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Problem Statement for Coding Documentation:

We carry out a quicksort calculation in Racket that utilizes the middle of-medians method to choose an effective turn for parceling the rundown. The median-of-medians method improves sorting performance overall by ensuring a successful pivot selection.

Argument for the Algorithm:

The list is divided into three parts recursively by the Quicksort algorithm: elements less than, equal to, and greater than a selected pivot. The worst-case performance is better because the pivot selection is better than a random pivot thanks to the median-of-medians algorithm. The median-of-medians method divides the list into five sublists, computes the median of each group, and selects the pivot recursively from the median of those medians.

Functions:

1. **find-median:**
    a. Data: a list of fewer than five numbers.
    b. Results: The list's middle point.
    c. Information: returns the median element and sorts the input list. This works well for small lists, especially 5 sublists.
2. **partition-into-sublists:**
    a. Data: a list of any length.
    b. Results: A rundown of sublists, every one of size ≤ 5.
    c. Information: divides the input list into sublists with a size of five or less.
    d. median-of-medians:
    e. Data: a list of digits
    f. Results: The pivot element of the medians.

g. Information: Recursively tracks down the middle of sublists to choose a turn for parceling.

3. **partition-list:**
    a. Data: A rundown of numbers and a turn.
    b. Results: There are three lists (less than, equal to, and greater than the pivot).
    c. Information: Parcels the information list into three sublists in light of the turn.
    d. quicksort:
    e. Data: a list of digits
    f. Results: a list in order.
    g. Information: The primary recursive quicksort function that uses median-of-medians to select a pivot, divide the list, and sort the sublists.
4. **generate-random-list:**
    a. Data: List size, least worth, greatest worth.
    b. Results: a list of random numbers in the range that has been specified.
    c. Information: makes a list of numbers at random for testing purposes.