King Saud University

College of Computer and Information Sciences

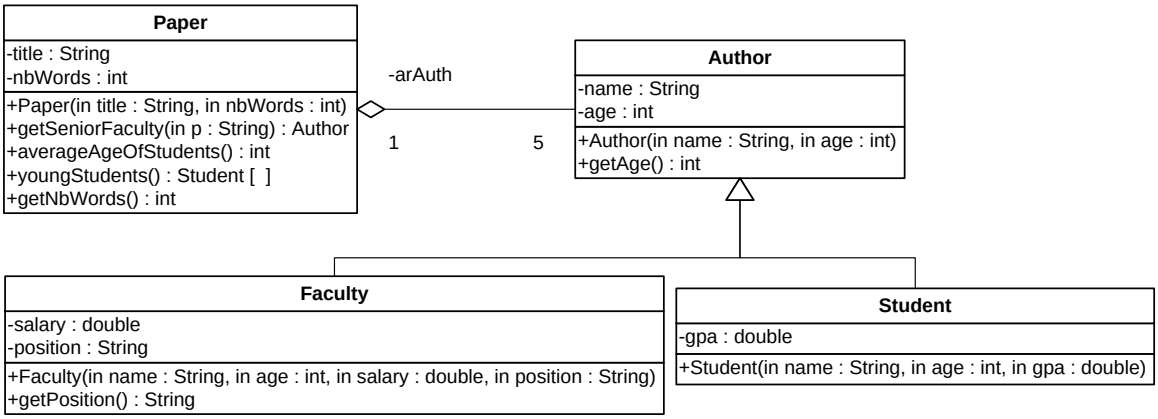
Computer Science Department

Course Code:	CSC 113
Course Title:	Computer Programming II
Semester:	Fall 2014
Exercises Cover Sheet:	**Final Exam**

Student Name:	
Student ID:	
Student Section No.	

Tick the Relevant	Computer Science B.Sc. Program ABET Student Outcomes	Question No. Relevant Is Hyperlinked	Covering %
X	**a) Apply knowledge of computing and mathematics appropriate to the computer science;**		
	b) Analyze a problem, and identify and define the computing requirements appropriate to its solution		
X	**c) Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;**		
X	**d) Function effectively on teams to accomplish a common goal;**		
	e) Understanding of professional, ethical, legal, security, and social issues and responsibilities;		
	f) Communicate effectively with a range of audiences;		
	g) Analyze the local and global impact of computing on individuals, organizations and society;		
	h) Recognition of the need for, and an ability to engage in, continuing professional development;		
X	**i) Use current techniques, skills, and tools necessary for computing practices.**		
	j) Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;		
	k) Apply design and development principles in the construction of software systems of varying complexity;		

Exercise1:



Author class***:***

- Attributes:
  - ***name***: the name of the author.
  - ***age:*** the age of the author.
- Methods:
  - ***Author (name: String, age: int)***: constructor
  - ***getAge()*:** this method returns the age of the author.

Faculty class

- Attributes:
  - ***salary:*** the salary of the faculty.
  - ***position***: the position of the faculty.
- Methods:
  - ***Faculty (name: String, age: int, salary: double, position: String)***: constructor.
  - ***getPosition()*:** this method returns the position of the faculty.

Student class:

- Attributes:
  - ***gpa***: the gpa of the student.
- Methods:
  - ***Student (name: String, age: int, gpa: double):*** constructor.

Paper class***:***

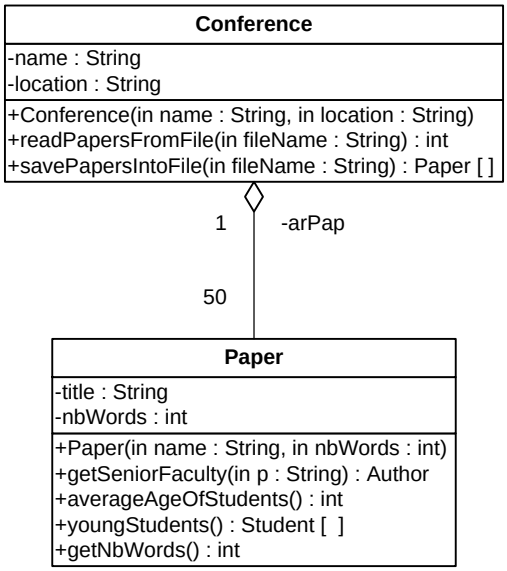
- Attributes:
  - ***title***: the title of the paper.
  - ***nbWords***: the number of words of the paper.
- Methods:
  - ***Paper(title: String, nbWords: int)***: constructor

