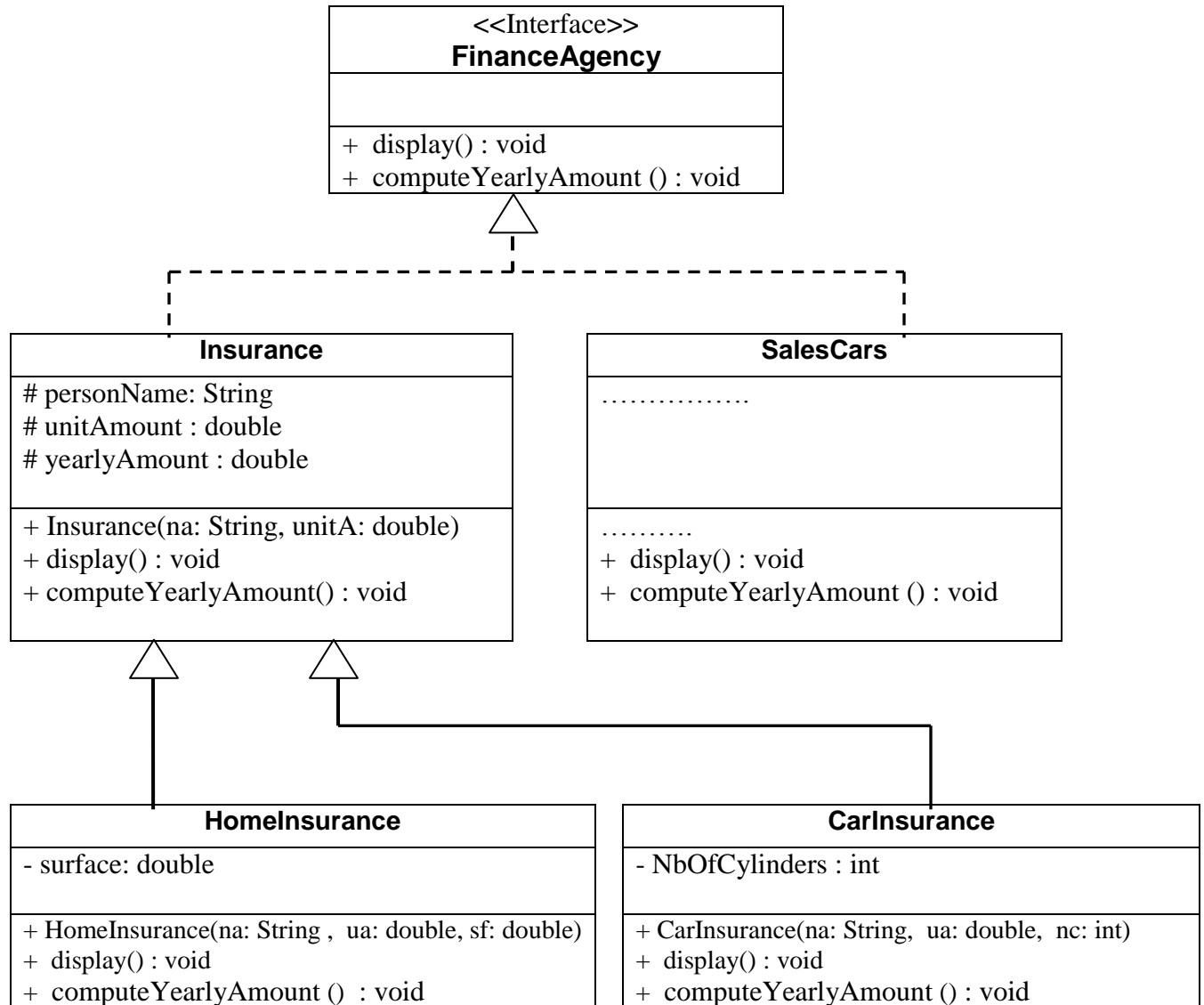
		<h1 style="text-align: center;">King Saud University</h1> <p style="text-align: center;">College of Computer and Information Sciences Computer Science Department</p>	
		Course Code:	CSC 113
		Course Title:	Computer Programming 2
		Semester:	Fall 2010 - 2011
		Exercises Cover Sheet:	Final Exam
Student 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 discipline;	1	80%
	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;	5	20%
X	d) Function effectively on teams to accomplish a common goal;	Project	100%
	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.	Lab Exam	50%
	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;		

