Object Oriented Programming – Fall-2022

Assignment-01

Due Date: 19 November 2022

Marks: 50

- Your assignment should be in .CPP format (Any other formats like scan images, PDF, zip, doc, rar and bmp etc. will not be accepted).
- Submit hard copy of assignment with your ID (e.g. bc000000000.CPP).
- No assignment will be accepted through email. Marks will be deducted if student's registration id, name, and section title are not written.

Question 1: (Marks:10)

Write a program that defines a shape class with a constructor that gives values to width and height. Then define two sub-classes triangle and rectangle, that calculate the perimeter of shape perimeter(). In the main, define two variables a triangle and a rectangle and then call the perimeter() function in these two variables.

Question 2: (Marks :10)

Given the following code add a destructor for Student class.

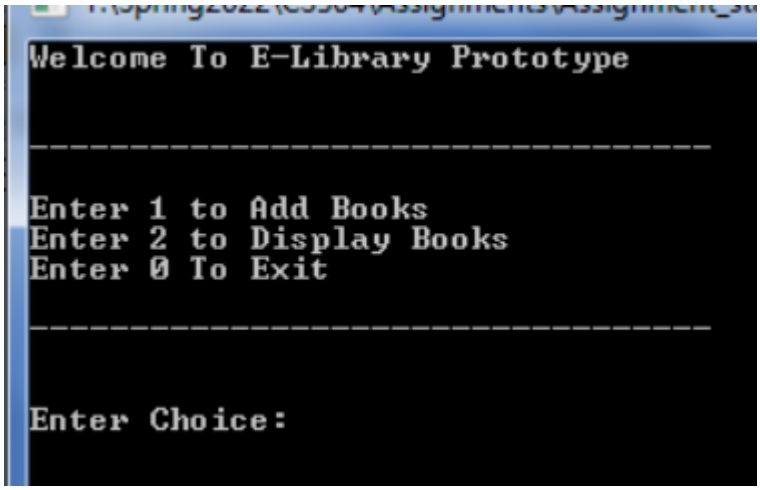
```
# include <iostream>
Class Student {
Public:
    Student(void)
    { std::cout<<" constructor called";}
Int main ()
{
     Student std;
    Return 0;
}
```

Question 3: (Marks 10)

Write a program to define a grade table that can be filled with both type integer or float using Class templates.

Question 4: (Marks 20)

