Lecture 26

CSE 331

Oct 30, 2019

Mid-term temp grade assigned

note

stop following 118 views

Mid-term temp grade

(For details on grading of mid-term exam, see @996 and @1021. More details on one-on-one meetings to talk about your 331 performance see @1059.)

Your temp letter grades have been assigned. To calculate your grade, you must first calculate your raw score R as follows:

- Add up your HW scores from HW1-4 to calculate H (out of a max of 400)
- Let Q be your quiz 1 score (out of a max of 10)
- Let M be your mid-term score (out of a max of 100).

Then R is calculated as follows (out of a maximum possible of 58:

$$R = \frac{33}{400} \cdot H + Q \cdot \frac{3}{10} + \frac{22}{100} \cdot M.$$

(I know the above does not fully follow the grading rubric since it does not drop any HW score and does not substitute the quiz score with the HW score if you do better on the latter. However, since this is just supposed to give you an idea of where you stand in the course, I think the above is fine as a proxy.)

Here are the stats of the raw score:

- Average: 24.6
- Median: 25.22
- Max: 56.43

(For those who are interested the median raw score is on par with that of last year.)

Now to calculate your letter grade, read it off from the following map:

- A: $R \in [52.2, 58]$
- A-: $R \in [42, 52.2)$

1-on-1 meetings

note

116 views

Meetings to discuss CSE 331 performance

I will email those who have a D or below in their mid-term grade (for more details on the grade see @1057). Of course you can also come and talk about your 331 performance even if you have a temp grade higher than D (though students with a D or below will get preference).

I have locked out certain times over next week or so for **10 mins** meetings. Please note that **these are NOT walk-ins**: if no one signs up for a slot, I might not be in my office then. If you want to come and talk with me, **please EMAIL me with ALL the slots below that work for you**. (Private posts on piazza will not work: please email me!) *Slots will be assigned on a first-come-first-serve basis.*

Below are all the available slots (below the start times are listed: a slot that is already taken has a strike-through):

- **Wednesday (Oct 30):** ~~12:00pm~~, 12:10pm, ~~12:20pm~~, ~~12:30pm~~, ~~2:10pm, 2:20pm, 2:30pm, 2:40pm, 2:50pm~~
- **Thursday (Oct 31):** ~~3:30~~, ~~3:40pm~~, 3:50pm, 4:00pm, 4:10pm, 4:20pm, 4:30pm, 4:40pm, 4:50pm
- **Friday (Nov 1):** 12:00pm, 12:10pm, 12:20pm, 12:30pm, 2:10pm, 2:20pm, 2:30pm, 2:40pm, 2:50pm, ~~3:00pm~~, ~~3:10pm~~, 3:20pm, 3:30pm, 3:40pm, 3:50pm
- **Monday (Nov 4):** 12:00pm, 12:10pm, 12:20pm, 12:30pm, 3:00pm, 3:10pm, 3:20pm, 3:30pm, 3:40pm, 3:50pm, 4:00pm, 4:10pm, 4:20pm, 4:30pm, 4:40pm
- **Tuesday (Nov 5):** 12pm, 12:10pm, 12:20pm, 12:30pm

You can of course also stop by during my office hours (but students with Qs on the HWs will get higher priority) and you unfortunately cannot book a slot during my usual office hours.

All the meetings will be in my office (Davis 319).

#pin

mid-term grading

edit · good note | 0

Updated Just now by Atri Rudra

Video due on Monday

By 11am

! ALL group members submit!

Each group member must submit the PDF. *Further, the PDF must EXACTLT be the same for all three group members.*

! PDF only please

Autolab might not be able to display files in formats other than PDF (e.g. Word cannot be displayed). **If Autolab cannot display your file, then you will get a zero (0) on the entire question**.

Survey 12pm Mon to 11am Wed

Submitting the survey

The peer evaluation survey will have to be filled on https://cse.buffalo.edu/teamwork. You will evaluate yourself and your groupmates in all the five categories.

The workflow

1. Between **12:00pm on Monday Nov 4** and **10:59apm on Wednesday Nov 6** the website above will be ready for you.
2. You will need to enter your UB email and click on a button to generate a verification code.
3. You will have limited time (~10 mins) to enter the verification code into the webage.
4. You will then fill in the survey: the website will ask you to evaluate yourself and your groupmates in all the five categories above.
5. Your part is done. Atri will use your survey responses and your video submission to post your video mini-project scores on Autolab (the scores will be posted on your video submission).

