Deepanshu 2019CS 50427

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and outer to tracial ask

			Date:	
	Homew	01K13-1		
				1
	Data Structure Array	Insert O(n)	Minimum (1)	Delete-Minimum O(n)
	Singly linked list	O(n)	0(1)	0(1)
	Stack	O(n)	O (1)	
1	Queue	0(n)	0(1)	0(1)
1	Hain Map	O(n)	0(1)	
	BST	O(n)	O(n) .	

Note that answer may vary depending on following points -

AUL/2-4/R-B tree. O(logn) O(1) O(logn)

. The element units wouldn't brickly about it is

· whether we keep a so pointer to last dement in tail or

whether we are doing unserted implementation or sorted implementation. (Above out is done assuming sorted implementation).

whether to take theight of BST as och or octogs

· for away case, whether we knows expected size in advance or not.

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The state of the s				
Homework 13-2				
City, at the composite of the	Party Assess of The			
Proof by induction	White as All			
P(m): Procedure gives correct outp	ed if beiged is x.			
Base case: B=0 Only one element is puckent: which	due probable			
Only one element is buckent which	Wa neab.			
The state of the s	10 till m 2			
Assume that asi				
Assume that P(K) if true se	f peight is to the			
Assume that P(k) is true se it the procedure duvibed in lecture for k+1. Now up, start 1	world convertly			
(ra) (+ ((-1)))	STATE OF THE STATE			
for k+1.	12: 0			
Now we start from me laws "	40.			
according to Enduction Consollering	the procedure and			
Now we start from to leaves in according to Enduction hypothesis, he up tell height K.	reals will be formed			
	19 2,			
Now & the left subtree and leave - and	TK+)			
subtree and				
right subtree of sort	opposo de			
Salid souls				
Sight subtree of not are subtree of soft are subtree.	Lam induction			
Toporesis.				
Now we call trapity(1) and sint	e and since			
both left subtree and right so	ubtree are hook			
beapt by works worrectly and fir	rally PH by			
both left subtree and right so beapt for works correctly and fire of bright k+1 is built.	1) The Assembly			
Herreakti) is true and	bu a o o			
Mothe material Induction, P(x) is	principle of			
The state of the s	true to all			
x.				

Hence Broved

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Homework 13.3

	6 + (ax(1 m)	L. Harris
n =>	Algorithm heapfort (arl], n)	
	for (int i = 1/4 -1; i >= 0; i) To reasonage ele heapity (art, si, sn) array so that represents a	ments is
	for (intie 1/2 1/2 2) array so that	ît
12453	heapity (are) expresents a	reap
	1 % to n are led	aves,
	for(i = n-i, i >0, i-) [so need no need swap (artol, artil) Reapity.	to
	swap (arto) artis). neapity.	
	bean tu (at , b)	
	Above loop buts element at last (effectively seemon in from heap as we are decrementing i). The is done to ensure in place sorting.	ng it
	Above loop buts element at the contract to your contract	V
	from heap as we are accounting.	
	Thes is done to ensure in place soil ented but	en
	Thes is done to ensure in place sorting. Note: final away after this sorted but	
	reverse.	•
	we can make it according order easily.	R.
	house to be a sure of the state of the second to the secon	-
	Algorithm neapity (DDL [], i, n)	
	int mine ax LL	
	int X & 20 + 1 1 and pribling and and	
	Mt r + 2 + 2 min	
	it (len es ar [l] < ar []	
	min = l	
	if (ren ed ar[r] car[still])	
	min=1	
	Algorithm heapity (ar [],i,n)	
	Est min = ar[i]	
	int l < 2i+1 int l < 2i+2	
	while (Trace)	
	if (

	Torograpion adjusted
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	Date.
	Algoritante nearpity
	Algoritam peoplify (art3, i, n) int min = arti]
- A	int min to mapity (art 3, i, n)
Jan Warney	while (e)
1	11:
- Just	if (ar[min] & ar[2i+1] &4 ar[min] (ar [2i+2]) else is (
10000	break >
No.	else if (ar [min] ar [ziti])
	else min = Lit 1
	min = 20+10
31000	elle
An	Swap (as I a ?
	() () () () () () () () () ()
102	From lecture analysis
	Love must struct a struct
	building heaps takes O(n) to
-	builds no build, we know that -
->	heapity takes time no more than Or logn).
	of takes time no more than or
	Thereal and a supplemental to the supplemental
	Therefore building beaf and the calling heapity repeatedly on all nodes will take.
	repeatedly on all nodes will take heapity
	DC: (Parity State: 4 3M)
	U(n) + 0 (Mogn) = D(-1)
	0(n) + 0(nlogn) = 0(nlogn)
-	Man 1 4:
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