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/* ASSIGNMENT NO.:3
Title :A book consists of chapters, chapters consist of sections and
sections consist of subsections. Construct a tree and print the nodes.
Find the time and space requirements of your method.
*/


#include<iostream>
#include<stdlib.h>
using namespace std;
struct node
{
char label[60];
int chcount;
node *child[50];
}*root;
class general
{
public:
void insert();
void display();
general()
{
root == NULL;
}
};
void general::insert()
{
int secount;
root = new node();
cout<<"Enter the name of book:"<<endl;
cin>>root->label;
cout<<"Enter the total number of chapters in book:"<<endl;
cin>>root->chcount;
for(int i=0;i<root->chcount;i++)
{
root->child[i] = new node();
cout<<"Enter the name of chapters:"<<endl;
cin>>root->child[i]->label;
cout<<"Enter the number of sections:"<<endl;
cin>>root->child[i]->chcount;
for(int j=0;j<root->child[i]->chcount;j++)
{
root->child[i]->child[j] = new node();
cout<<"Enter the name of section:"<<endl;
cin>>root->child[i]->child[j]->label;
cout<<"Enter the number of sub sections:"<<endl;
cin>>root->child[i]->child[j]->chcount;
for(int k=0; k<root->child[i]->child[j]->chcount; k++)
{
root->child[i]->child[j]->child[k] = new node();
cout<<"Enter the name of sub section:"<<endl;
cin>>root->child[i]->child[j]->child[k]->label;
}
}
}
}
```

```
void general::display()
{
if(root != NULL)
{
cout<<"********** Hierarchy of Book **********"<<endl;
cout<<"Book Name is"<<root->label<<endl;
for(int i=0; i<root->chcount; i++)
{
cout<<"— "<<root->child[i]->label<<endl;
for(int j=0; j<root->child[i]->chcount; j++)
{
cout<<"——— "<<root->child[i]->child[j]->label<<endl;
for(int k=0; k<root->child[i]->child[j]->chcount; k++)
{
cout<<"——————— "<<root->child[i]->child[j]->child[k]->label<<endl;
}
}
}
}
}
int main()
{
general g;
int ch;
do
{
cout<<"~~~~~ MENU ~~~~~"<<endl;
cout<<"1. Insert"<<endl;
cout<<"2. Display."<<endl;
cout<<"Enter the choice:"<<endl;
cin>>ch;
switch(ch)
{
case 1: g.insert();
break;
case 2: g.display();
break;
}
}while(ch<3);
}
```

OUTPUT :

```
~~~~~ MENU ~~~~~
1. Insert.
2. Display.
Enter the choice:
1
Enter the name of book:
java
Enter the total number of chapters in book:
2
Enter the name of chapters:
operators
Enter the number of sections:
2
```

Enter the name of section:
arithmetic
Enter the number of sub sections:
1
Enter the name of sub section:
Addition
Enter the name of section:
Logical
Enter the number of sub sections:
2
Enter the name of sub section:
And
Enter the name of sub section:
Or
Enter the name of chapters:
applet
Enter the number of sections:
1
Enter the name of section:
lifecycle
Enter the number of sub sections:
1
Enter the name of sub section:
beginning
~~~~~ MENU ~~~~~
1. Insert.
2. Display.
Enter the choice:
2
********** Hierarchy of Book **********
Book Name is java
– operators
——– arithmetic
———————– Addition
——– Logical
———————– And
———————– Or
– applet
——– lifecycle
———————– beginning
~~~~~