

Tree based model

Decision Tree ↗ Regression
 Classification

Linear Reg → Geometrical model



Hyperplane based Separation

Logit Reg :- Geometrical model, probabilistic approach
log-loss - MLE

KNN ← Instance based model - Distance based model

SVM ← Geometrical model - Hyperplane

Decision Tree :- Nested if - else model

↳ if-else parallel model

CART - CA - Classification

RT - Regression Tree

Classification Regression Tree

Iris dataset

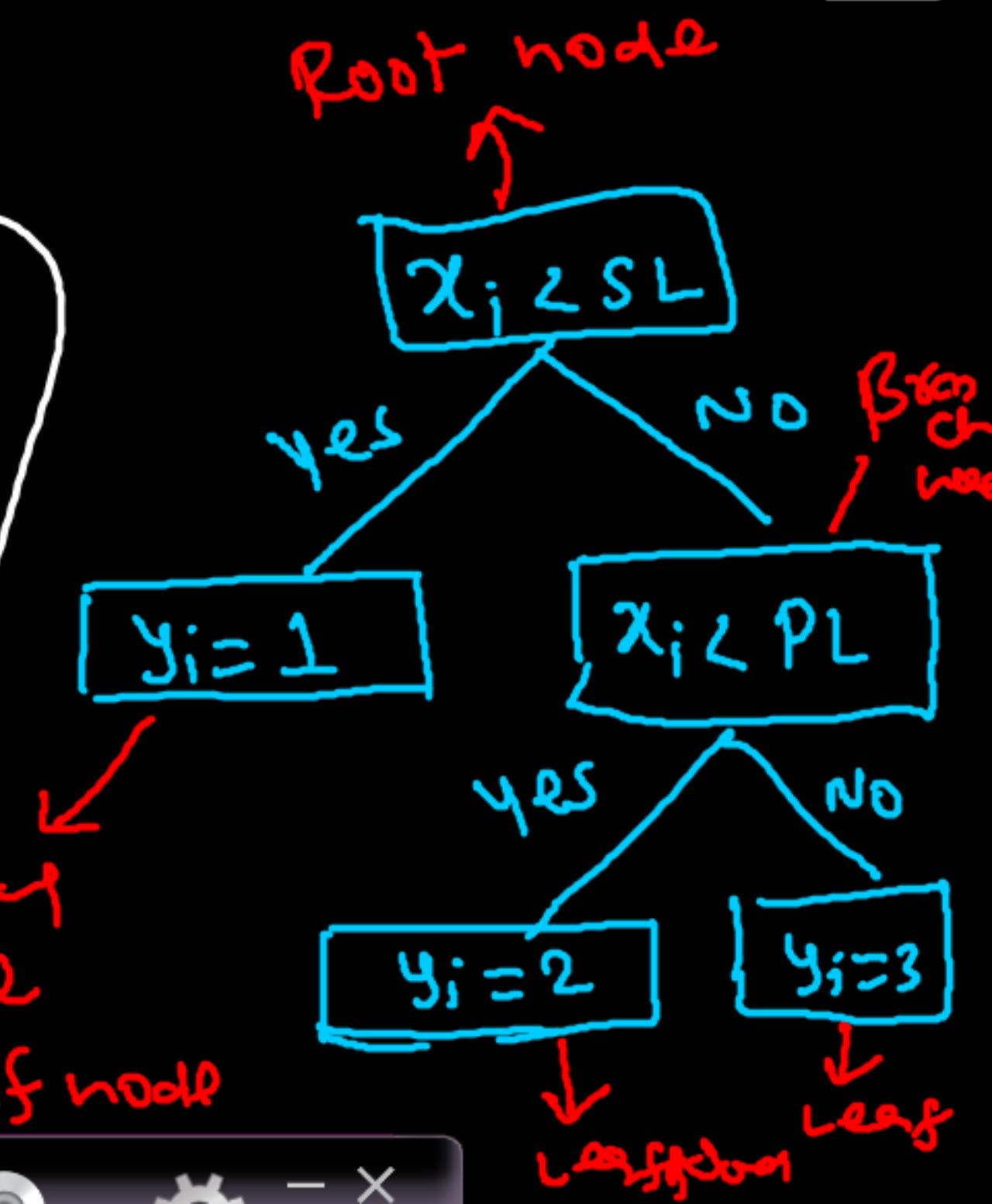
$$y_i = \{1, 2, 3\}$$

$$x_i = \{SL, SW, PL, PW\}$$

if $x_i < SL$, $y_i = 1$
else $x_i < PL$, $y_i = 2$
else, $y_i = 3$

parent node → Root node → Decision Node → Terminal node / leaf node

child node ← Branch node



$$y_i = \{1, 2, 3\}$$

$$x_i = a, b, c$$

first node = Root node
= Terminal / Leaf

first node = Terminal node
last node = Non-terminal node

non-leaf nod
type

non-lethal
Deception
2nd kill by

$y = 1$

terminal value

if $x < a$, $y = 1$

else $x \geq b$, $y = 2$.

