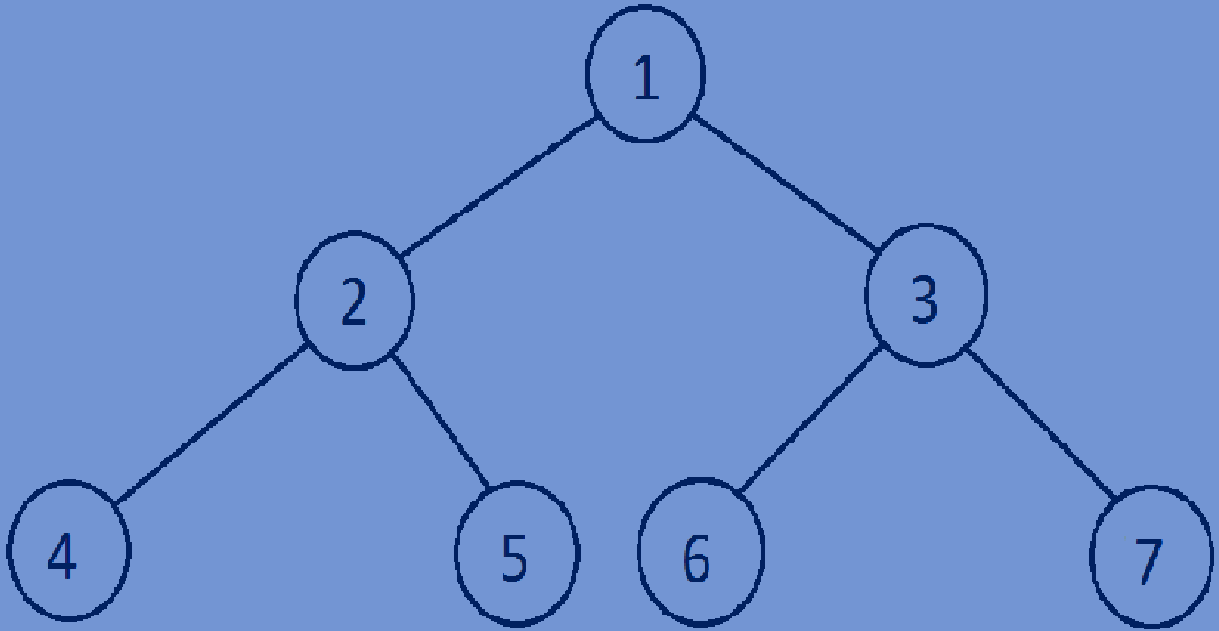
Data Structures

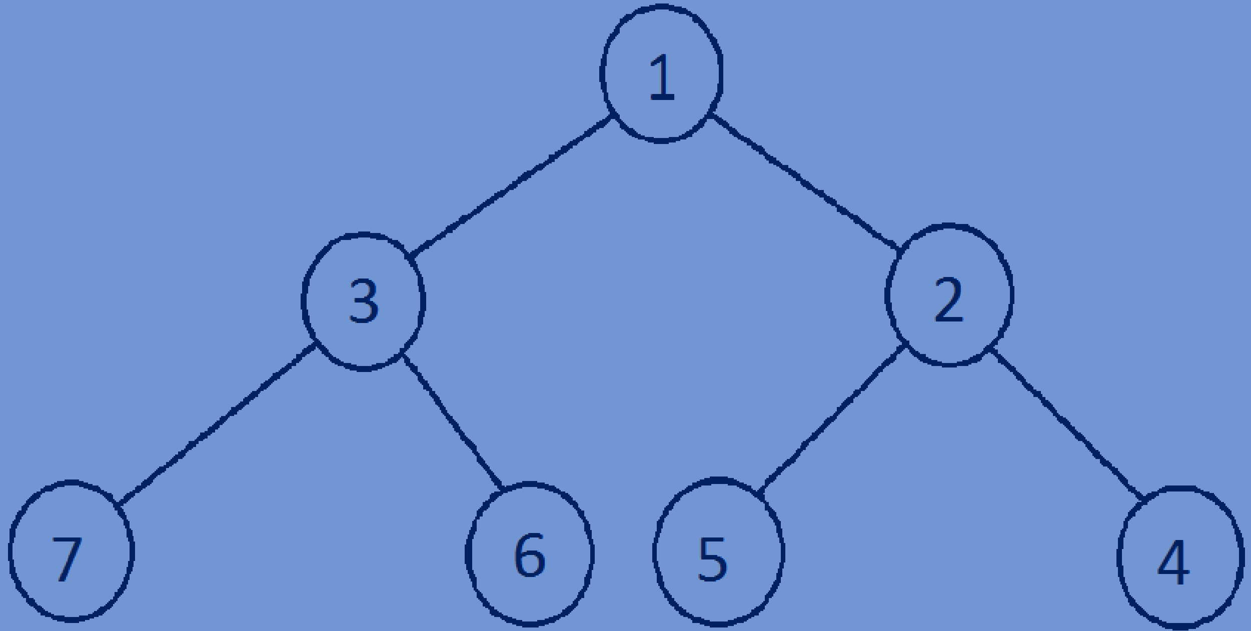
Finding Mirror Tree of a given Binary Tree

Mirror of a binary tree:

- A mirror tree of a binary tree is a binary tree in which left and right child of every Node is interchanged except the leaf nodes.