- ***getSeniorFaculty (p: String)*:**this method receives a position p and returns the *oldest* Faculty having the position ***p***.
- ***averageAgeOfStudents():*** This method returns the average age of all students of the paper.
- ***youngStudents():*** this method returns an array of students of the paper whose age is less or equal than the average age (the average age of all students of the paper).
- ***getNbWords ():***this method returns the number of words of the paper.

QUESTION: Translate into Java code the class ***Paper.***

Exercise 2:

Let's consider the same class Paper described in exercise 1.



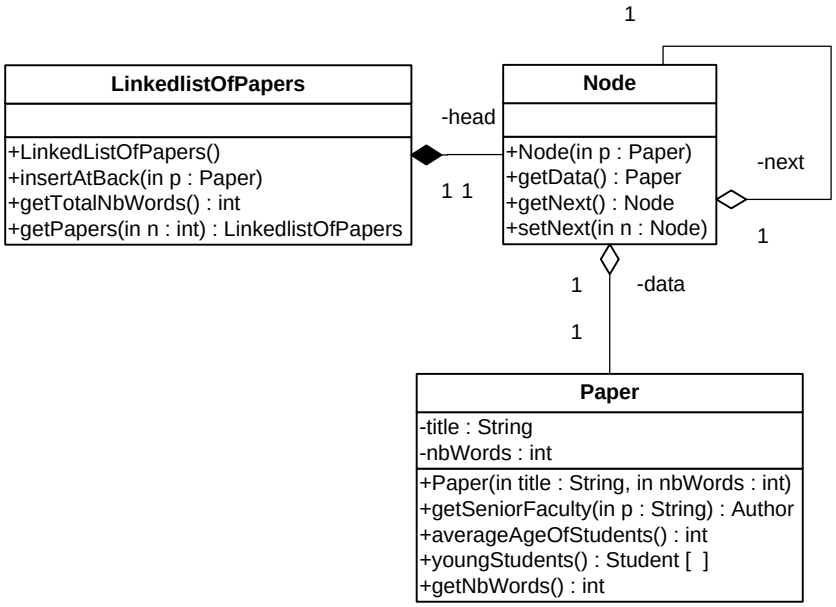
Conference class***:***

- Attributes:
  - ***name***: the name of the conference.
  - ***location***: the name of the city where the conference is held.
- Methods:
  - ***Conference(name: String, location:String)***: constructor
  - ***readPapersFromFile(fileName: String):***this method reads objects of type paper from the file ***fileName*** and inserts them into the array of papers of the conference. It returns the number of objects read from the file and inserted in the array.
  - ***savePapersIntoFile (fileName: String):***this method processes all the papers of the conference. Papers containing more (or equal) than 500 words are saved into the file ***fileName***. The remaining papers (those containing less than 500 words) are placed and returned in an array.

QUESTION: Translate into Java code the class ***Conference.***

Exercise 3:

Let's consider the same Paper class described in exercise 1.



LinkedListOfPapers class***:***

- Attributes:
  - ***head***: references the first element of the linked list.
- Methods:
  - ***LinkedListOfPapers()***: constructor.
  - ***insertAtBack (p: Paper*)*:**this method adds the paper ***p*** at the end of the linked list.
  - ***getTotalNbWords():***this method returns the total number of words of papers of the linked list.
  - ***getPapers (n: int):***this method returns a new linked list containing all papers of the current linked list having a number of words equal to ***n***.

QUESTION: Translate into Java code the class ***LinkedListOfPapers.***