UB CSE Evaluation Form

Please enter your UB email address! You'll then receive a verification code you can type in further down the page.

ubitname@buffalo.edu

Get Verification Code

Already have valid code?

More on integer multiplication

note

stop following 66 views

More on integer multiplication

First, sorry for the delay in getting up all of today's lecture material on the schedule page but they are up now: http://www-student.cse.buffalo.edu/~atri/cse331/fall19/schedule.html

Couple more followup comments:

- Here is a support page that tries to "de-mystify" the "magical" identity we used in class today: http://www-student.cse.buffalo.edu/~atri/cse331/support/int-mult/index.html
- Here is a blog post by our very own Ken Regan (and Dick Lipton) talking about the $O(n \log n)$ time algorithm to multiply two n-bit integers that came up in March this year. The post also links to the paper in case you are interested in the details!

lectures

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Updated 1 day ago by Atri Rudra

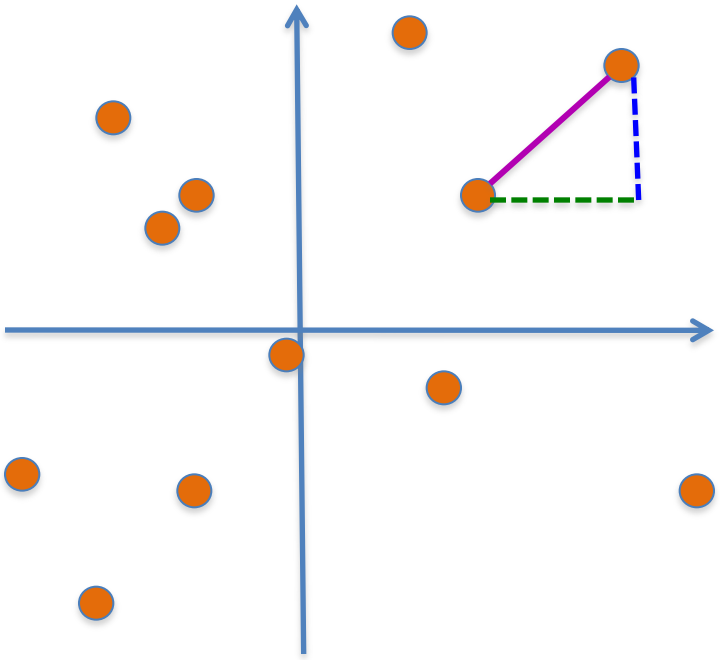
Questions?

Closest pairs of points

Input: n 2-D points $P = \{p_1,\ldots,p_n\}$; $p_i=(x_i,y_i)$

$d(p_i,p_j) = ((x_i-x_j)^2+(y_i-y_j)^2)^{1/2}$

Output: Points p and q that are closest



Group Talk time

$O(n^2)$ time algorithm?

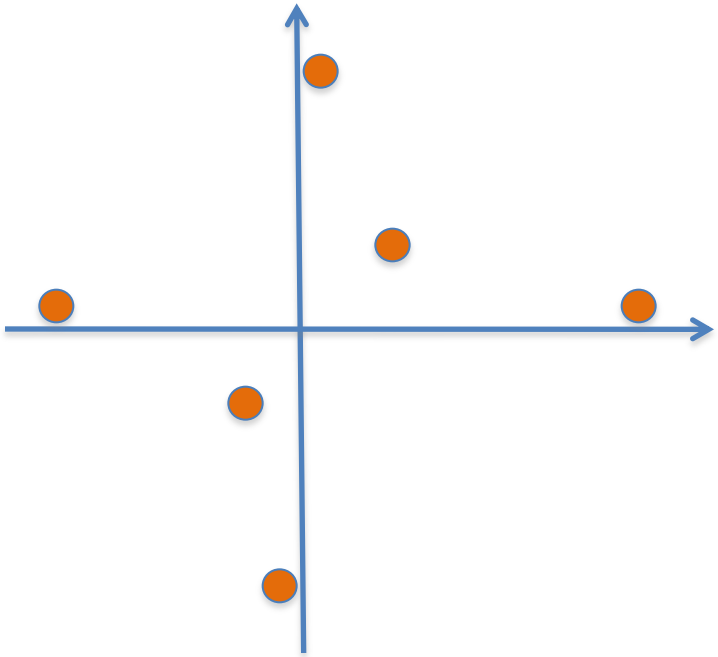
1-D problem in time $O(n \log n)$?

