

Assignment No. 3

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Programme:

```
#include <iostream>

#include <string.h>

using namespace std;

struct node
{
    string label;

    int ch_count;

    struct node *child[10];
} * root;

class GT
{
public:
    void create_tree();
    void display(node *r1);

    GT()
    {
        root = NULL;
    }
};
```

```

void GT::create_tree()
{
    int tbooks, tchapters, i, j, k;

    root = new node;

    cout << "Enter name of book : ";

    cin.get();

    getline(cin, root->label);

    cout << "Enter number of chapters in book : ";

    cin >> tchapters;

    root->ch_count = tchapters;

    for (i = 0; i < tchapters; i++)
    {
        root->child[i] = new node;

        cout << "Enter the name of Chapter " << i + 1 << " : ";

        cin.get();

        getline(cin, root->child[i]->label);

        cout << "Enter number of sections in Chapter : " << root->child[i]->label << " : ";

        cin >> root->child[i]->ch_count;

        for (j = 0; j < root->child[i]->ch_count; j++)
        {
            root->child[i]->child[j] = new node;

            cout << "Enter Name of Section " << j + 1 << " : ";

            cin.get();

            getline(cin, root->child[i]->child[j]->label);

        }
    }
}

```

```

void GT::display(node *r1)
{
    int i, j, k, tchapters;

    if (r1 != NULL)
    {

```

```

cout << "\n-----Book Hierarchy---";

cout << "\n Book title : " << r1->label;

tchapters = r1->ch_count;

for (i = 0; i < tchapters; i++)
{

    cout << "\nChapter " << i + 1;

    cout << " : " << r1->child[i]->label;

    cout << "\nSections : ";

    for (j = 0; j < r1->child[i]->ch_count; j++)
    {

        cout << "\n"<< r1->child[i]->child[j]->label;

    }

}

}

cout << endl;
}

```

```

int main()
{
    int choice;

    GT gt;

    while (1)
    {
        cout << "-----" << endl;

        cout << "Book Tree Creation" << endl;

        cout << "-----" << endl;

        cout << "1.Create" << endl;

        cout << "2.Display" << endl;

        cout << "3.Quit" << endl;

        cout << "Enter your choice : ";

        cin >> choice;

        switch (choice)

```

```

{
case 1:

    gt.create_tree();

case 2:

    gt.display(root);

    break;

case 3:

    cout << "Thanks for using this program!!!";

    exit(1);

default:

    cout << "Wrong choice!!!" << endl;

}

}

return 0;

}

```

Output:

```

C:\Users\Yogesh Chimandare > SE DSA Programs > ass2.cpp > GT
54 void GT::display(node *r1)
57     if (r1 != NULL)
62         for (i = 0; i < tchapters; i++)
68             for (j = 0; j < r1->rchild[i]->ch_count; j++)
71                 cout << "-----" << endl;
72             }
73     }
74     cout << endl;
75 }
76
77 int main()
78 {
79     int choice;
80     GT gt;
81     while (1)
82     {
83         cout << "-----" << endl;
84         cout << "Book Tree Creation" << endl;

```

Book Tree Creation

1.Create
2.Display
3.Quit
Enter your choice : 1
Enter name of book : Agnipankh
Enter number of chapters in book : 2
Enter the name of Chapter 1 : Chap 1
Enter number of sections in Chapter : Chap 1 : 2
Enter Name of Section 1 : Sec 1
Enter Name of Section 2 : Sec 2
Enter the name of Chapter 2 : Chap 2
Enter number of sections in Chapter : hap 2 : 2
Enter Name of Section 1 : Sec 1
Enter Name of Section 2 : Sec 2
-----Book Hierarchy-----
Book title : Agnipankh
Chapter 1 : Chap 1
Sections :
Sec 1
Ec 2
Chapter 2 : hap 2
Sections :
Sec 1
ec 2