

Computer Programming

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Session: Quiz2 on Sorting





Q1. The number of "basic" steps to sort an array of n elements by selection sort

- A. Grows quadratically with n
- **B. Grows linearly with n**
- C. Grows logarithmically with n
- D. Grows exponentially with n

Recap Quiz



- Q2. Which of the following is/are NOT true about merge sort?
- A. It can be implemented as a recursive function
- B. It is an example of computing by divideand-conquer
- C. It proceeds by finding an extreme element and sorting the remainder of the array
- D. It does not use any comparisons



- Q3. In merge sort, the merging of two subarrays happens
- A. Before sorting either of the sub-arrays
- **B.** After sorting both the sub-arrays
- C. After sorting one, but before sorting the other sub-array
- **D. None of the above**

Recap Quiz



- Q4. Which of the following CANNOT be considered a basic step when analyzing the performance of selection sort?
- A. Swapping two array elements
- B. Comparing one array element with another
- C. Reading an element of an array
- D. Finding the index of the maximum element



- Q5. When sorting an array of size n by recursive merge sort, the termination case occurs when
- A. The size of the array is even
- B. The size of the array is odd
- C. The size of the array is 1
- D. The size of the array is exactly n/2
- E. None of the above



Unsorted array A containing n elements



How do we modify Selection Sort so that we save some "basic" steps compared to Selection Sort as studied, and A is divided into three sorted segments (of any size)?



Practice Question 1: (Recall from previous class)



Unsorted array A containing n elements



How do we modify Selection Sort so that we save some "basic" steps compared to Selection Sort as studied, and A is divided into three two sorted segments (of any size)?





No. of "basic" steps needed to sort an array of size n by Selection Sort is (n-1).(n+2)/2 How many "basic" steps needed if we divide the array A into two segments of size m and (n-m), and sort each segment? For what value of m is no. of "basic" steps minimized? [Think high school calculus] Now solve the problem with 3 segments.

Practice Question 2



int Bdays[1000]; // Birthdays of students // Each birthday is an integer YYYYMMDD

We want to sort the array in order of earliestto-latest-birthday.

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Practice Question 2 (continued)



What should be the comparison operator in findIndexofMax in Selection Sort?

int findIndexOfMin(int BDays[], int start, int end) {