Sorting to rescue in 2-D?

Pick pairs of points closest in x co-ordinate

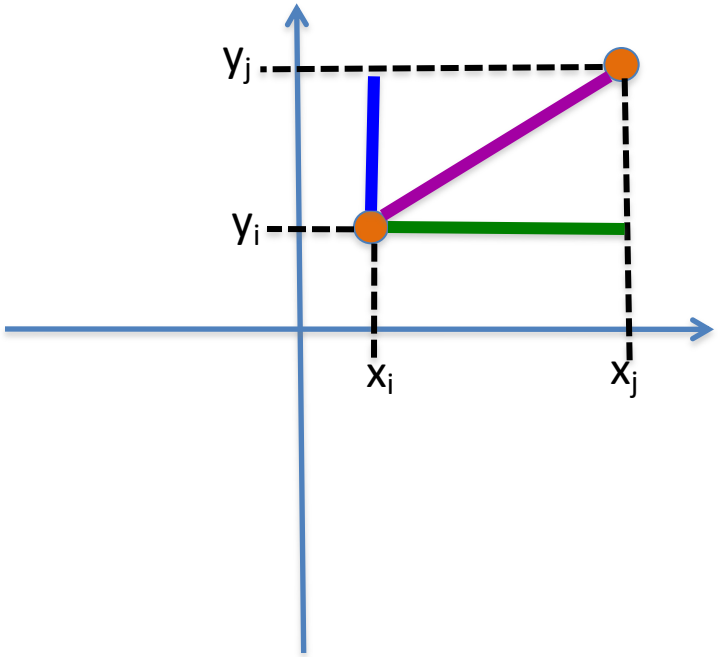
Pick pairs of points closest in y co-ordinate

Choose the better of the two



A property of Euclidean distance

$$d(p_i,p_j) = ((x_i-x_j)^2+(y_i-y_j)^2)^{1/2}$$



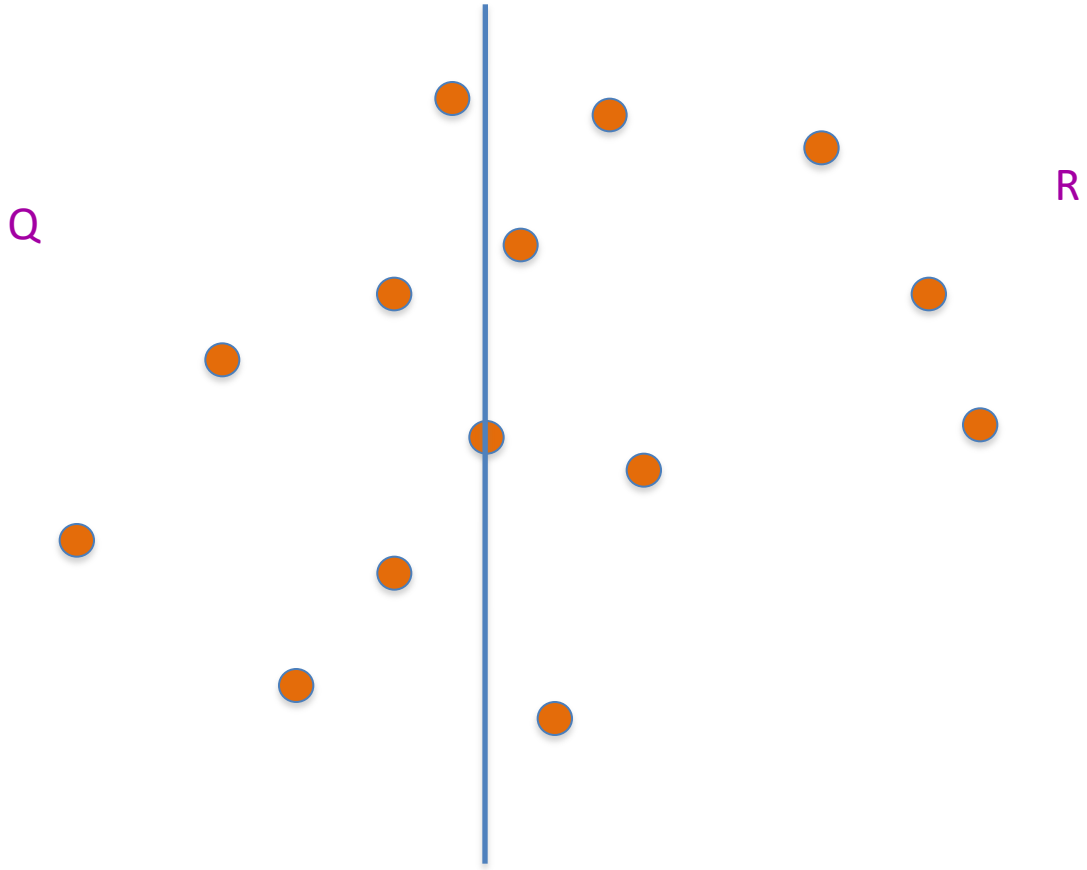
The distance is larger than the **x** or **y**-coord difference

