

# 2023 AP Daily: Practice Sessions

## AP Computer Science A

### Session 3 – FRQ (Question 2: Class)



1. The `Book` class is used to store information about a book. A partial `Book` class definition is shown.

```
public class Book
{
    /** The title of the book */
    private String title;

    /** The price of the book */
    private double price;

    /** Creates a new Book with given title and price */
    public Book(String bookTitle, double bookPrice)
    { /* implementation not shown */ }

    /** Returns the title of the Book */
    public String getTitle()
    {
        return title;
    }

    /** Returns a string containing the title and price of the Book */
    public String getBookInfo()
    {
        return title + "-" + price;
    }

    // There may be instance variables, constructors, and methods that are not shown.
}
```

You will write a class `Textbook`, which is a subclass of `Book`.

A `Textbook` has an edition number, which is a positive integer used to identify different versions of the book. The `getBookInfo` method, when called on a `Textbook`, returns a string that also includes the edition information, as shown in the example.

Information about the book title and price must be maintained in the `Book` class. Information about the edition must be maintained in the `Textbook` class.

The `Textbook` class contains an additional method, `canSubstituteFor`, which returns `true` if a `Textbook` is a valid substitute for another `Textbook` and returns `false` otherwise. The current `Textbook` is a valid substitute for the `Textbook` referenced by the parameter of the `canSubstituteFor` method if the two `Textbook` objects have the same title and if the edition of the current `Textbook` is greater than or equal to the edition of the parameter.

The table on the following page contains a sample code execution sequence and the corresponding results.

The code execution sequence appears in a class other than `Book` or `Textbook`.

Write the complete `Textbook` class. Your implementation must meet all specifications and conform to the examples shown in the preceding table.

Statement	Value returned (blank if no value)	Class Specification
<code>Textbook bio2015 = new Textbook("Biology", 49.75, 2);</code>		bio2015 is a Textbook with a title of "Biology", a price of 49.75, and an edition of 2.
<code>Textbook bio2019 = new Textbook("Biology", 39.75, 3);</code>		bio2019 is a Textbook with a title of "Biology", a price of 39.75, and an edition of 3.
<code>bio2019.getEdition();</code>	3	The edition is returned.
<code>bio2019.getBookInfo();</code>	"Biology-39.75-3"	The formatted string containing the title, price, and edition of bio2019 is returned.
<code>bio2019. canSubstituteFor(bio2015);</code>	true	bio2019 is a valid substitute for bio2015, since their titles are the same and the edition of bio2019 is greater than or equal to the edition of bio2015.
<code>bio2015. canSubstituteFor(bio2019);</code>	false	bio2015 is not a valid substitute for bio2019, since the edition of bio2015 is less than the edition of bio2019.
<code>Textbook math = new Textbook("Calculus", 45.25, 1);</code>		math is a Textbook with a title of "Calculus", a price of 45.25, and an edition of 1.
<code>bio2015. canSubstituteFor(math);</code>	false	bio2015 is not a valid substitute for math, since the title of bio2015 is not the same as the title of math.