Given binary tree

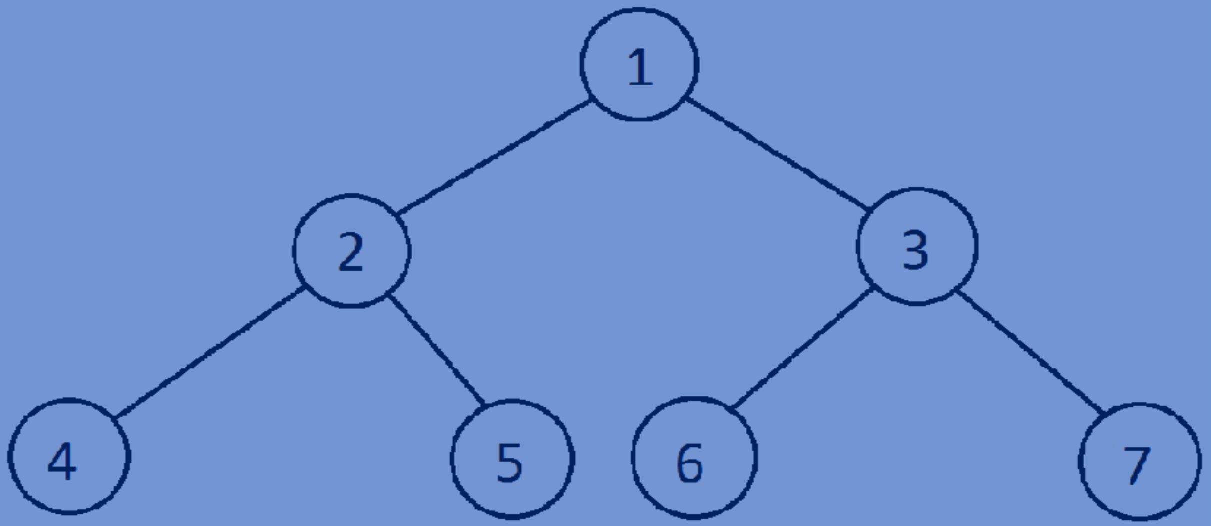


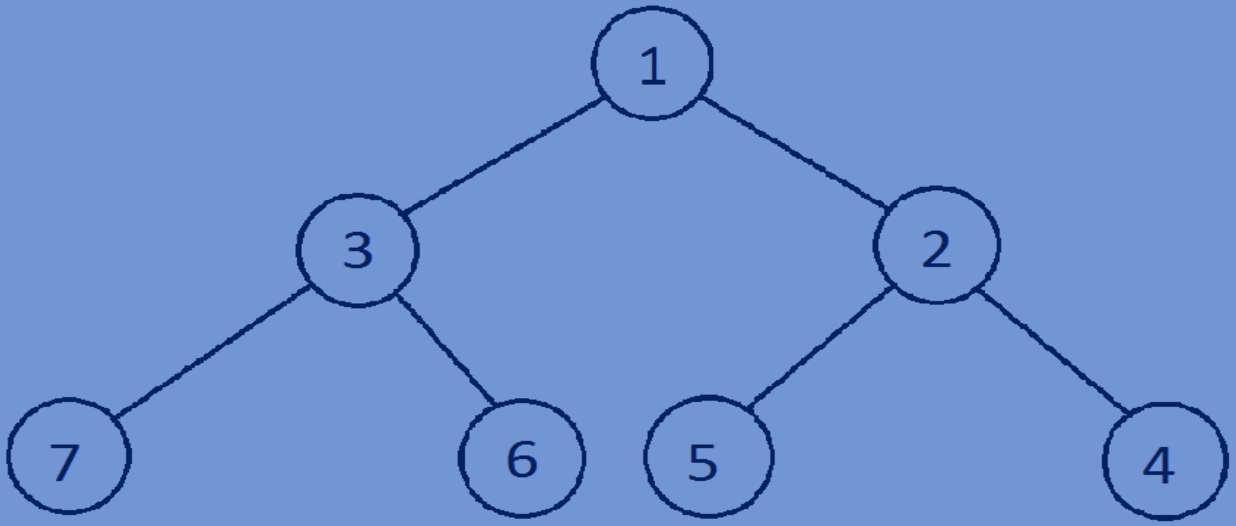
Mirror binary tree

Finding the mirror of a given Binary Tree:

- Write a recursive function to convert the given binary tree into its mirror tree.
- Traverse through each node of a binary tree and while traversing, at each Node swap the left and right subtrees.

```
temp=tree->left;
tree->left=tree->right;