Questions?

Rest of Today's agenda

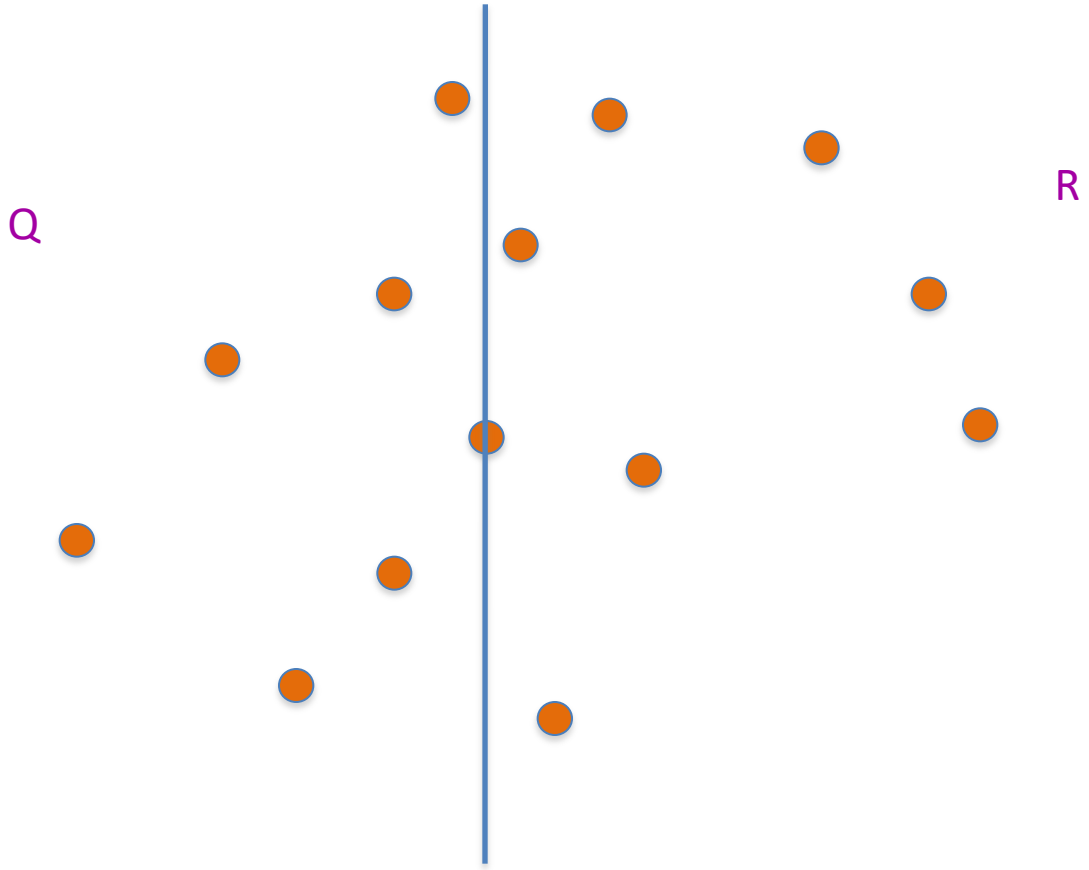
Divide and Conquer based algorithm

Dividing up P



