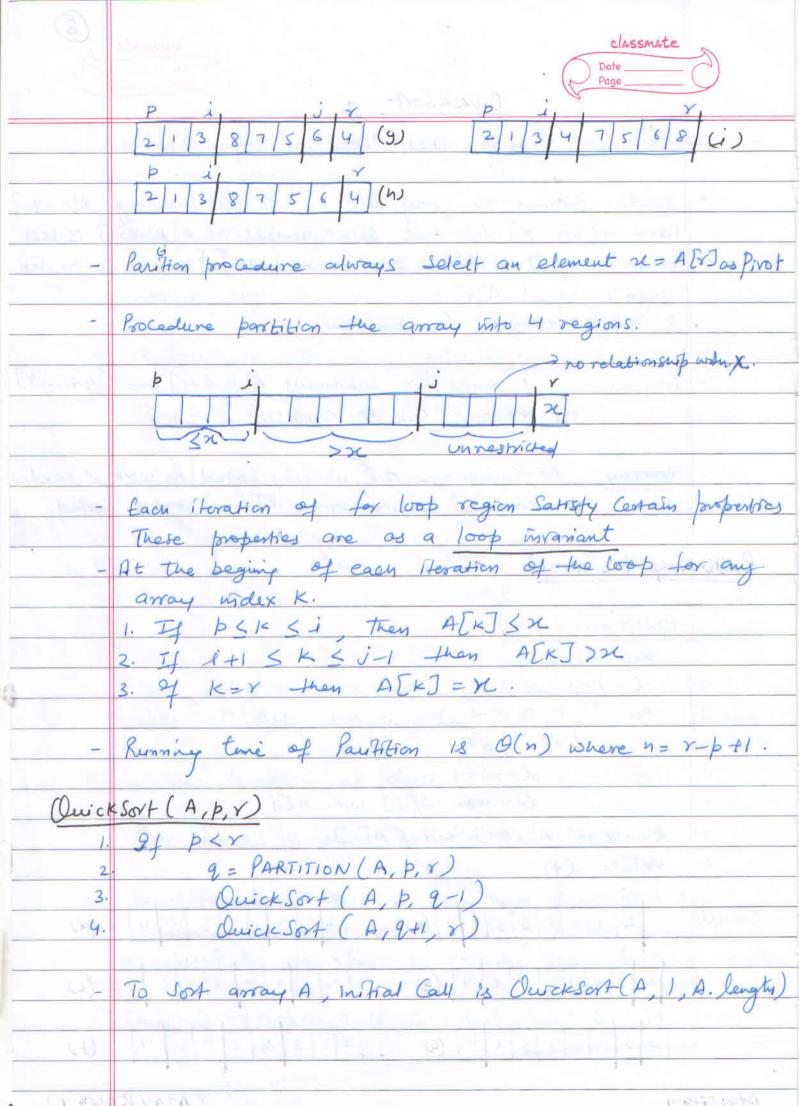
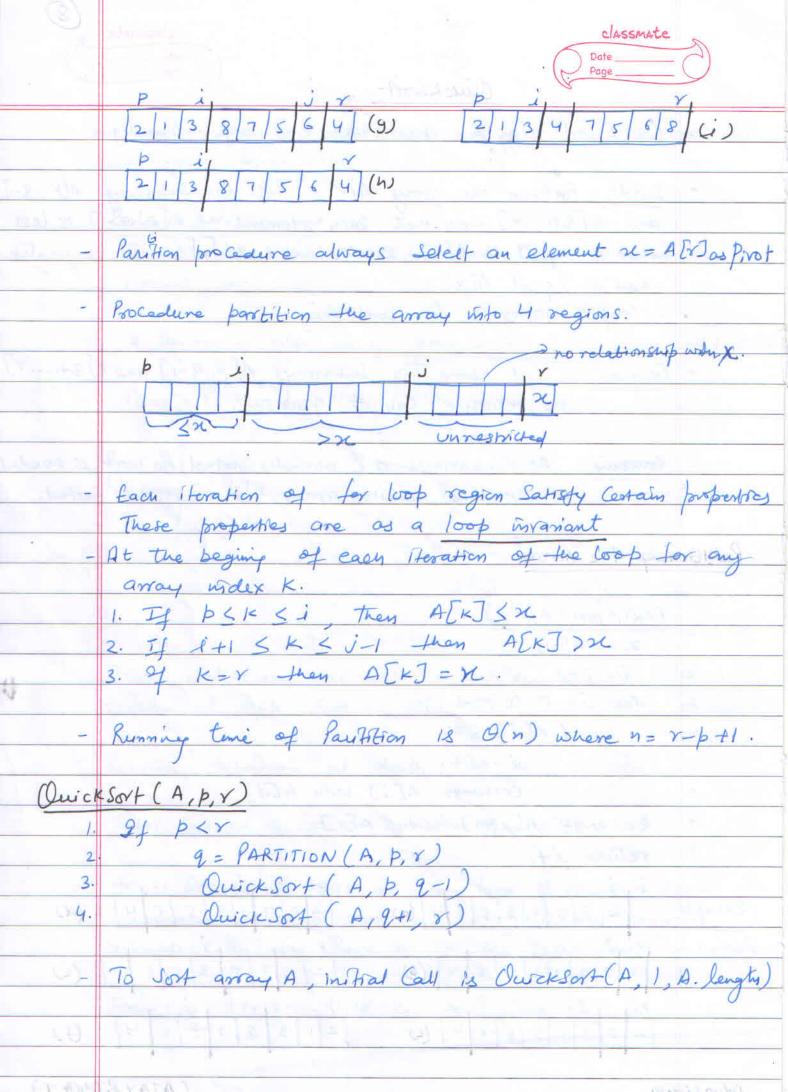
Quick Sost

