```cpp
#include <iostream>
#include <string>
using namespace std;

class Topic{
 public:
        Topic(){title = "NoTitle"; cout << title << endl;}
        Topic(const string &aTitle){title = aTitle; cout << title << endl;}
        ~Topic(){cout << "Topic " << title <<" dies\n";}
        string getTitle() {return title;}
 private:
        string title;
};

class Section{
 public:
        Section(){title = "NONAME"; numPages = 0; cout << "Section " << title << " is born\n";}
        Section(const string &aTitle, const int &pages);          //parameterized cstr
        Section(const Section &aSection);                         //copy constructor
        ~Section(){ cout << "Section " << title << " dies\n";}    //destructor
        string getTitle(){ return title;}
        int getNumPages(){return numPages;}
 private:
        string title;
        int numPages;
};

Section::Section(const string &aTitle, const int &pages){
 title = aTitle; numPages=pages;
 cout << "Section " << title << " is born\n";
}

Section::Section(const Section &aSection){
 title = aSection.title; numPages = aSection.numPages;
 cout << "Copy cstr fired\n";
}


class Document{
 public:
        Document();
        Document(const string & aName, const Topic * aTopic);
        ~Document(){cout << "Doc " << docName << " dies\n";}
        void addSection(const Section &aSection);
        void  computeStats(const  double  &  hoursSpentPerPage,  int  *  totalNumPages,  double  *
                totalEffortToRead);
        void showMe();
        void showMeDetails();
        static string getOwner(){return owner;}
 private:
        string docName;
        Topic * docTopic;
        Section sections[5];
        int numSections;
        static string owner;
};

string Document::owner = "Library of Univ. Ioannina";

Document::Document(){
 docName="NoName"; docTopic = NULL; numSections= 0;
 cout <<"Empty Doc generated\n";
}

Document::Document(const string & aName, const Topic * aTopic){
 docName=aName;
 docTopic = const_cast<Topic *>(aTopic);
 numSections = 0;
 cout <<"Doc: " <<docName <<" owned by "<< owner <<" with topic " <<docTopic->getTitle() << endl;
}
```

```cpp
void Document::addSection(const Section &aSection){
 sections[numSections] = aSection;
 cout << "Section " << sections[numSections].getTitle() << " added\n";
 numSections++;
}

void  Document::computeStats(const  double  &  hoursSpentPerPage,  int  *  totalNumPages,  double  *
totalEffortToRead){
 *totalNumPages = 0; *totalEffortToRead = 0;
 for (int i=0; i<numSections; i++)
        *totalNumPages += sections[i].getNumPages();
 *totalEffortToRead = *totalNumPages * hoursSpentPerPage;
}

void Document::showMe(){
 cout << owner << " owns a very nice document titled: " << docName << "\n\twith the topic: " <<
docTopic->getTitle() << "\n";
}

void Document::showMeDetails(){
 cout << "Sections: " << numSections << "\n";
 for (int i=0; i<numSections; i++){
        cout << sections[i].getTitle() <<"\t" << sections[i].getNumPages() << "\n";
 }
 double hrsPerPage = 0.1; int totalPages = 0; double totalEffort = 0;
 this->computeStats(hrsPerPage, &totalPages, &totalEffort);
 cout << "Number of pages: " << totalPages <<endl;
 cout << "Estimated Effort: " << totalEffort << endl;
}

int main(){
 Topic botany("Botany");
 Document doc1;
 Document doc2("Votaniki by Theofrastos", &botany);
 Document * docPtr = new Document("Peri fyton by Aristotle", &botany);

 cout << "\n----------------------------- SECTIONS OF A DOCUMENT ---------------------------\n";
 Section sec1("Intro", 6); Section sec2("Background", 10); Section sec3("Actual contribution", 30);
 Section sec4("Experiments", 10); Section sec5("Fin", 4);
 Section sec2_clone(sec2);
 docPtr->addSection(sec1); docPtr->addSection(sec2); docPtr->addSection(sec2_clone);
 cout << "\n----------------------------- DOCUMENT ---------------------------\n";
 docPtr->showMe();
 docPtr->showMeDetails();

 cout << "\n\nOffered by the " << Document::getOwner() << endl;
                      //ATTN: NOT docPtr->getOwner(), belongs to class
 cout << "\n----------------------------- KILLED BY DEATH---------------------------\n";
 delete docPtr;


 cout << "\n----------------------------- END OF PROGRAM ---------------------------\n";
 return 0;
}

//observe that when the doc dies, the topic is unaffected
//observe that when the doc dies, its sections die too.
```

```
$ ./a.exe
Botany
Section NONAME is born
Section NONAME is born
Section NONAME is born
Section NONAME is born
Section NONAME is born
Empty Doc generated
Section NONAME is born
Section NONAME is born
Section NONAME is born
Section NONAME is born
Section NONAME is born
Doc: Votaniki by Theofrastos owned by Library of Univ. Ioannina with topic Botany
Section NONAME is born
Section NONAME is born
Section NONAME is born
Section NONAME is born
Section NONAME is born
Doc: Peri fyton by Aristotle owned by Library of Univ. Ioannina with topic Botany

----------------------------- SECTIONS OF A DOCUMENT ---------------------------
Section Intro is born
Section Background is born
Section Actual contribution is born
Section Experiments is born
Section Fin is born
Copy cstr fired
Section Intro added
Section Background added
Section Background added

----------------------------- DOCUMENT ---------------------------
Library of Univ. Ioannina owns a very nice document titled: Peri fyton by Aristotle
        with the topic: Botany
Sections: 3
Intro   6
Background      10
Background      10
Number of pages: 26
Estimated Effort: 2.6


Offered by the Library of Univ. Ioannina

----------------------------- KILLED BY DEATH---------------------------
Doc Peri fyton by Aristotle dies
Section NONAME dies
Section NONAME dies
Section Background dies
Section Background dies
Section Intro dies

----------------------------- END OF PROGRAM ---------------------------
Section Background dies
Section Fin dies
Section Experiments dies
Section Actual contribution dies
Section Background dies
Section Intro dies
Doc Votaniki by Theofrastos dies
Section NONAME dies
Section NONAME dies
Section NONAME dies
Section NONAME dies
Section NONAME dies
Doc NoName dies
Section NONAME dies
Section NONAME dies
Section NONAME dies
Section NONAME dies
Section NONAME dies
Topic Botany dies
```