First n/2 points according to the x-coord

Recursively find closest pairs



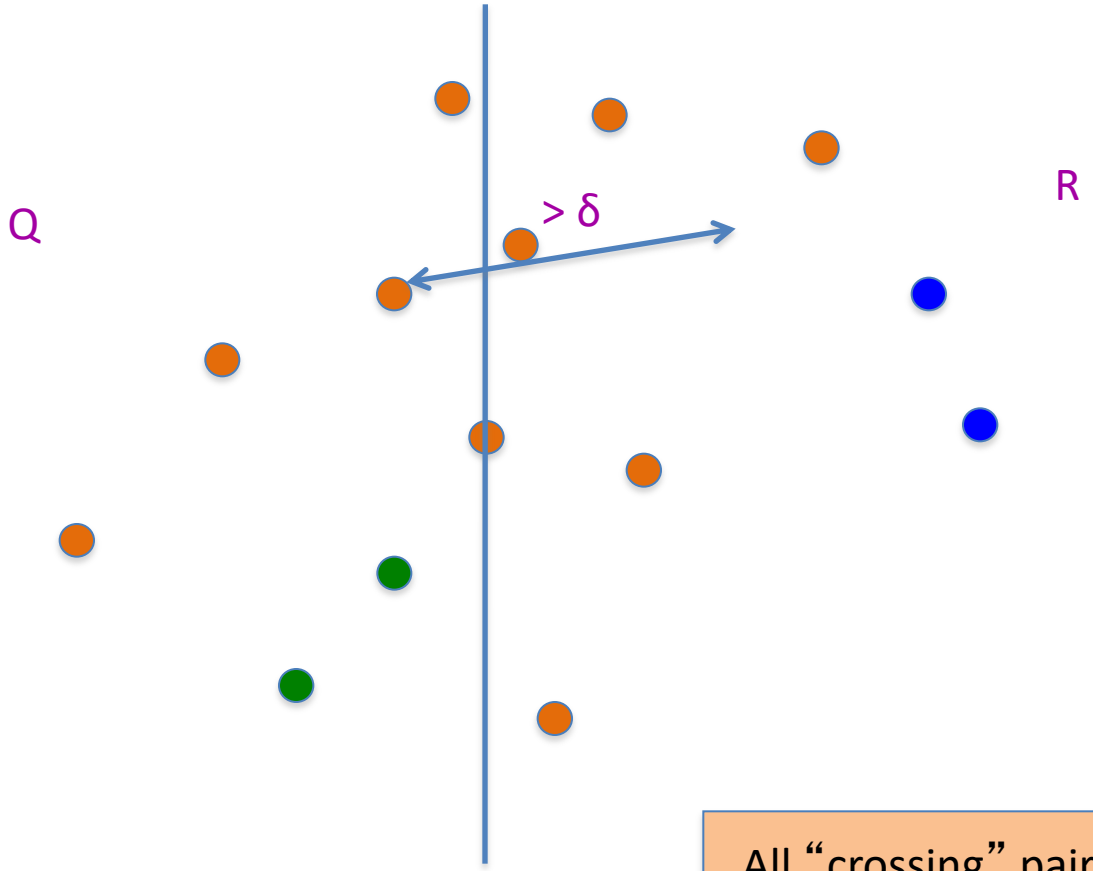
δ = min (**blue**, **green**)