Otherwise $y = 3$

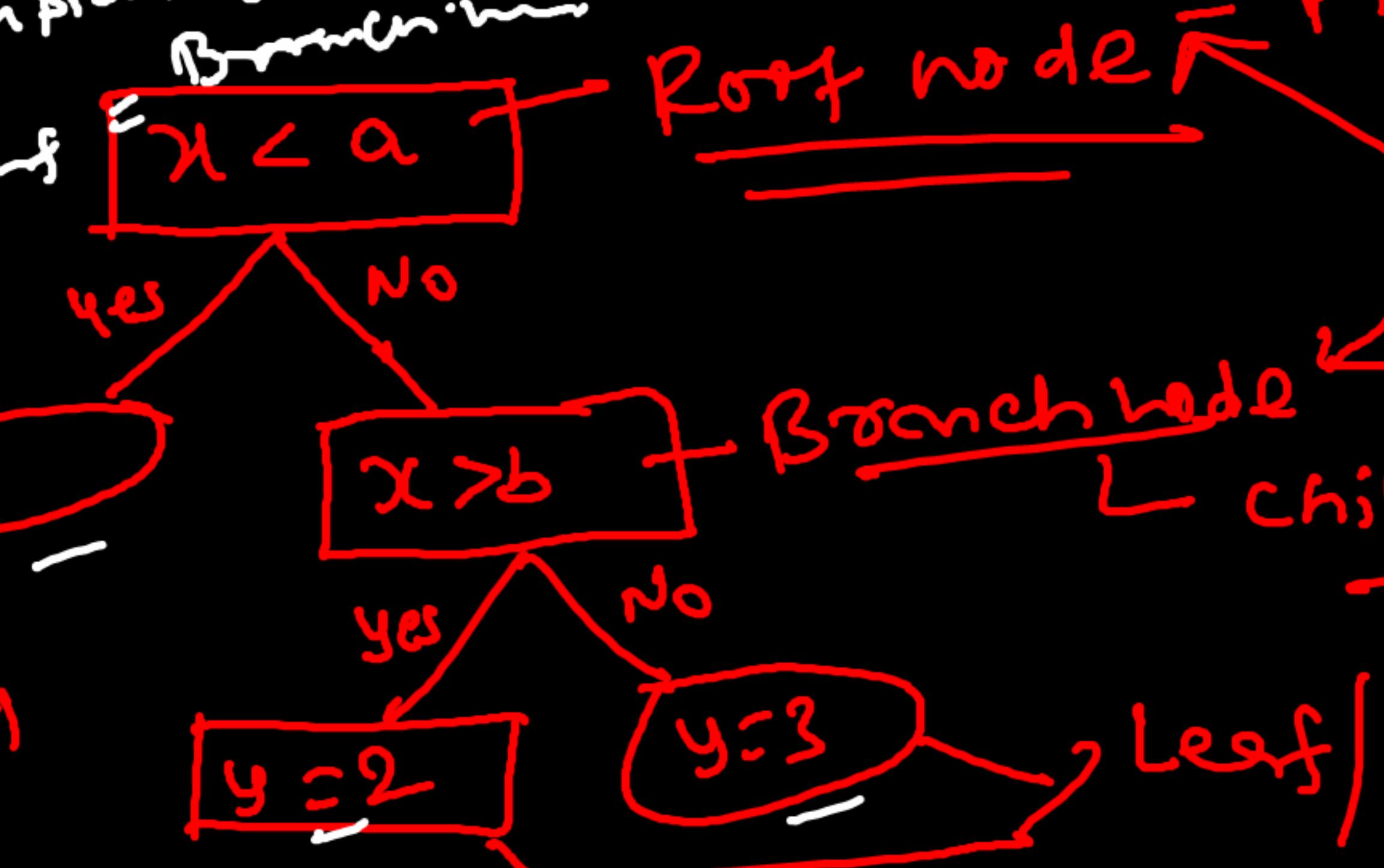
Nested if-else
Conditions

Pg 8 Int v 4 Q

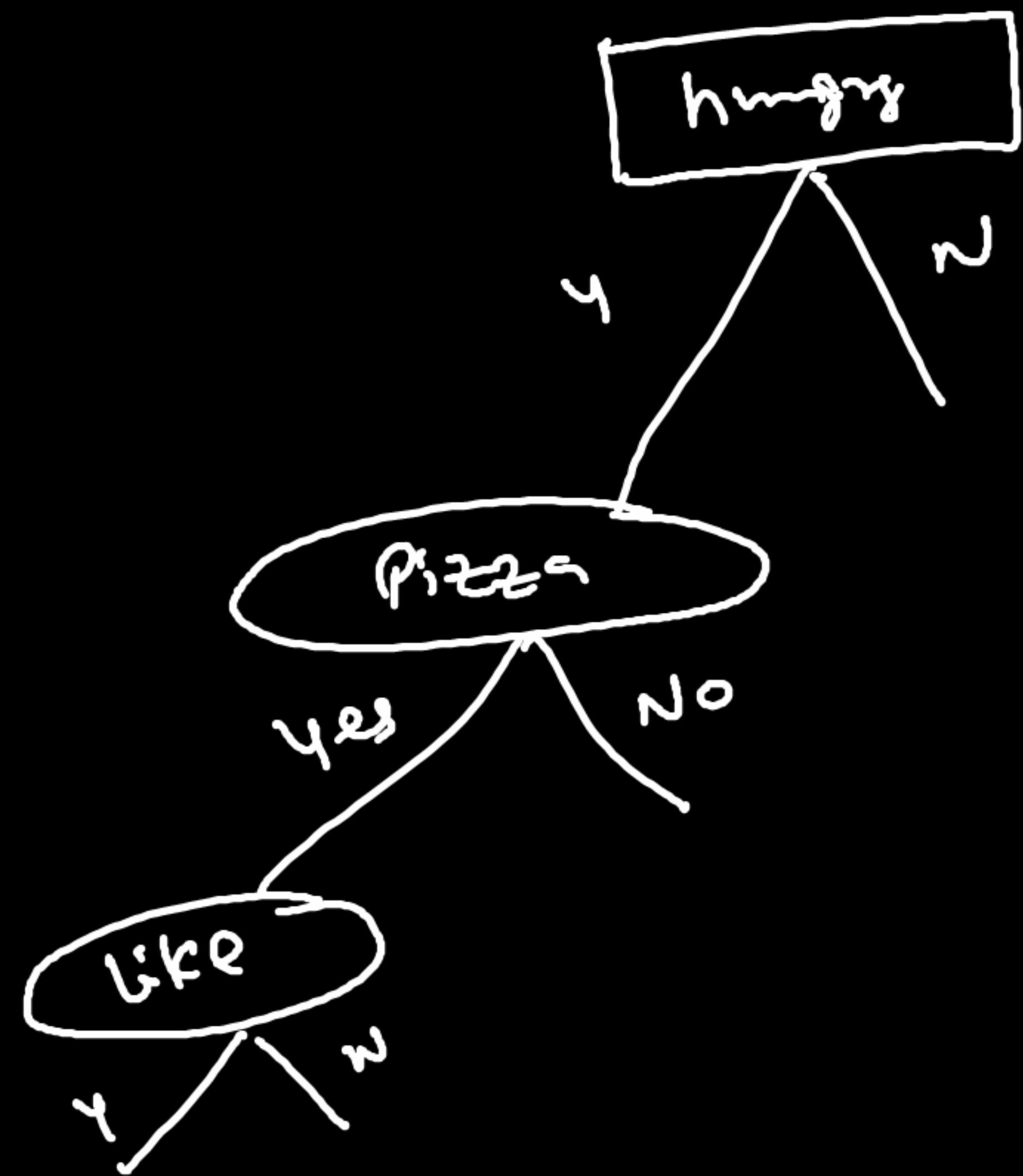
Decipium nade

child note

