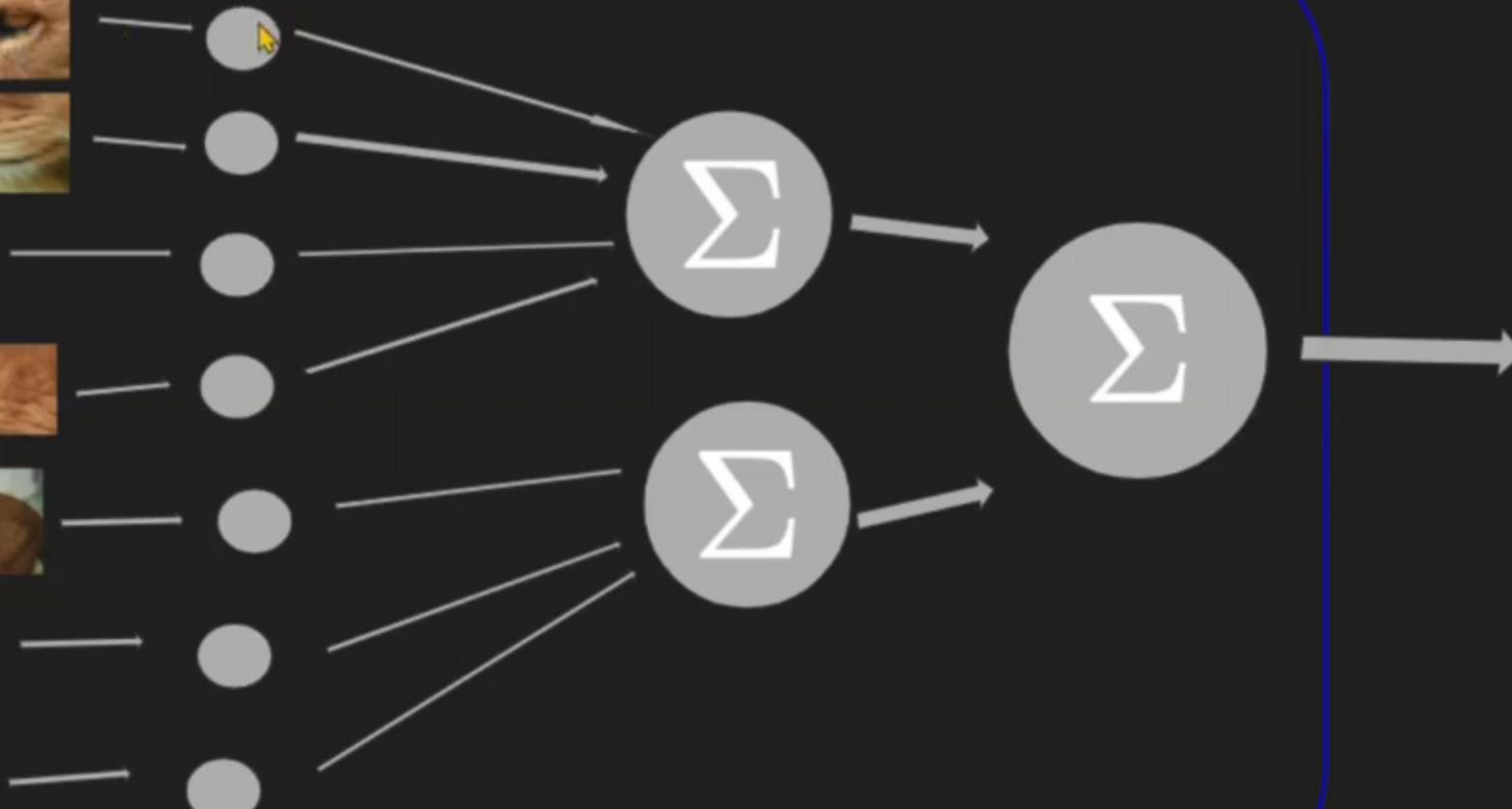
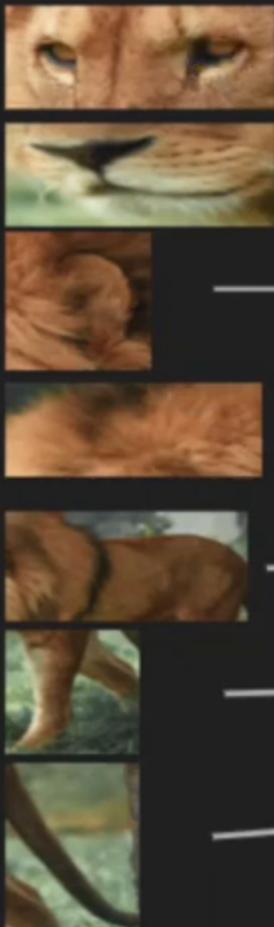
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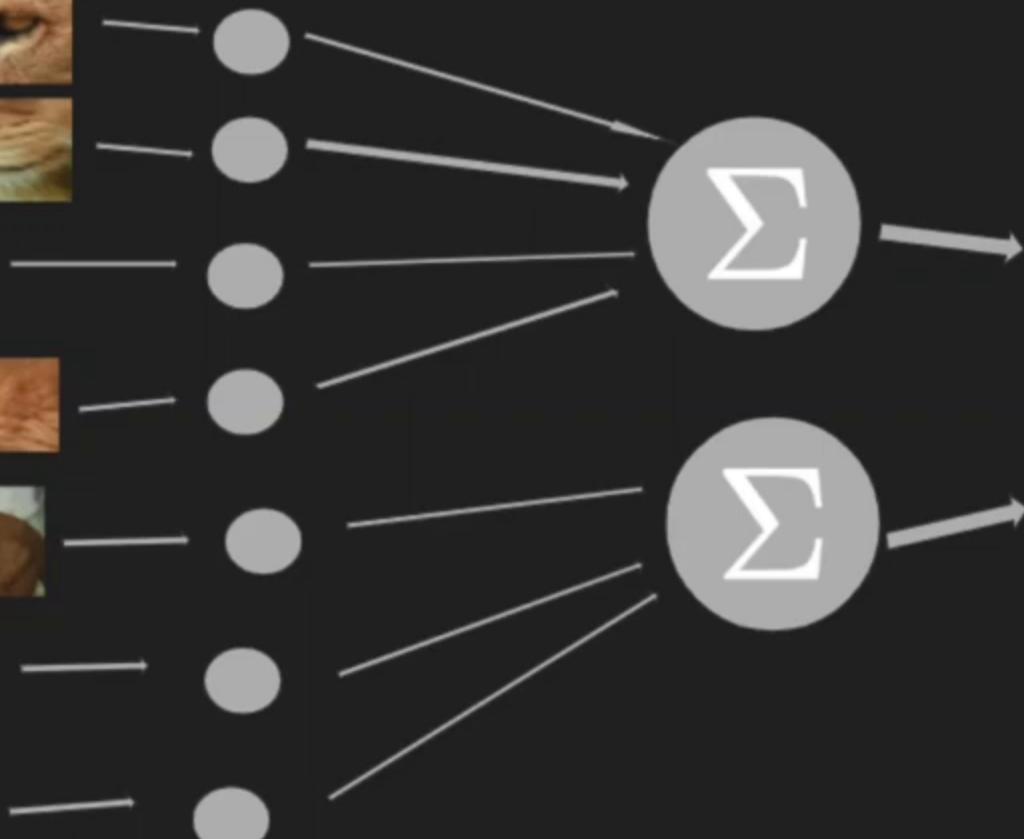
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Not

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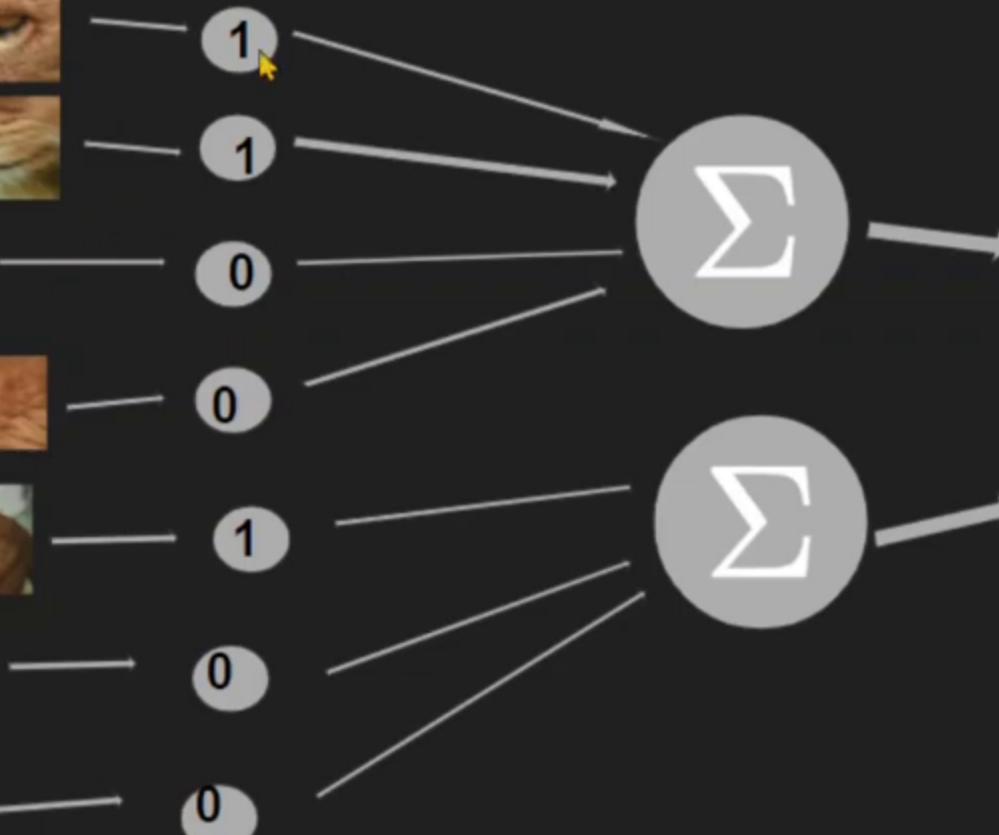


1 - Yes

0 - No

Lion  
Or  
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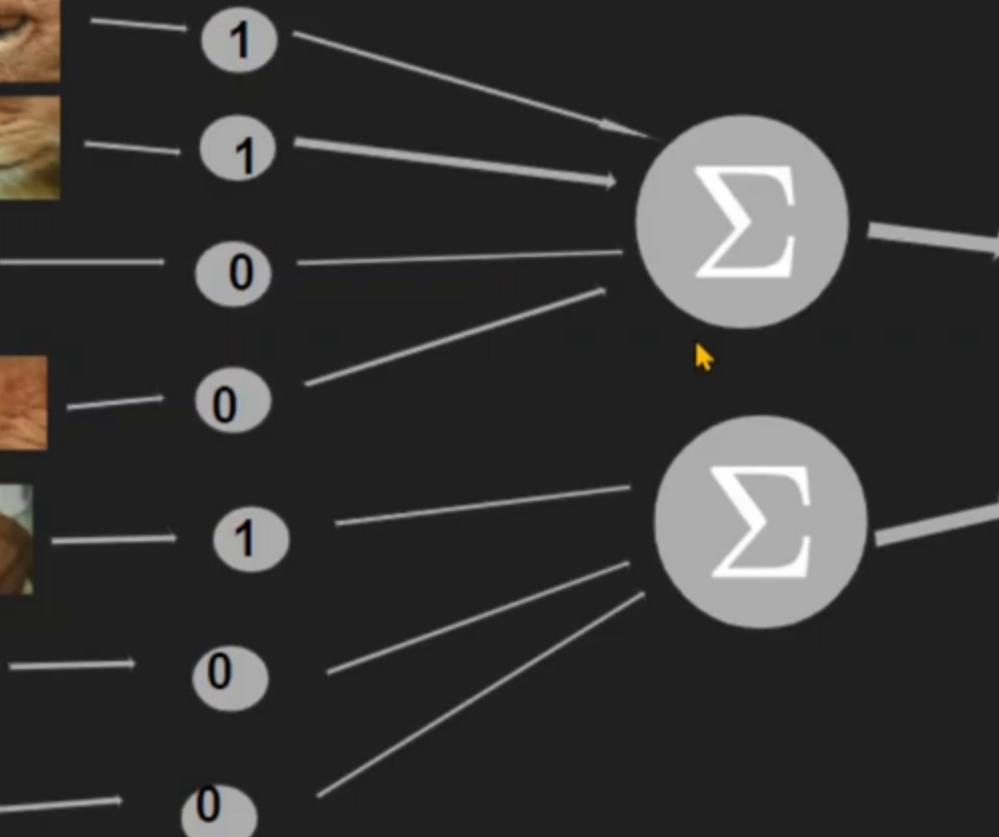


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0 - No

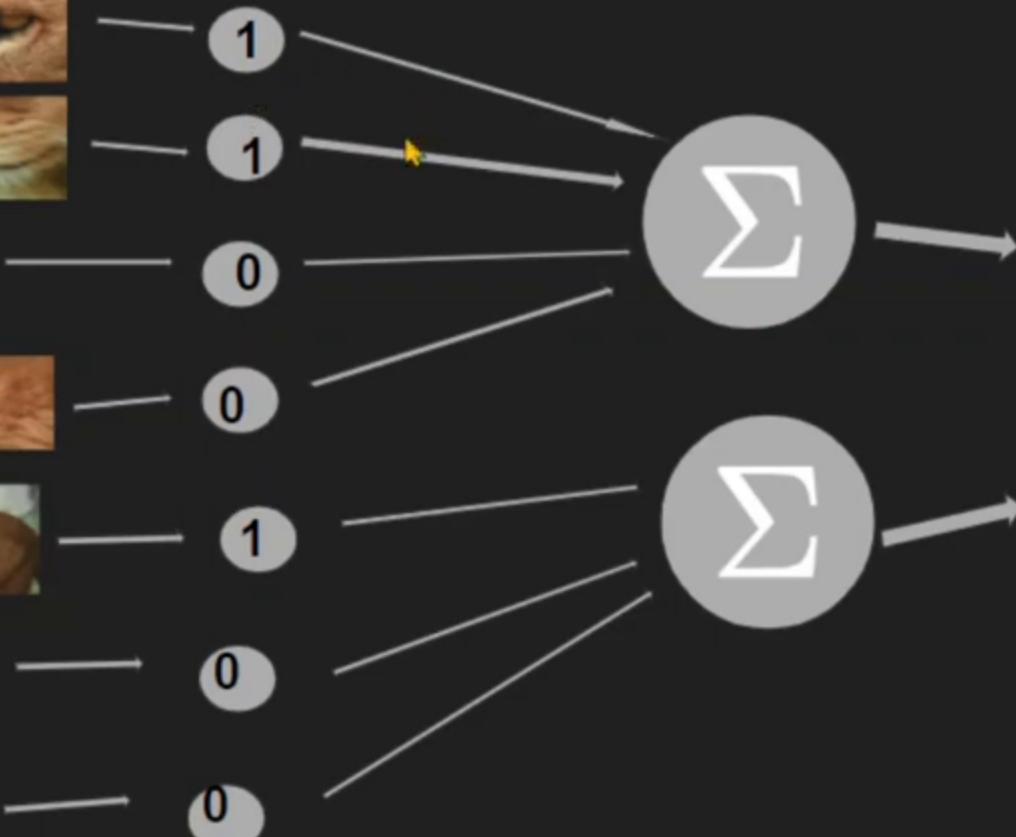
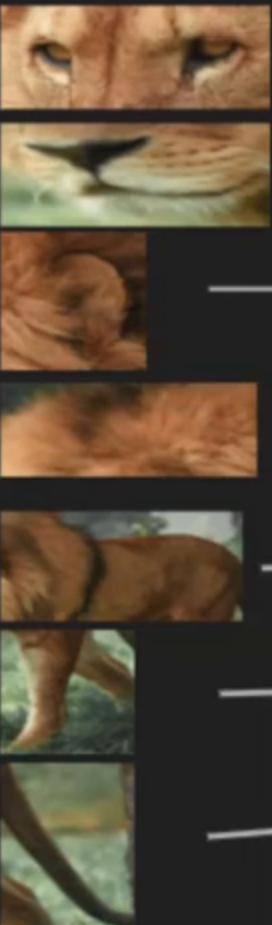
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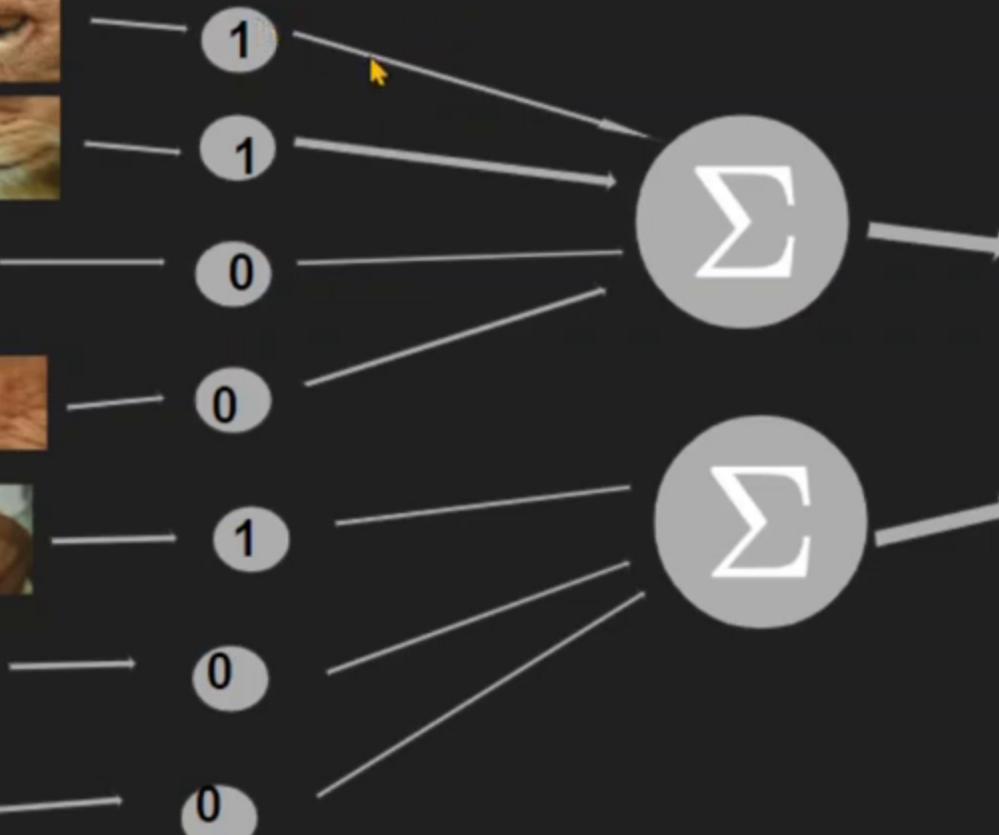
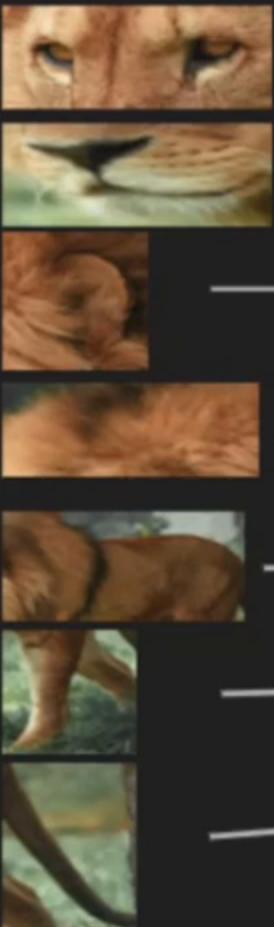
1 - Yes  
0 - No  
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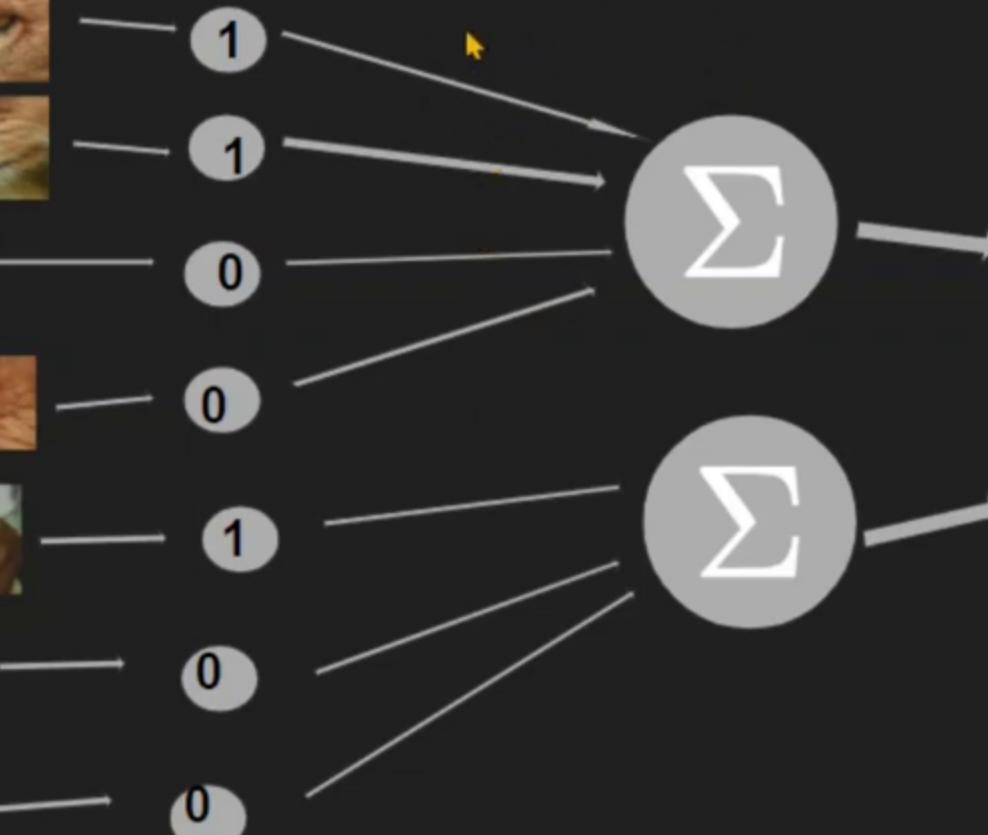


