

 <p>دانشگاه علم و صنعت ایران</p> <p>دانشکده مهندسی کامپیوتر</p> <p>مدرس: دکتر حسین رحمانی</p>		ساختمان های داده	به نام او
<p>نام و نام خانوادگی:</p> <p>شماره دانشجویی:</p> <p><u>توجه:</u></p> <ul style="list-style-type: none"> <u>تاریخ تحویل:</u> اگر برای جواب دادن به سوالی نیاز به پیش فرضی دارید، فرض خود را صریحا نوشته و با توجه به فرض خود به ارائه جواب بپردازید. به هیچ وجه تمرینی را از دیگران کپی نکنید. در صورت مشاهده تقلب و کپی در تمرینات، نمره هردو طرف <u>صفر</u> در نظر گرفته می شود. 			
نمره	تمرین سری سوم (hash, sort)		
25	<p>Compare these sorting algorithms(Bubble sort, Insertion sort, Selection sort, Merge sort, Quick sort, Heap sort) for given states.</p> <p>A)For random array of inputs, compare these algorithms.</p> <p>B)Which algorithm is better for sorting array of inputs that are already nearly sorted? Say why.</p> <p>C)Change bubble sort algorithms to gain better result for last part.</p>		
25	<p>Suppose you're given large amount of numbers(for example 10 million numbers) as input. But all of these numbers are in a certain range(like 0 to 255). Naturally we have lots of duplicate numbers among our input.</p> <p>A)Explain quick sort algorithm step by step, on this section of input {0,10,10,5,3,5,10,3,9,5}</p> <p>B)As you know, one of the problems of quick sort algorithm, is that in some cases, time complexity of this algorithm get worse. For input data in this question, check whether the time complexity get worse or not. If this problem occurs, try to find solution for this problem and make optimizes the algorithm.</p> <p>C)Among the algorithms that you studied, find the best algorithm for this question and explain it completely.</p>		

25	<p>We have list of different dates in the last century as input. In this question, we are going to sort this list.</p> <p>A)At first, try to sort this part of given data using Merge sort and explain the process. {13000206, 13000509, 13561130, 13670816, 13980501, 13991229, 13460824, 13780524, 13890524, 13330331}</p> <p>B)Among the algorithms that you studied, find the best algorithm for this question and explain it completely.</p>	۳
25	<p>An array of numbers is given with the number K.</p> <p>A)At first, try to sort this part of given data using Heap sort and explain the process. {1,5,3,4,2}</p> <p>B) Among the complete array, identify each pair of numbers with differences equal to k. Explain your solution.</p>	۴

موفق باشید.