An aside: maintain sorted lists

P_x and P_y are P sorted by x-coord and y-coord

Q_x, Q_y, R_x, R_y can be computed from P_x and P_y in $O(n)$ time

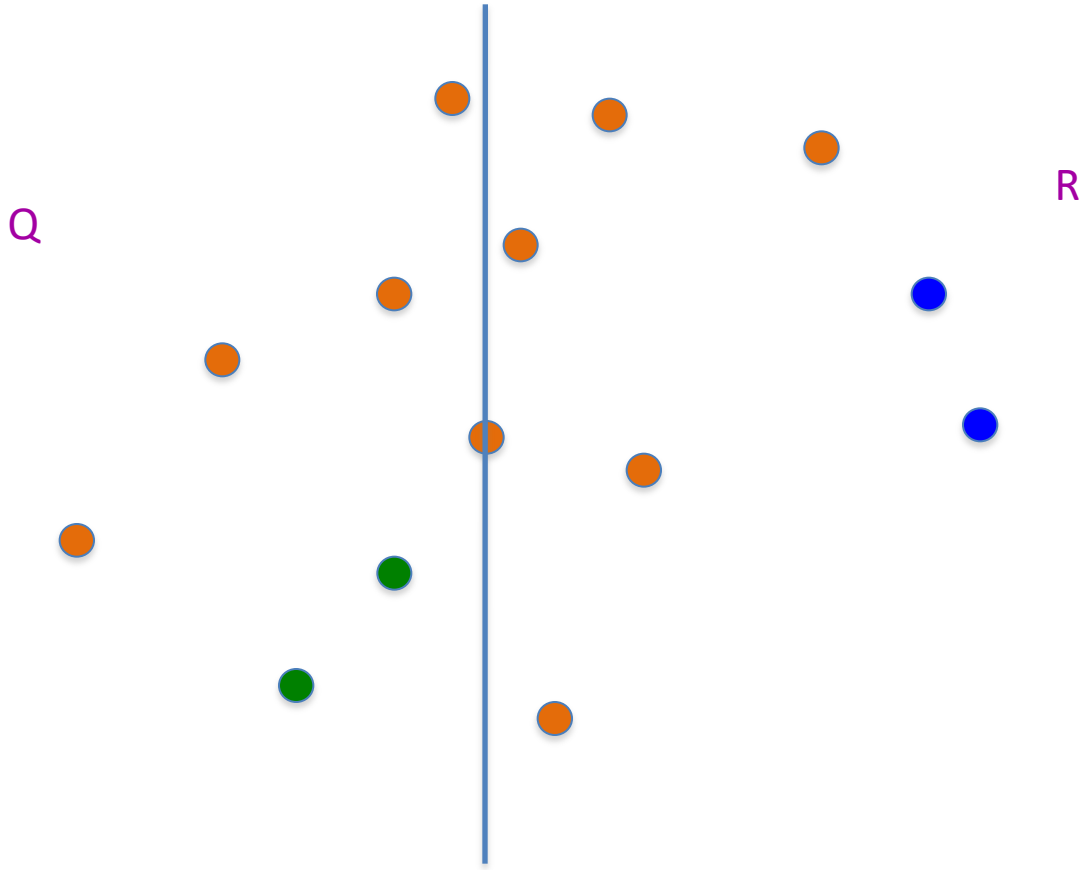
An easy case



All "crossing" pairs have distance > δ

δ = min (**blue**, **green**)

Life is not so easy though



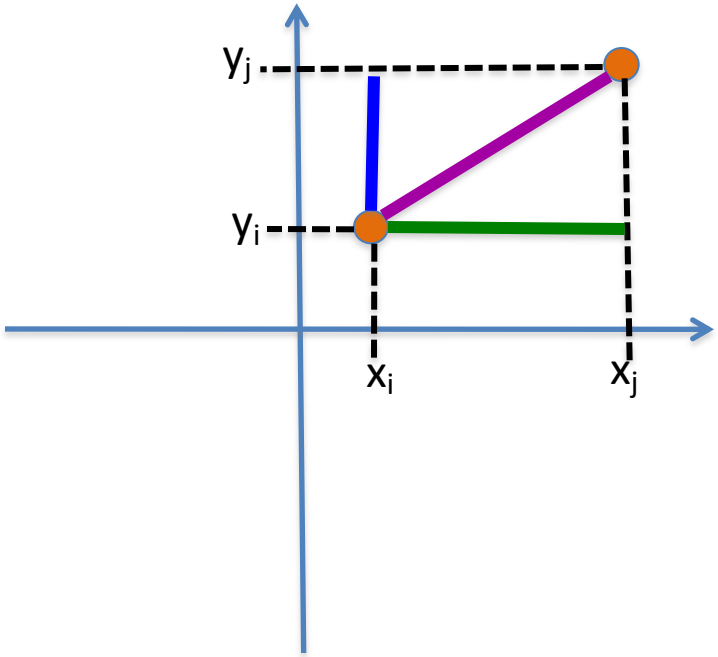
δ = min (**blue**, **green**)