1 - Yes

0 - No

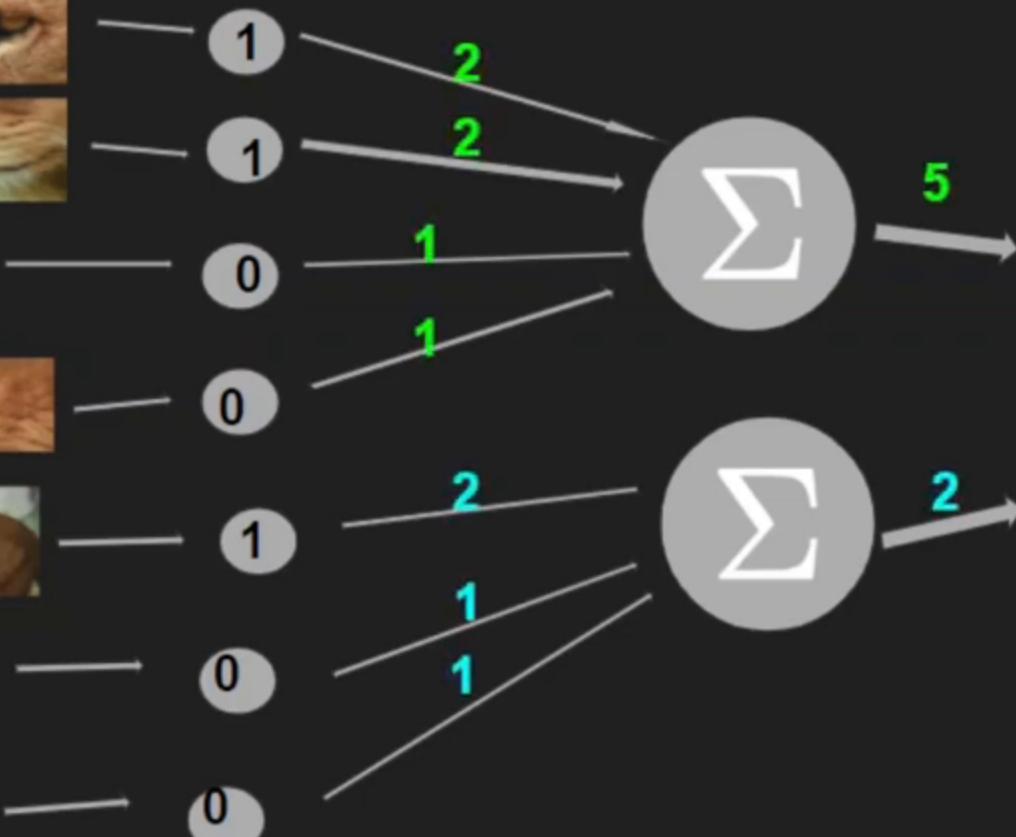
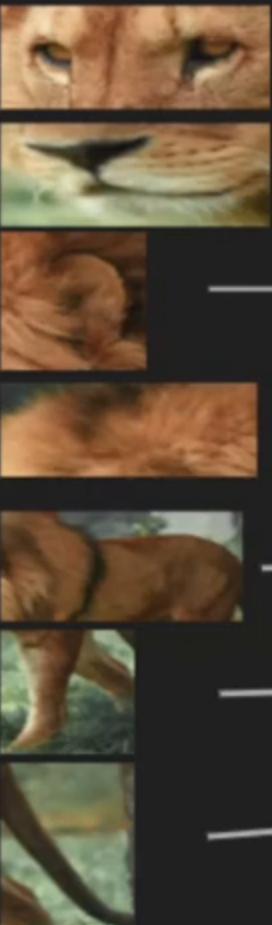
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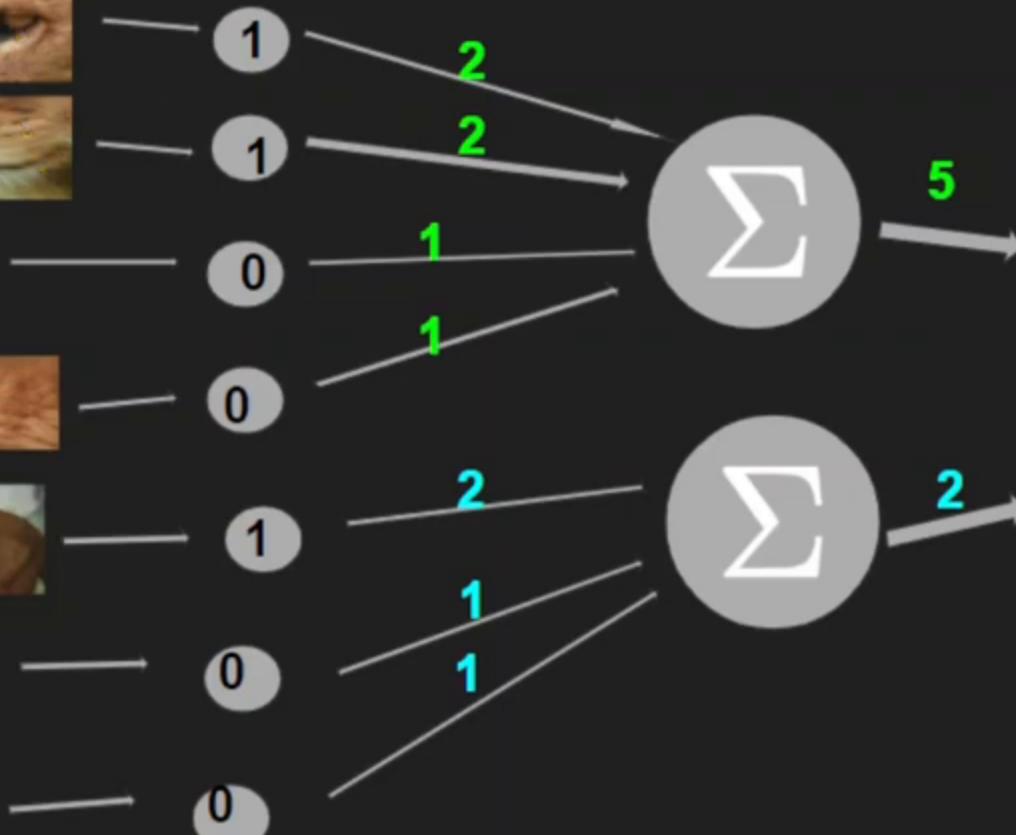
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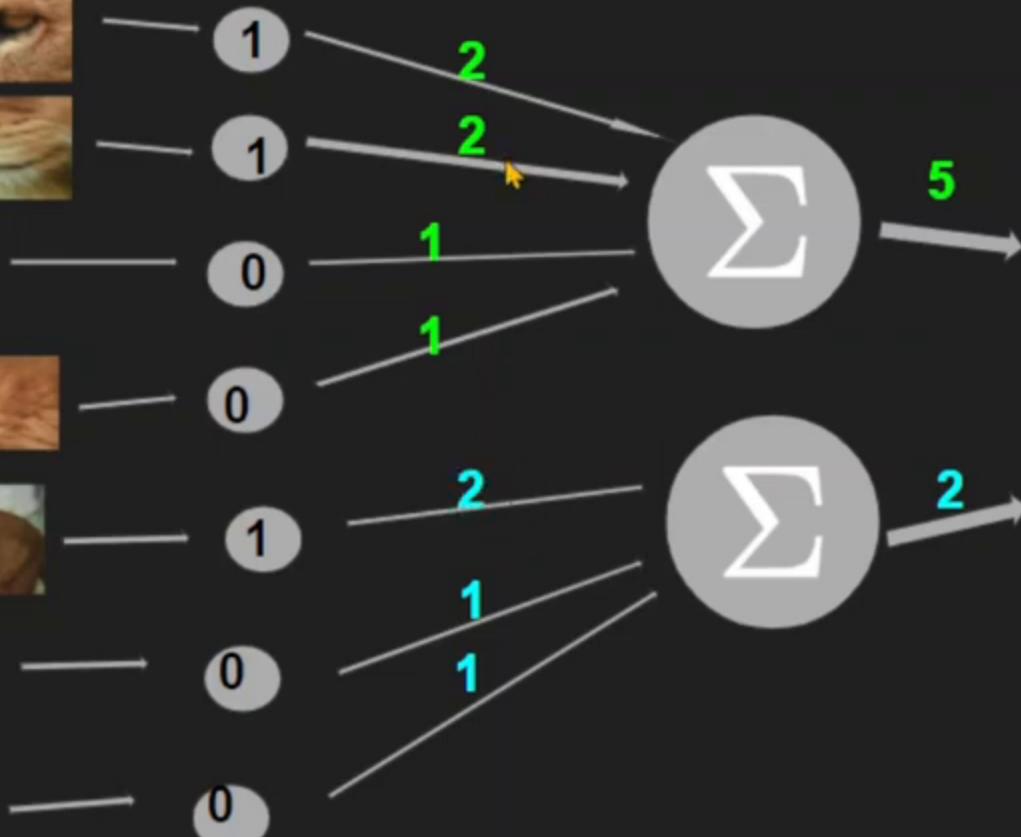
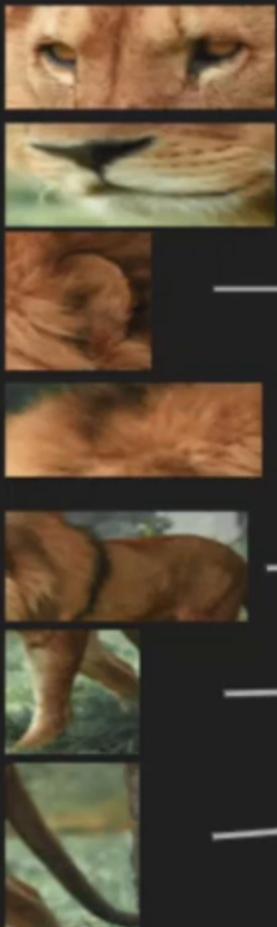
1 - Yes  
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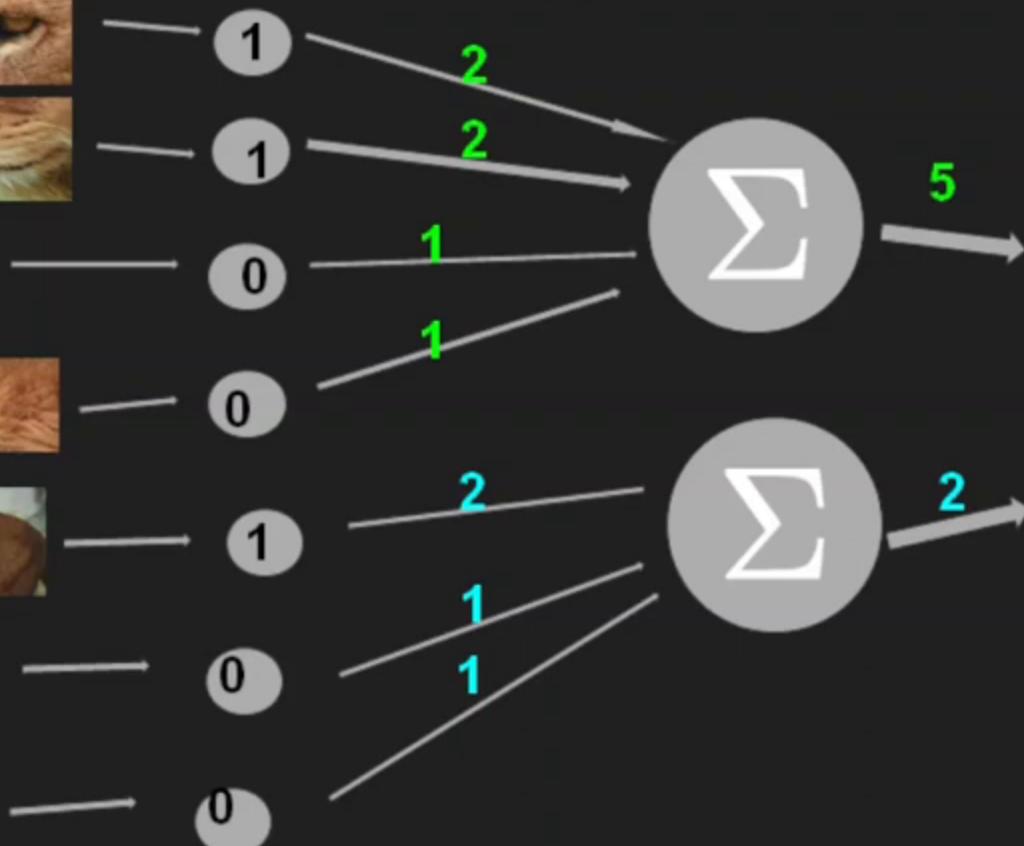
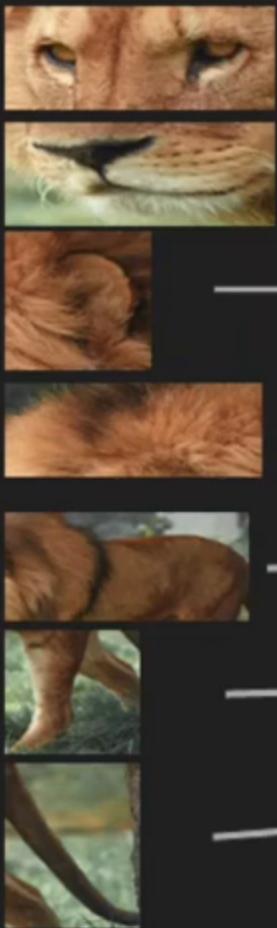
1 - Yes  
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Or  
Not

