	Data Structures
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#	Abstract data time
- 1	Abstract data type.
	- Combination of data structure and their operation are known as
	Abstract Data type
	institut vara 19pe
#	Algorithm acceptant anciques
	- Step by step instructions to solve a
	problem.
	o otout (a)
	Rate of growth
	The rate at which the running time
	increases as a function of input is
	called rate of growth.
oa bat	There exist possible constants
lin v	$f(n) = n^4 + 2n^2 + 100n + 500$
	f(n) = n4 for some n > no.
	Alg I
0100	(cos) 1 cos James Alg 2011.
wated 3	again on 21 from took stop
la m	E July od
	F /: 0<0.
	No. of inputs ->
	anamo s
	From above graph, alg 2 is boetter.
	ntair c
25 /	a so reader sport of the sold of
	brusel resert

	logn < n < n < n logn < n² < 2n
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-	Types of analysis of algoriths
	- worst case
20	- Average case
	- Best case and the state
G	Asymptotic Notations
10 9 VI (I)	Big Owithwideal date led this -
2	Omega 1 moldon
3	Theta 0
	attosom to awa .
2 min to	Big O notation to the
	Increases as a function of in
	O (g(n)) = f(n) sion bollo
	There exist positive constants c and no
	such that 0 < f(n) < (*g(n) for all
60 4	n > no. 102 103 For = (10)7
	The statement f(n) = 0 (g(n)) state
	only that g(n) is an upper bou
	on the value of f(n) for all n
	; n > 0
	4 distant to .014
	Omega
73/19/6	- Lower bound
3.	Theta.
	- consider both upper as well as
	lower bound

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#	Array
	Array takes constant time to access
#	Recursion and Backtracking
	When a function calls itself in a code, it is known as recursive
ex:	main ()
	E INT K
	K = fun (3);
	prints ("1.d" K);
	3
	int 'fun (int a)
	5
	int 3
	IF (a==1)
	return(a);
	S = a + fum (a-v);
	return (s);
	7
	3.

#	Big O notation Common rules
1.	multiplicative constants can be omitted
	the methodale in the party and party property
	$7n^3 = 0(n^3)$
	cueffectives regions -
2.	
	$n = O(n^2) \qquad \sqrt{n} = O(n)$
3	na < nb (a>0, b>1)
	24203 24026
	$n^5 = O(\sqrt{2}^n)$ , $n^{100} = O(1.1^n)$
	condingues suited to
6	(logn)a < nb (ab>0)
9.	(40911)
	(log n)3 = O(1)
	$n \log n = o(n^2)$
	11 20911 - 0 11
	a loome can be manipulated
5 .	Smaller terms can be manipulated
	$h^2 + n = O(n^2)$ $n^3 + 11^n = O(1.1^n)$
	- Provid require

-eklavyā PAGE NO.: DATE: Levels of designing algorithm - Naive algorithm Algorithm by way of standard took Optimized algorithm - magic algorithm. # Greedy Algorithms · main ingredients Disafe move 2) Prove safety 3) Solve subproblem. 4) Estimate running time. · creedy move can be faster after sorting. General Greedy choice , Safe move method :> Problem Subproblemt