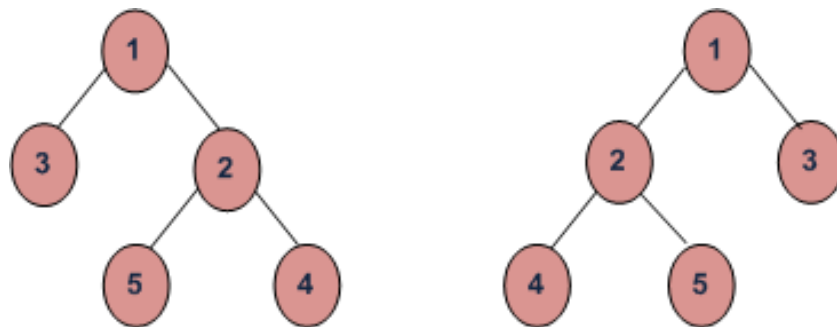


Write an Efficient C Function to Convert a Binary Tree into its Mirror Tree

Mirror of a Tree: Mirror of a Binary Tree T is another Binary Tree M(T) with left and right children of all non-leaf nodes interchanged.



Mirror Trees

Trees in the below figure are mirror of each other

Algorithm - Mirror(tree):

- (1) Call Mirror for left-subtree i.e., Mirror(left-subtree)
- (2) Call Mirror for right-subtree i.e., Mirror(right-subtree)
- (3) Swap left and right subtrees.
 temp = left-subtree
 left-subtree = right-subtree
 right-subtree = temp

Program:

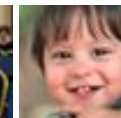
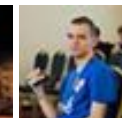
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```
#include<stdio.h>
#include<stdlib.h>

/* A binary tree node has data, pointer to left child
   and a pointer to right child */
struct node
{
    int data;
    struct node* left;
    struct node* right;
};

/* Helper function that allocates a new node with the
   given data and NULL left and right pointers. */
struct node* newNode(int data)

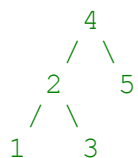
{
    struct node* node = (struct node*)
                        malloc(sizeof(struct node));
    node->data = data;
    node->left = NULL;
    node->right = NULL;

    return (node);
}

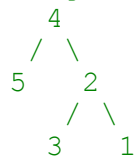
/* Change a tree so that the roles of the left and
   right pointers are swapped at every node.

```

So the tree...



is changed to...



```
*/
void mirror(struct node* node)
{

```

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```

if (node==NULL)
    return;
else
{
    struct node* temp;

    /* do the subtrees */
    mirror(node->left);
    mirror(node->right);

    /* swap the pointers in this node */
    temp      = node->left;
    node->left = node->right;
    node->right = temp;
}
}

/* Helper function to test mirror(). Given a binary
search tree, print out its data elements in
increasing sorted order.*/
void inorder(struct node* node)
{
    if (node == NULL)
        return;

    inorder(node->left);
    printf("%d ", node->data);

    inorder(node->right);
}

/* Driver program to test mirror() */
int main()
{
    struct node *root = newNode(1);
    root->left      = newNode(2);
    root->right     = newNode(3);
    root->left->left = newNode(4);
    root->left->right = newNode(5);

    /* Print inorder traversal of the input tree */
    printf("\n Inorder traversal of the constructed tree is \n");
    inorder(root);

    /* Convert tree to its mirror */

```

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```
mirror(root);

/* Print inorder traversal of the mirror tree */
printf("\n Inorder traversal of the mirror tree is \n");
inOrder(root);

getchar();
return 0;
}
```

Time & Space Complexities: This program is similar to traversal of tree space and time complexities will be same as Tree traversal (Please see our [Tree Traversal](#) post for details)



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