

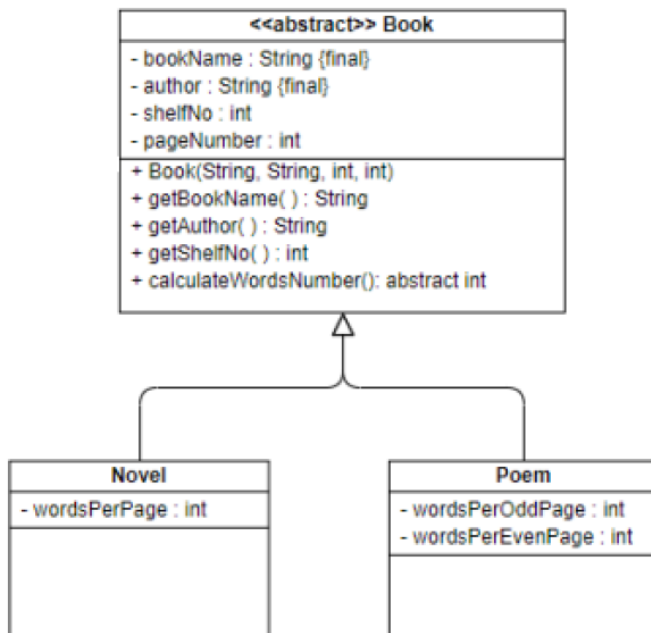
MATH 335E Programming Algorithms

Lab-10 / CRN: 21193

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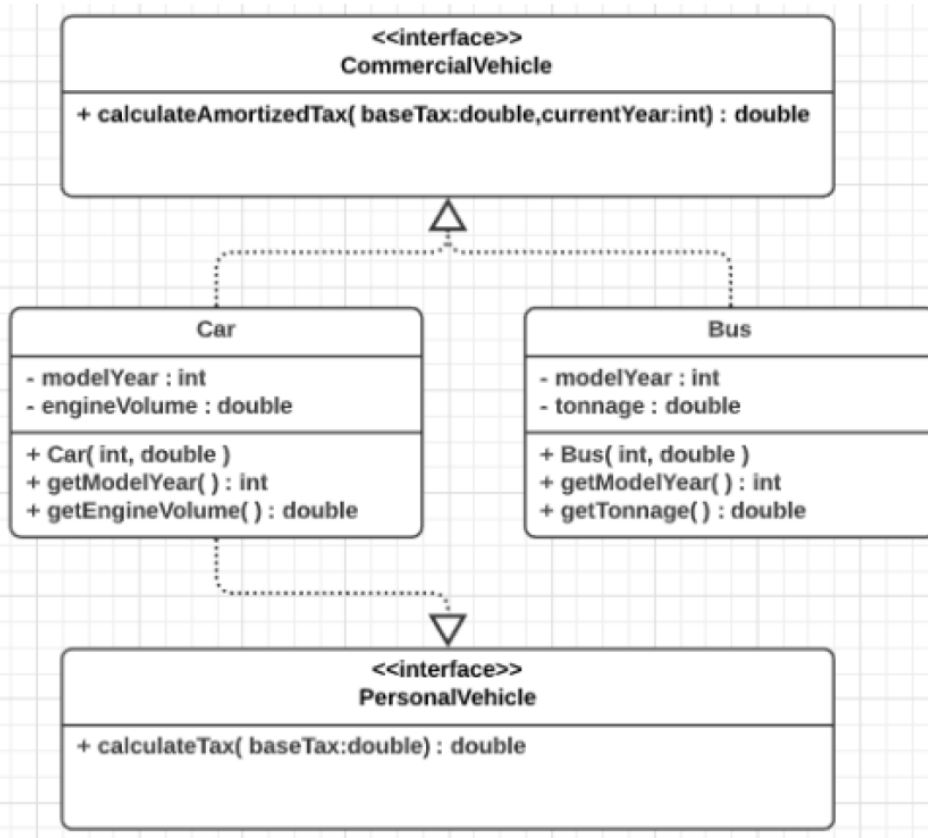
Question 1

Write a Java source code of the UML diagram below and a test class to run your program. Note that some methods may be missing in some classes



- Write a Java source code of class **Book**.
 - `shelfNo` indicates the shelf number of the book
 - `pageNumber` indicates the total number of pages of the book.
 - `CalculateWordsNumber()` calculates the average number of words in the book. Note that the first page number of each book is one.
- Write a Java source code of class **Novel**.
 - `wordsPerPage` shows the average number of words per page. That is, each even and odd page number have same number of words.
 - Constructor of this class populates all members which associated with **Novel**.
- Write a Java source code of class **Poem**.
 - `wordsPerOddPage` shows the average number of words in each odd page number of the book.
 - `wordsPerEvenPage` shows the average number of words in each even page number of the book.
 - Constructor of this class populates all members which associated with **Poem**.

Question 2



Write a Java source code of the UML diagram above and a test class to run your program.

- Write a Java source code of class **Car**.
 - `calculateTax()`: This method calculates the tax as the product of the vehicle's engine volume and the tax base.
 - `calculateAmortizedTax()`: Tax can be reduced 10 percent for each year. After 9 years, the amortization rate should be 0.9(constant).
- Write a Java source code of class **Bus**.
 - `calculateAmortizedTax()`: The amortization tax of this vehicle is the product of the tax base and two especially determined rates. These rates are called tonnage and age rates. The tonnage and age rate are calculated as follows, respectively:
 - * If the tonnage is less than 1, then the tonnage rate is 1. If the tonnage is between 1 and 10, then the tonnage rate is 1.4, and the tonnage rate is calculated as 1.6 for a vehicle with a tonnage greater than 10.
 - * Age rate is determined by multiplying age with a 0.05 coefficient. If the age rate exceeds 2, this ratio should be taken as 2(constant).