

## Assignment #4 (7%)

### Inheritance, Interfaces & Polymorphism

#### Requirements:

- Implement a superclass **TextCharacter** and subclasses **Paragraph**, **Document**, and **Collection** for text in one paragraph, in one document (with many paragraphs), and in one collection (with multiple documents).
- A TextCharacter has the number of words, number of characters, and number of vowels.  
E.g.,  
Number\_of\_words: 2  
Number\_of\_characters: 14  
Number\_of\_vowels: 3
- Write a method  
**getNumWord(void): int**  
that returns the number of words
- Write a method  
**getNumCha(void): int**  
that returns the number of characters
- Write a method  
**getNumVowel(void): int**  
that returns the number of vowels
  
- For the **Paragraph** class, it has some extra differences:  
Number\_of\_sentences: 5  
And  
Write a method  
**getNumSentence(void): int**  
that returns the number of sentences
  
- For the **Document** class, it has some extra differences:  
Number\_of\_paragraph: 3  
And  
Write a method  
**getNumParagraph(void): int**  
that returns the number of paragraphs
  
- For the **Collection** class, it has some extra differences:  
Number\_of\_document: 2  
And  
Write a method  
**getNumDoc(void): int**  
that returns the number of documents  
And  
Write a method  
**getARI(void): int**  
that returns the ARI

- Implement a **TextTester** class which can construct different instances of paragraph, document, and collection.
  - Write a method **addText(TextCharacter)**  
give the user the option to add new paragraph/document/collection by entering the paragraph, document, or collection
  - Write a method **displayTextAverage(TextCharacter)**  
For paragraph, return the average number of sentences; for document, return the average number of paragraphs; for collection, return the average number of documents
- (extra 1%)
- Write an interface **Measurable**  
that returns value in paragraph/document/collection for further calculation  
For paragraph, return the number of sentences; for document, return the number of paragraphs; for collection, return the number of documents

**Submission:** Your Eclipse project is named `yourStudentID_HW4`. The project is submitted as `yourStudentID_4.zip`. Submit via eCourse2. No other submissions will be graded.

**Academic dishonesty:** You may not do work for another student nor may any student copy or plagiarize someone else's work. Severe penalties will be imposed on all parties involved.

**Deadline:** Saturday, January 15, 2022 (end of the day)