

Assignment No.3

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#include <iostream>

#include <vector>

using namespace std;

// TreeNode class representing each node in the tree
class TreeNode {
public:
    string name;
    vector<TreeNode> children; // Vector of child nodes (objects, not pointers)

    // Constructor
    TreeNode(string name) {
        this->name = name;
    }

    // Function to add child nodes
    void addChild(const TreeNode& child) {
        children.push_back(child);
    }

    // Recursive function to print the tree structure
    void printTree(int level = 0) const {
        for (int i = 0; i < level; i++) {
            cout << " "; // Indentation for hierarchy
        }
        cout << name << endl;

        for (const auto& child : children) {
```

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        child.printTree(level + 1);
    }
}
};

int main() {
    // Root node representing the book
    TreeNode book("Book");

    // Adding chapters
    TreeNode chapter1("Chapter 1");
    TreeNode chapter2("Chapter 2");

    // Adding sections to Chapter 1
    TreeNode section1_1("Section 1.1");
    TreeNode section1_2("Section 1.2");

    // Adding subsections to Section 1.1
    TreeNode subsection1_1_1("Subsection 1.1.1");
    TreeNode subsection1_1_2("Subsection 1.1.2");

    // Adding sections to Chapter 2
    TreeNode section2_1("Section 2.1");

    // Building the tree structure
    section1_1.addChild(subsection1_1_1);
    section1_1.addChild(subsection1_1_2);

    chapter1.addChild(section1_1);
    chapter1.addChild(section1_2);

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chapter2.addChild(section2_1);

book.addChild(chapter1);
book.addChild(chapter2);

// Print the tree structure
cout << "Book Structure:\n";
book.printTree();

return 0;
}
```

Output-

Book

Chapter 1

Section 1.1

Subsection 1.1.1

Subsection 1.1.2

Section 1.2

Chapter 2

Section 2.1

Output :

```

Book Structure:
Book
  Chapter 1
    Section 1.1
      Subsection 1.1.1
      Subsection 1.1.2
    Section 1.2
  Chapter 2
    Section 2.1

...Program finished with exit code 0
Press ENTER to exit console.

```