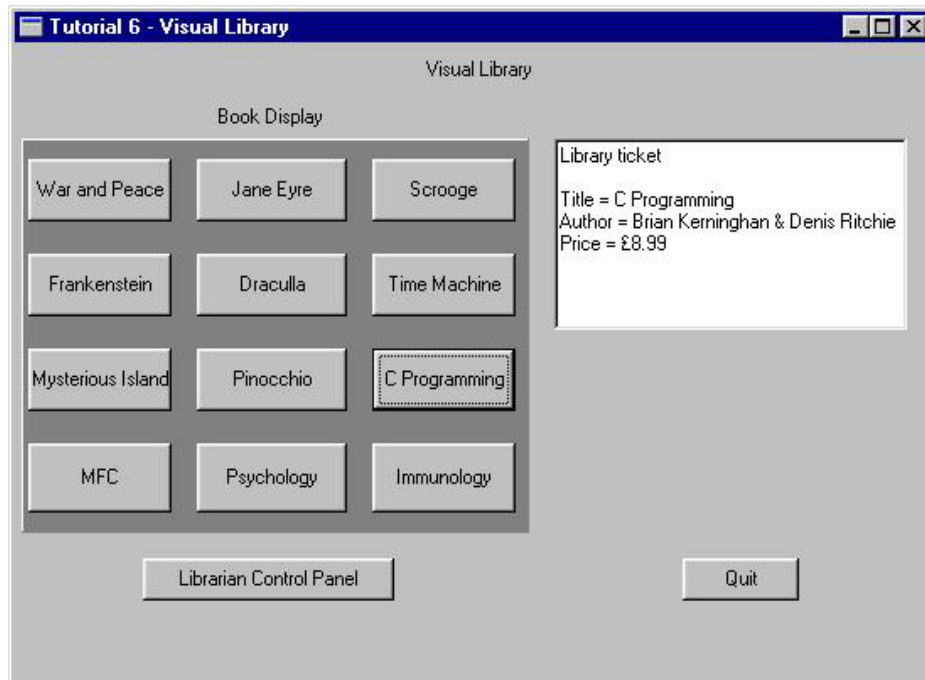


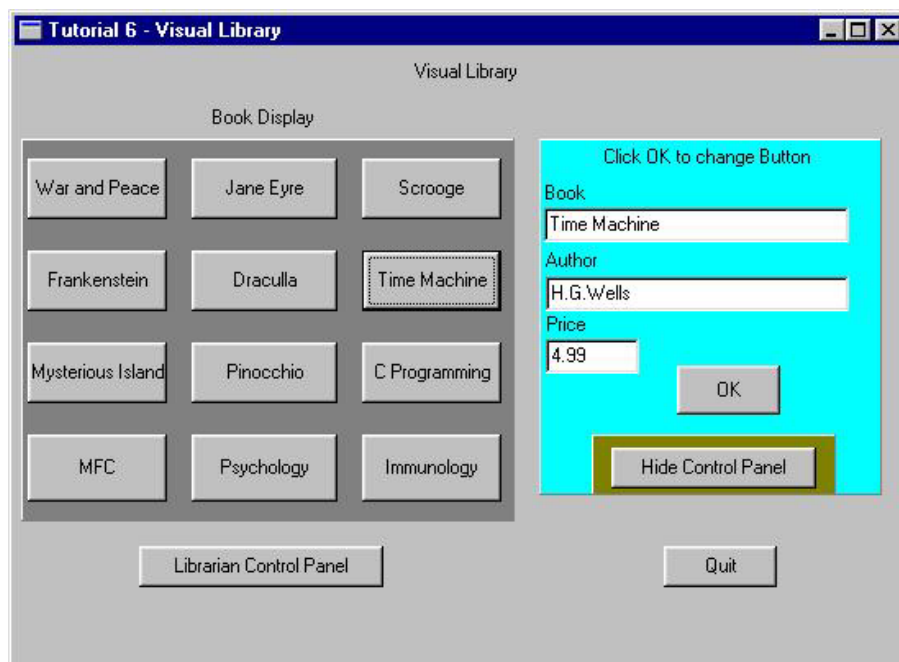
Software engineering exercise

Write a visual book library with upto 12 books (represented by clickable buttons) displayed on the shelves. The user should be able to view the Title, Author and Price of the book when then click on the respective button. Also there should be Librarian control panel that allows the Librarian to change the detail of the book.