Leaf Fernie rock

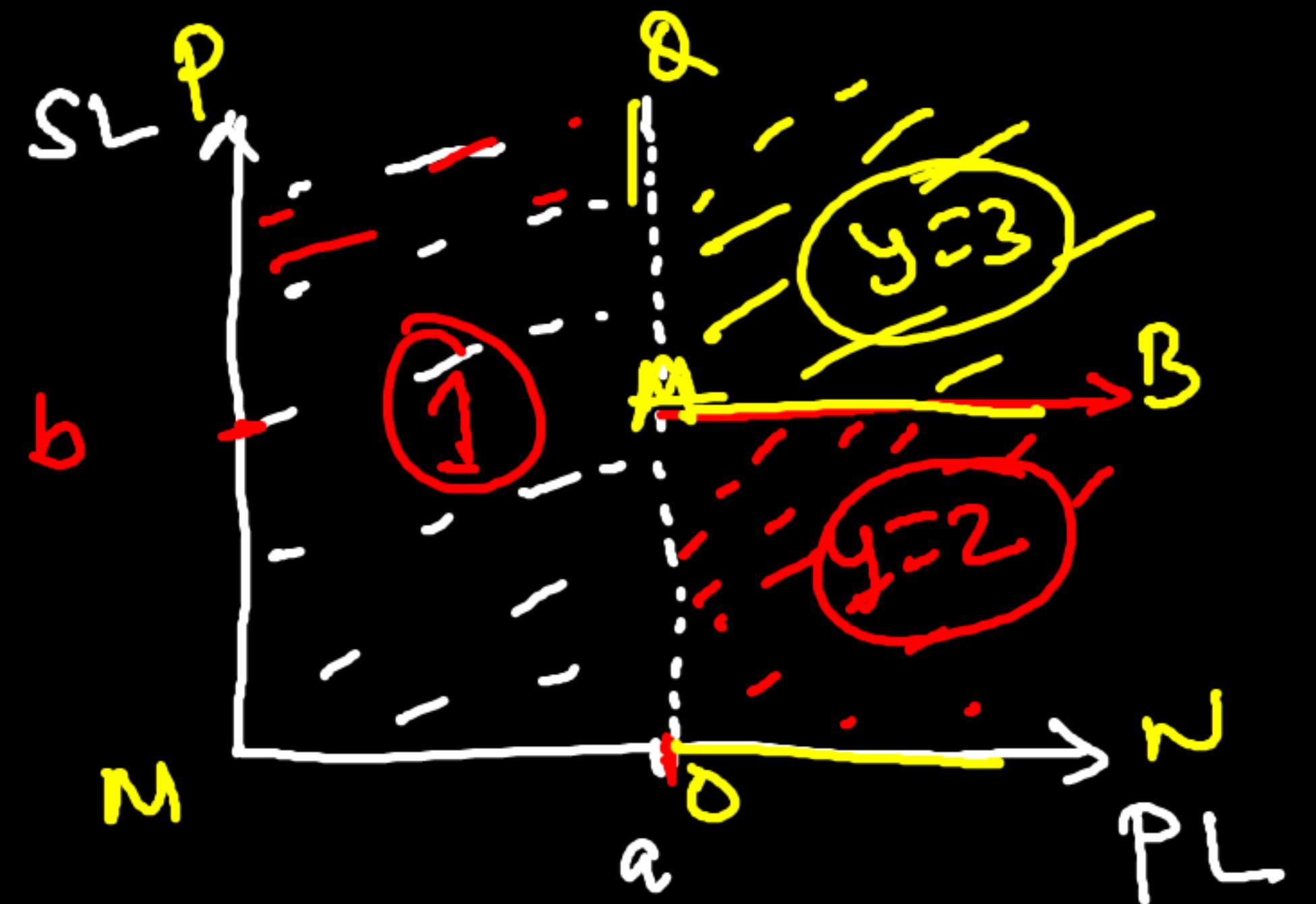


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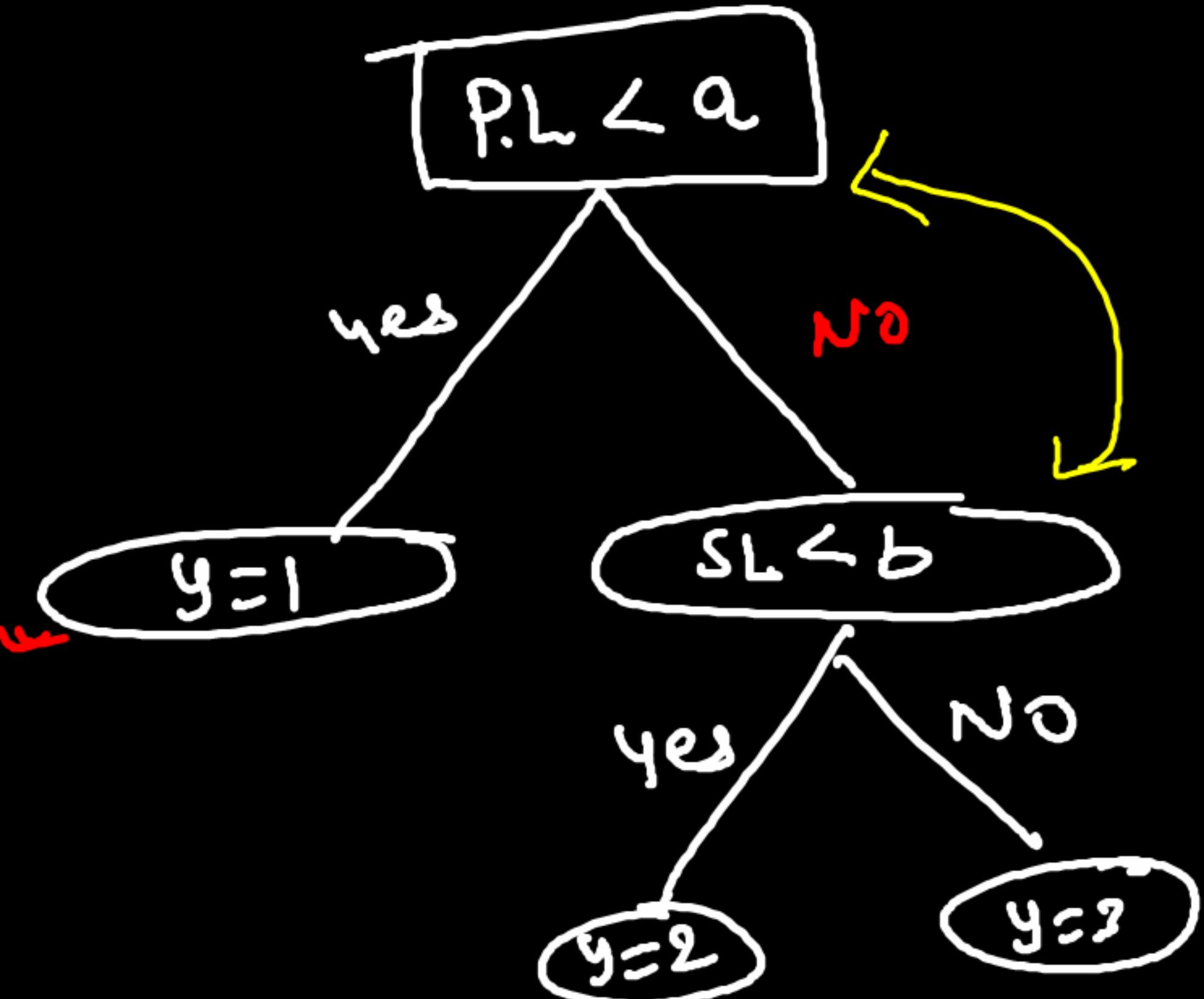


Geometric cut approach

Axis parallel model w



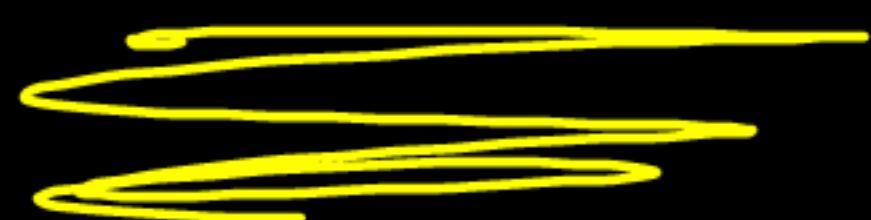
$P_M \parallel Q_D$ $O_N \parallel A_B$



{ Nested - If - Else
Condition

NOTE :- All hyperplanes are axis-parallel models in Decision Tree

DT - Classification Problem
↳ CART algorithm
↳ Nested - if - else Condition ~ quis paralley



maths - how to calculate root node, Branch