tree->right=temp;
```





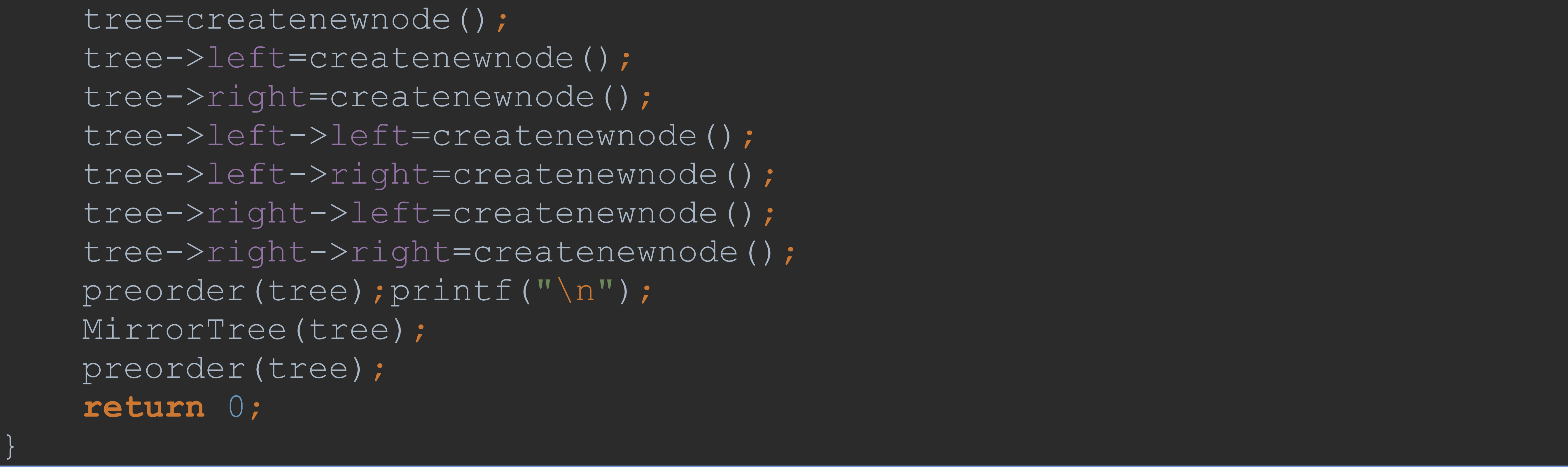
Function for converting a given binary tree into its mirror tree:

```
//finding mirror of a binary tree
void MirrorTree(Btree *tree){
    if(tree==NULL){
        return;
    }
    MirrorTree(tree->left);
    MirrorTree(tree->right);
    Btree *temp;
    temp=tree->left;
    tree->left=tree->right;
    tree->right=temp;
}
```

