

# CS311H

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# Challenge Problem

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- Use divide and conquer to find the closest pair of points in a (planar) set in time  $O(n \log n)$

# Good Morning, Colleagues

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Are there any questions?

# Important Points

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- Importance of loop invariants

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  - Start by identifying the loop invariant

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  - Prove that it stays true (induction)
  - Prove termination

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  - Start by identifying the loop invariant
  - Prove that it's true at the beginning
  - Prove that it stays true (induction)
  - Prove termination
  - Prove that at termination, the loop invariant leads to a correct result

# An Iterative Algorithm

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# A Recursive Algorithm

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  - What's your proof strategy?
  - What's your predicate?

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