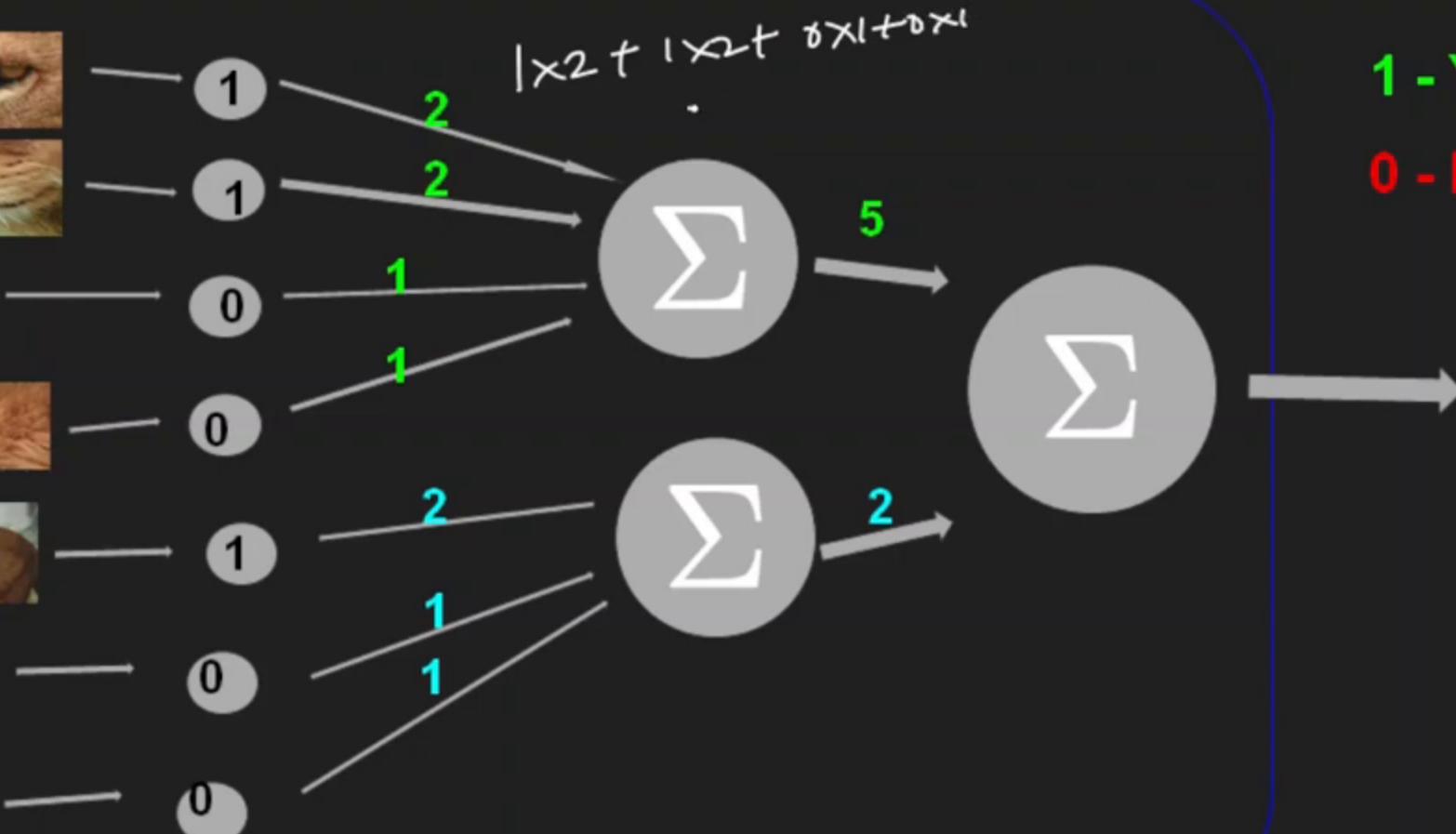
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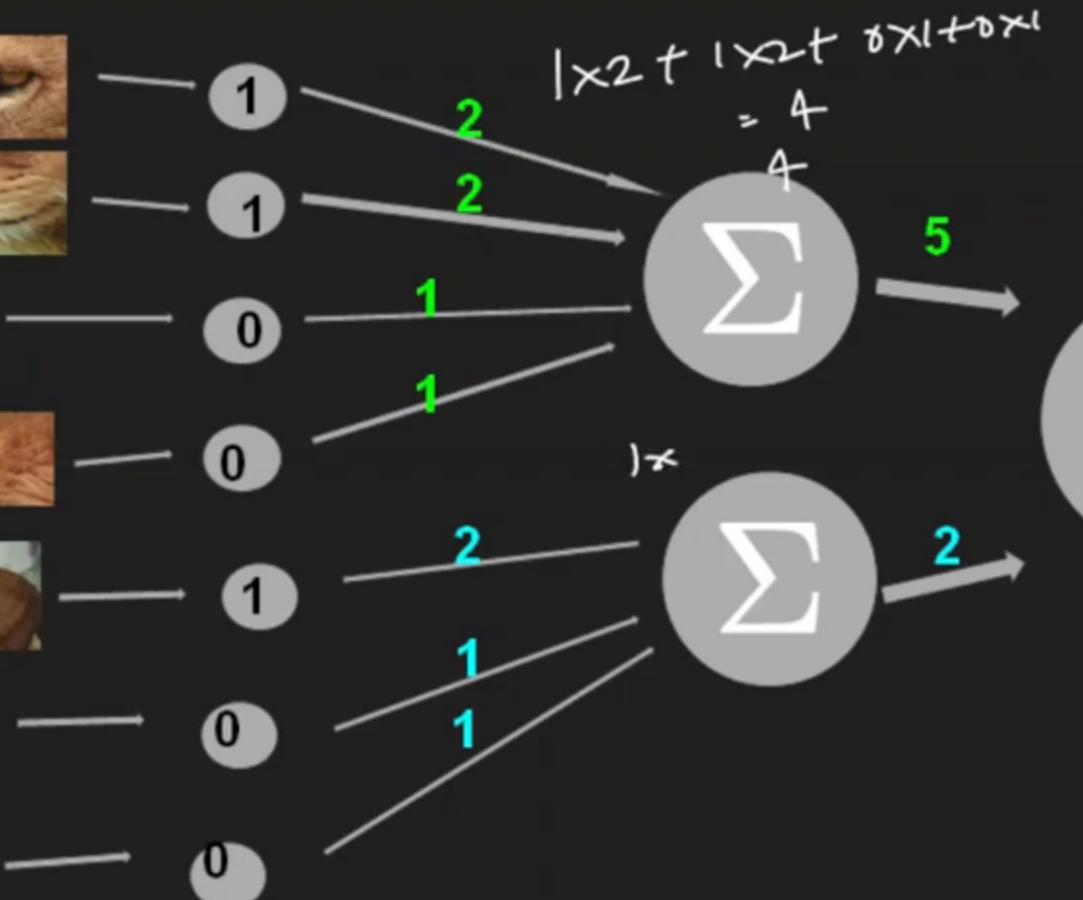
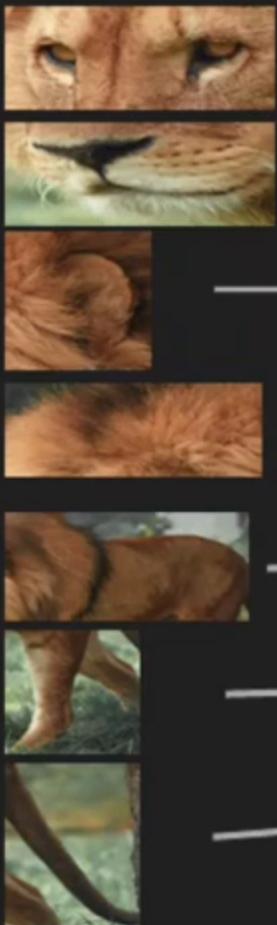
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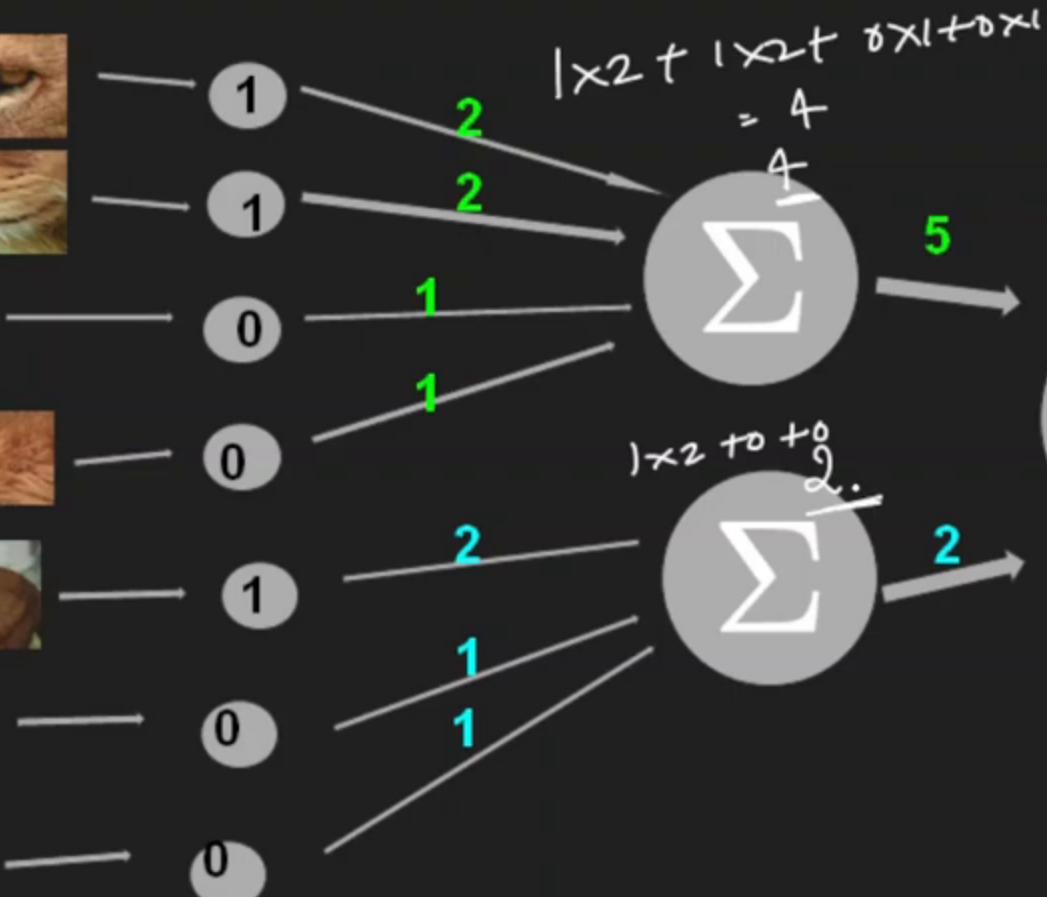
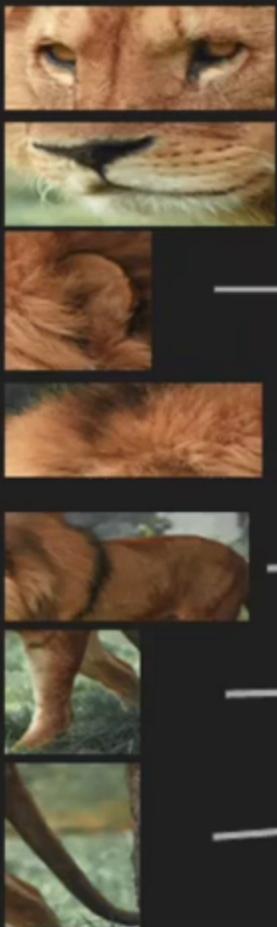
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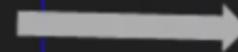
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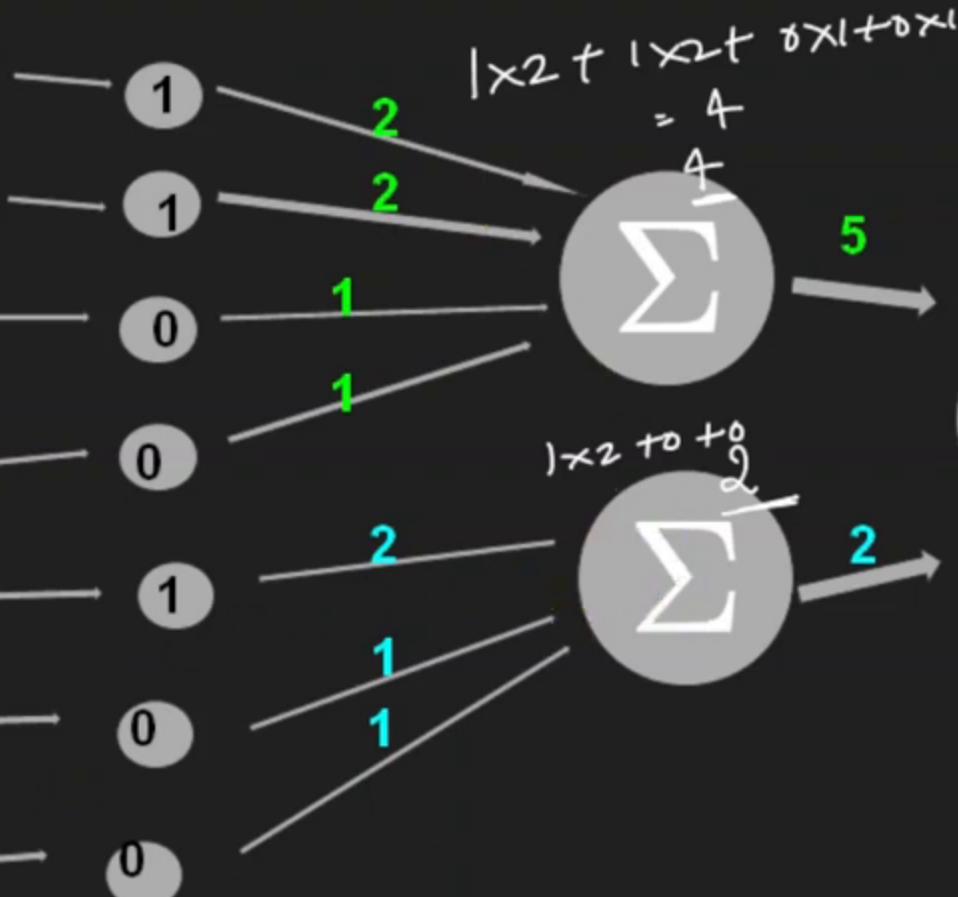
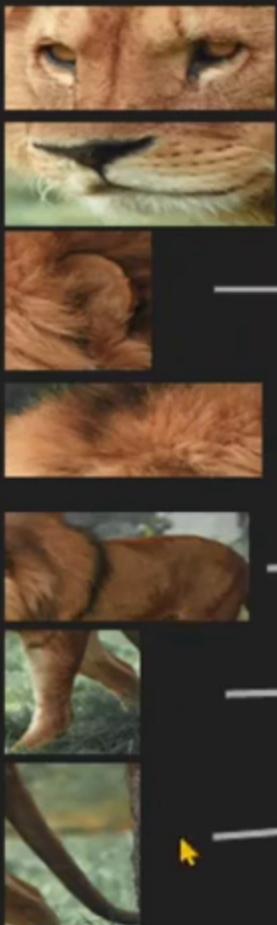
1 - Yes

0 - No

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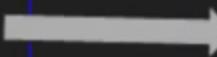


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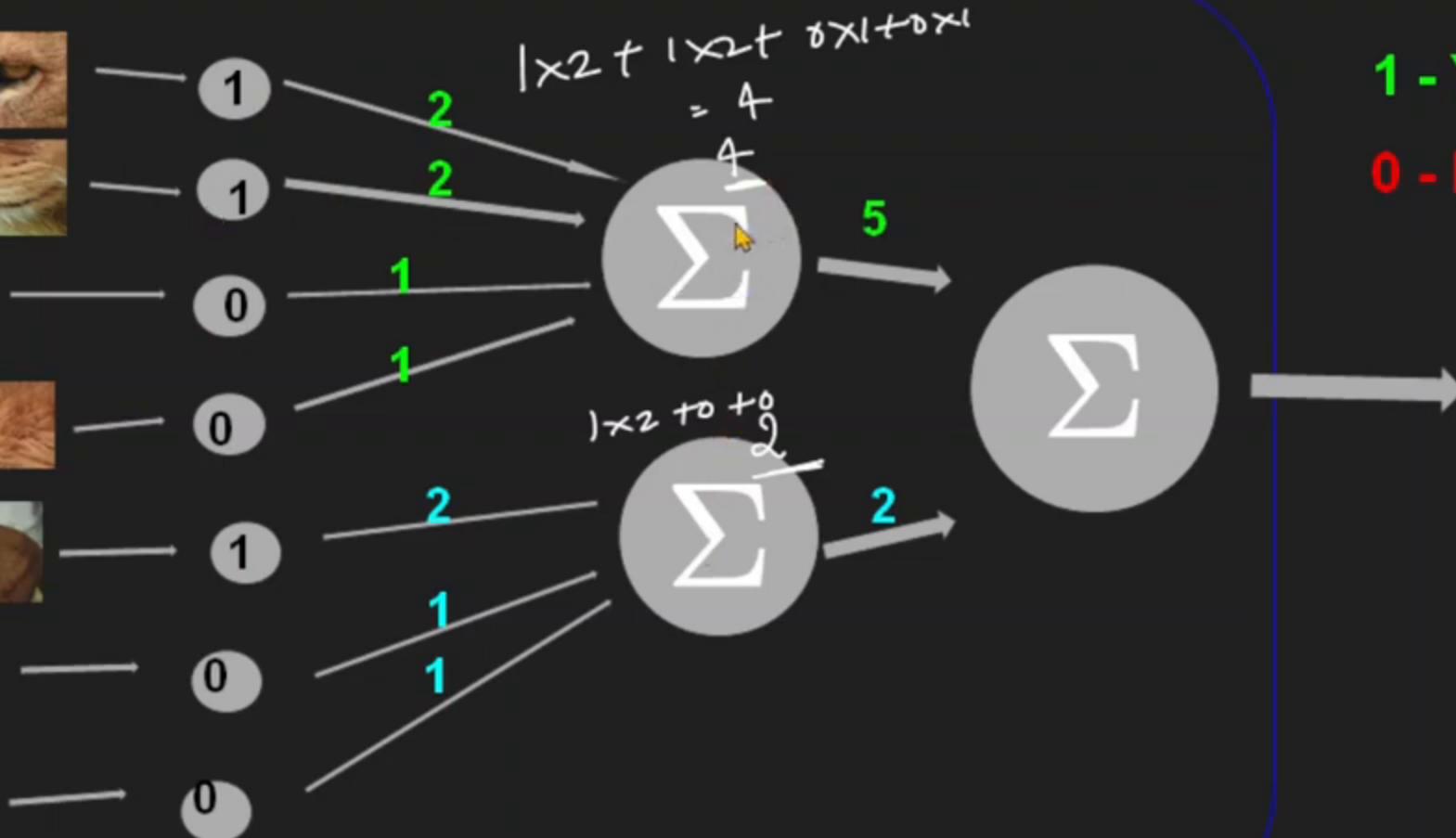
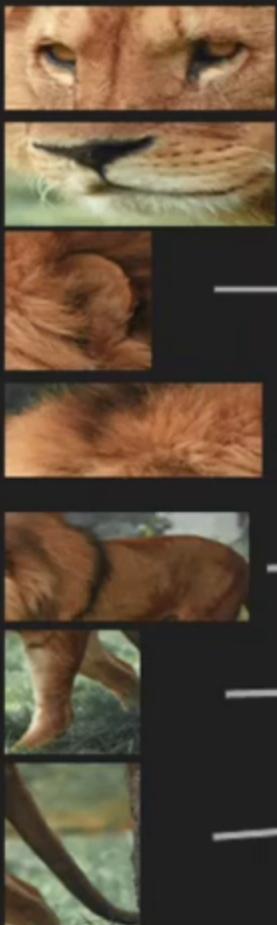


