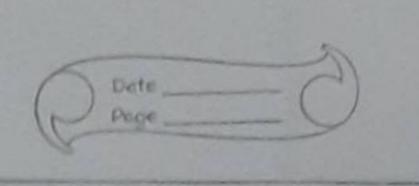
CLASS => BCAP A BRO SEM

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Dues Is Explain time and space complexity. Also describe Ansi Space Complexity: Space Complexity of on alog algorithm supero -onto the amount of memory space needed the algorithm in its life lycle Space needed by an algorithm is Equal to the osum of the following two components. H fixed part that is a space to required to estore certain data and variables (i.c. Simple variables and Constants, program size etc.), that are not dependent of the size of for the A variable part is a space required by variables, whose size is totally dependent on the size of the publem. for example, recursion stack space, dynamic memory allocation etc. Space complexity S(P) of any algorithm P is S(P) = A + SP(1) where A is treated as the fixed part and s(1) is treated as the Variable part of the algorithm which depends on instance characteristics. IME COMPLEXITY & Time Complexity of an algorithm is the respresentation of the amount of tie



required by the algorithm to execute i to completion. Time requirement can be denoted or defined as a numerical function t(N), where & t(N) can be measu ed as the no. of steps, provided each

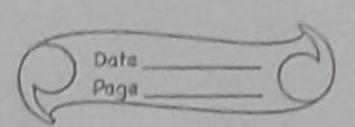
estig takes constant time.

Fox example, in case of addition of two n-bit integers, N steps are taken. Los Consequently, the total computational time 15 t(N) = C*n, where C is time consumed for addition of two bits. Here, we Observe that E(N) grows linearly as input dize increases.

SPACE - TIME PADEOFP: A Space-time or time-memory toade - off in Computer Science is case where an algorithm or program trades increased space usage with decreased time. Here space refers to the data storage consumed in performing a given tosk (computation time or respon

The utility of a given space - time trade off is affected by related fixe and variable cost pop, cg, cpu speed, storage space), and is subject to diminshing returns.

ves 28- Differentiate between Buinitive and - Primitive data Structure.



	O Date Page O
Ans 2: Brimib've Date	2 Non-primitive data
	Structure
1. Data structione H.	
are directly orper	rated that are derwied
upon the machine	- duir derived from
	are primitive data
Known as primitive	
data structure.	
	Structure
2. There are basic	2. These emphasize on
structures are	structiving of a
directly operated	group of homogeneous
upon by the mach	
instructions.	data stems
3. Integers, Floating	3. These are dit
point, Charactero,	
Constant, string	Into two categories;
Constants, pointer	
etc. fall in this	linear data 8
Category.	structure.
Dun-2- 1-10-1-1-4	10
Oves3: Differentiate between	en unear and non
Ans 3. linear data 3th	roccioce.
Hns3:- linear data Structure	
1. In a linear data	1 To com 10
structure, data	1. In a non-linear
climents are arrang	red data elements are
in a linear order	
where each and ever	and add a street and a street a
- Conce co	ey hierarchically manner.

		O Dete
	clements are attached	
	to its previous and next	
	advadiacent.	
2.	In linear data struck	2) whereas in non-linear
		data structive,
-	involved.	mutt multiple level ære involved.
3	Its implementation is	3) While its implementar
	easy in Comparison to	-son 10 complex in
	non-linear data	to comparision to liner
	structure.	data Structiva.
4.	In linear data Structur	4) While in non-lianer
	data elements (an	data structure, data
	be traversed in a	clements can't be travers
	single rin only.	-ed is a single run
		only,
	Jn a linear data	5. While in a non-linear
	not utilized in an	is utilized in an
	efficient way.	efficient way.
6	Its examples are	6. while its examples
	array, stack, quoqu	are trees and graphs.
	que ru, linked list etc.	
7	Application of linear	7. Applications of
	data structiones are	non-linear data
	mainly in application	Structures are in
	destware development.	Arbifical intellègence &
		image processing.

