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Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Fall 2022

Course Code: CSE 221/214, Course Title: Object Oriented Programming

Level: 2 Term: 1+2 Batch: 59, 60, OLD-SYL

Time: 01:30 Hrs **Marks: 25**

Answer ALL Questions [Optional]

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	*a)*	**What** is the relationship between a class and an object? Explain with an example.	[2.5]	CO1
	b)	**Compare** among the different Access Modifiers in Java.	[2.5]	
2.	*a)*	Suppose, your name is A, your father's name is B, and your grandfather's name is Z. You have two uncles named U1 and U2. C1 is the son of U2. Now, draw a UML and **show** the relationship between the classes. What types of inheritance it refers to?	[2.5]	CO2
	b)	**Explain** how we can achieve polymorphism with examples.	[2.5]	
3.	*a)*	Suppose you want to write a program in Java. Consider a scenario where A, B, and C are three classes. The C class inherits A and B classes. If A and B classes have the same method name display() and you want to call this display() method from the "Child" class. Is this possible or not? **Analyze** your answer with appropriate examples.	[2.5]	CO3
	b)	Suppose the parent class name is "Car" and child class name is "BMW". Parent class has a public method named "color()" that prints "Car color is red". Now **apply** the method overriding and print "BMW car color is black".	[2.5]	

4.	*a)*	**Apply** your knowledge of OOP to make the below class to exhibit fully encapsulation. You need to describe where to need change/correction step by step with your own words after completing code.
		
		`public class Rectangle {`
		`  int height;`
		`  int width;`
		`  int area;`
			[5]	CO4

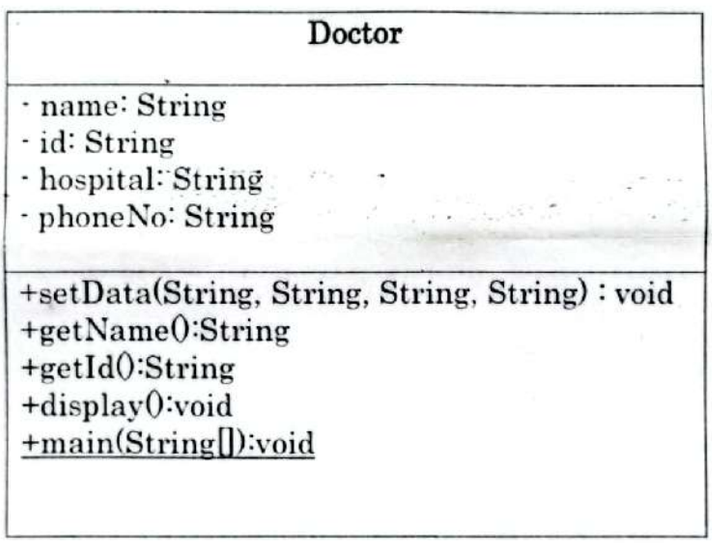
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```
    private void setHeight(int height) {
        this.height = height;
    }

    private void setWidth(int width) {
        this.width = width;
    }

    private void getHeight() {
        return height;
    }
}
```

b) Suppose you are given the following UML diagram. Now **develop** a Java Code to implement the UML Diagram. Create one object of this class and implement all the methods. **[5]**



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