The graphical output for the main program should look similar to the figure below :



The graphical output for the Librarian control panel should look similar to the figure below:



Design the followings :

VisLib.cpp : The main driver that connects the application to Windows

VisLibU.h : Header that contains the button driver for the application

VisLib.cpp : The main software driver

VLEng.h : Header that contains the Class definition for the engine

VLEng.cpp : Implementation of the engine

Answer to Software Engineering exercise

VisLib.cpp

```
//-----  
-  
#include <vcl.h>  
#pragma hdrstop  
USEFORM("VisLibU.cpp", Form1);  
USEUNIT("VLEng.cpp");  
//-----  
-  
WINAPI WinMain(HINSTANCE, HINSTANCE, LPSTR, int)  
{  
    try  
    {  
        Application->Initialize();  
        Application->CreateForm(__classid(TForm1), &Form1);  
        Application->Run();  
    }  
    catch (Exception &exception)  
    {  
        Application->ShowException(&exception);  
    }  
    return 0;  
}  
//-----
```

VisLibU.h

```
//-----
#ifndef VLUH
#define VLUH
//-----
#include <Classes.hpp>
#include <Controls.hpp>
#include <StdCtrls.hpp>
#include <Forms.hpp>
#include <ExtCtrls.hpp>
#include "VLEng.h"
//-----
class TForm1 : public TForm
{
__published: // IDE-managed Components
    TPanel *Panel;
    TButton *B0;
    TButton *B1;
    TButton *B2;
    TButton *B3;
    TButton *B4;
    TButton *B5;
    TButton *B6;
    TButton *B7;
    TButton *B8;
    TButton *B9;
    TButton *B10;
    TButton *B11;
    TButton *Button13;
    TPanel *ControlPanel;
    TEdit *DescBox;
    TEdit *CostBox;
    TLabel *Label1;
    TLabel *Label2;
    TLabel *Label3;
    TButton *OKButton;
    TMemo *Display;
    TPanel *Panell;
    TButton *Button1;
    TEdit *IdEdit;
    TLabel *Label4;
    TLabel *Label5;
    TLabel *bookdis;
    TButton *QuitButton;
    void __fastcall B0Click(TObject *Sender);
    void __fastcall FormCreate(TObject *Sender);
    void __fastcall Button13Click(TObject *Sender);
    void __fastcall OKButtonClick(TObject *Sender);
    void __fastcall FormActivate(TObject *Sender);
    void __fastcall QuitButtonClick(TObject *Sender);
private: // User declarations
    VLType MyVL;
    void ProcessButton(int ButtonId);
    void SetDisplay(int ButtonId);
    AnsiString SetCaption(int ButtonId);
    int CurrentTag;
public: // User declarations
    __fastcall TForm1(TComponent* Owner);
};
//-----
extern PACKAGE TForm1 *Form1;
//-----
#endif
```

VisLib.cpp

```
//-----  
#include <vcl.h>  
#pragma hdrstop  
  
#include "VisLibU.h"  
//-----  
#pragma package(smart_init)  
#pragma resource "*.dfm"  
TForm1 *Form1;  
//-----  
__fastcall TForm1::TForm1(TComponent* Owner)  
    : TForm(Owner)  
{  
}  
//-----  
AnsiString TForm1::SetCaption(int ButtonId)  
{  
    MyVL.SetSelection(ButtonId);  
    return MyVL.GetTitle();  
}  
  
void TForm1::ProcessButton(int ButtonId)  
{  
    CurrentTag = ButtonId;  
    MyVL.SetSelection(ButtonId);  
    Display->Clear();  
    Display->Lines->Add("Library ticket");  
    Display->Lines->Add("");  
    Display->Lines->Add("Title = " + MyVL.GetTitle());  
    Display->Lines->Add("Author = " + MyVL.GetAuthor());  
    Display->Lines->Add("Price = £" + MyVL.GetBookCost());  
};  
  
void TForm1::SetDisplay(int ButtonId)  
{  
    CurrentTag = ButtonId;  
    MyVL.SetSelection(ButtonId);  
    IdEdit->Text = MyVL.GetTitle();  
    DescBox->Text = MyVL.GetAuthor();  
    CostBox->Text = MyVL.GetBookCost();  
}  
//-----  
void __fastcall TForm1::FormCreate(TObject *Sender)  
{  
    MyVL.Initialise("VisLibData.dat");  
}  
//-----  
void __fastcall TForm1::B0Click(TObject *Sender)  
{  
    if (!ControlPanel->Visible)  
        ProcessButton(((TButton*) Sender)->Tag);  
    else  
        SetDisplay(((TButton*) Sender)->Tag);  
    ((TButton*) Sender)->Caption = MyVL.GetTitle();  
}  
  
void __fastcall TForm1::Button13Click(TObject *Sender)  
{  
    ControlPanel->Visible = !(ControlPanel->Visible);  
    Display->Clear();  
    Display->Visible = !(Display->Visible);  
    MyVL.SaveData("VLData.dat");  
}  
//-----
```

```

void __fastcall TForm1::OKButtonClick(TObject *Sender)
{
    MyVL.SetTitle(IdEdit->Text);
    MyVL.SetAuthor(DescBox->Text);
    MyVL.SetBookCost(float(CostBox->Text.ToDouble()));
    switch (CurrentTag)
    {
        case 0: B0->Caption = IdEdit->Text;
                break;
        case 1: B1->Caption = IdEdit->Text;
                break;
        case 2: B2->Caption = IdEdit->Text;
                break;
        case 3: B3->Caption = IdEdit->Text;
                break;
        case 4: B4->Caption = IdEdit->Text;
                break;
        case 5: B5->Caption = IdEdit->Text;
                break;
        case 6: B6->Caption = IdEdit->Text;
                break;
        case 7: B7->Caption = IdEdit->Text;
                break;
        case 8: B8->Caption = IdEdit->Text;
                break;
        case 9: B9->Caption = IdEdit->Text;
                break;
        case 10: B10->Caption = IdEdit->Text;
                break;
        case 11: B11->Caption = IdEdit->Text;
                break;
    }
}
//-----

void __fastcall TForm1::FormActivate(TObject *Sender)
{
    B0->Caption = SetCaption(B0->Tag);
    B1->Caption = SetCaption(B1->Tag);
    B2->Caption = SetCaption(B2->Tag);
    B3->Caption = SetCaption(B3->Tag);
    B4->Caption = SetCaption(B4->Tag);
    B5->Caption = SetCaption(B5->Tag);
    B6->Caption = SetCaption(B6->Tag);
    B7->Caption = SetCaption(B7->Tag);
    B8->Caption = SetCaption(B8->Tag);
    B9->Caption = SetCaption(B9->Tag);
    B10->Caption = SetCaption(B10->Tag);
    B11->Caption = SetCaption(B11->Tag);
    Display->Clear();
}
//-----

void __fastcall TForm1::QuitButtonClick(TObject *Sender)
{
    Application->Terminate();
}
//-----