Rest of Today's agenda

Divide and Conquer based algorithm

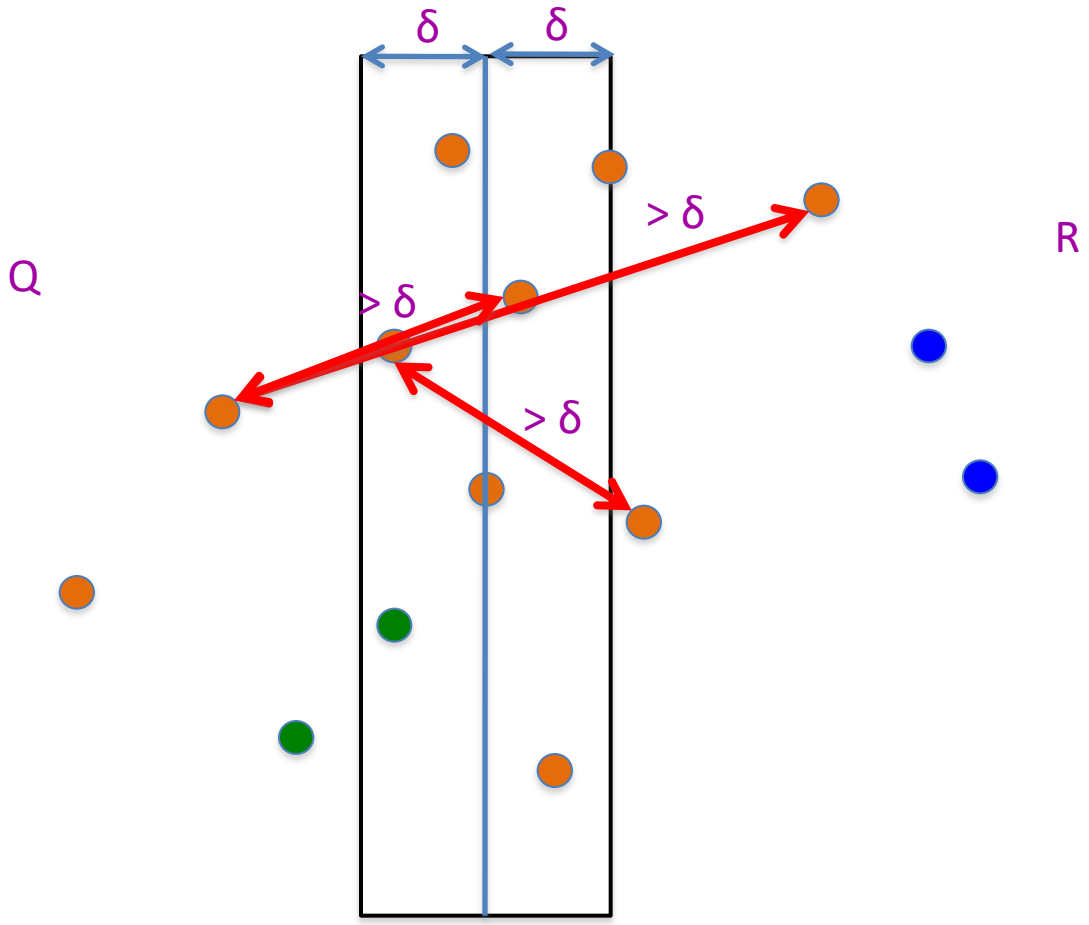
Euclid to the rescue (?)

$$d(p_i,p_j) = ((x_i-x_j)^2+(y_i-y_j)^2)^{1/2}$$



The distance is larger than the **x** or **y**-coord difference

Life is not so easy though



δ = min (**blue**, **green**)

