

CS 305  
Design and Analysis of Algorithms

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# Today's Topics

- Questions/Comments?
- Quicksort
  - vs. Mergesort
  - Divide and conquer
  - Partitioning
  - Best case analysis
  - Worst case analysis
  - Randomized algorithm
- Probability
  - Sample space
  - Event
  - Elementary event

# Quicksort / Partition examples

- Problem with MergeSort is space is  $\text{BigTheta}(n)$
- Quicksort is a divide and conquer algorithm that works in-place (that is, with space  $\text{BigTheta}(1)$ )
- Example on the board of Partition function
- Pseudocode for Partition
- Pseudocode for Quicksort
- Randomized Quicksort
- Then start discussion of Probability