1 - Yes  
0 - No

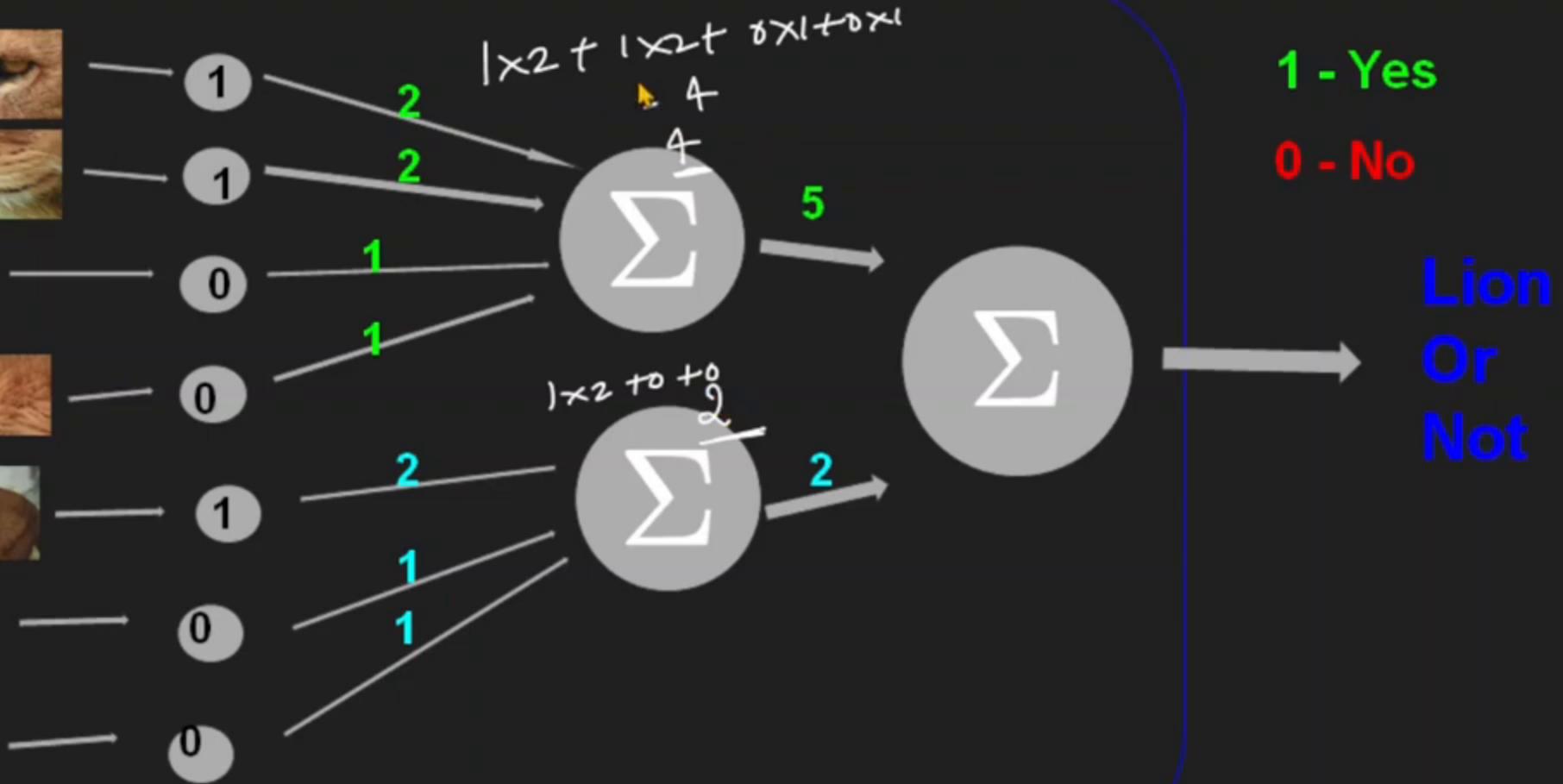
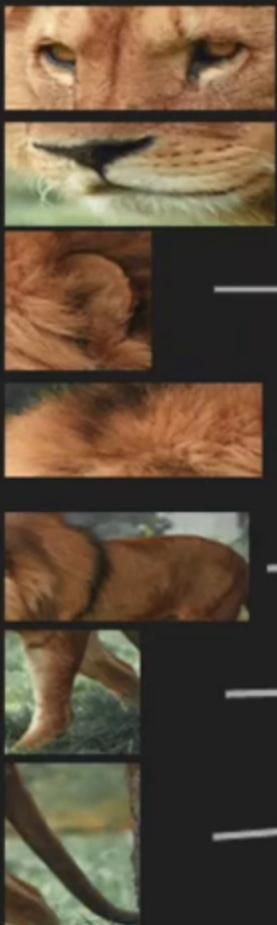
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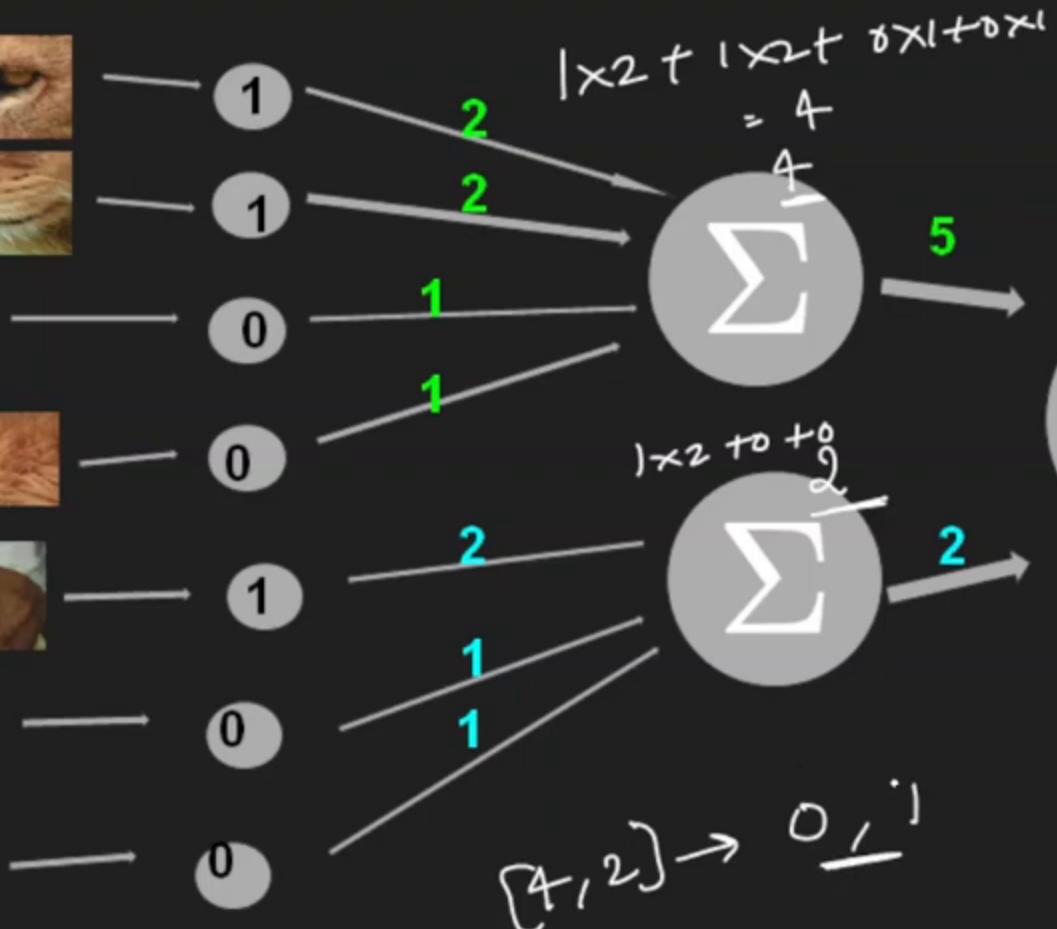
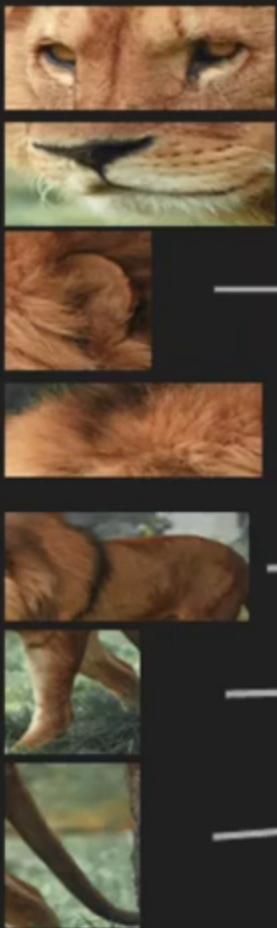
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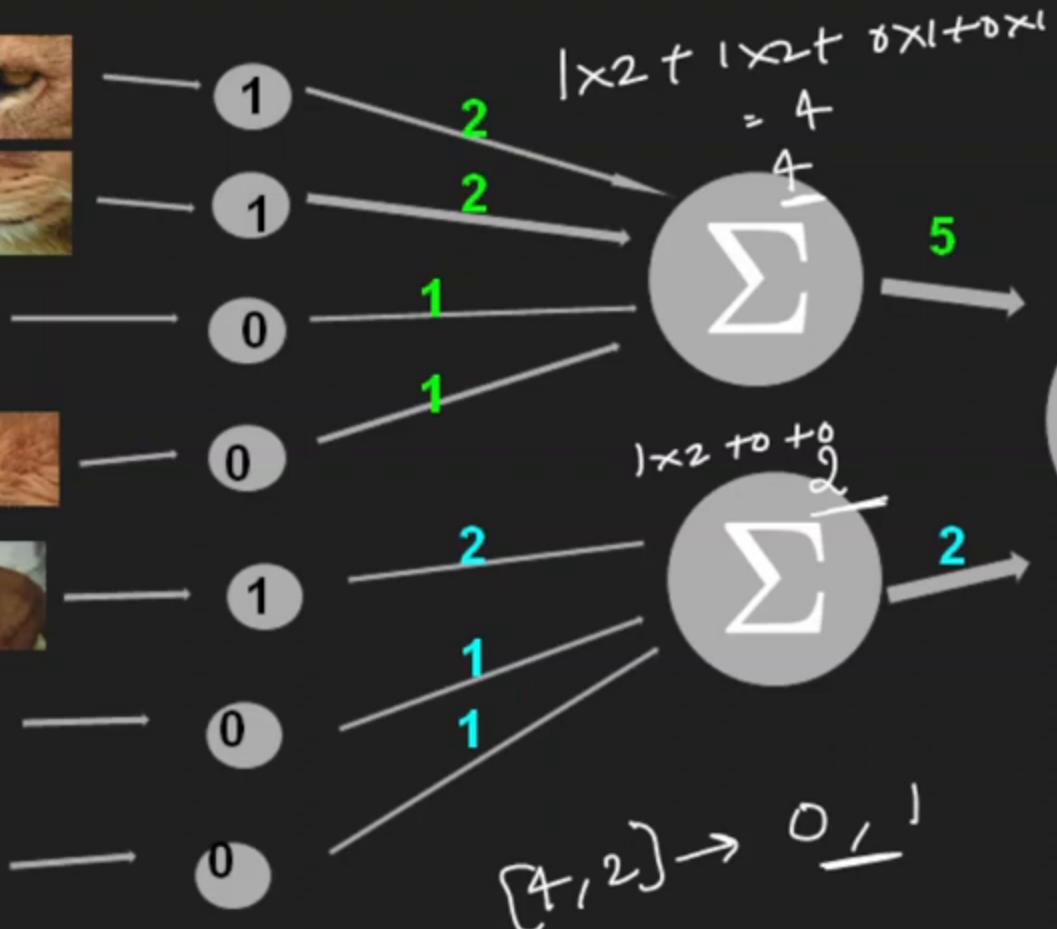
1 - Yes

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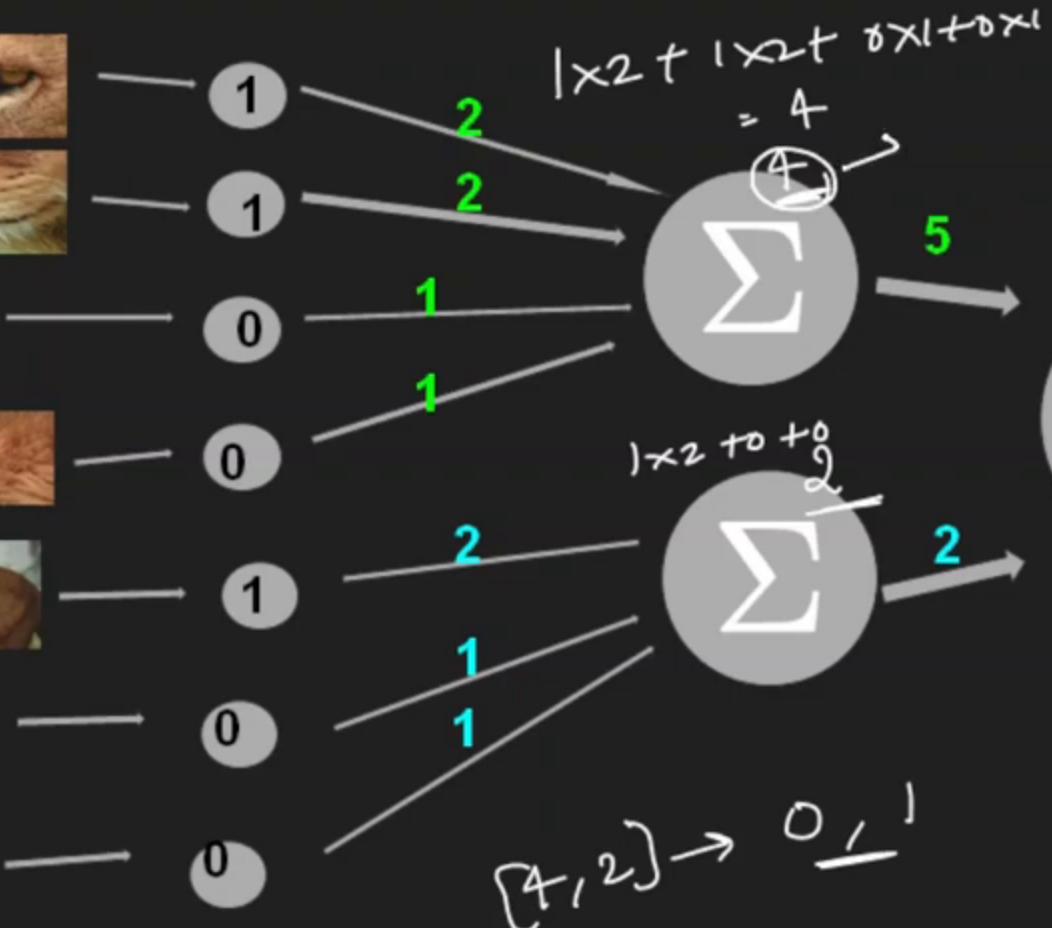
1 - Yes

0 - No

Lion  
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Step Function

# Network



1 - Yes

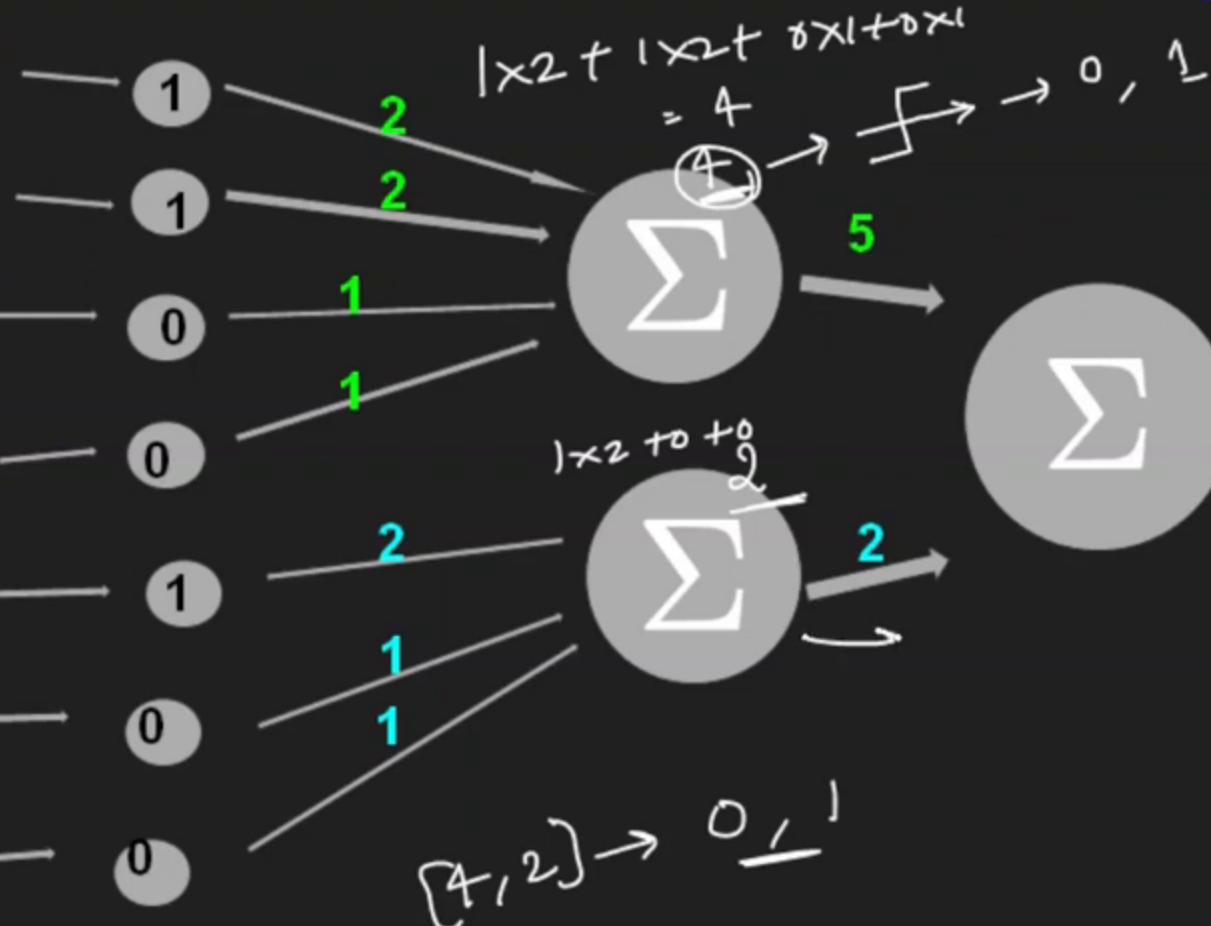
0 - No

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Step Function

$$y = \begin{cases} 1 & x > 0 \\ 0 & x \leq 0 \end{cases}$$

# Network



1 - Yes

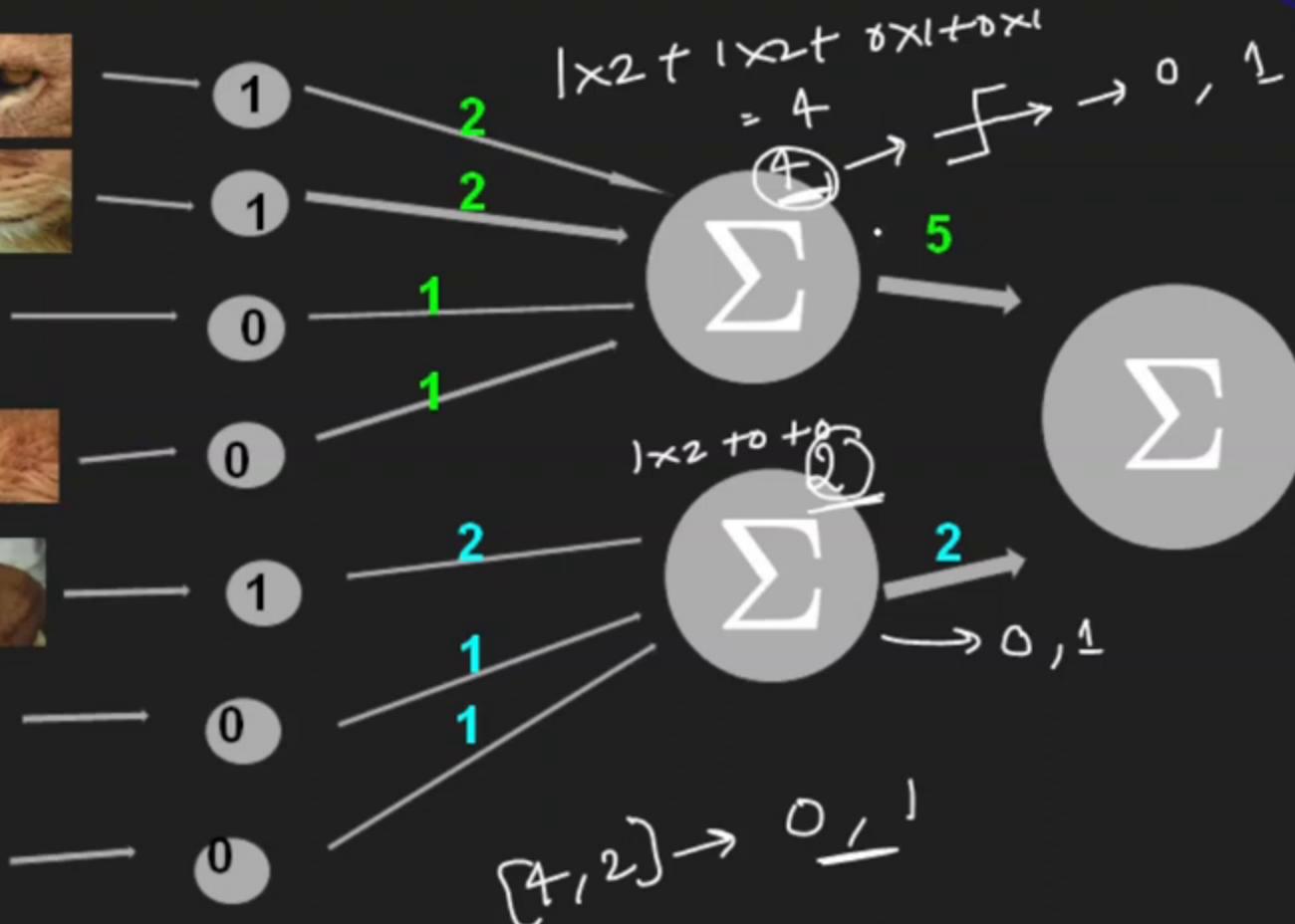
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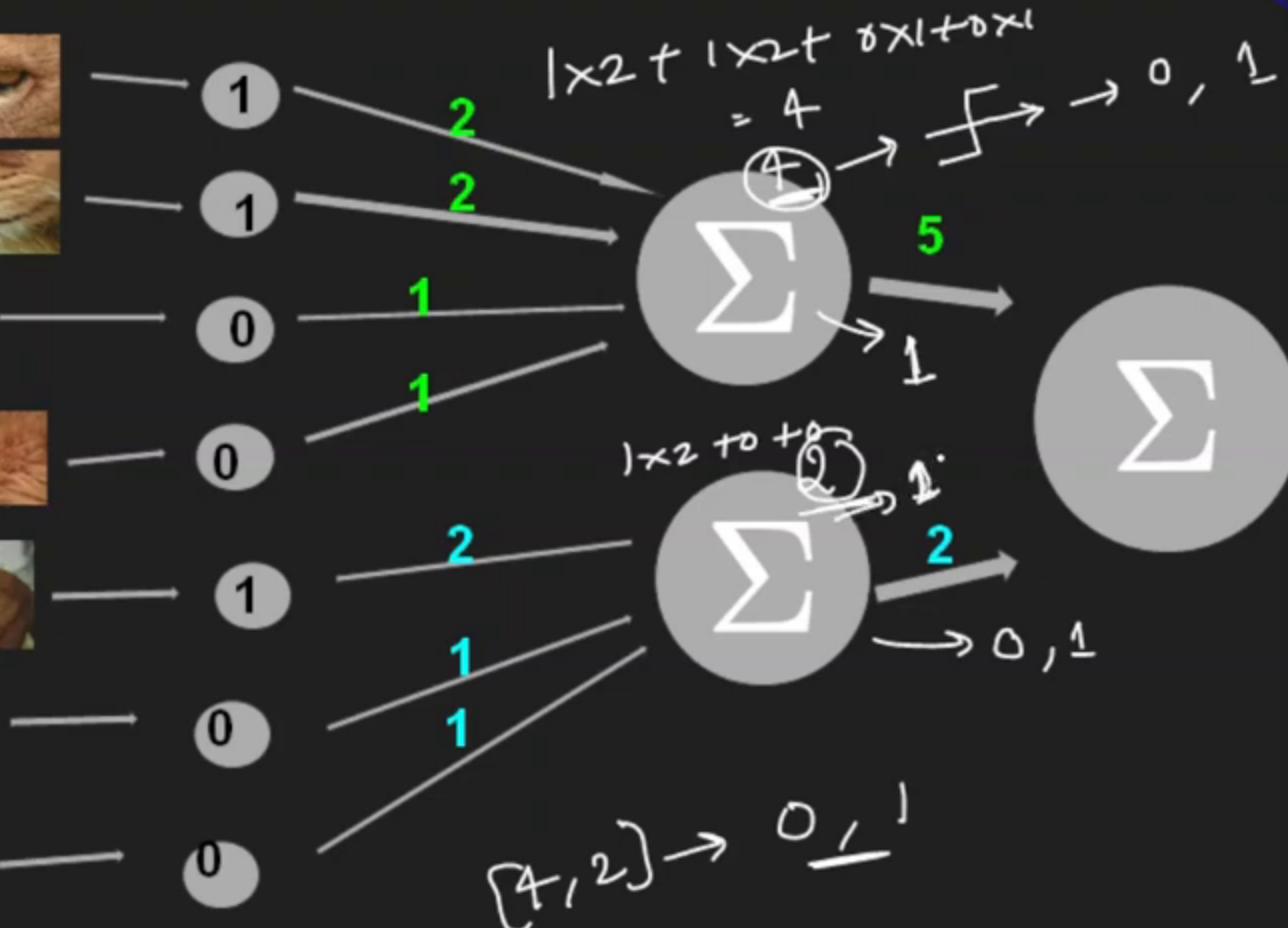
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Step Function

