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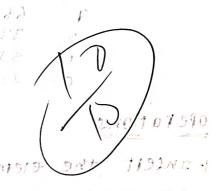
REGIND :- 192321073

COURSE CODE: - CSA 0389

COURSE NAME: Data Structure

ASSIMMENT:- 02

PS/8/2 -: NOTISIMBUS TO STAD



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THOMOLY - SET WHEN LASSINGTED PROPERTY BODY 21 BODY - SAL (8) 100188188 188 pre 61

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Perform the following operator using stack. Assume the of the stack 155 and having a value of 22,55,733,660 in the stack from a position of size-1 now perform the following operations: Uznset the element in the stack 21 pop (1 3) pop (1 4) push(mys) push(36) 6) push (11) 1 71 push(31) pop (1 4) pop (1 4) push(mys) push(36) 6) push (11) 1 71 push(31) pop (1 5) pop (1 4) push(mys) push(36) 6) push (11) 1 71 push(31) pop (1 5) pop (1 5) pop (1 6) push (11) 1 71 push(31) pop (1 7) push(31) pop (1 7) push(31) push(31) 6) push (11) 1 71 push(31) pop (1 7) push(31) push(31) push(31) pop (1 7) push(31) pop (1 7) push(31) pop (1 7) push(31) push(31) push(31) pop (1 7) push(31) pop (1 7) push(31) push

A	88	1> TOP	0 120	and the second	
3	66	B .		1 3 1971	7 2 2 2 2 3
2	33				
1.4	55		50	11 1 11 11 11 11	
0	22				
1	NEL	5/2 1/4	15 25 - 1	19:10 77	<i>#14 1</i>

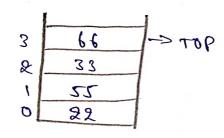
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1.

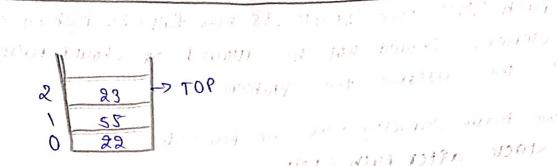
The stack is already initialized with the elements

[22,55,33,66,188]

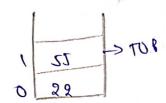
2. Poll: Remove the top element (88) stack after pop (1:



3. POP(); Remove the next top element (16)



-1011 WILL MOTER WOOL POP (1: Remove the rest tos element (33) (with \$1700 1) Stack after POP



Push (ad): Add ao to the stack

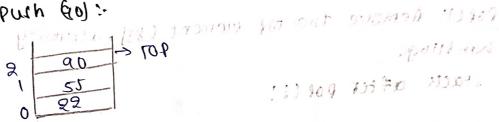
stack after puth goj:

4.

5.

6.

7



111 109 731 FO MIDEL.

Push (36): Add 36 to the stack stack after push (36):

3	36 -> 708
2	90
1	55
0	22/11 7/19/19

hot and avenual

-: 11909 724AC 0771-2

push (11): Add II to the stack Stack after push (11):

	1 . 0
P	10700
3	36
2	90
1	72
1	99

purh (88): The Stack is now full , so paining another Element Enoug not pe anomed or Evong Louise Homely if we assume the problem.

we have capacity, we can proceed.

(assuming overflow it allowed) the north over 100 overflow)

-> TOP 88 5 11-U 36 3 90 2 1 55

NOTE: The stack size is exceeded, indicating an overflow STACK OFFER PULL GOLD condition.

POPCI: Remove the rox element (88), assuming overflow handling.

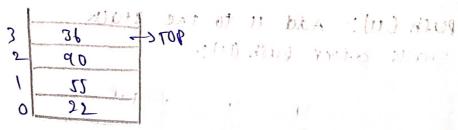
22

Stack after por (1:

(overflow)

16:5 5Ht of 02 bb6 - 1051 6209 > TOP 1) 4 tions ofter push (36): 7 31 0 p 22 22

POP LI: Remove the for element (11) Stack after Popul:



36 90TC : 2 " territory OP 22

11 1 WE 1 DW SAN SAN 1/2016 IDENTIFICATION: OF the TOP: The top of the stack I Currently at index 31 with the value 36. CONCLUSION: - Des formed

1 . + 4 5 . 1/11/

frent dissolution

4 The orelation on the stack were performed as specified and the coment top element is 36 at Index 3.

is the stack initially had elements, which were then popled, and new elements were purhed of the bear the starting

& An attempt to pull beyond the stack's capacity was noted rassuming an overflow condition. It overflow protection Eviloneried the but two luth operations deter reading. capacity would be invalled and to reduce our

Develop an algorithm to detect duplicate element is array unsorted array using linear search. Determine the time Complexity and discuss now you would optimize this process. To detect duplicate elements in an unsorred array using unear rearch , you can use a brute force approach that I nuclues comparing each element with every other element in the array Here's a simple implementation in pseudocode: Prévido code: no listin prinspinas sinit et posses de les

function find dulicates (air): duplicate = [] h= length (air) for 1=0 to no1:

durlicale=[] n= length (arr) if ancil== ancil and arrail not in duflicates: for 1=0 to n-1: for i= it1 to no! reroin duplicates. durlicate. alrend (ari Ei) To create an empty list durilloate to store dupilicate elements. 2. Cu Therate through each element arr(i) in the array: 3 tol each ancil. compare it with every subsequent everyent u. if aw(i) == ari(i) and the element ti not already in the duplicates 11st, add it to duplicates. In 114941919 with him 5. After both coops complete return the lift of dullicates. LE-MORTERE MORTHUR NO PRIMULZE: DOJON Time complexity: The time comprexity of this brute -force approach is (o(n 12)), where (n) is the number of elements in the array this is because for each element, the algorithm compares it with every other element in the array. William point from borrows optimization: To optimize this process and reduce the time complexity , we can use a different approach that invowed additional data structures. Here are same methods. 1. Using A Hash set: we can we a north set to keep track of element we've seen as we sterate through the array. This method reduces the time complexity to (am) our average due to average (o(1)) time complexity for incertions and cook of in a noth set.

1850 1 11 1 10 1 31 1 1 1 1

Function Find Duplicate Card:

see = see () " I proposed to the street of the street

durlicate = () in militaria en al proper de la company

for elements in art:

the crament in coon;

duplicate. append (element)

seen add cerement

reroin dulitates

CETTEEN: - A CET TO CHORE ELEMENTS OF THE LABORETE AMOUGH

CHOIDS AS A TEXT GRANT

* Check for Dulicates: For each Elements check it it is already in the set seen. If it is, add it to the dullicate wit because it was been identified as a duplicate

Ruturning the result:

After therating through the entire array the function rening the dullicates list, which contains an element that were found more than once in the input array.

minimising space:

If the goal is to minimize space, a more spaceefficient method (but slower) would be to use rested bols compare each element with every other element travever this would increase the time callexty to olury

the current altroach can be oftimized to exit early if finding a dullicate is the only requirement. As soon as a dullicate is the only requirement. Immediately dullicate is found the function can return immediately

An conclusion, using a let it an efficient way to find durificates with own time complexity and oly slave complexity. This method is orthwal for most practical purpose, find and space efficiency.

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