$\longleftarrow$ Model parameters $\longrightarrow$ $\longleftarrow$ Hyperparams $\longrightarrow$

Hyperparams $\longrightarrow$ [   ] $\longrightarrow$ Model parameters

Elbow Methods

WCSS

Elbow Pt

k

1   2   3   4   5
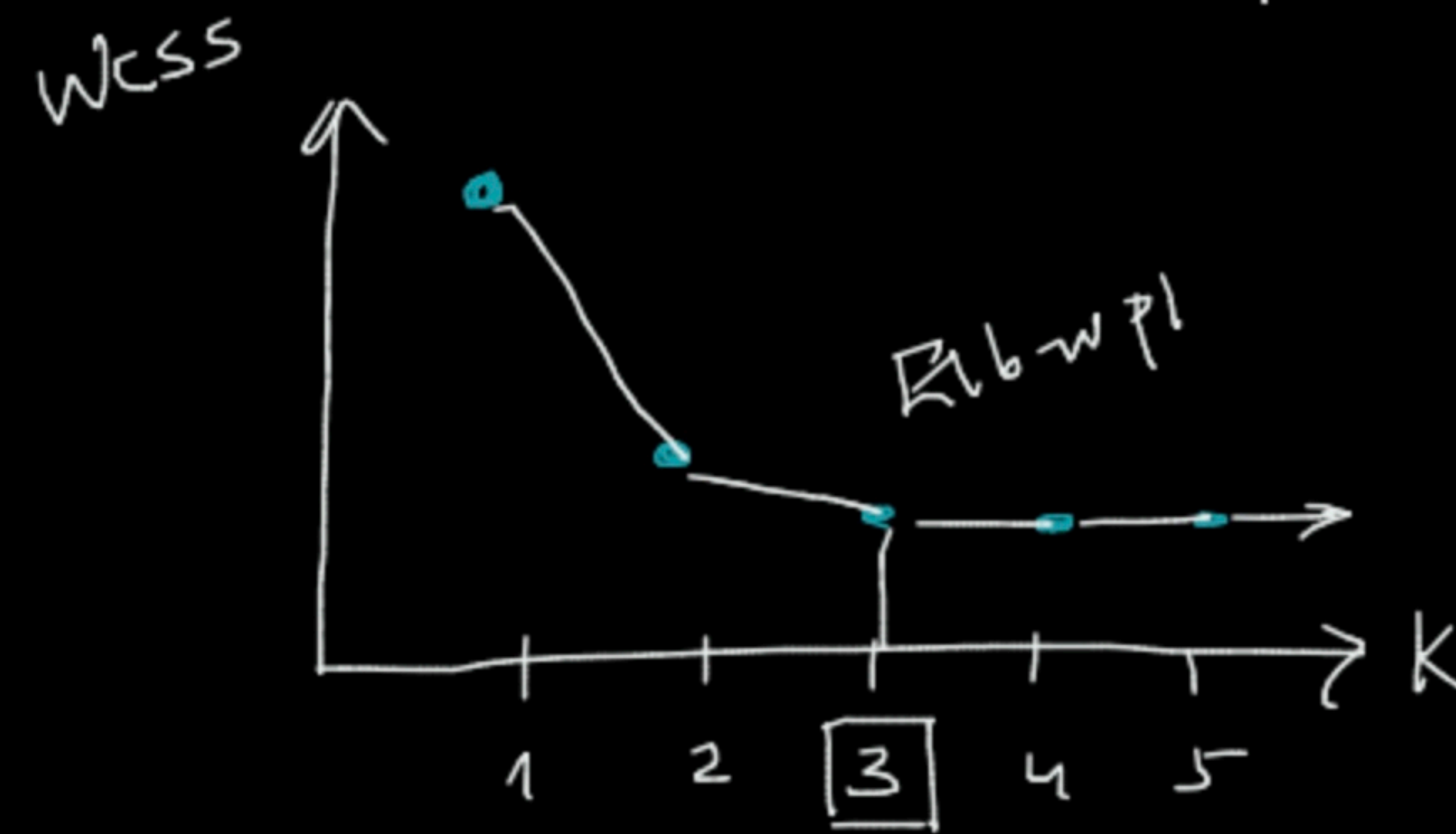
WCSS $\rightarrow$ within
cluster sum of
squared errors