Whole program:

```
#include<stdio.h>
#include<stdlib.h>
#include<time.h>
//creating a node
typedef  struct Btree{
    int data;
    struct Btree *left;
    struct Btree *right;
}Btree;
//creating new nodes
Btree *createnewnode(){
    Btree *newnode=(Btree*)malloc(sizeof(Btree));
    //generates random no between 1 and 20
    newnode->data=rand()%20+1;
    newnode->left=NULL;
    newnode->right=NULL;
    return newnode;
}
//finding mirror of a tree
```

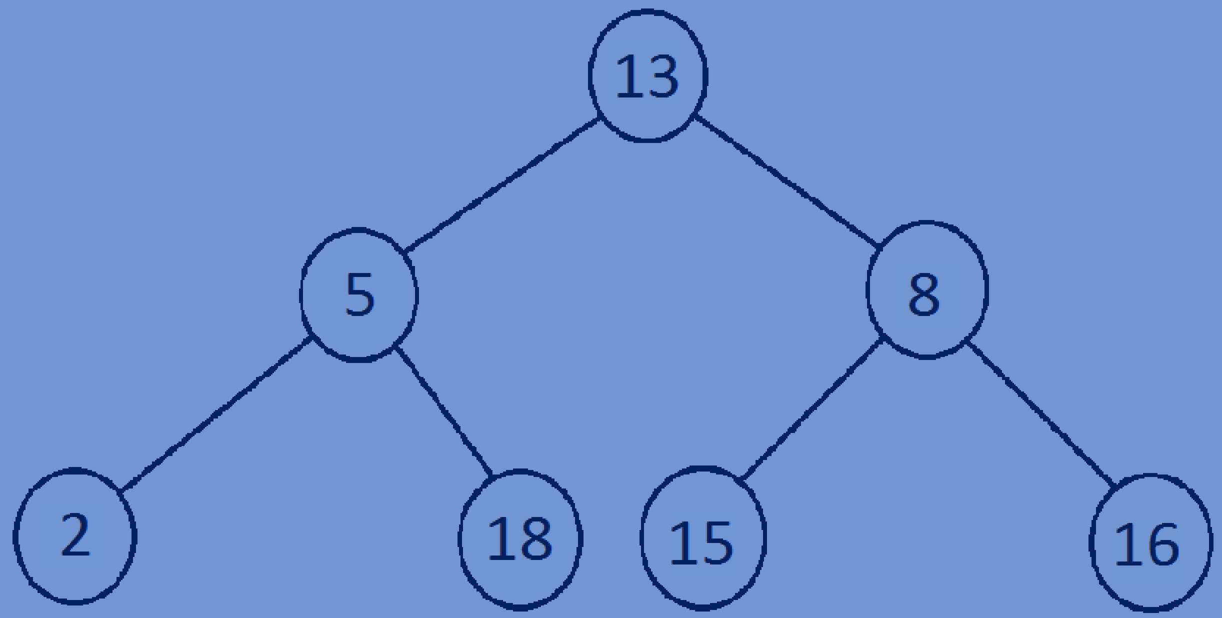
```
void MirrorTree(Btree *tree){
    if(tree==NULL){
        return;
    }
    MirrorTree(tree->left);
    MirrorTree(tree->right);
    Btree *temp;
    temp=tree->left;
    tree->left=tree->right;
    tree->right=temp;
}
//print all the nodes of a tree in preorder fashion