1,500	Quick Sort algorithm uses divide and Conquer paradigm.
	Divide - Partition the array A[P. 1] into two Subarrays A[p. 9-1]
	Divide - Pastition the array A[P. 1] into two Subarrays A[P. 2-1] and A[2+1r] Such that each element of A[P. 2-1] is less
and will	than or equal to A[2], lack element of A[2+1 r] is greater
	than or equal A[8]
	- Compute 15 dex 9 for partitioning.
_	Conquer - Sort above Two Subarrays A[p. 9-1] and A[9+1r]
	by recursine Call to quick sof.
	Files - I feet and the same of
	Combine - As Subarrays are already sosted no work is needed
	to combine, entire growy A[p. x] is now sorted.
	the state of the least of the second of the
Partition	ring the Array
	PARTITION (A, P, 8)
T _s	x = A[Y]
	$i = P - I$ $\mathcal{L} = \mathbb{L}^{d} \setminus \mathbb{R}$ $\mathcal{L} = \mathbb{L}^{d} \setminus \mathbb{R}$
3.	for j=p to r-1
4.	if A[j] < x
5.	i = i + 1
6.	exchange A[i] with A[i]
7.	exchange AlitiJ with AlrJ
8.	return i+1
	i, pi , r pi, j , r
example	28713564 (a) 28713564 (d)
	Pij Pij j
4-8-6	28713564(6) 21783564(e)
	Pij J P ij J Y
	287135646 (0) [21387564) (4)
Algorit	Lam DAIN DAIN -
- () was	(AJAYRAWAT)



Perform	rance of Quicksort
	Running time depends on whether the pastitioning is balanced
	Running time depends on whether the pastitioning is balanced or unbalanced.
	and it is the first that the same of the s
	If balanced, algo runs asymptotically as fast as merge sort
	The state of the s
-	If unbalanced, it run asymptotically as slow as Insertion
ha-1-en	Sort.
	Worst Case Partitioning
-	When partitioning, routine produces one Subproblem with n-1 elements and one with a elements
	elements and one with a elements
	- Mary day (NAV 1975 - New Park of the Mary Control of the Control
-	Assume this unbalanced partitioning arises in each recursive Call
	Partioning Cost O(n),
-	T(0) = O(1) (array of size o)
W R 4	La transport of the last test to the the test to the t
A terror) le	recurrence relation - T(n) = T(n-1) + T(o) + Q(n)
	$T(n) = T(n-1) + Q(n) = Q(n^2)$
	O(n2) running occur when away is already Sorted. In
	Similar Situation Insertion Sort runs in O(n) time.
	institutes to bear prints to Hural Ligaritation in the Party in
	Best Case-partitioning
	Portitioning produce two Subproblem each of size no more
	than n/2, one is n/2 other is n/2-1.
_	Recurrence relation - T(n) = 2T(n/2) + O(n)
	$T(n) = O(n\log n)$
Attended to	