All we have to do now

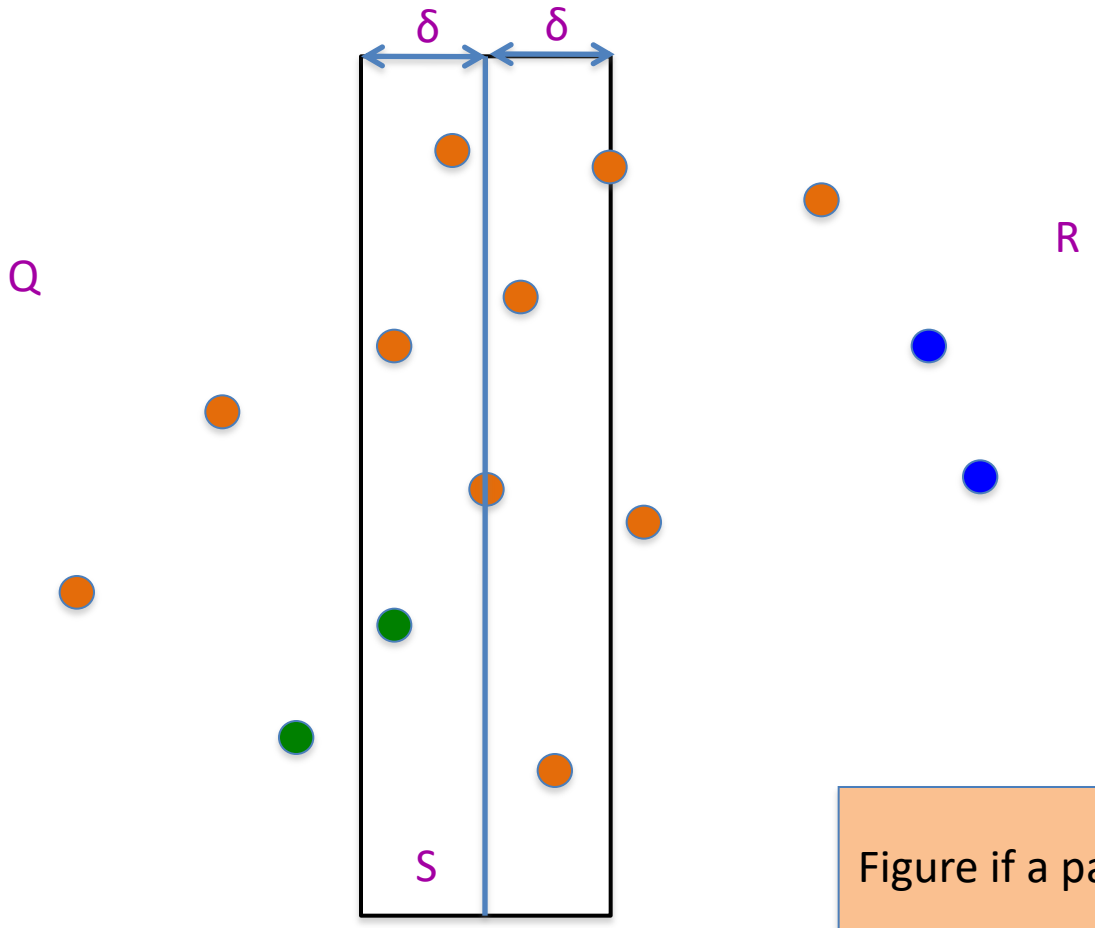


Figure if a pair in S has distance < δ

δ = min (**blue**, **green**)

The algorithm so far…

$O(n \log n) + T(n)$

Input: n 2-D points $P = \{p_1,\ldots,p_n\}$; $p_i=(x_i,y_i)$

Sort P to get P_x and P_y — $O(n \log n)$

Closest-Pair (P_x, P_y)

If $n < 4$ then find closest point by brute-force

$T(< 4) = c$

$T(n) = 2T(n/2) + cn$

Q is first half of P_x and R is the rest — $O(n)$

Compute Q_x, Q_y, R_x and R_y — $O(n)$

(q_0,q_1) = Closest-Pair (Q_x, Q_y)

(r_0,r_1) = Closest-Pair (R_x, R_y)

$O(n \log n)$ overall

$\delta = \min (d(q_0,q_1), d(r_0,r_1))$ — $O(n)$

S = points (x,y) in P s.t. $|x - x^*| < \delta$ — $O(n)$

return Closest-in-box (S, (q_0,q_1), (r_0,r_1)) — Assume can be done in $O(n)$