Result					
Question No.	Relevant Student Outcome	SO is Covered by %	Full Mark	Student Mark	Assessor's Feedback
1	CO 1	(a)	10		
2	CO4	(a)	10		
3			10		
4			5		
5		(c)	5		
6					
7					
Totals			40		
I certify that the work contained within this assignment is all my own work and referenced where required. Student Signature: _____ Date: _____					Feedback Received: Student Signature: _____ Date: _____

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ID:	CSC113 Final Exam	Dr.

Question1: Consider the following UML class diagram



The interface **FinanceAgency** contains the following methods:

- `display()`
- `computeYearlyAmount ()`

The class **Insurance** contains the following attributes and methods:

- `personName` : The name of the insured person.
- `unitAmount`: The insurance unit amount.
- `yearlyAmount`: The amount of insurance for one year.
- `display()` : displays all the attributes of the Insurance.
- `computeYearlyAmount ()`: computes the amount of insurance for one year.

The concrete class **HomeInsurance** contains the following attributes and methods:

- *surface*: the surface of the home to be insured.
- *display()* : displays all the attributes of the HomeInsurance.
- *computeYearlyAmount()* : computes the amount of insurance for one year as follows:
 - $yearlyAmount = unitAmount * surface$.

The concrete class **CarInsurance** contains the following attributes and methods:

- *NbOfCylinders*: the number of cylinders of the car to be insured.
- *display()* : displays all the attributes of the CarInsurance.
- *computeYearlyAmount()* : computes the amount of insurance for one year as follows:
 - $yearlyAmount = unitAmount * NbOfCylinders$.

Write in Java the interface **FinanceAgency**, the classes **Insurance** and **HomeInsurance**.

Note: You can call getters and setters without implementation. Assume that the classes **SalesCars** and **CarInsurance** are implemented.

Answer :