DBSCAN

— Density Based Spatial Clustering of
Applications with Noise

$$Density = \frac{No\ of\ pnts}{Area} \rightarrow \frac{Min\ points\ \to(4)}{Circle\ of\ radius\ (\varepsilon)}$$

Hyperparam

$SME \to \varepsilon,\ Minp_1$

(a) within ε radius $<$ min-point
points

(b) one of the points is a core point

(a) within ε <
min point

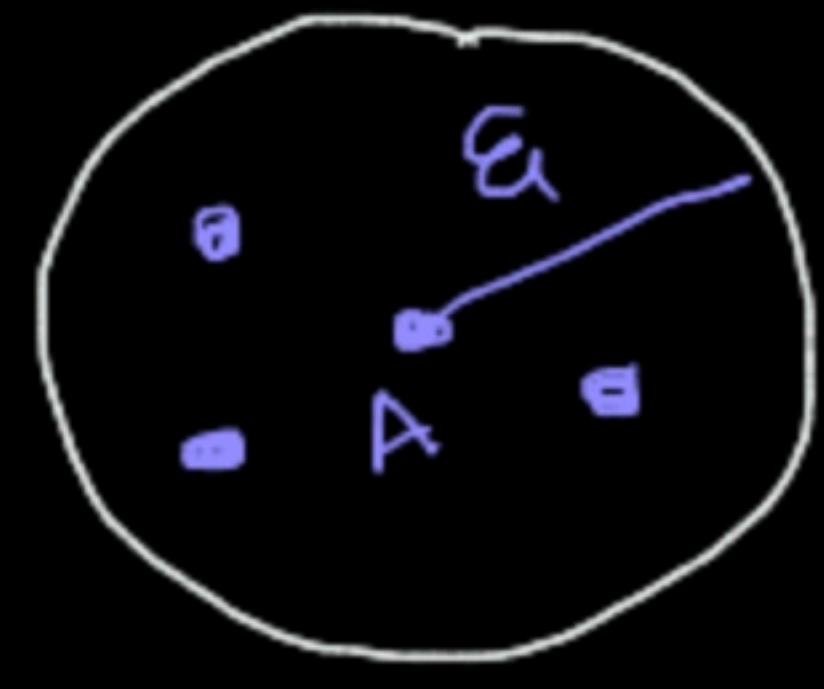(b) NoNe of them
are core points

1. Minpoints (4)
2. Epsilon Radius

3 Corepoint

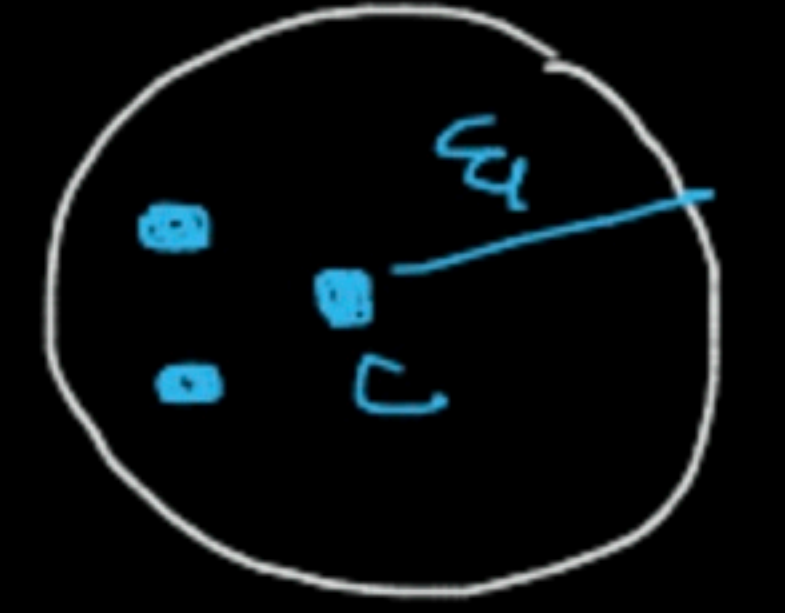4 Border Point

5 Noise point

(a) within ε radius
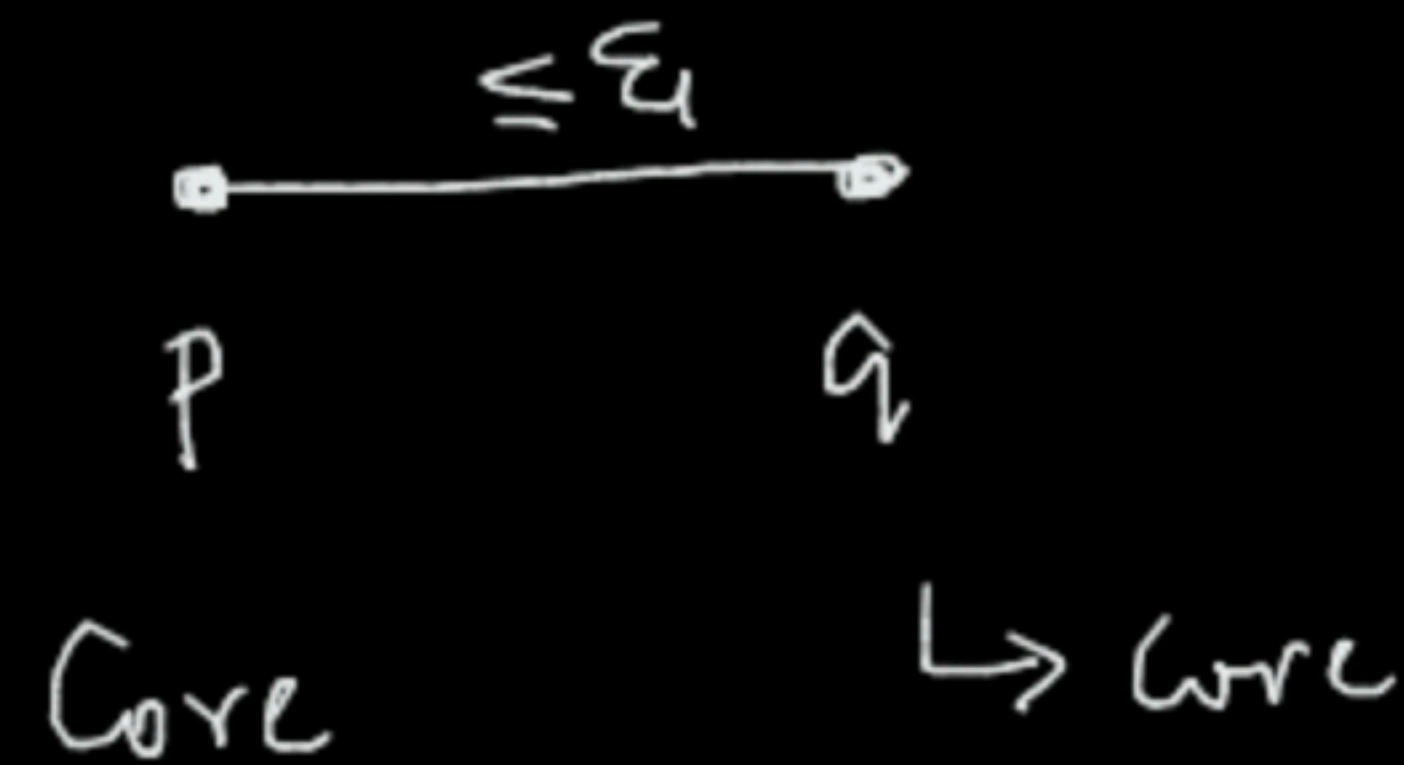atleast minpoint no of
Points