void preorder(Btree *root){
    if(root){
        printf("%d ",root->data);
        preorder(root->left);
        preorder(root->right);
    }
}
//main function
int main(){
    Btree *tree=NULL;
    //making time as seed
    srand((unsigned)(time(NULL)));
```



```c
    tree=createnewnode();
    tree->left=createnewnode();
    tree->right=createnewnode();
    tree->left->left=createnewnode();
    tree->left->right=createnewnode();
    tree->right->left=createnewnode();
    tree->right->right=createnewnode();
    preorder(tree);printf("\n");
    MirrorTree(tree);
    preorder(tree);
    return 0;
}
```

```
13 5 2 18 8 15 16

13 8 16 15 5 18 2
```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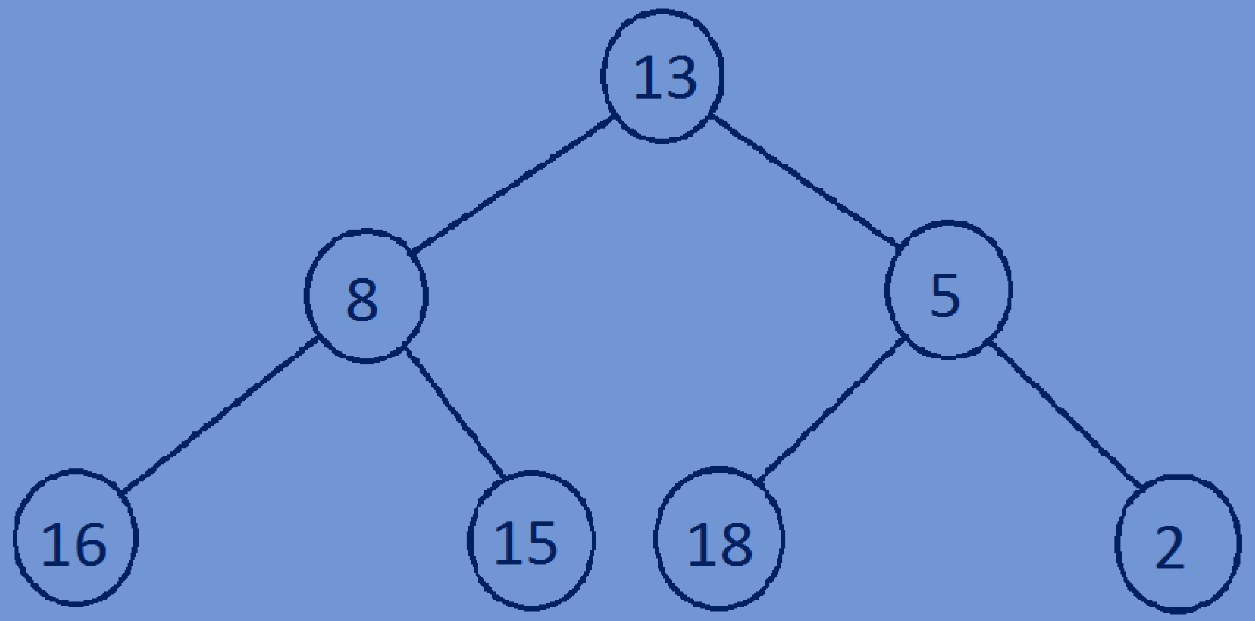
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