Quick Sort

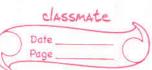
classmate 8

	Average Case
	Partition produce a mix of 'good' and bad' Splits.
	In recursion tree good and bad splits are distributed randomly throughout the tree.
	-throughout the tree.
	Good and bad splits alternate occur in the free (Bestlase) (worklase)
	$0 \qquad \qquad 0 \qquad $
	n-1;
	(n-1)/2-1 $(n-1)/2$
3	Combination of Split produce & Sub arrays of size 0, (n-1)/2-1
	and $(n-1)/2$ at cost $O(n) + O(n+1) = O(n)$
	(goodsput + badsplit)
p4+1	Kumny time of amerage Case is U(nlogn) like the running
	time of best case (good spers) but sugnity larger constant
	hidden by the O-notation.
10	P - A - A D - W - A - A - A - A - A - A - A - A - A
And	- Running time of Owicksort When all the elements have same value (O(n2), one partition is always empty (worst Case)
701/3	(A(n), one partition is always emply (worst care)
	Coloring and a simple service of the
	The Contract of the Contract o
	and the state of t
	Military Brown San Street Street Land Company of the Street Stree

Agaitum

(AJAYRAWAT)

Binary Search



	Page Page
#	A Simple apprach is to do linear Search Whose Complexity
	is O(n).
	They are the sure fall this this.
***	The idea of binary Search is to use the information that an array is sosted and reduce the time Complexity to O(logn).
	group is sorted and reduce the time Complexity to O(logn).
2007	
Binan	y Search (A, val, left, figut) (Recursive approach)
	- Algerthenic tamplying Dicite and Congress
1.	If right 2 left
2.	return not found
3.	mid = (left + signt)/2
4.	if (A[mid]) val.)
5.	Setulu Binary Searcy (A, Val, loft, mid-1)
6.	
	Setuen Binary Search (A, Val, mid+1, Kight)
8	Else
9.	Seture rud
	To this up ion half of the plannite just alt one
	In this we ignore half of the elements just after one Comparision.
	Solve place grove.
1.	Compane value with middle element.
	if val matches with middle element we return middle index.
	Else if val is greater than mid element, the value Can only
	lie in right half Subarray after mid element. So we recur for
	light half.
	Else (Val is Smaller) recur for left half.
	J
:= 1	Recursive Brisary Search algorithm Uses Divide and Congran Strategy.

also to	Recurrence relation $T(n) = T(n 2) + O(1)$
V -	T(n) = T(n 2) + O(1)
	7(n) = 0 (logn) for worst Case running time.
we to	- other refer of brown frame is to see the inflorention to
(Logal).	Auxilary space - O(1) for iterative implementation.
	- O(logn) reluxsion Call Stack Space.
	Emphysical A red Last Roy C Fitzer See approach)
-	Algorithmic Paradigm - Divide and Conquer.
	4831 3 Jupy 12 J
B	inany Searcu_Iterative (A, l, Y, X)
1.	While $(l \leq r)$ $m = (l + r)/2$ Characteristics
2.	m = (l + r)/2 (New (Trine TATE)
3.	if (A[m] = = x) return m;
4.	if (A[m] < x) l = m+1; Think A IT MB A
5.	Else v= m-1 A)
6.	End While.
0	9. Addition read to the control of t
Ones	Why Binary Search is better than Ternary Search?
2.45)	The transfer and the to that want ou get it is
	- milliondans)
	Chron-
	6. Coupere Value Wills, residete Assent
	the year analyses and established the related to the related to the second to the seco
	3. Else if val is givetter than beed Blower to the value
de mila	he is eight had the method had tope in it
	Croux Parks.
	the that of more furthered is love and in
DE PURE SE	- Kirmen Liney Low or Syrilan Old Cook and Cook