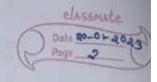


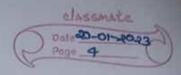
	PRE-IN ORDER BINARY TREE
	The state of the s
	AEM:
	To constauct a unique belnoon tree using
	the geven pae-oxider and in-oxider traversals.
	ALGORITHM :
	this is a recursive algorithm.
#	Base case - (1
	1 2 2 1 when lower
	1 pare 1 in 1 dermit crosses the
	ui Li vz Le upper elemit
Sint	this is an ensalld case, so the value
	NULL should be returned.
The Comments	The Branch of the Archagh
#	Ban car - 2:
	2 1 3 1 2 3 when both
	ple 11, mc 11, demits
	equalize
	this is a leaf node. so once noot node to
	created, et can be derectly setuaned without
	modifying to left on night child pointers.
#	Recursive cases:
	pre-order in-order
	1 2 4 5 3 6 7 4 2 5 1 6 3 7
	1) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	4
	# the 900t is present at the 4th position in the
	pae-onotes traversal.
200/1-	& 'P' denotes the location of the noot in the
	in-order traversal.



In-ander traversal is depicted as
Left Root Right
2 2 4
positions position positions
L2 to P-1 P P+1 to U2
Pre-ogder traversal ? deploted as
Root Left Right
2 2)
position LI positions post tions
unknown
a calculation of a
For the left subtree, no. of elements
in pre-order totavorsal = in-order travers
Up- LOW +/ = Up. LOW +/1
· (x) - (1+1) = (1-1)-(L2)
X-LIX = P-L27
and the I will be seen
X= P+ L1-L2
so finally
ALCOHOLD STREET, ST. May 21 , Northern 18
Pre - order traversal 6
Root Left Right
2 2 1
position L1 positions positions
LI+1 to P+LI-L2+1
P+L1-L2 to U1
First P? calculated.
Them 900t -> left is formed by securision.
Then root - aght is foormed by occurren.
them the foormed groat is neturned,
to Time amount is want care skowed tree ocal
(no of elements)

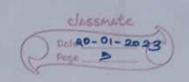
CODE : # include "bits / stac++. h" using namespace stol; 11 stoucture of a Bimary Toke woole stouct Noble int data; // data Node * left, * sight; " left & right chaldren Node (prot on) // constructor data = n; 11 set data Seft = night = NULL; // leaf by default 3: 11 seasch for an element in an assay int search (int * A, int n, int L, Int) POSI (ME == L; i <= U; i++) if (A[i] == n) neturn i; nelement found setum -1) // element not found 1 constauction Function storuct Node * from (rmt pore [], int in [] int 4, int 01, int Le, int ue) 2 if (LINUI) return NULL; // lease-case 1 struct Node * noob = new Node (PRE[4]);

if (11 == 01) return scoot; 11 base-case 2



int 1 = search (in, pae [LI], Le, U2); // locate species represent in those nost -> left = form (pore, in, LI+1, P+ LI-L2, L2, P-1); // Refl moot - sught = foam (pae, in, P+L1-12+1, 01, P+1, U2); // stight oceturen succt; 11 Paint a somery tree with NULL children also (trave * about tomets) toured place £ if (! 300t) cout << "N"; else cout << 9.00t -> data <= " "; // 900t mount (root -> left); 11 left point (noot -> sight); // right int main () £ cout << a welcome to att Pere- In order small Thee Generators ! " IT end I end! int n; 11 number of elements cout << " Enter the number of elements in your tree : 5 cm >> n; mt me [n]; 11 me - order coay cout <= "Enter the per-order traversal"

for (rot i= 0; i< n; i++) oin >> rae[i]



cout << "Enter the m-oader traverse : ";
for (me 1=0; i < n; i++) cm >> m [;];

struct Node & 200t = form (pare, In,

0, n-1, 0, n-1); / whole alsoy bridg

cout << endl << " smally tree was foormed

successfully | The tree is " << endl;

nount (200t); / paint lomany tree

could to enall to "Thank you for using c++ pre- In Brank Tree
Generator. Bye Bye ["]

INPUT AND OUTPUT :

sample

There Enter the number of elements in your tree: 7

Enter the pre-order traversal: 12 4 5 3 6 7

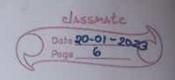
Enter the pre-order traversal: 4 2 5 1 6 3 7

Brnary Tree was formed successfully ! The tree is:

thank you far wong C++ Pre-In Binary Tree Generala

RE SULT :

traversals was successfully generated.