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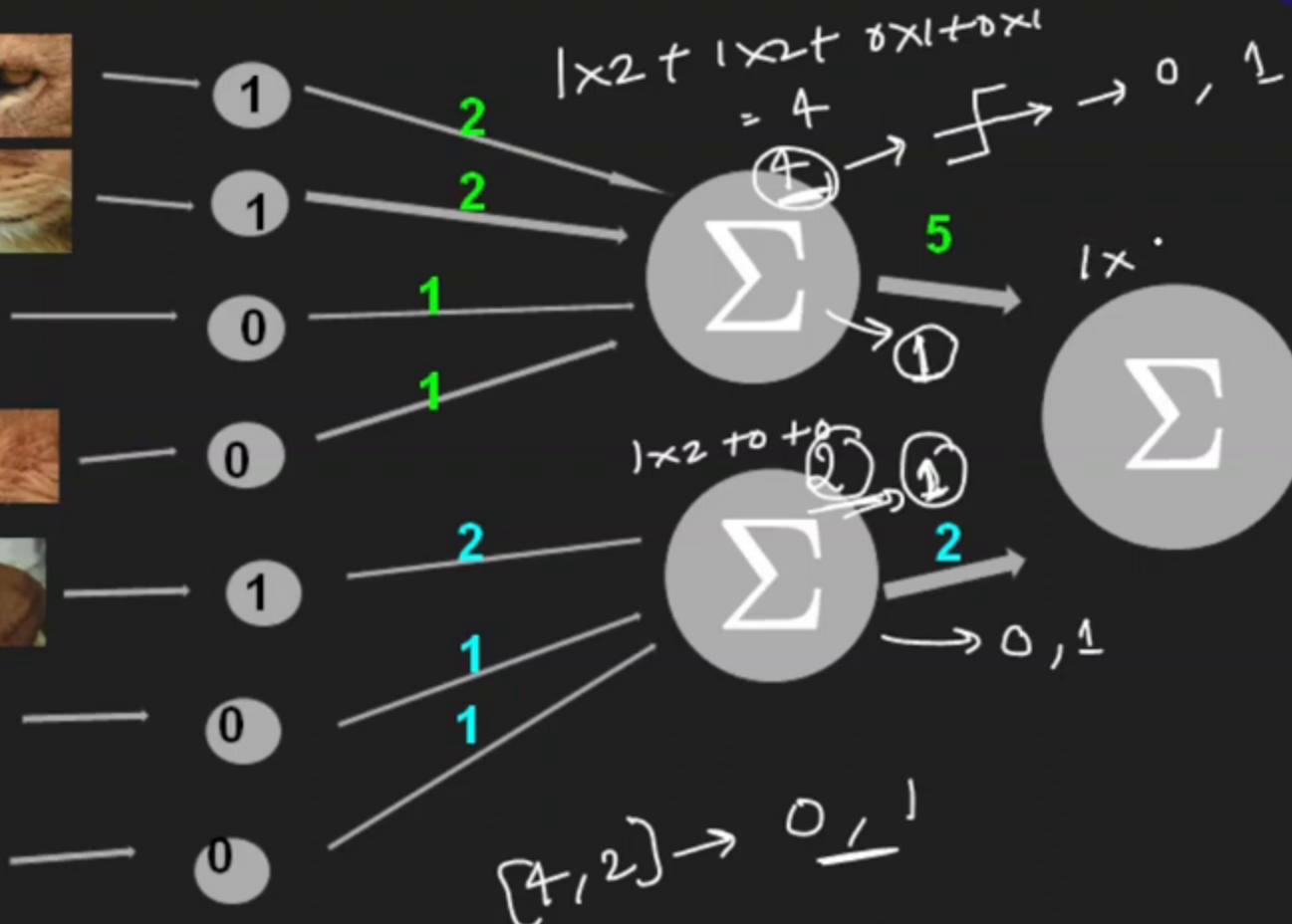
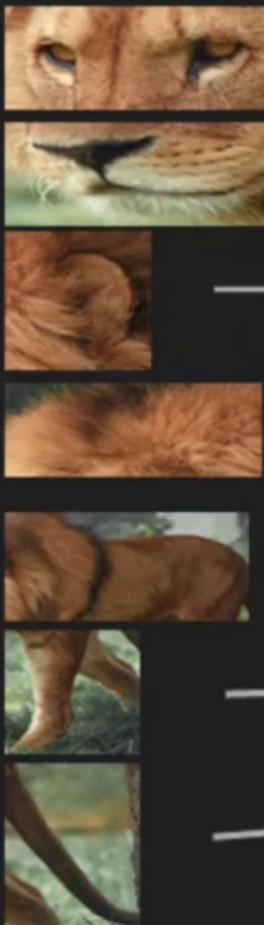
1 - Yes  
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Step Function

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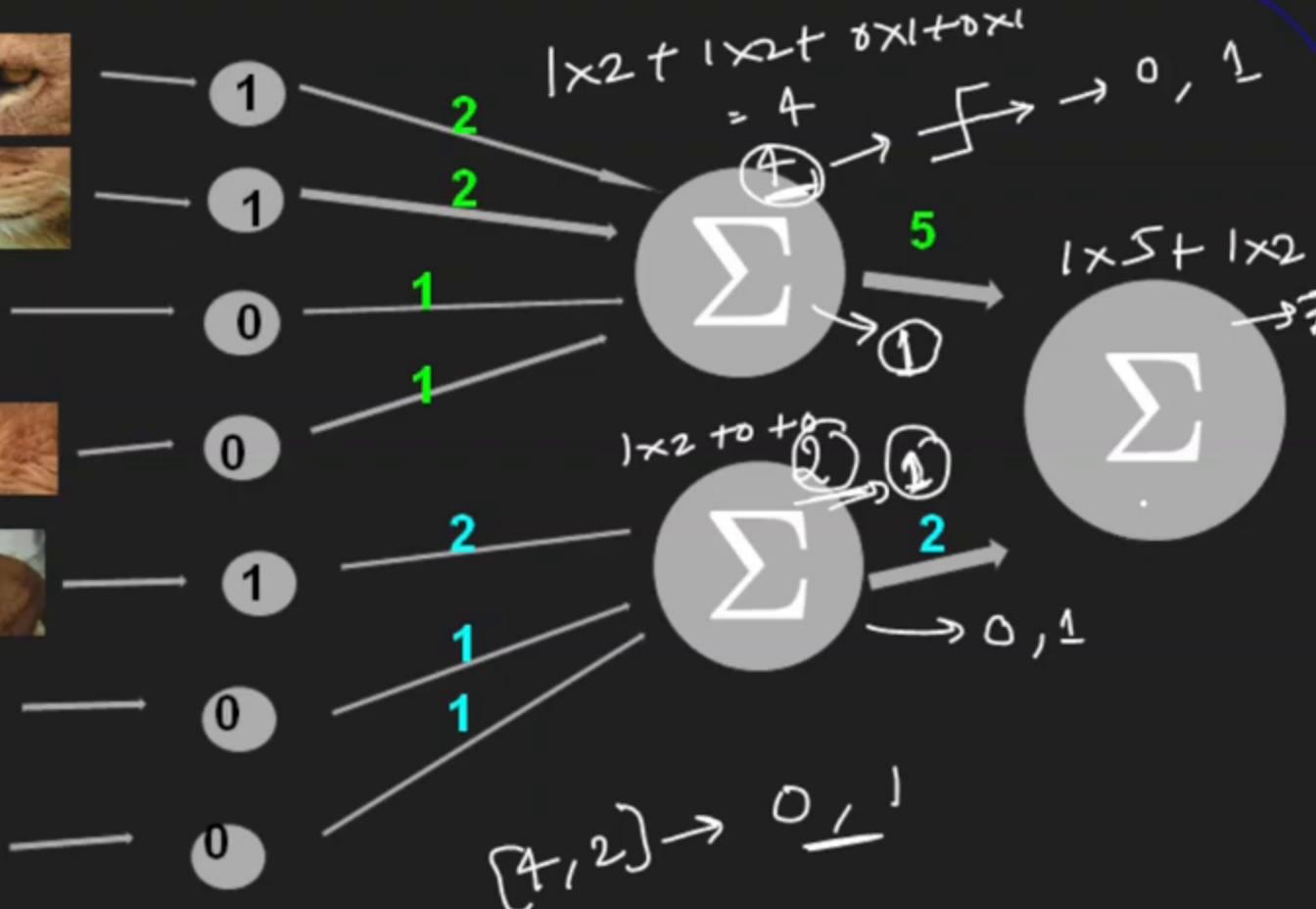
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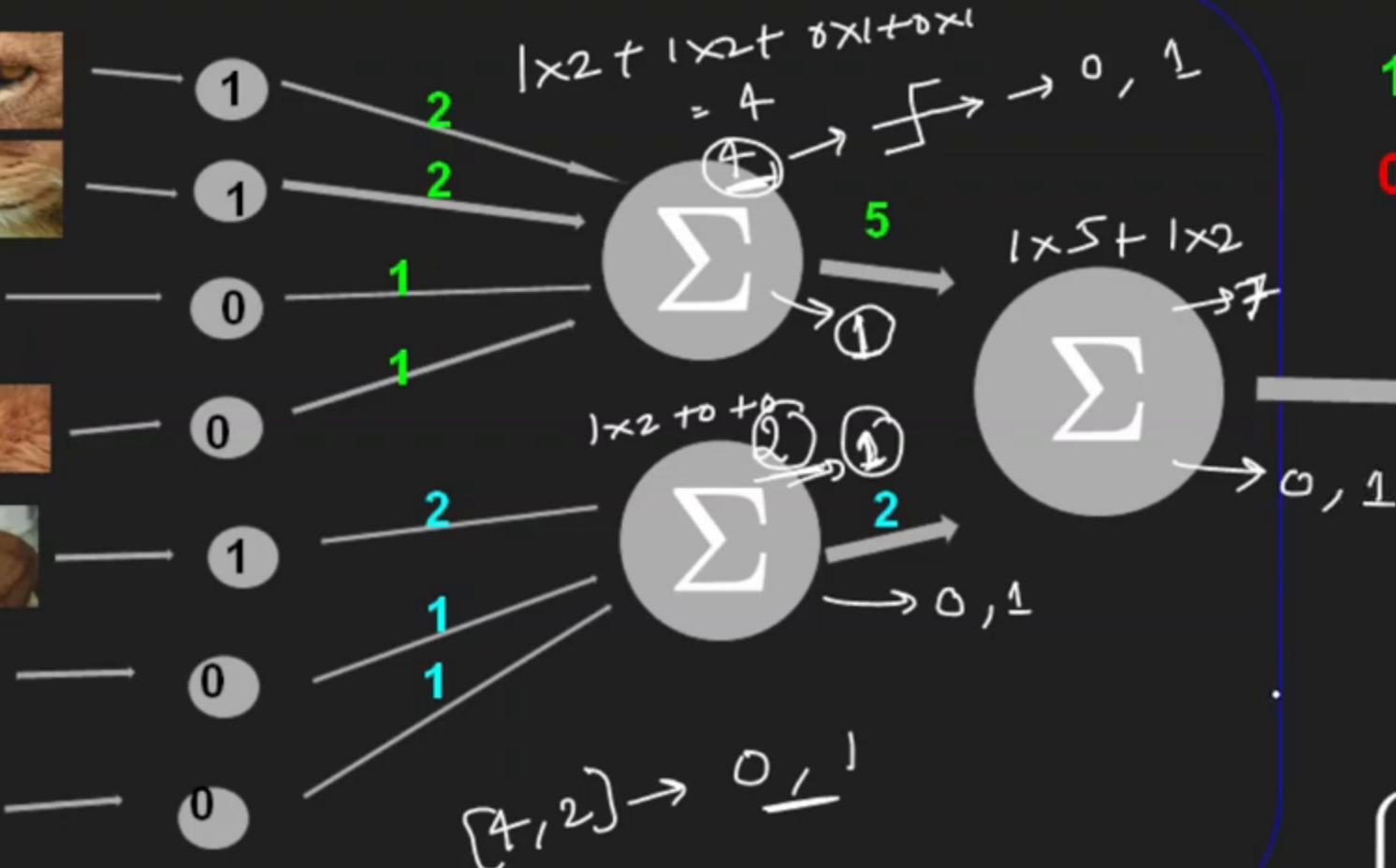
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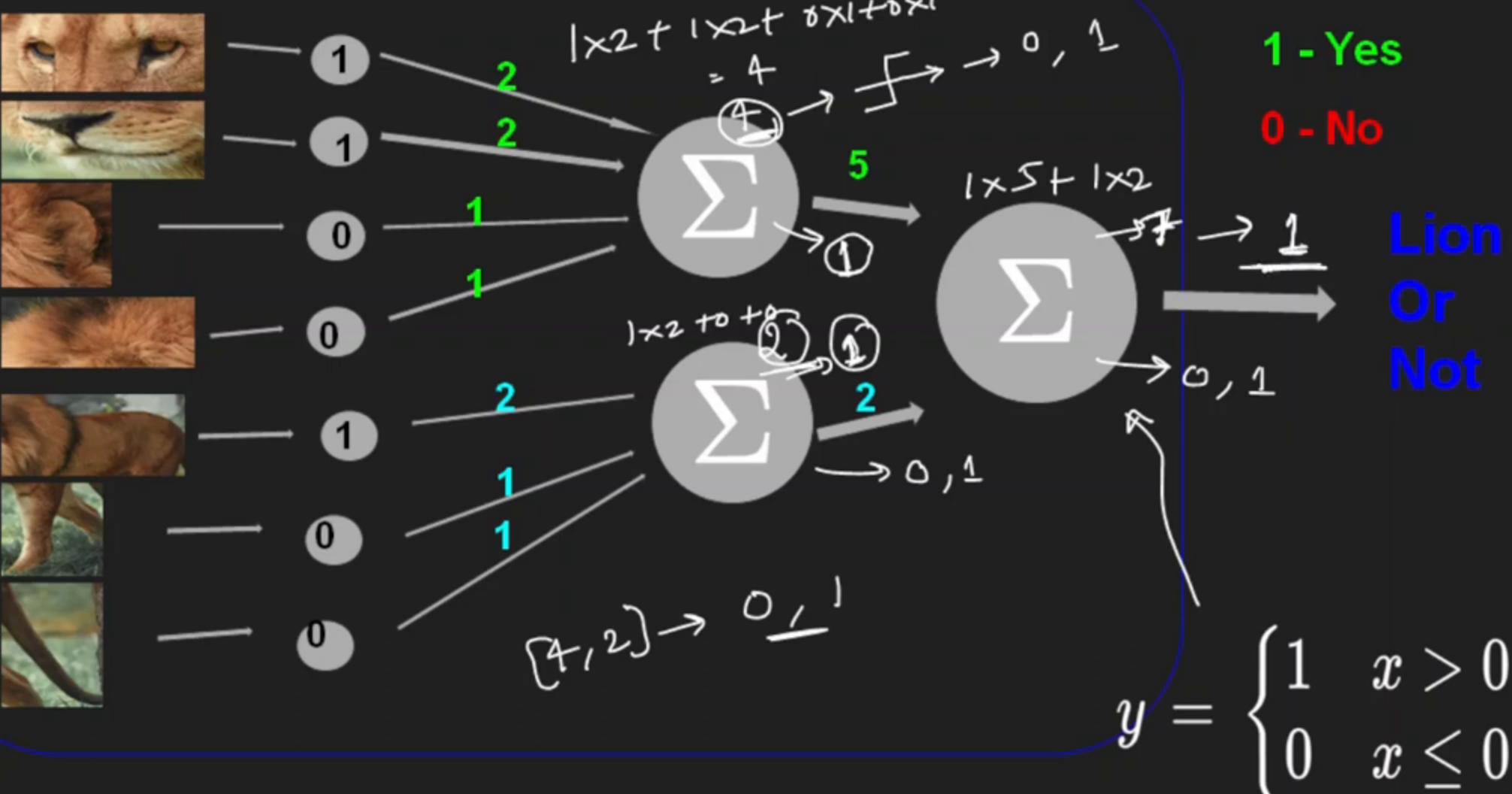
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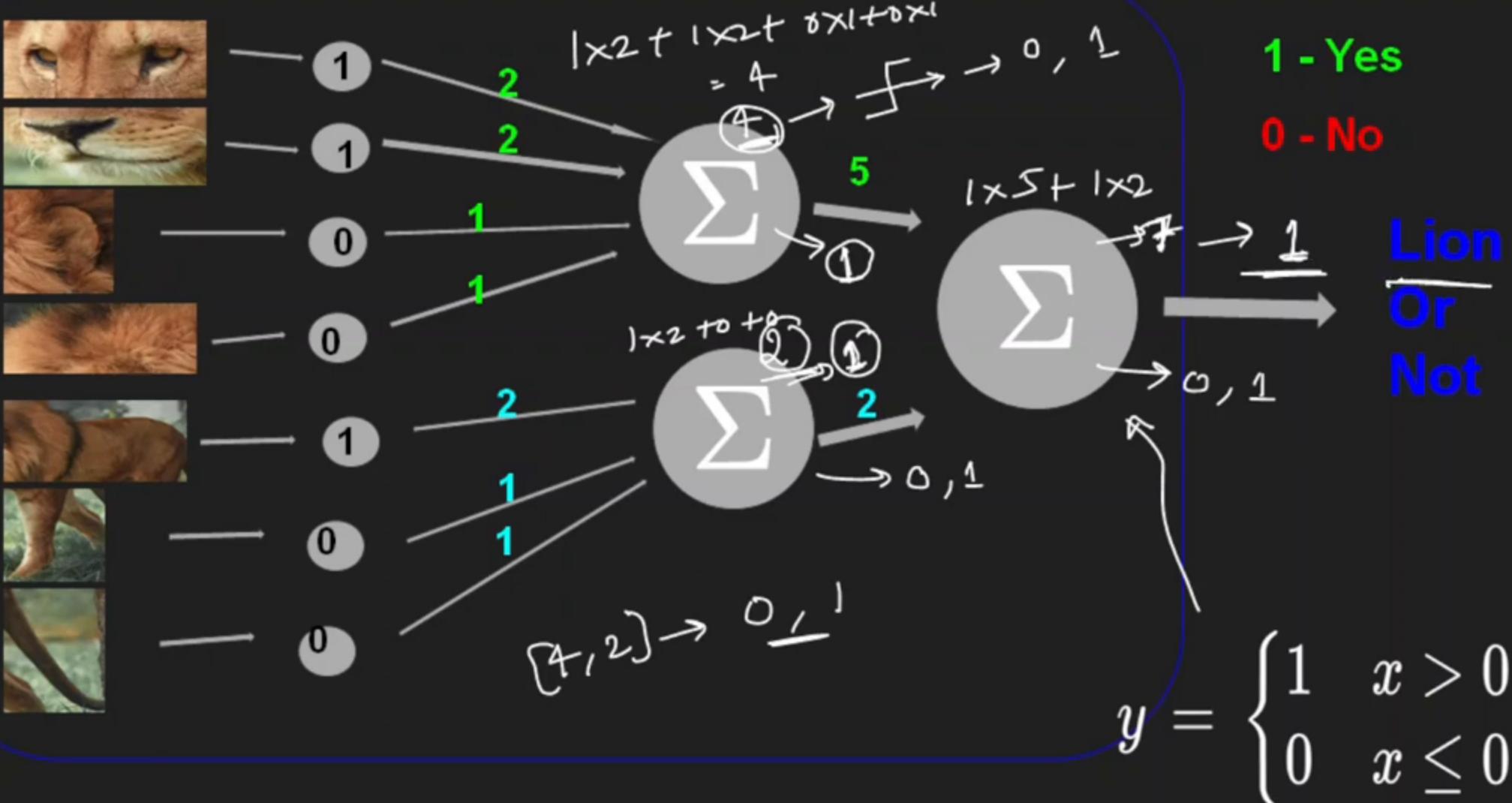
Step Function