A — Core point

B — Border

C — Noise point
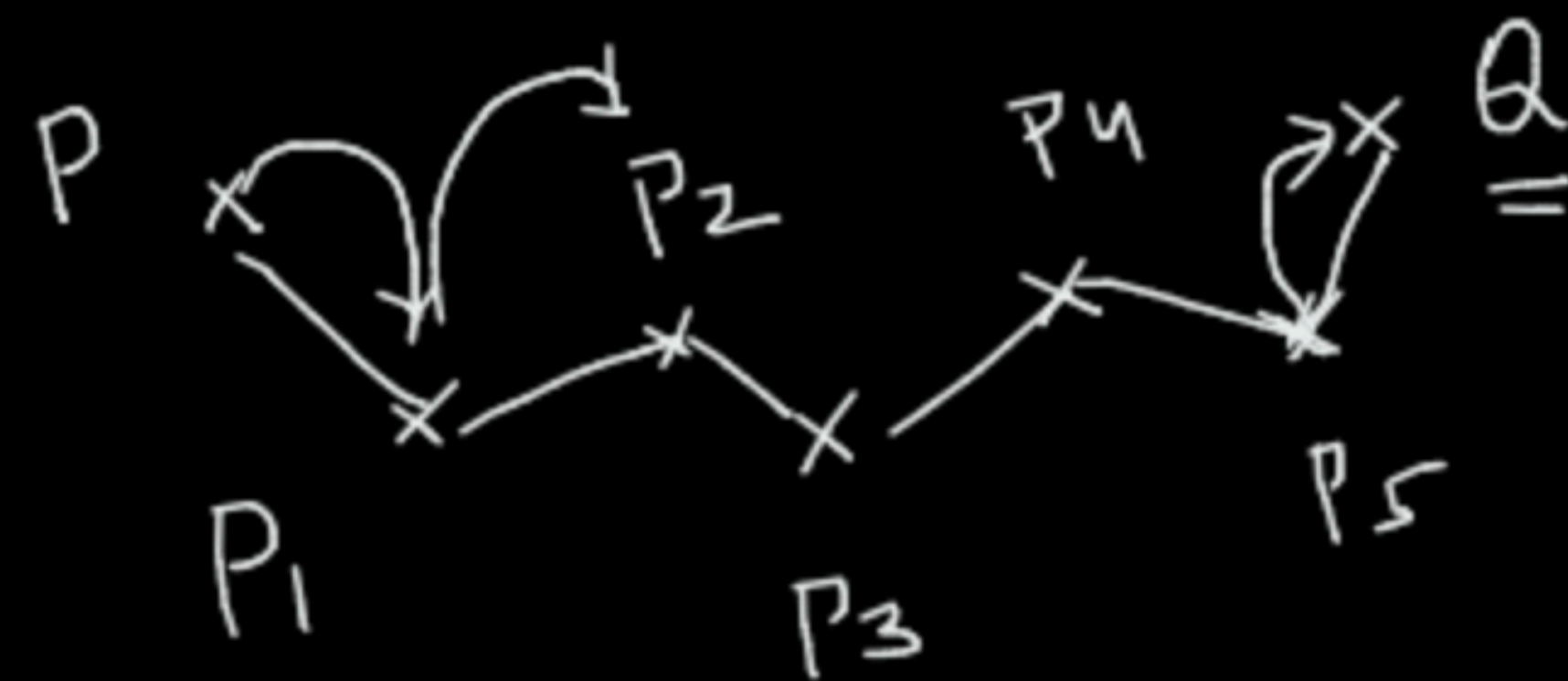
Reachability

1 Directly Density Reachable pts

P   q

Core   ↳ core

q is DDR from 'p' if

(a) $q \leq \varepsilon$ from 'p'