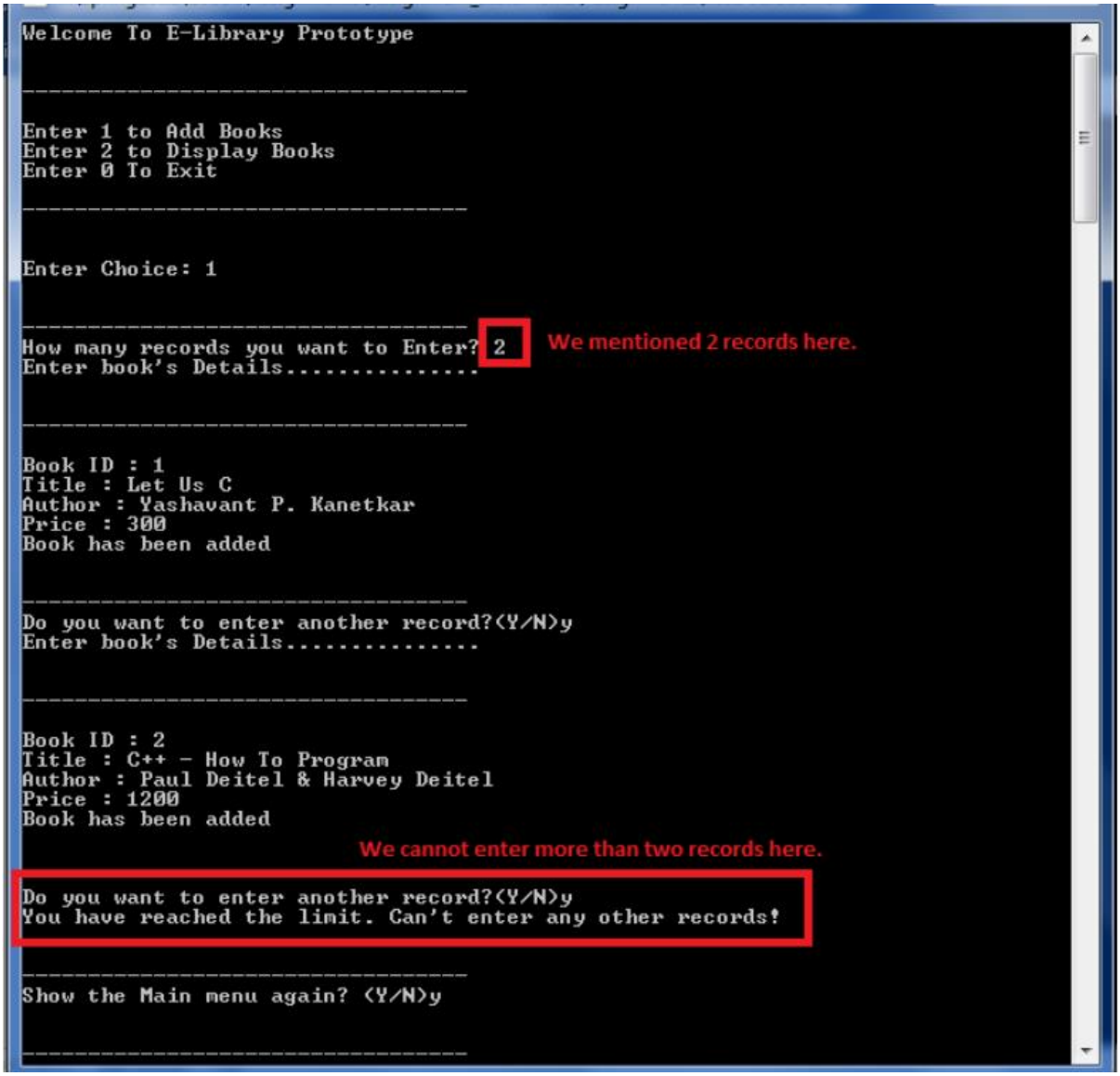
Assume you are working as a website developer for a university named XYZ. The project assigned to you is to develop a Library Management System in C++ named “E-library”, to facilitate the librarian to keep records of the books. But at first, the university wants to get a prototype of the Library Management System. The prototype will have two basic functionalities. First, “Add Books” to add new books. Second, “Display Books” to display record of books added. When you will run the prototype, following menu will appear on the screen:

