THE UNIVERSITY OF BUCKINGHAM

SCHOOL OF COMPUTING

OBJECT-ORIENTED PROGRAMMING

Assignment

	Assessed parts	Mark allocated	Your mark
1	Proper class creation	10	
2	Proper use of inheritance	5	
3	Proper use of composition	5	
4	Proper use of constructors	10	
5	Using of UML	5	
6	Methods with proper returning values and parameters	10	
7	Section 3 design & justification	20	
9	Documentation & testing	8	
10	Section 4 design & justification	20	
11	Documentation & testing	7	
	Total	**100**	

Submission instruction:

1. You need to submit all your code in one single project.

2. All your code, UMLs, and output screenshots should be populated in a single word document.

3. You will submit two files:

    a. The full visual studio folder (or equivalent “Mac”) project without the debug folder to reduce the size, put all the project folder in a zip file.
    b. The word document that is described in (2), please populate this page as the first page of your word document.

Library System

This assignment is about designing and developing a Library system. The OOP design is to be completed in three stages across three sections, all these three sections must be implemented in a single project called Library_System.

Section 1: (20 marks) you can work on this after Week 3

In this section, you need to implement the three classes represented by the UML diagram shown in figure 1: **Date**, **Time**, and **Person**. The class Person is composing the class Date as a data member. After implementing these classes, test your system by creating an object for each class.

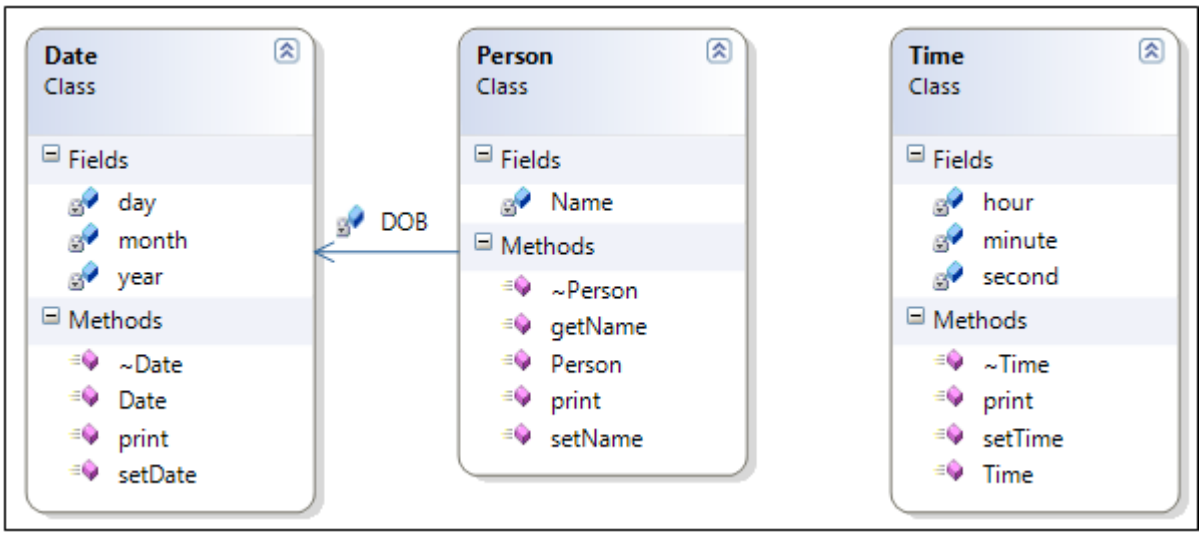

Figure 1

Section 2: (20 marks) you can work on this after Week 4

In this section, you need to add three classes, as shown in figure 2, to the project you have already developed in section 1. These classes are Publisher, Student, and Author. The last two classes are inheriting the class Person. Test your implementation for these classes by creating an object for each class.