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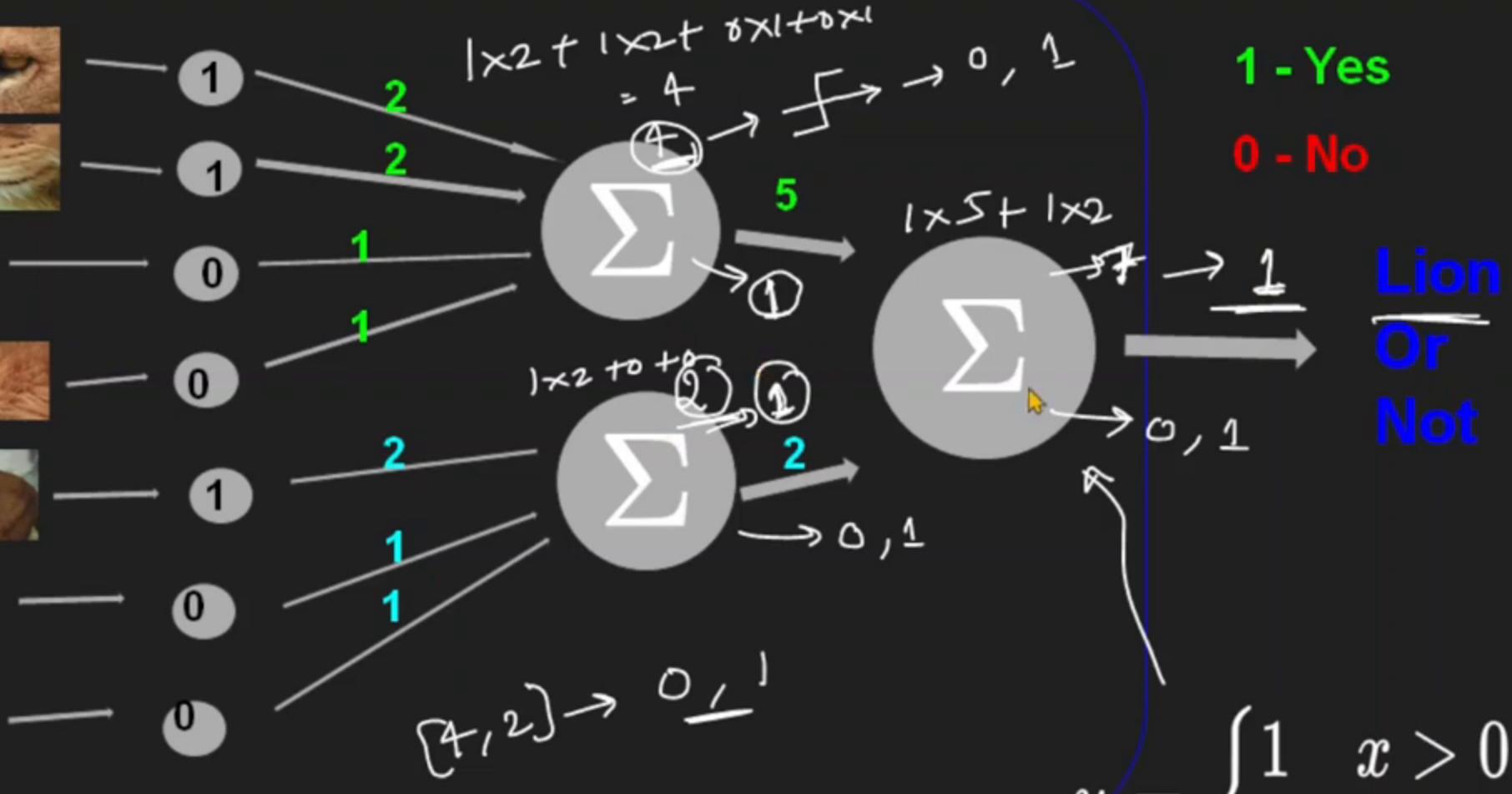
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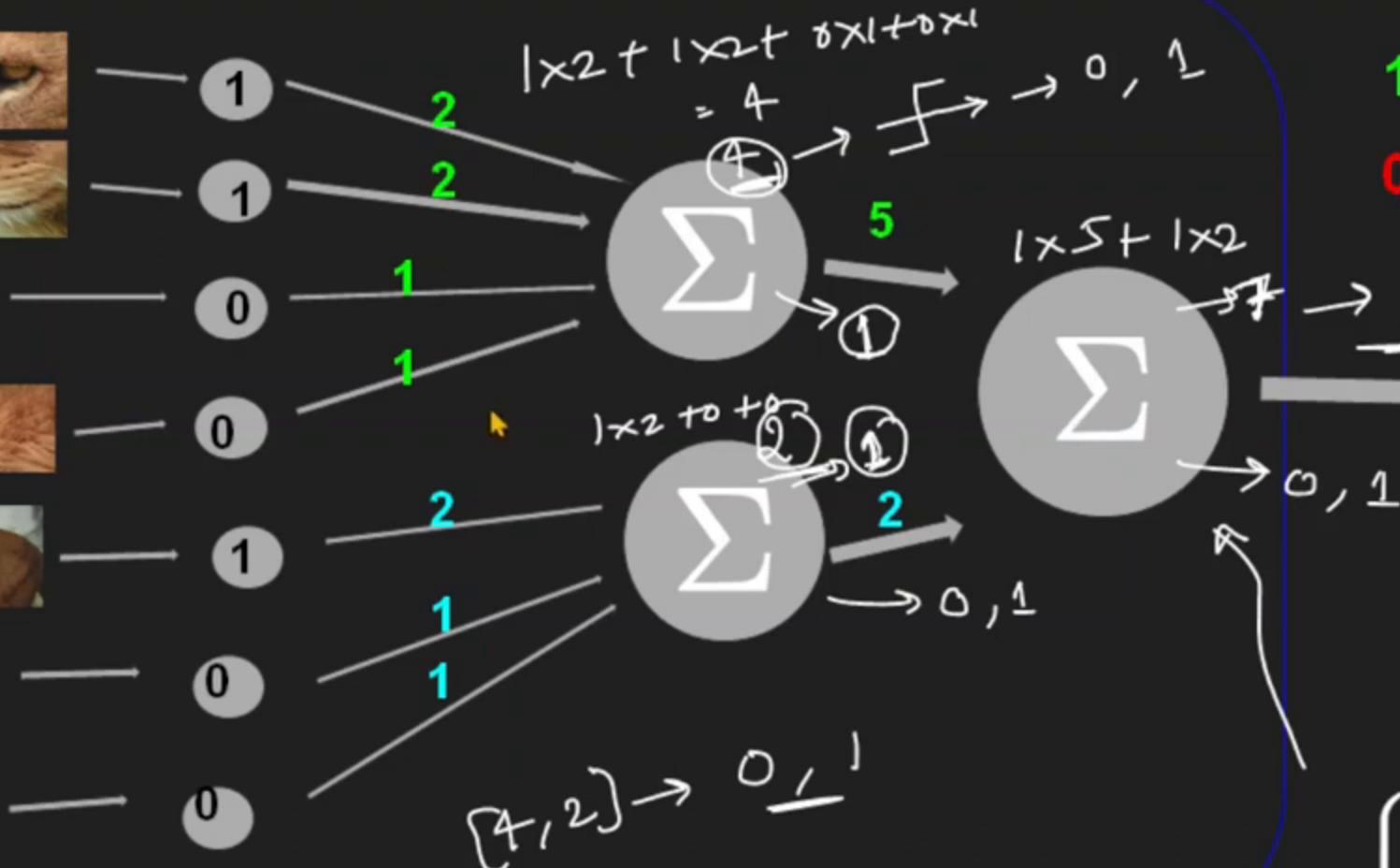
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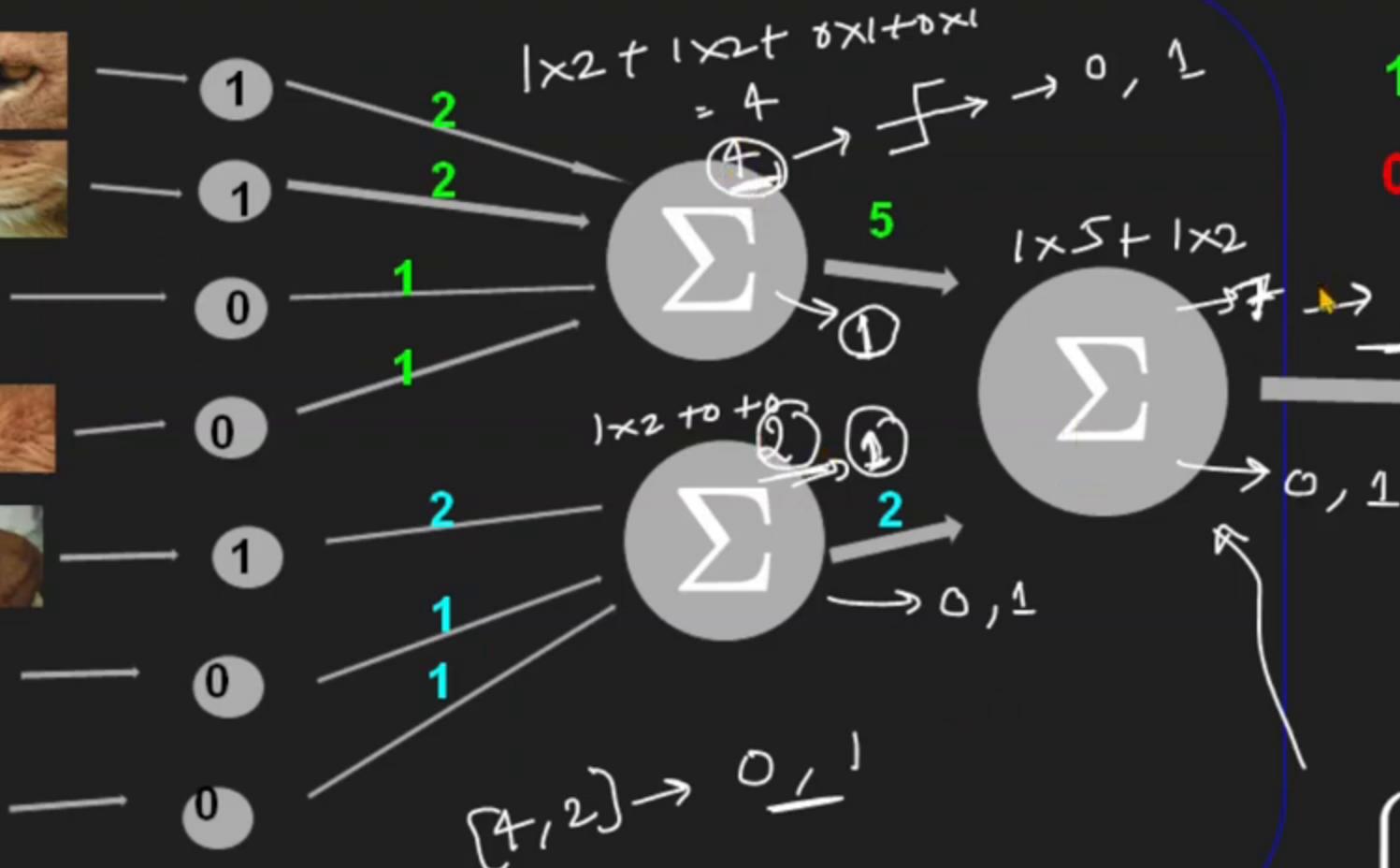
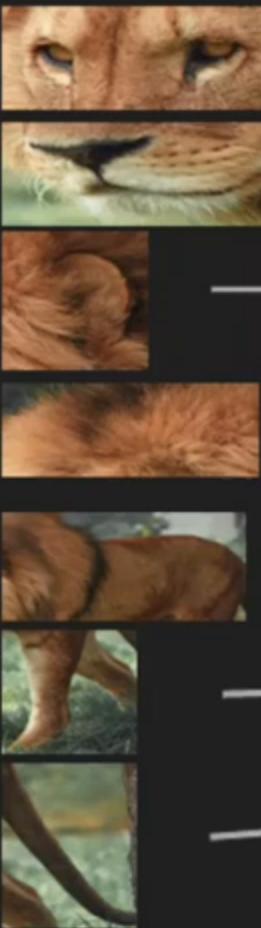


