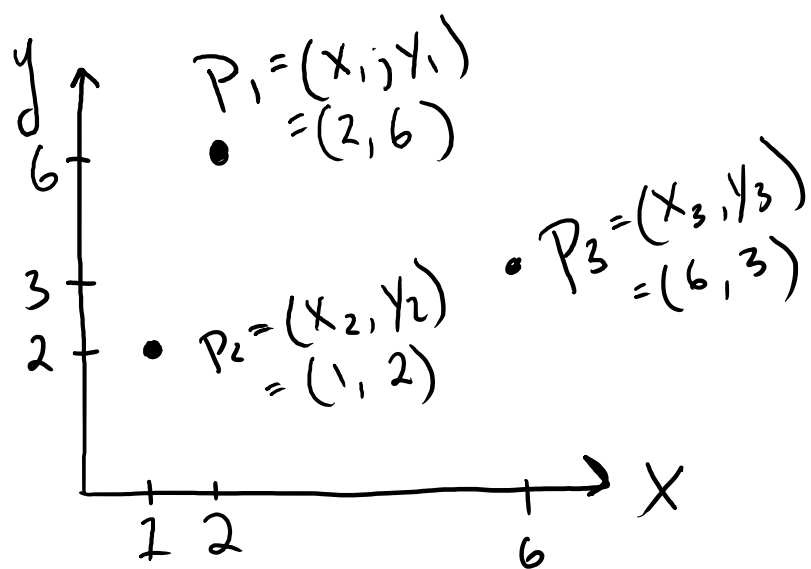


Divide + Conquer Example:

Closest Points Problem



Input:

(2, 6)
(1, 2)
(6, 3)
(2, 8)

← Array

not allowed b/c
not unique x-coord

Output: closest distance b/t any 2 pts ← class
closest points ← prog. assign

$$\text{Distance: } d(P_i, P_j) = \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}$$

* Assume unique x, y coordinates

Applications

- Air traffic control
- Robotics
- Stereo → 3D

Ethics: (If you could fly anywhere, where would you go?)

1. Brainstorm all stake-holders.
2. Who might benefit from this algorithm (applied to this domain)?
 - a. Passengers, airlines (reduced flight times), shareholders (more flights=more profit), Uber/Lyft (car traffic version), environmental benefit if shorter flights,
3. Who might be harmed by this algorithm (applied to this domain)?
 - a. Environmental impact (more flight), folks living near airports (noise pollution),
4. Reinforce or counteract existing inequities?
 - a. School districting (reinforces educational inequities), lower the cost of flying (make flying more accessible), bigger airlines → bigger
5. Any other ethical concerns?
6. Would you feel comfortable (from an ethical perspective) implementing this algorithm in this context?