SWE 4201 - OBJECT ORIENTED CONCEPTS I

LAB 03 HANDOUT AND TASKS

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1 Class and Object Creation from a scenario

A library needs a system to manage its book inventory. The system should keep track of various details for each book, including its title, author, ISBN, publication date, publisher, and availability (whether the book is currently available for borrowing or not). The system should also be able to lend books to library members and record the details.

Now, how can you decide what should be classes, properties, or methods? We can think of nouns and verbs from the scenario.

Noun Identification

A library needs a system to manage its book inventory. The system should keep track of various details for each book, including its title, author, ISBN, publication date, publisher, and availability (whether the book is currently available for borrowing or not). The system should also be able to lend books to library members and record the details. Every library member has a unique ID, name, and address. A member can borrow multiple books from the library.

Class Book

Properties

- Title
- Author
- ISBN (International Standard Book Number)
- Publication Date
- Publisher
- Available

Data type identification

- Title: String
- Author: String

- ISBN: String
- Publication Date: Date (for simplicity, use String)
- Publisher: String
- Available: Boolean

Verb Identification

A library needs a system to manage its book inventory. The system should keep track of various details for each book, including its title, author, ISBN, publication date, publisher, and availability (whether the book is currently available for borrowing or not). The system should also be able to lend books to library members and record the details. Every library member has a unique ID, name, and address. A member can borrow multiple books from the library.

Methods

- borrow()
- ~~lend()~~
- record(). The record method means when a book is borrowed it should not be available. Similarly, when the book is returned, it should be available. So, it ultimately means two methods (borrowBook and returnBook). **returnBook()**
- We can think of other methods to print the details of a book. **getDetails()**

Class & Properties Library Member or Member

Properties:

- ID: int
- Name: String
- Address: String

Methods: **?**

Class & Properties Library

Properties: **?**

Methods: **?**

Now, Use the constructor, and access modifiers in your code. Create a Main class and instantiate objects of the classes. Call some methods to print in the console.

2 TASKS

2.1 Class Creation **Marks 10**

- Identify class, properties, and methods from the scenario.
- Add 1 constructor with the default constructor.
- Create another class Main with the main method to create objects and run the code.
- Initially you should not add any access modifiers for properties and methods. Later add those modifiers to access properties from the Main class.

An electronics store needs to maintain an inventory of electronic equipment which might be found there. You should include audio as well as video equipment. Keep information on all equipment such as manufacturer, cost, date purchased, and serial number. For the audio equipment, keep track of whether it is a cassette player, a CD player, or a radio. Video equipment should be categorized as VHS, 8MM, or video disk.

You should be able to calculate the depreciation of each piece of equipment based on its cost and age. Every year there will be 20% depreciation. A print details method can print information on each piece of equipment in the inventory.