PRE- POST OR DER BINARY TREE

AIM

pre-order and post-order totalessals.

ALGORITHM !

This is a necursive algorithm.

Base case-1: LI > U1

Invalid case - return NULL

Base case-2: L1=01

real node - form root and action it without modifying its children.

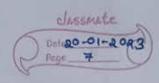
Recupsive cases:

Case 1: when Fill Binary trace 13 paggette

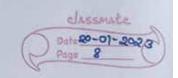
1 2 4 5 3 6 7 4 5 2 6 7 3 1

21 PRE 1 1 12 12 12 12

- position in the post-oader traversal and the uzthe
- traversal and marked as 12
- (co-159 rosition in the part order traversal



	The 13 them located in the per-order
8	towersal and marked as p,
	a Pre order traversal is depended as
	Root Left Right
	and demand and of Joseph many many
	positions positions positions
Ī	Lito PI-1 PI to 0)
i	The state of the s
ī	to post-oorder transonsal is depicted as
	Left Right Root
Ī	
Ī	positions positions position
	12 to p2 p2+1 to u2-1
	& First PI and PR are calculated.
	Then root -> left is farmed by orecursion.
ī	Then scot -> sight ?s formed by securinon.
Ī	them the formed tree is returned.
	a real Files in a set for a set of
	cased: when full Brinary Tree is not posseble
	G H I I H G
	2 2
	CI PILE POST
i	Anna w March States
i	* elements @ (L1+1)th and (42-13th positions
i	are equal this means woth cam't lose
	right & left children, as there is enly
	one node. so, we have to nick up etitle
7	left on reght.
	& considering left [and thereby, right & NOLL]
	Pre: Root left Post: reft Root
	41 41 40 11 12 40 02-1 12



check if pre [11+1] and post [12-1] are same.

25 yes - only modify left (asse)

Otherwise - modify left & sight (asse)

Then return root of the formed tree.

7'me complexity:, o(n) in worst case

(seewed tree)

CODE :

include "bits/stale++.h"
using namespace stal;

stouct Node { * same as previous program*/9

not search (opter * A, door n, i'nt c, intu)

{ /* same as previous program * /9

stouct Node or form (extra pret), char part[],
int 11, mt v1, int 12, int v2)

if (LIXVI) return NOLL, // Base see-

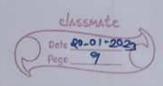
if (LI == 01) return quet; 1 sax cax-2

if (rue [4+1] == post [22-1]) // lead with a de à
200t → left = form (rue, post >
41+1, v1, Le, v2-1);

else // recurrive cax-1

2 pt p1 = search (pe, post[v2-1], (1, 01);

nt p2 = search (post, pre[4+1], (2, 02);



	suot -> left = form (jue, post,
	XI+1, PI-1, depo, 102+10; 1/2/4
	soot -> seght = form (pare, post,
	PI, UI, P2+1, U2-1); // sugest
	3
	sietuen scoot;
	3
	soid permet (stermet Node of scot)
	{ / ot same as previous program of / 3
	Int main()
	{ / of same with slight modifications:
	replacing "in" with 'post' */]
	INPUT AND OUTPUT :
Sarry &	welcome to C++ pre-post order Brazy Tree Generator!
0	enter the number of elements in your tree: 7
30	Enter the per-order traversal: 12 4 5 3 6 7
300	Enter the post-order traversal: 4526731
	enger Tere was formed necconfully The tree 8:
	gracy tree was formed necessfully. The tree 8:
	Be was City for and Bones. The Generator By Do
	Thank you for uning C++ lee-nort Browny The Generation. By the
(RESULT!
	many tree with given you is m order
	teamersals was succentully generated.
1 40	