

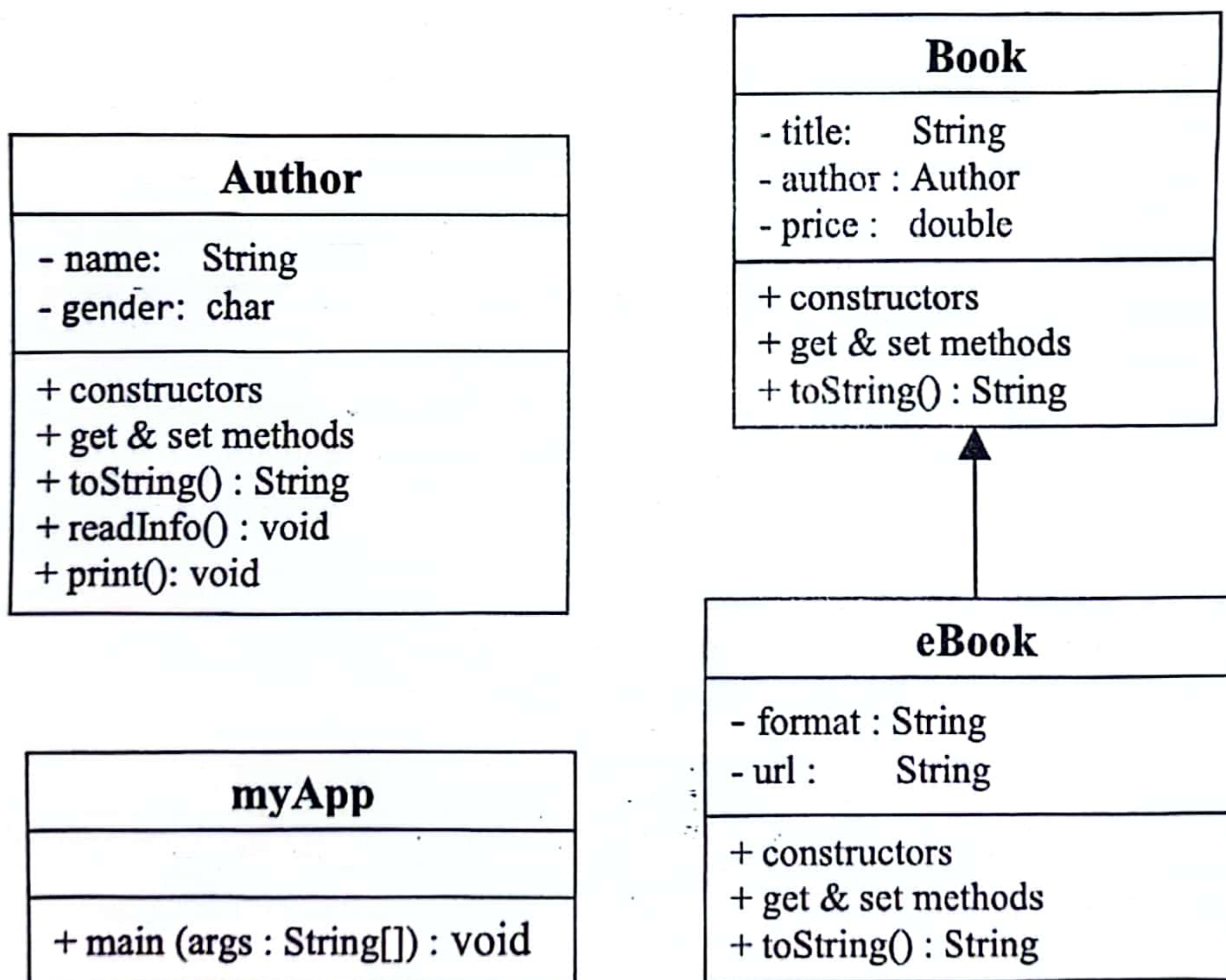


امتحانات الدورة الأولى للفصل الثاني  
من العام الجامعي 2020 - 2021

المادة: Object-oriented programming	إجازة: الأولى	المرحلة: السنة المنهجية:
المدة: ساعة ونصف	الاولى	الاختصاص:
الأستاذ: د. جواد مكي	Data Science	
العلامة من: (100)		

**Question # 1 (100 pts)**

Consider the inheritance hierarchy shown below in the UML class diagram (the class description is next:)



The **Author** class has the following:

*Attributes (private member variables):*

- name: A String to store the name of the author.
- gender: a char that represents the gender of the author. It should be only either 'M' or 'F'.

*Methods (public methods):*

- Constructors (default and with arguments)
  - get & set methods
  - readInfo(): read the needed data entered by the user to the class attributes using the Scanner
  - print() : a method to print a description of the author
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The **Book** class is a super class that has the following:

*Attributes (private member variables):*

- title: A String to store the title of the Book.
- author: an instance of the Author class (A Book is written by one Author)
- price: a double containing the price of the Book. Make sure that price should always be a positive value.

*Methods (public methods):*

- Constructors (default and with arguments)
  - get & set methods
  - toString() : a method that returns a description of the Book.
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The **eBook** is a sub class derived from the **Book**. It has the following:

*Attributes (declared as private):*

- format: A String representing the format of the eBook (e.g. PDF, docx, doc, txt ...)
- url: A String representing the full URL (link) of the eBook

*Methods:*

- Constructors (default and with arguments)
  - get & set methods
  - toString() : a method that returns a description of the eBook.
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- a) Write the class **Author**.
- b) Write the class **Book**.
- c) Write the class **eBook**.
- d) Create a driver class called **myApp** whose **main** method should perform the followings tasks:
  - 1) Create 2 authors (auth1 & auth2) as the following
    1. name: Paul Deitel  
gender: M
    2. name: Dania Bilal  
gender: F
  - 2) Create an ArrayList called *bkList* of objects of the type **Book**.
  - 3) Instantiate the array *bkList* according to the below information. Use the authors created above for these books
    1. Title: Java: How to Program  
author: (*auth1*)  
Price: 50.0
    2. Title: Library Automation  
author: (*auth2*)  
Price: 35.0
  - 4) Using an enhanced for loop to print a full description for each book
  - 5) Calculate the total prices of the books in *bkList*
  - 6) Change the name of the second author in *bkList* from "Dania Bilal" to "Dr. Dania Bilal"
  - 7) Print a full description for each author in *bkList*
  - 8) Create a new author (auth3) and read the needed data using readInfo().