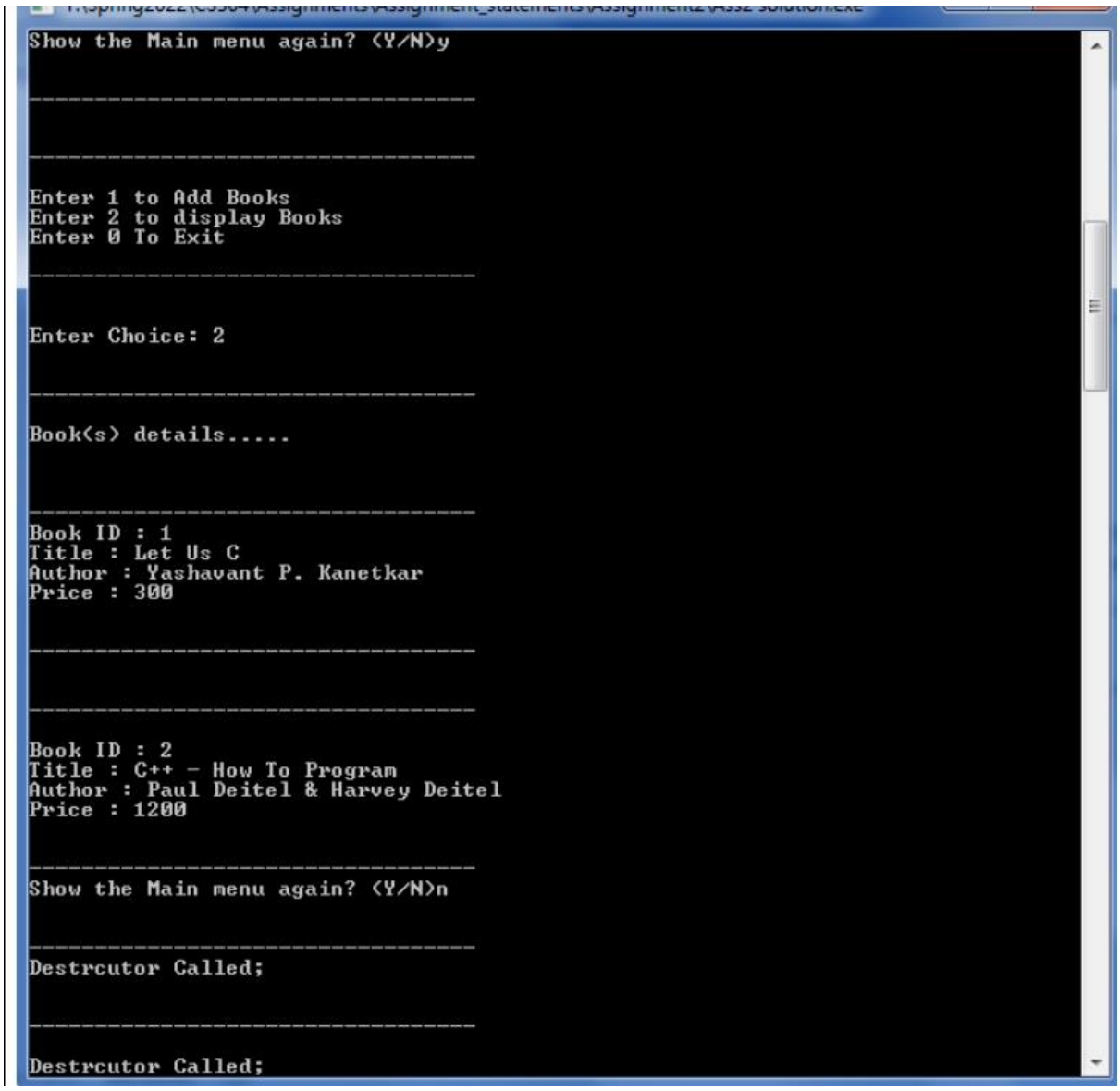


Create a class book with following data members and Member Functions: Data Members

- Book_ID (int)
- Title (string)
- Author (string)
- Price (float) Implement the following Functionalities:
    - Create a Default constructor
    - Add Accessor functions (Getter and Setter) for each of the data members
    - Add new book records using Setter functions (use this pointer)
    - Display book records using Getter Functions
    - Create Destructor Instructions:
    - Use the new operator to create instances of the class Book.
    - Destruct all the instances of the class which were created in this program.

Your output should be same as sample output


Welcome To E-Library Prototype
Enter 1 to Add Books
Enter 2 to Display Books
Enter 0 To Exit
Enter Choice: 1
How many records you want to Enter? 2
We mentioned 2 records here.
Enter book's Details.....
Book ID : 1
Title : Let Us C
Author : Yashavant P. Kanetkar
Price : 300
Book has been added
Do you want to enter another record?(Y/N)y
Enter book's Details.....
Book ID : 2
Title : C++ - How To Program
Author : Paul Deitel & Harvey Deitel
Price : 1200
Book has been added
We cannot enter more than two records here.
Do you want to enter another record?(Y/N)y
You have reached the limit. Can't enter any other records!
Show the Main menu again? (Y/N)y


Show the Main menu again? (Y/N)y
Enter 1 to Add Books
Enter 2 to display Books
Enter 0 To Exit
Enter Choice: 2
Book(s) details.....
Book ID : 1
Title : Let Us C
Author : Yashavant P. Kanetkar
Price : 300
Book ID : 2
Title : C++ - How To Program
Author : Paul Deitel & Harvey Deitel
Price : 1200
Show the Main menu again? (Y/N)n
Destrcutor Called;
Destrcutor Called;