Step Function

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1 - Yes

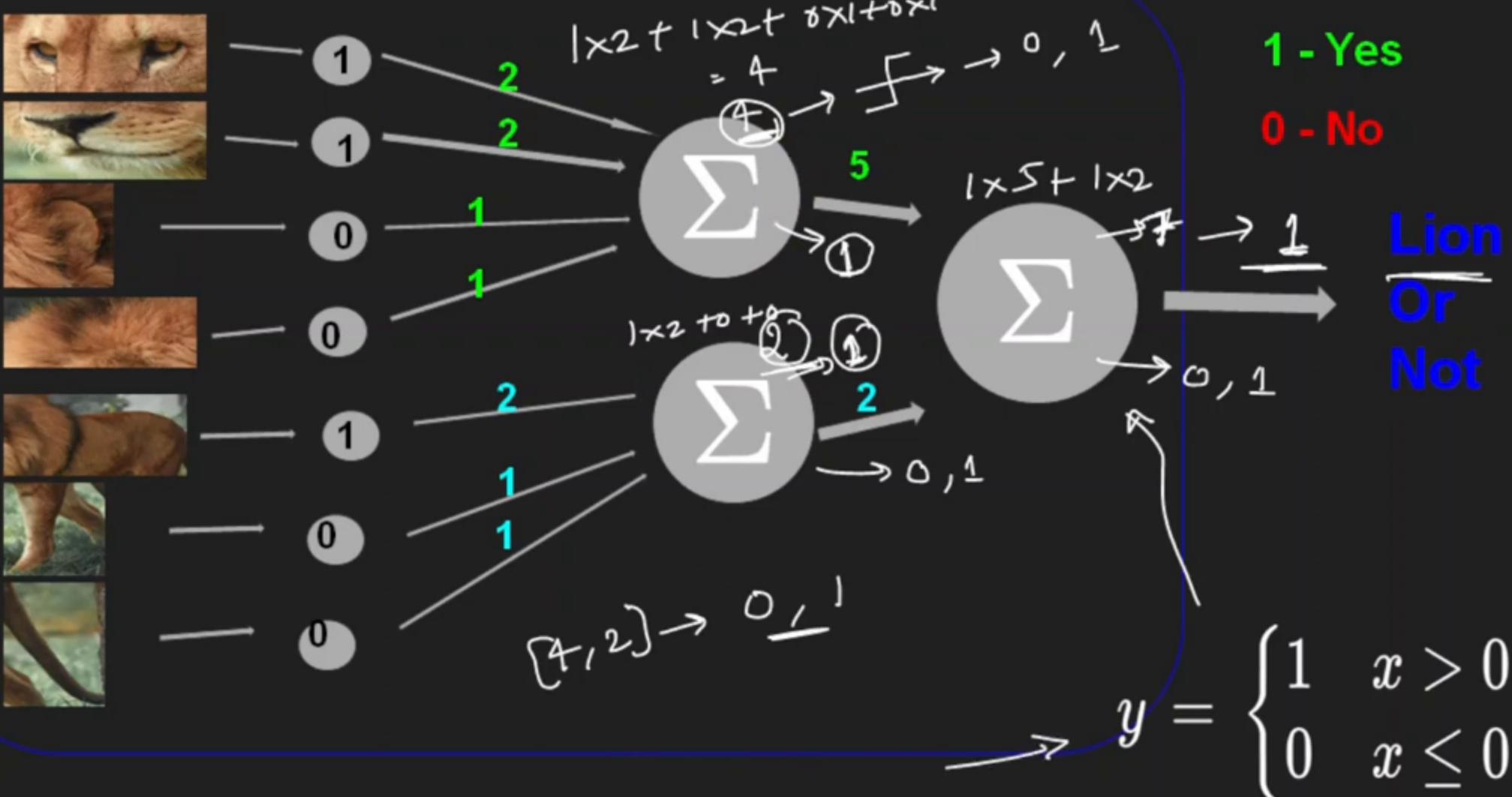
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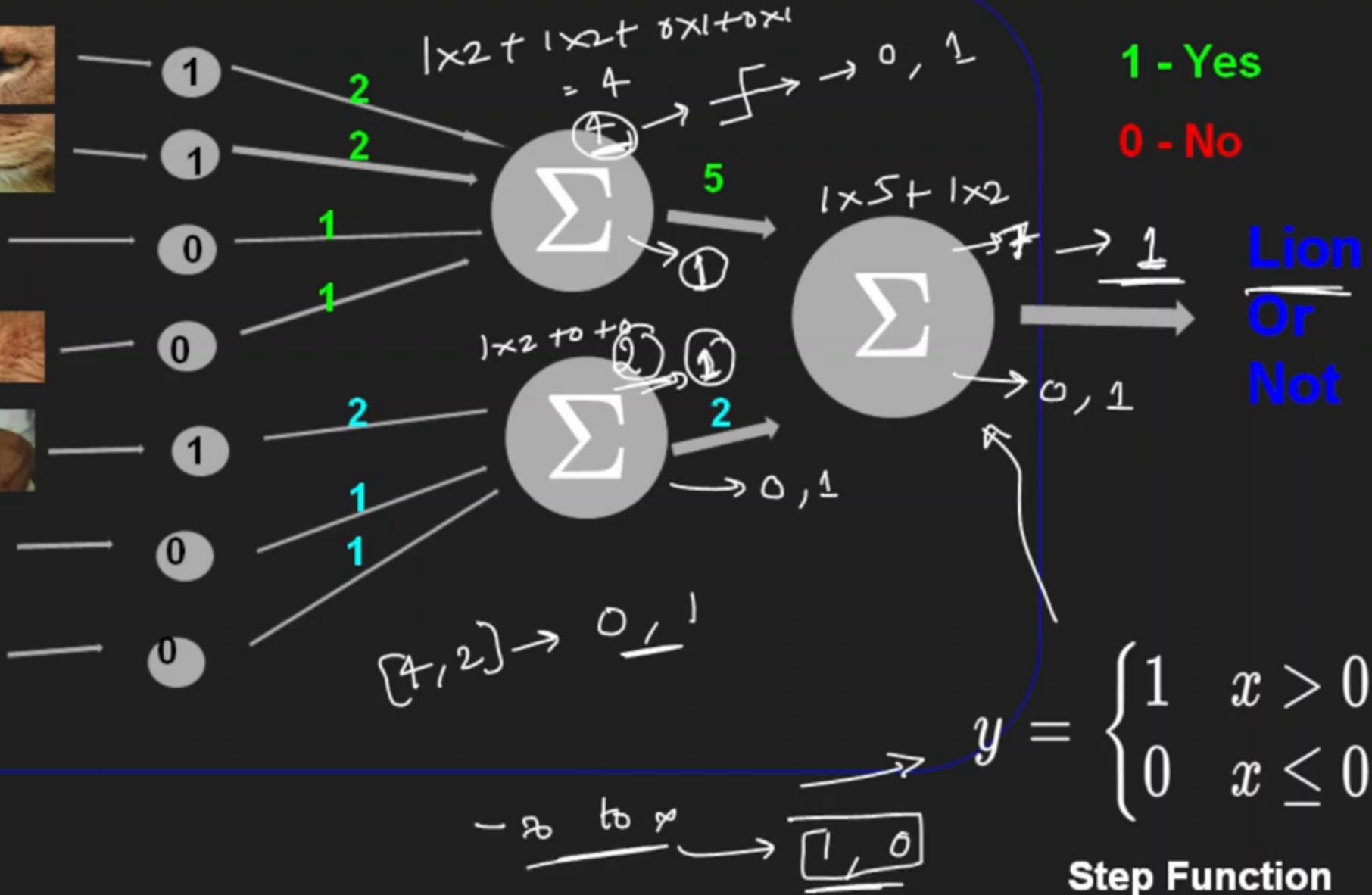
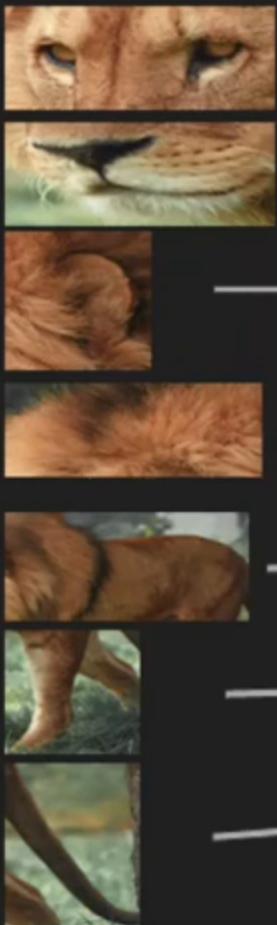
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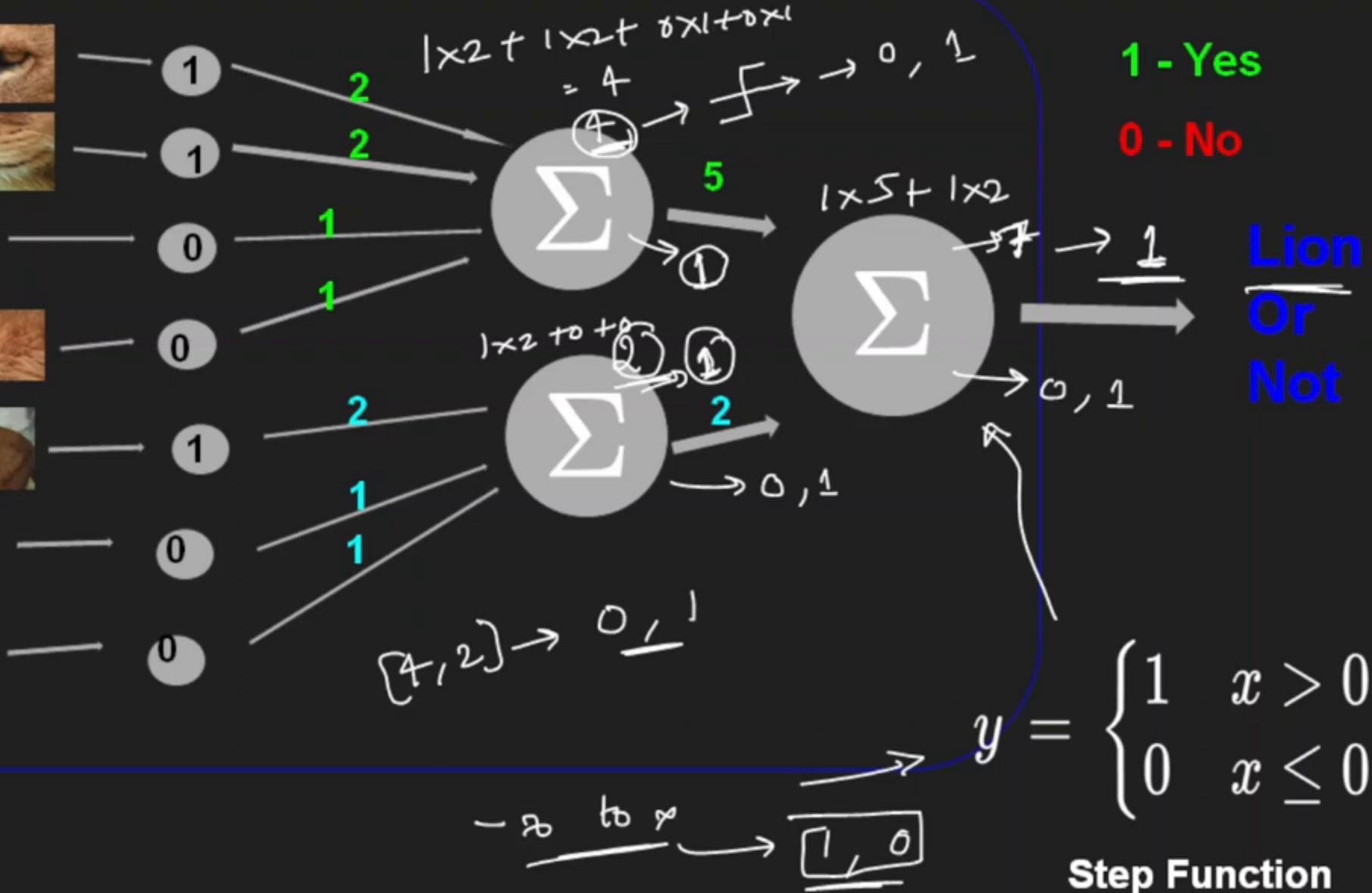
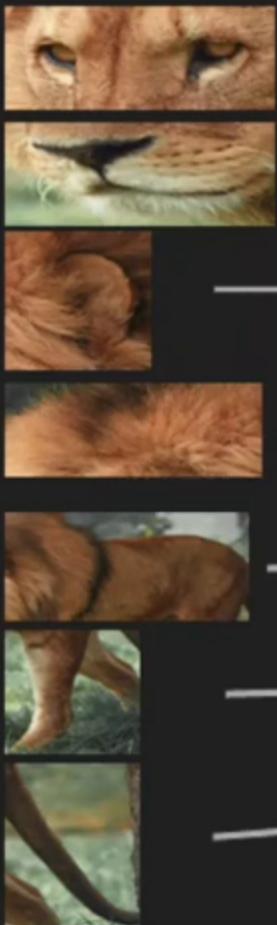