(b) P → core point

2 Density Reachable

P   P₂   P₄   Q

P₁   P₃   P₅

All p's → core

q — Need not be Core

Density connected point

P ——— DC ——— Q

DR   DR

P₁ P₂ P₃ P₄   Q₁ Q₂ Q₃ Q₄

O

Not core
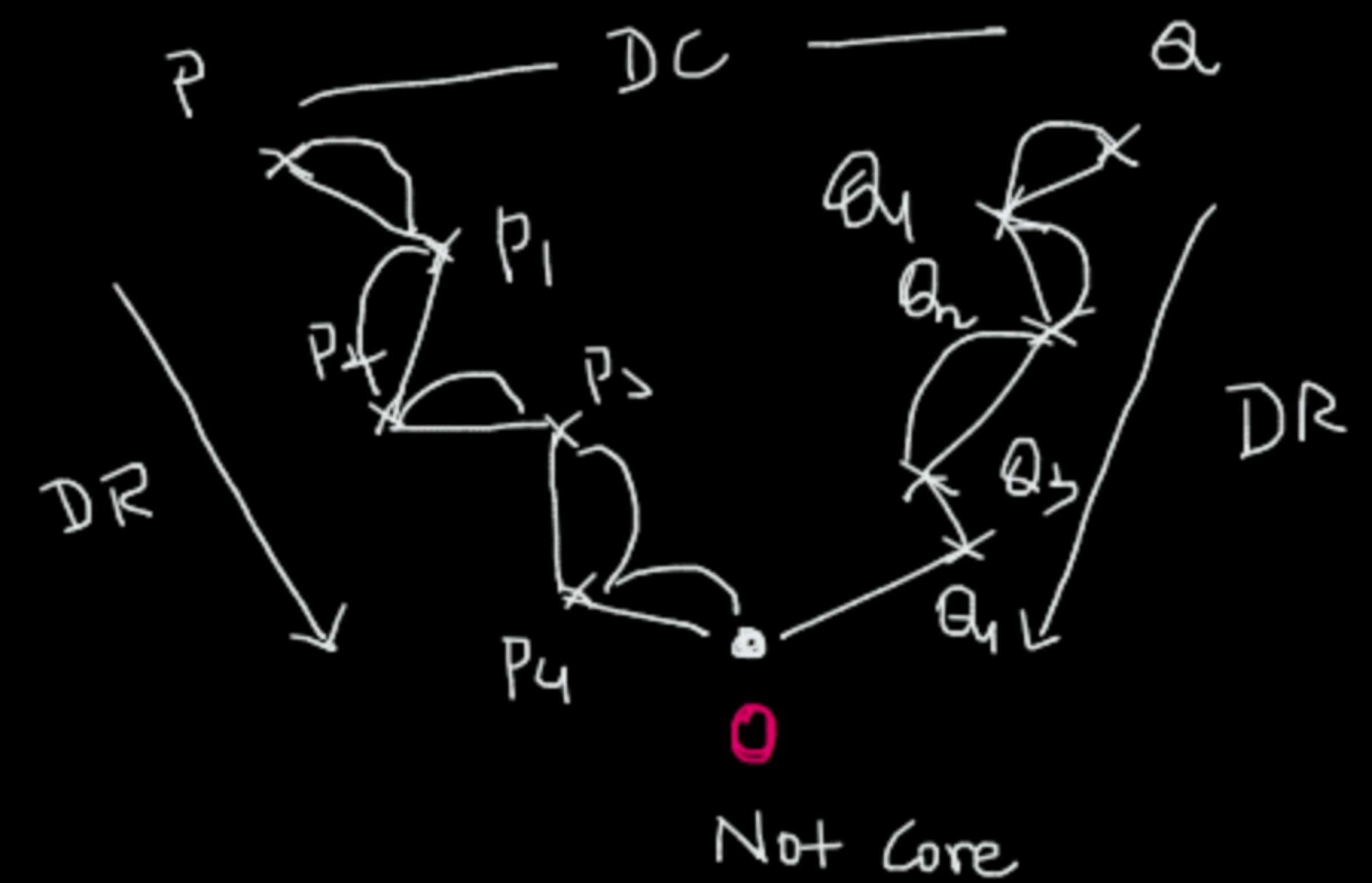
O → which is density reachable from both

P & Q

Step 1: Label every point as core, Border or Noise points

Step 2: Start from an unassigned core point

Step 3: Connect all density connected points into one cluster

Step 4: Repeat steps 2 and 3 until all core points are assigned to some cluster

Step 5: Assign all border points to the closest cluster

Step 6: Ignore all noise points

ε, Minpoints $\rightarrow$ Expert