CONVERSION OF BUYARY TREE TO BINARY SEARCH TREE	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~ <u>~</u>	~~~~~	~~~	لم د	~~~~~	~~~~	~~~
	CONVERSION	()F	BUVARY	TREE	To	1 114/11-	SEARCH	REE

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A Binary Tree is a hierarchical data structures in which each node has at most two children, referred to as:

left child. right child.

Program to minimum ewap required to convert binary tree to binary search tree.

Step 1: Create a bimary tree.

Step 2: Sorting of binary tree in "Inorder".

Step 3: Creating the left and right child nodes then visit

each node in inorder traversal technique.

Step 4: The minimum swapping of binary tree.

#include Lstdio.h>
#include Lstdib.h>
#include Lstd bool.h>

struct Nodes
Int data;
struct Node * left, * right;

1 function to create a new tree node:

Program:

Struct Node * new Node (Int data)

```
Struct Node * node = (struct Node *) malloc(size of (struct Node));
     nocle - data = data;
    node -> left = node -> right = NULL;
  teturn node;
Il function to perform inorder traversal and store elements in an arraly
void inorder Traversal (struct Node* root, intarred, int & index) &
                                 Third them differ had
          return:
       inorderTraversal Croot -> left, arr, index);
   africe index)++j = nobit -/ datas minimi et manger!
       inorder Traversal Crook -> right, arr, index); to deten prints
Afunction to find the minimum swaps required to sort the array.
Int swaps formate in and mend to patent recient
  .. bool vitsited (n); id- der i bat toll beit falle i latel
     for (Intel=0) density) in return at their dies
         Visitad (i) = false; protes a munistre of the rolls
    Struct Pair &
                                              inerati t
        Int value, index;
    g pairs [n];
    for ( int i = 0; 12 n; 1++) &
       pairs [i]. value = arr [i];
       paris (1). index = i;
     for (Int 1=0; 12n-1; j++) &
         if (patrs[i] value , patrs[j] value)?
```

)

```
pairs(i) = pairs(j);
pairs(j) = temp;
 for (int i=0; itn; itt) &
    if (visited (i) H. paris (i) index == i), is noted in income
       continue:
     int cycle-size = 0;
     int jei;
    while (! visited (j)) ?
visited (j) = true;
         j= pairs(j).index; 2 2
cycle-stre++; // /
      if (Cycle-size >1)
         swaps + = (cycle-size - 1);
    return swaps;
3 int main () 8
    struct Node * root = new Node (5);
     root -> left = new Node (3);
     root -> right = new Nocle (8);
     root -> left -> left = new Node (1);
     root → left → right = new Node (4);
    root → right → left = newNocle (7);
     root -> right -> right = new Node (a);
     int arr(10), Index = 0;
     Inorder Traversal (root, arr, inder);
     int swaps = minswaps (air. index);
     printf ("Minimum swaps required 1.d in", swaps);
     idum 0;
```

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