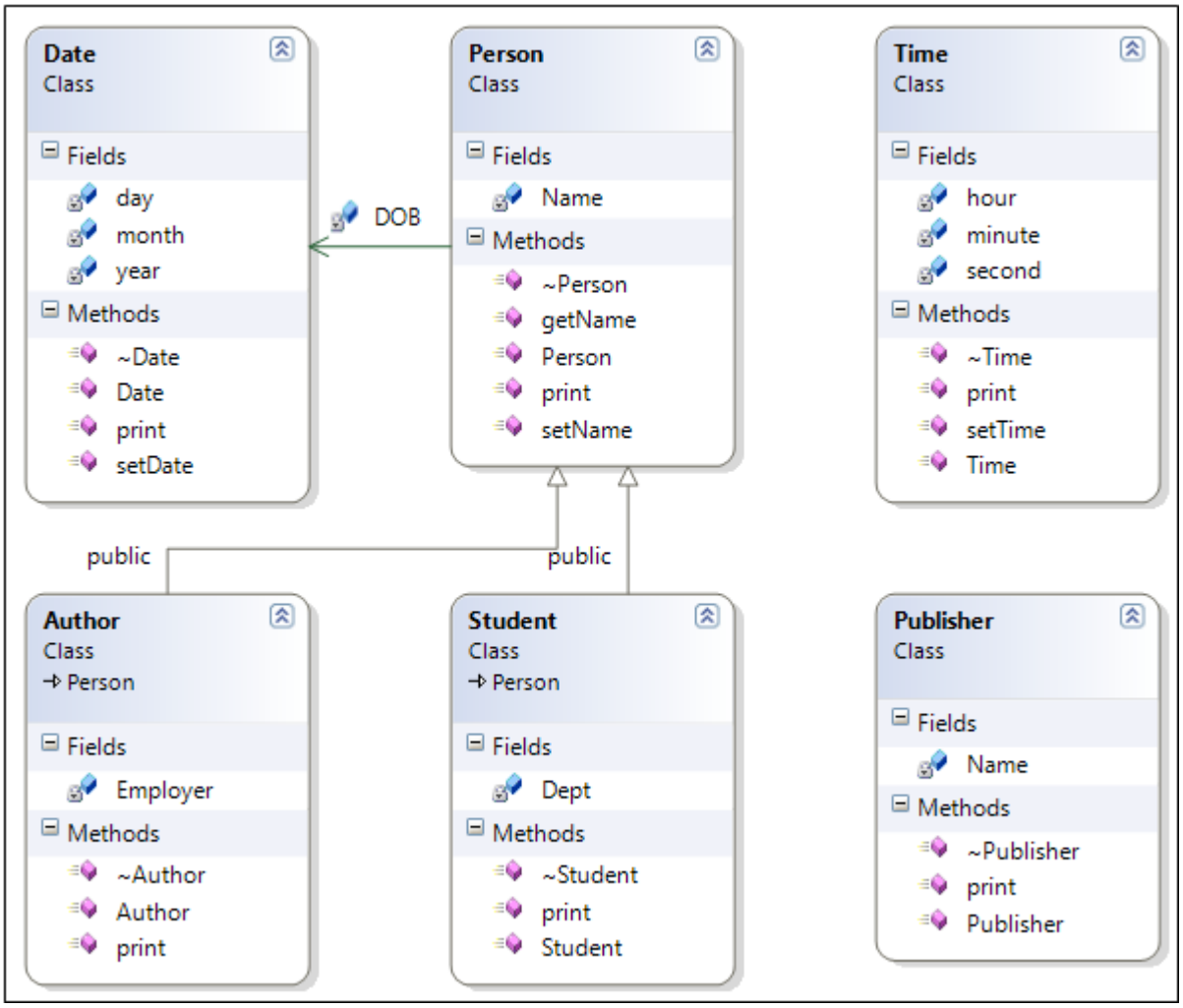

Figure 2

Sample output for testing the three added classes is shown below:

```
Publisher created: Prentice Hall
Student created: JamesHall, Dob: 12/12/1988, Applied Computing
Author Created: Deitel, Dob: 12/12/1970, Deitel comp ltd
```

Section 3: (28 marks) you can work on this after Week 4

To complete the design and provide a book borrowing system, you need to design and implement two extra classes. These two classes are Book class and Borrow class as shown in figure 3. You need to add suitable data members and functionalities. These two classes need to be also associated with your designed classes. The association can be made by inheritance or composition. You need to justify your design by adding comments to the class header file where appropriate. Test your system by creating a test object for Book class and Borrow class.

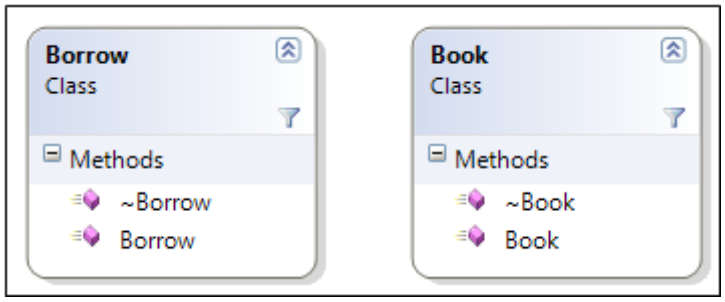

Figure 3

Sesction 4: (27 marks) you can work on this after Week 7

In this section you need to think how to save samples of your data in the memery and what type of STL library you might be using to achieve this. So for example the librarian would like to retrieve a centain book and find out the following information:

1. Who is borrowing that book?
2. When it has been borrowed?
3. When is the due date for returning the book?
4. How is the author of the book?
5. Who is the book publisher?

Testing:

Testing here is very important, this should include using sample data that can show the performance of your system

END