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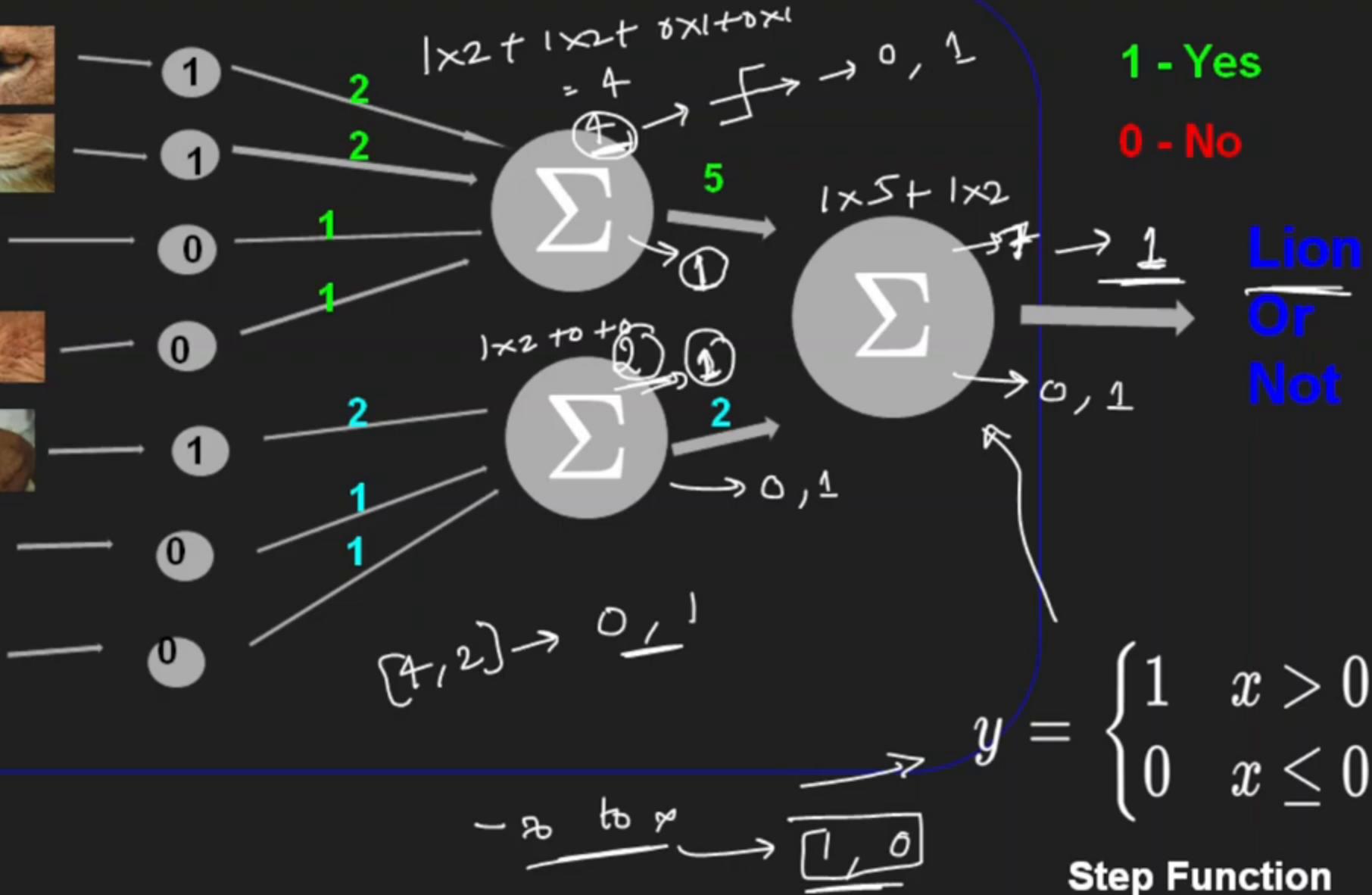
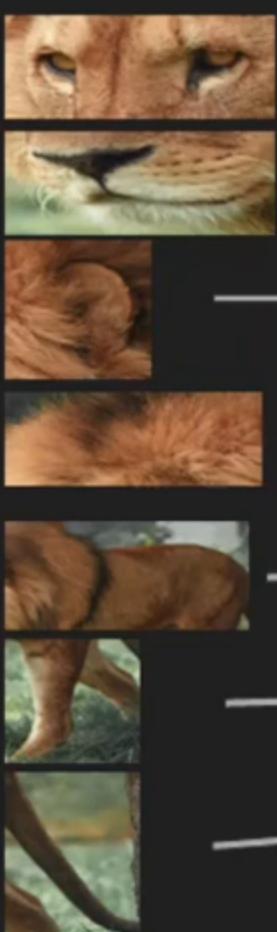
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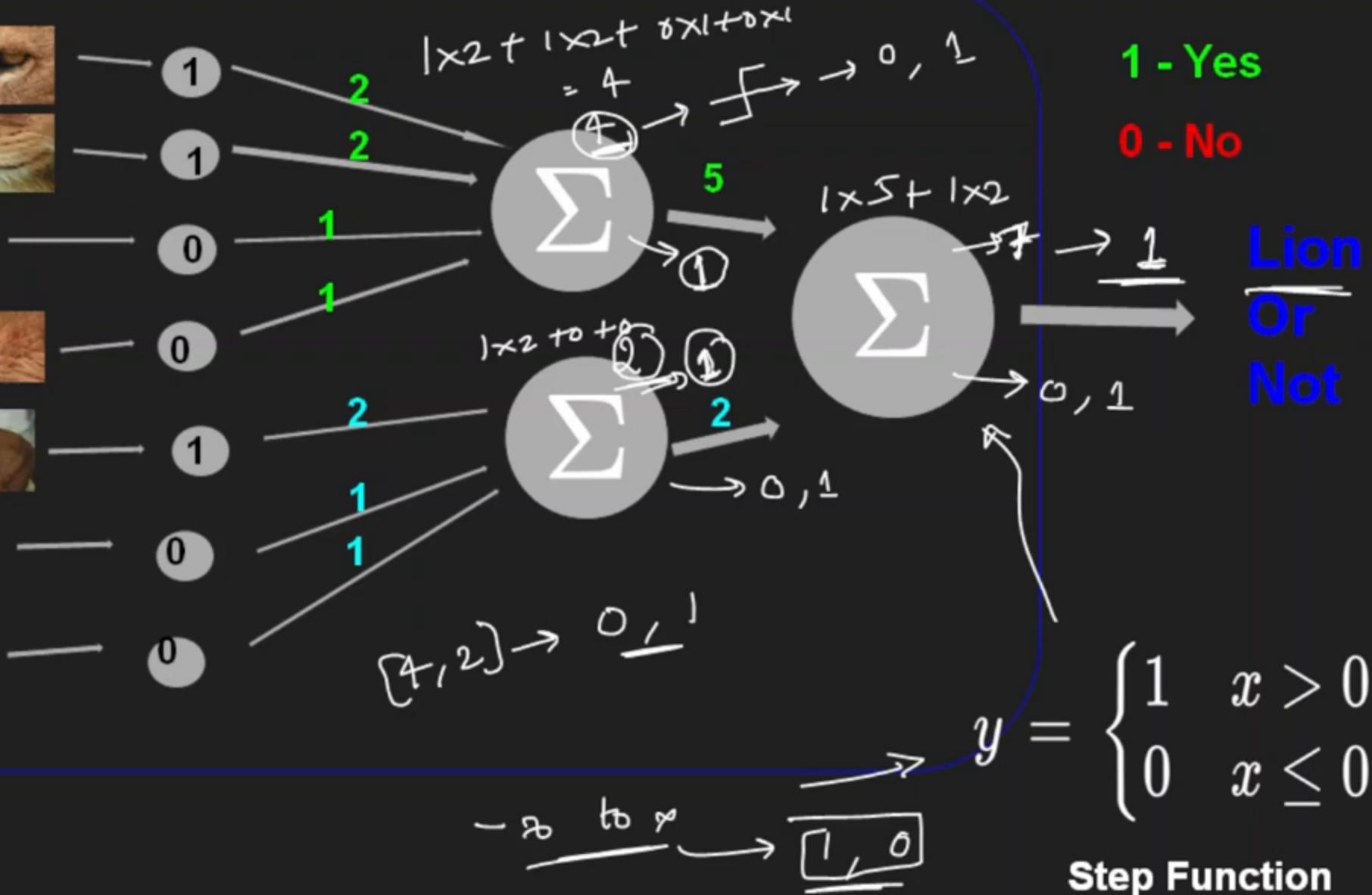
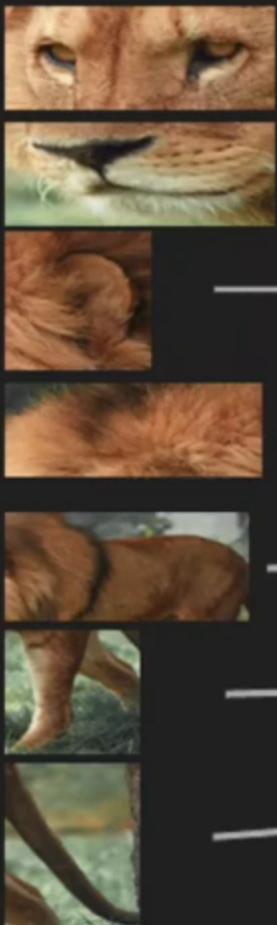
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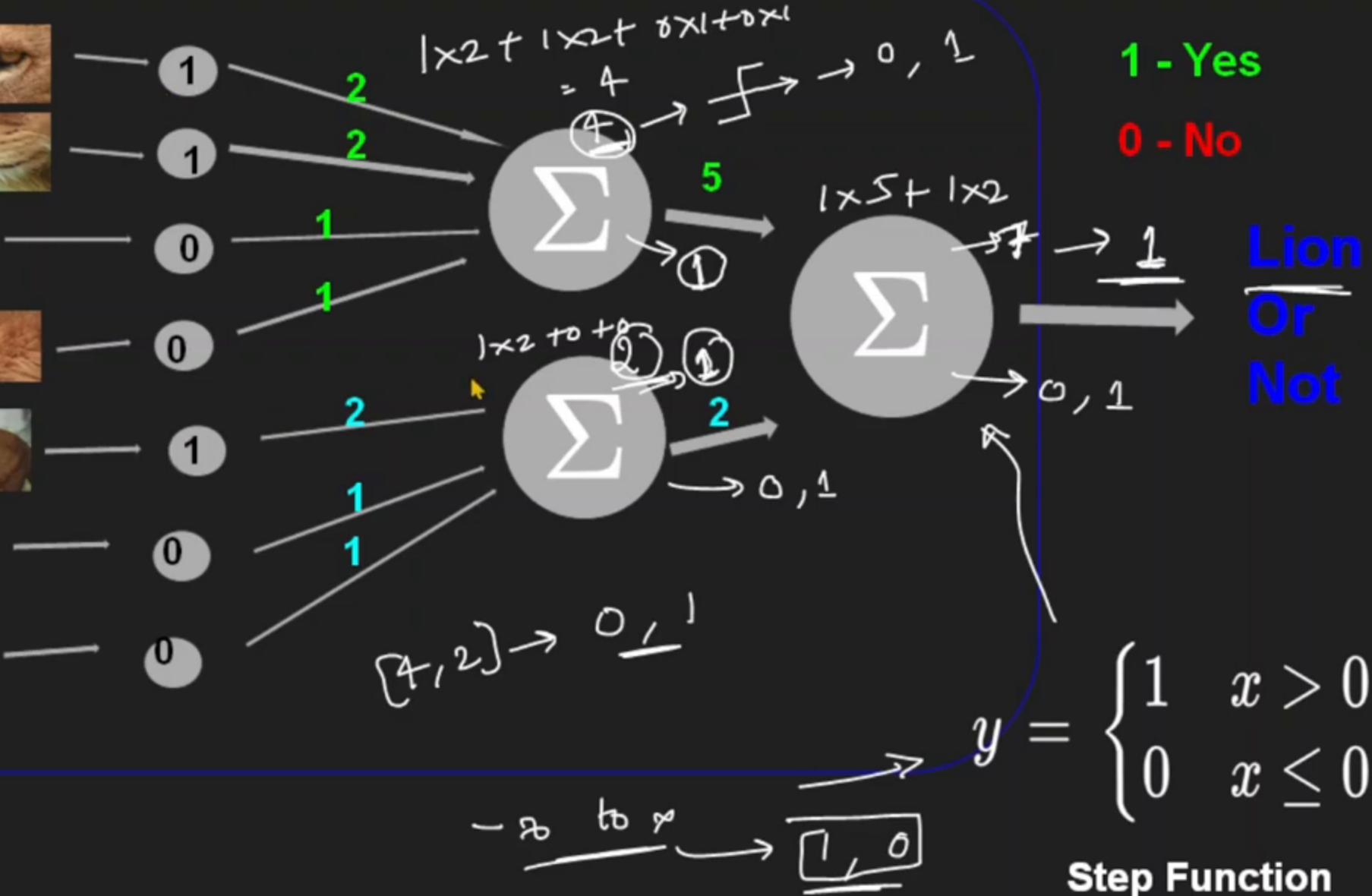
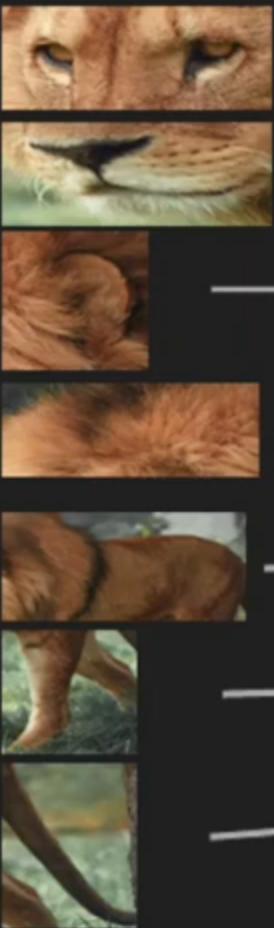
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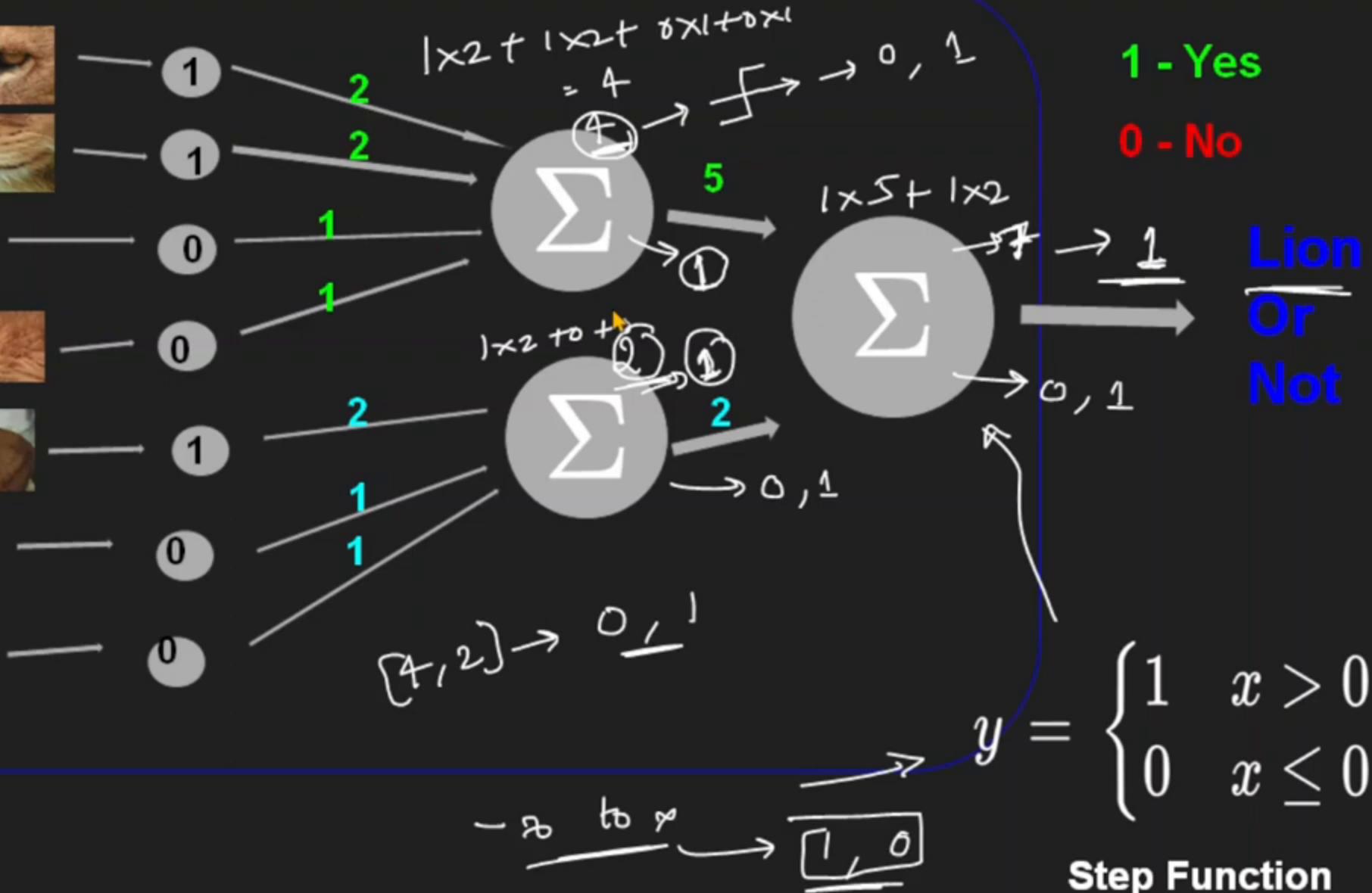
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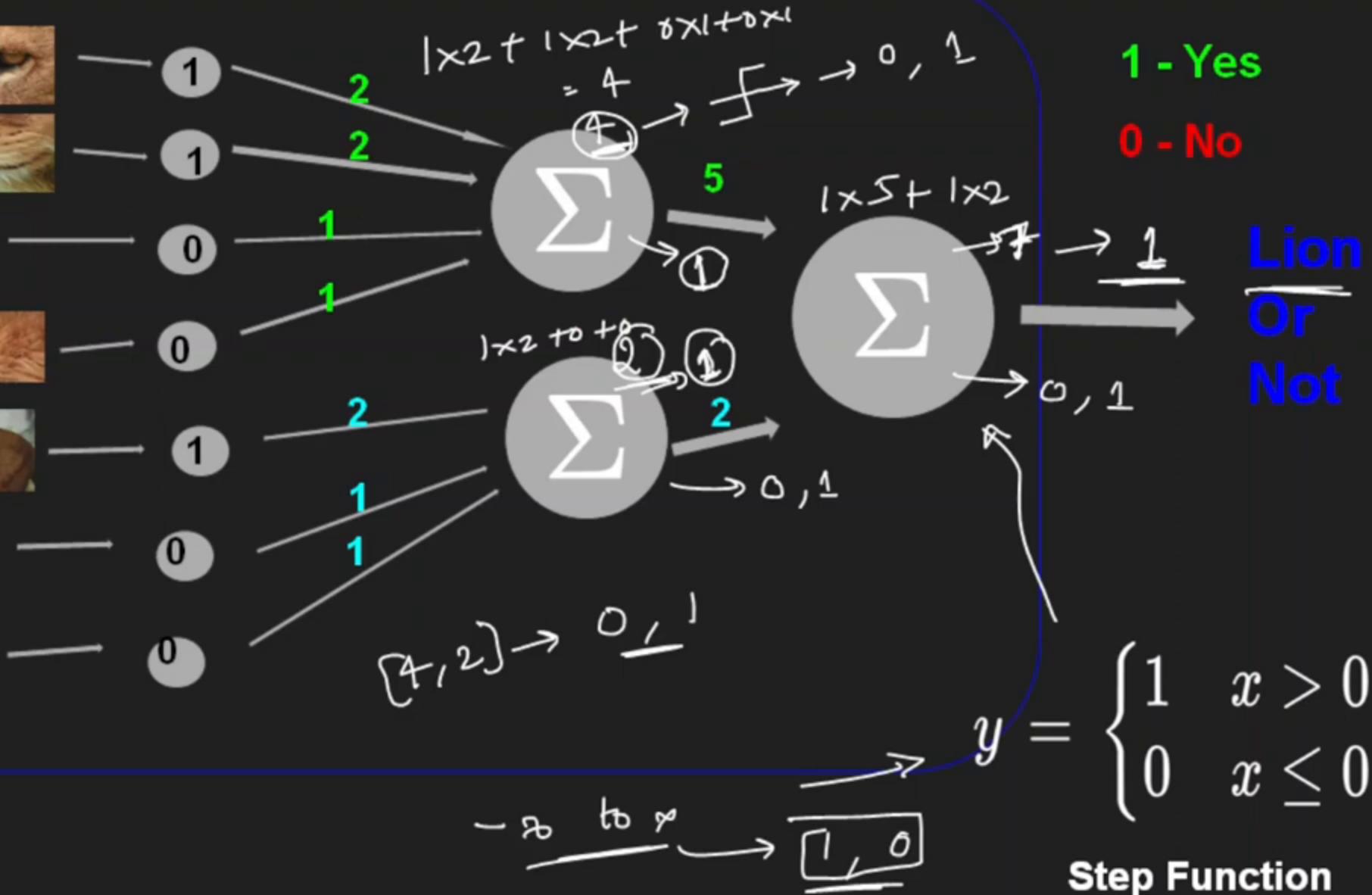
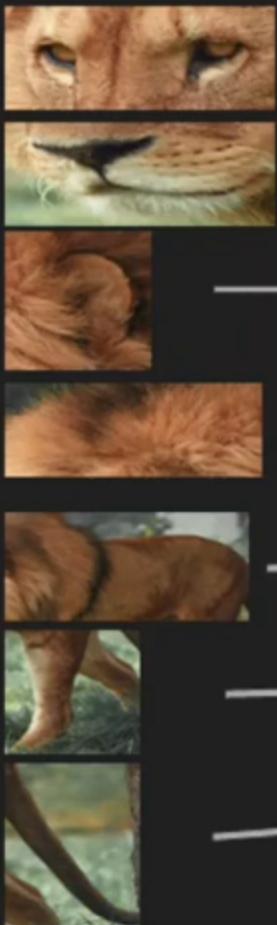
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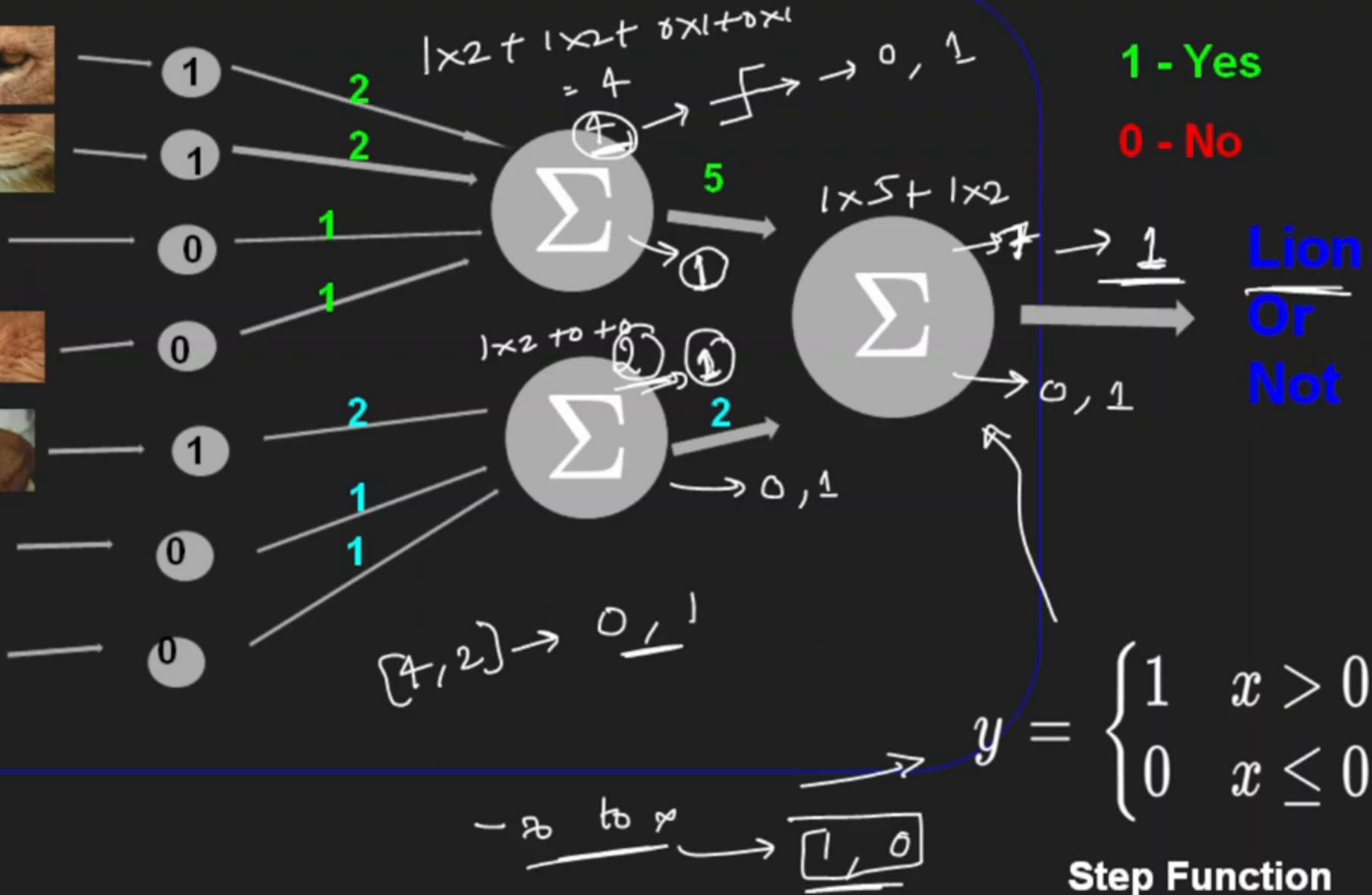
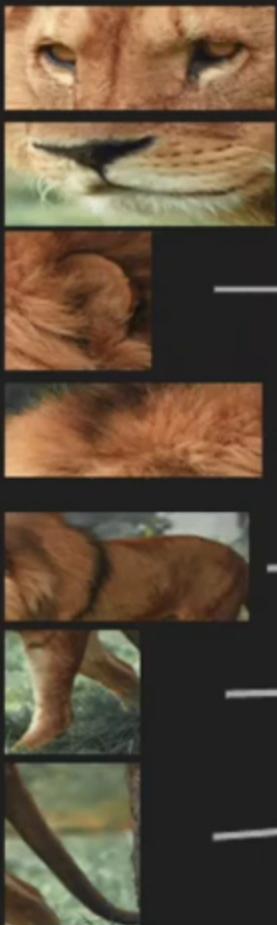
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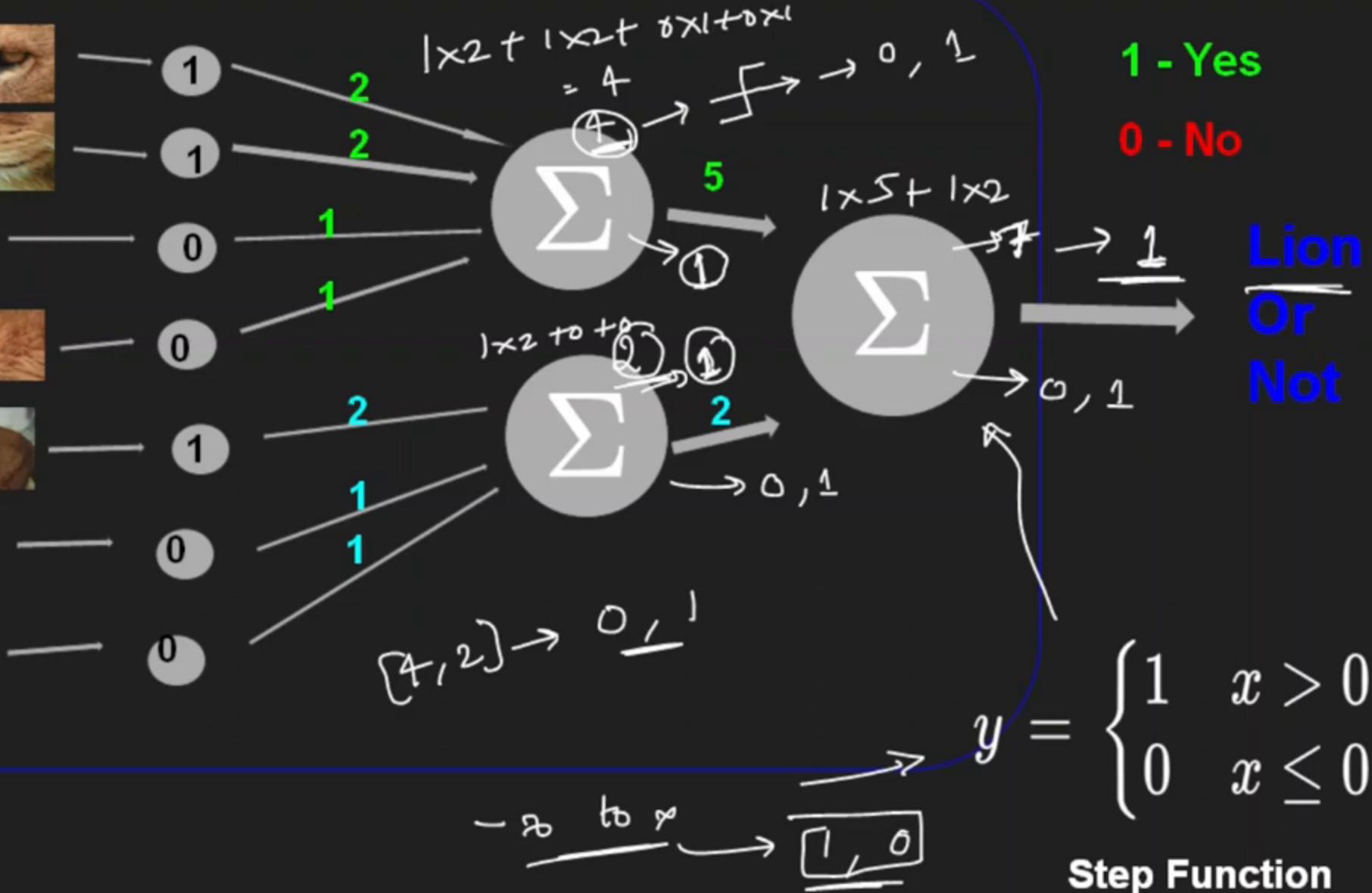
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# Why activation function?

- Restricting the output to a specific range
- Introducing non-linearity

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# Properties

- Non-linearity
- Differentiable
- Range
- Monotonic
- Computationally efficient

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