print)	Date:
	Assignment Page 140.
190 John	The land was soin and the second
1	19- 1482 Guota
1	Branch- CSE
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el men.	The second can be taken an encessive division of size of
20 19/00	Insertion Sort Function and prist prists
complexity	grania & the then size of array that making time
	Void insert (int spirit, int is
_s	forcintai=10000i(n; i++) 000
3	3-1-3-6-6-
	-i S z = i - 1
3	x= A[i] 3 F P 8 8
	while (j>-1 && A EjJ > x) → O(n)
	when gap reintil ATE: [!+i] And and invertion
194	The advantage is that in Tist case we don't need to
_	many surprings as we already swapped elements at go. $x = [i+t]A$
	23 46 5
	Time complexity (augustone com) = 0(02)
	Jime complexity (average case) $\approx O(n^2)$ Analysing time complexity for best case \rightarrow
	Suppose the array is already sorted.
dim	
san it is	every other adjacent temports & to to the contract to compared to the contract
	In this array for every $j = i-1$; the condition $A[j] > A[j]$
	will be false. Therefore, the condition of while loop will
	neverabe true be him I transle priving mod I sai?
	For n elements, number of comparisons = o(n)
	No of suraps ité while loop = o(1)
	T 2259
	Time complexity of bast case is O(n)
	Scanned with CamScanner

41300	A CONTRACT S
	The time complexity of insertion sout can be reduced by
	compaising & suaping elements at certain indexes or gaps firest
	although this technique is called shell sort but it uses insestion
	sout technique to sout elements.
	These gaps can be taken by successive division of size of elements
	by 2, thus making time complexity as o(nlogn) or taking gaps as
	prime number less than size of array thus making time complexity
	as O(note) (or the 213 Action) theorai blow
	Eg: 27436
	Gap is 2 Insertion Sout at 1=0 & i=2
	i=1 g i=3
	i=2 & $i=4$
	2 3 4 7 6 33 A = 30
n De	0 <- (xGap=1A && 1-<1) olida
	When gap reduces to 1, we perform normal insertion sort.
	The advantage is that in last case we don't need to perform
	many suapings as we alredy swapped elements at gap
	$\mathcal{S} = \mathcal{L} + \mathcal{T} + \mathcal{T}$
	2 3 4 6 7
4	Jime camplexity courses cares = 00
	BUBBLE SORT Algorithmon and gringland
-	Emplose the nearly is absently sorted
	In this sorting technique, every element is compared with
17.70	every other adjacent element if it is in wrong order than it is
15.6	Suapedinos on Eq: 1-3 7 5 6 Jason solo od Nin
سنلار	transfer transfer to condition of while torn
	Pass I Compairing element 7 with adjacent element
	(m) = 20,021,200,000 = 55 = 20,000 = 0
	Pass II 5 6 7
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	6>7 → No

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	Time complexity of this algorithm is 0002 as every element is compared to adjacent element for n times
eithm.	Space complexity: 0(n) This technique do not require any extens space other than the array to be sorted. Since, no extens space is required to sort elements, therefore it is inplace algorithm.
	MERGE SORT Algorithm In merge sort, we take two list or array having sorted
Š	Eg:
SSBJOSQ S	Now, single element arriay's are always sorted. 9 6 merge 6 9 Merge 5 7 5 6 7 9
[\infty] \(\sigma \)	at at every step we divide the array is half and merge the n elements. Time complexity = nlog n
the array	Void most (int A [], int l, nint h) and have some how the solution of the period of t
	msort (A, l, b); msort (A, l, b); merge (A, l, h);
	1 a 3 3 5 a 2 3 5 5 5 5 5 5 5 5 5

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	Space complexity: Bingle merge sort requires an extra array
	are surely are all the recursive month also requires a
	such mying height of logn.
	As, extra space is evequired, It is a outplace algorithm
W-329329	Siera or orten source to accompleted to south Elemeters II
	Note: The algorithm of Insertion Sort mentioned in 1st answer.
	QUICK SORT Algorithmosph T908 3093M
K9480	in reade 103 8 in rake two list as assault having a
J. He	First me addiving large value at end of array
3)	1 files 1 1 1 1 1 1 1 1 1
	and take two pointers i & j
	botton spormi=orandy= plast element and well
	If A [i] > P and A [j] < P then swap them this process_
nah	continue till $i < j$ $[4]$ $[8]$ $[6]$ $[2]$ $[1]$ $[\infty]$
1 0 1 Z	15 15 16 2
	=> Pass I - 4 1 2 6 8 \infty
NA HOLLY	is at at every step we divide the account both and
V	Nous **** A Silver P element > 2 19 6 8 0
	Now, the array is sorted before & after P so split the array and quick sort there larrays to all the larray
	and quick sort there hardrays the CIA Jones Jacobin 19134
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	(124) 2020
	(Add) 0 Ax3) 1 2 4 6 8 00
	6 8 00 2 6 8 00 split 6 8 00
	30H

		Date: Page No.
	: Time complexity Caverage case	splitting the assemy in hou
	and complaining n elements In warst case it is $O(n^2)$.	In this case cositioning of
	arrays takes place at end of a	
	ways sans prace at one	2 3 4 5 00
	(IOCOPHA)	split
	(Barrid) (birrage)	2 3 4 5 0
	7-2 (-119)	split !
	1 123112	" - 0(02)
	1 · · · · · · · · · · · · · · · · · · ·	complexity = O(n2)
2.	Approach	
		case and comparison is clone on
# # 4	the bosis of ASCII values And to	hus it is sorted using merge sort
	(Approach discussed in ensurer.2	
4.		reorder format and comparison
	of names is done using strample	L) function.
•	First, element is made root	then successive elements are made
	the left on hight child on basis	of streemp <0 or >0
	(Arthi) Roc	ot
74)	step) (Arthi)	Step2 (Arthi)
	(chocisty)	(chousty)
		Dorothy
	Hep3 (Arethi)	Step 4 (Arthi)
	Christy	(Christy)
	Dorothy	Dorothy
	(Fiosex)	Froses
		(Eliza)

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Harrier (1997) (Page No.
Your David is inserted.	unestances sonit
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Doscott	ny)
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	(Frioser)
David)	
2 1 8 1 2 David	(ruser)
biva@ 2 Bavid	(Moser)