

Check Children Sum

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/*Check for Children Sum Property in a Binary Tree*/
#include <stdio.h>
#include <stdlib.h>

struct node
{
    int data;
    struct node *left;
    struct node *right;
};

struct node *newNode(int data)
{
    struct node *temp = (struct node *)malloc(sizeof(struct node));
    temp->data = data;
    temp->left = temp->right = NULL;
    return temp;
}

int checkChildrenSum(struct node *root)
{
    int lsum = 0, rsum = 0;
    if(!root || (!root->left) && !(root->right))
        return 1;
    if(root->left)
        lsum = root->left->data;
    if(root->right)
        rsum = root->right->data;
    return ((root->data == (lsum + rsum))
        && checkChildrenSum(root->left)
        && checkChildrenSum(root->right)) ? 1 : 0;
}

int main()
{
    struct node *root = newNode(10);
    root->left = newNode(8);
    root->right = newNode(2);
    root->left->left = newNode(3);
    root->left->right = newNode(5);
    root->right->right = newNode(2);
    checkChildrenSum(root)? printf("Given tree satisfies children sum property"):
    printf("Given tree not satisfies children sum property");
    return 0;
}
```

Time complexity: $O(n)$

Space complexity: $O(n)$