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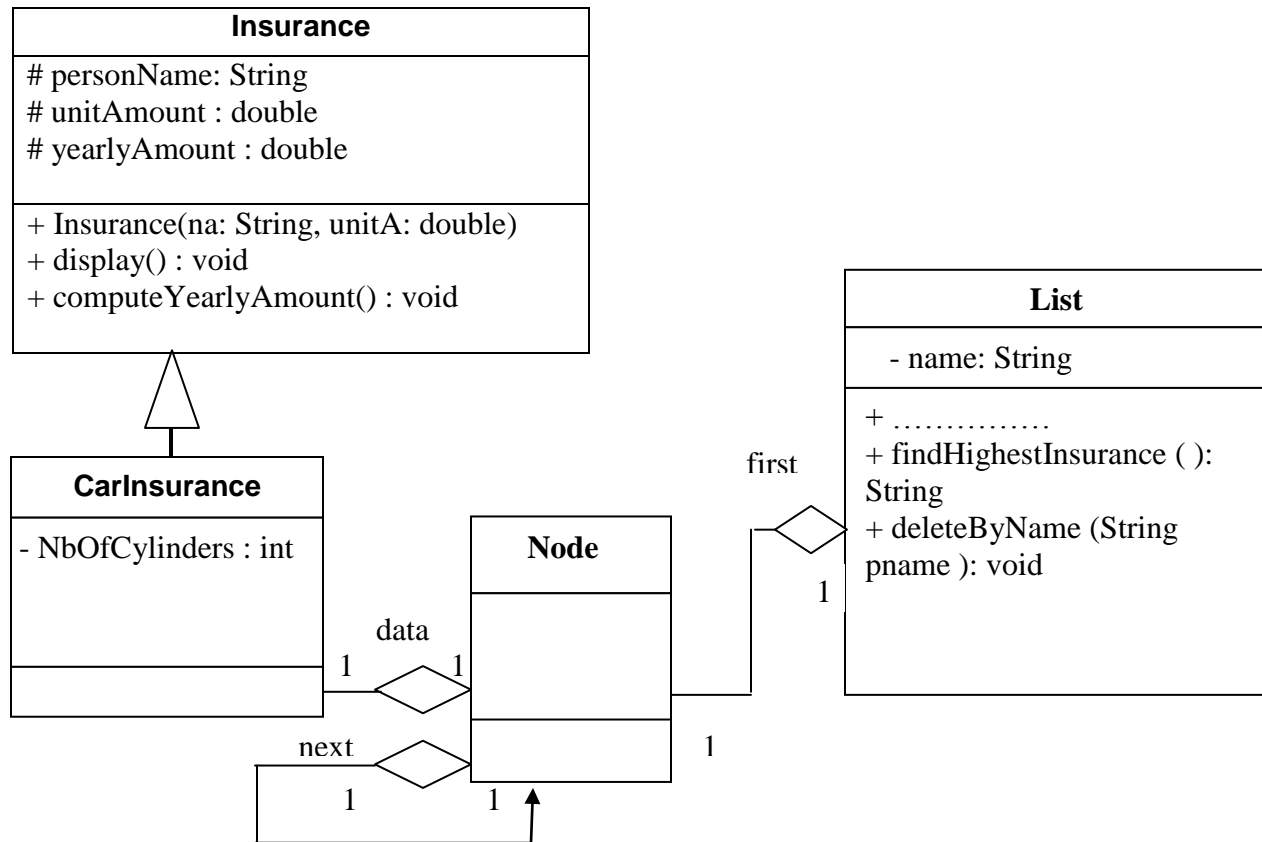
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Question 2 : We want to manage a linked list of **CarInsurance** objects. Consider the following UML class diagram.



Class `List`: The class `List` contains the following attributes and methods:

- `name` : name of the List
- `first` : first Node of the List
- ***public String findHighestInsurance ()***
This method returns the name of the person having the greatest insurance yearly amount. Handle the case where the list is empty.
- ***public void deleteByName (String pname)***
This method deletes the node containing an *Insurance* object with a name equal to the argument *pname*. If more than one node meets the condition, only the first one is deleted. In your solution, in addition to the general case, consider the following special cases, where:
 - the list is empty
 - the list contains only one element
 - the name does not exist in the list.

Write in Java the above two methods.

This image shows a full page of a document template designed for handwritten notes or essays. It features approximately 30 evenly spaced, thin grey horizontal lines across the entire width of the page. The margins are consistent on all sides, providing ample space for writing. There are no titles, headers, or other markings present on the page.

This image shows a full page of a document template designed for handwritten notes or essays. It features approximately 28 evenly spaced, thin grey horizontal lines across the entire width of the page. The margins are consistent on all sides, providing ample space for writing. There are no titles, headers, or other markings present on the page.

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Question 5 :

We have a park containing vehicles. The vehicles are of two types: personal cars and trucks. We would like also to represent the types of wheels used by all the cars and trucks.

All the vehicles are described by the number of passengers, and their speed.

Personal cars are characterized by the number of passengers, the speed and whether it is taxi or not.

The trucks are described by the number of passengers, the speed and the capacity of transportation.

The wheels are characterized by their type, size and manufacturing year.

Draw the UML diagram of the classes **Park**, **Vehicle**, **Truck**, **Car** and **Wheels** described above. In this diagram show clearly the type of relationship between these classes.

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[illegible]