Closest pair of points

- Divide, split into left half and a right half of \( \sim n/2 \) points each

- Recursively find closest pair on each of these two subproblems

- Combine - use subproblem solutions to find closest pair in given point set
For (i = 0; i < numInStrip - 1; i++)
    j = i + 1;
    while (j < numInStrip & &
        yStrip(yStrip(j), y - yStrip(i)) < d)
        d = min(d, distance point i to point j)
        j++

Consider each point in yStrip looking upward.
Closest pair of points (cont.)

Combine step in more detail: \[ d = \min(c_{L}, c_{R}) \]

\[
\text{Step 1: Construct yStrip to ref all points in order of pts By Y (sorted by y-coord) with x-coord > X_R - d + \lt X_L + d}
\]

\[
\text{Step 2: Find any pair with yStrip with distance < \Delta (one from each side)}
\]
Example Execution

$\text{pts By X}$

$\text{d} = \min (d_L, d_R)$

left subproblem

right subproblem

$X_L \quad X_R$
don't need to consider with any point from right half

no point here is part of a closest pair with left half

\( dr = d \quad \text{left subproblem} \quad \text{right subproblem} \)