```

VLEng.cpp

```
//-----  
-----  
#include <vcl.h>  
#include <fstream.h>  
#pragma hdrstop  
#include "VLEng.h"  
  
//-----  
-----  
#pragma package(smart_init)  
void VLType::Initialise(AnsiString FileName)  
{  
    int Index;  
    int NumItems;  
    TStringList *S1;  
    for (Index = 0; Index < 12; Index = Index + 1)  
    {  
        List[Index].Title = "";  
        List[Index].Author = "None";  
        List[Index].Cost = 0;  
    }  
    NumItems = 0;  
    if (FileExists(FileName))  
    {  
        S1 = new TStringList();  
        S1->LoadFromFile(FileName);  
        NumItems = S1->Count / 3;  
        if (NumItems > 20)  
            NumItems = 20;  
        if (NumItems > 0)  
            for (Index = 0; Index < NumItems; Index = Index + 1)  
            {  
                List[Index].Title = S1->Strings[3*Index];  
                List[Index].Author = S1->Strings[3*Index + 1];  
                List[Index].Cost = S1->Strings[3*Index + 2].ToDouble();  
            }  
        delete S1;  
    }  
    SelectedItem = 0;  
}  
  
void VLType::SetSelection(int SelectionNumber)  
{  
    SelectedItem = SelectionNumber;  
}  
  
void VLType::SetTitle(AnsiString NewBook)  
{  
    List[SelectedItem].Title = NewBook;  
}  
  
AnsiString VLType::GetTitle(void)  
{  
    return List[SelectedItem].Title;  
}  
  
void VLType::SetAuthor(AnsiString NewAuth)  
{
```

```

    List[SelectedItem].Author = NewAuth;
}

AnsiString VLType::GetAuthor(void)
{
    return(List[SelectedItem].Author);
}

void VLType::SetBookCost(float NewCost)
{
    List[SelectedItem].Cost = NewCost;
}

AnsiString VLType::GetBookCost(void)
{
    return(FormatFloat("0.00",List[SelectedItem].Cost));
}

void VLType::SaveData(AnsiString FileName)
{
    TStringList *S2;
    int Index;
    S2 = new TStringList();
    for(Index = 0; Index < 20; Index = Index + 1)
    {
        S2->Add(List[Index].Title);
        S2->Add(List[Index].Author);
        S2->Add(AnsiString(List[Index].Cost));
    }
    S2->SaveToFile(FileName);
    delete S2;
}

```

VLEng.h

```
//-----  
#ifndef VLEngH  
#define VLEngH  
//-----  
class VLType  
{  
private:  
struct VLRecord  
{  
    AnsiString Title; // Button label for book  
    AnsiString Author;  
    float Cost;  
};  
    VLRecord List[20];  
    int SelectedItem;  
  
public:  
    void Initialise(AnsiString FileName);  
    void SetSelection(int SelectionNumber);  
    void SetTitle(AnsiString NewBook);  
    AnsiString GetTitle(void);  
    void SetAuthor(AnsiString NewAuth);  
    AnsiString GetAuthor(void);  
    void SetBookCost(float NewCost);  
    AnsiString GetBookCost(void);  
    AnsiString GetPrice(void);  
    void SaveData(AnsiString FileName);  
};  
#endif
```