



Umm Al-Qura University
Jamoun University College
Department of CS

Course Title: Object Oriented Programming
Exam Total Grade: 20
Student ID: _____
Midterm Exam, Semester #1, 1446 H)
Course Code: CS2113 (F)
Allowed Time: 19:50-21:50 (1 hour)
Student Name: _____

Question 1: Mark (T) if the statement is True and (F) if it is False:

1. A no-arg constructor is a constructor that does not take any parameters. **T**
2. The Random class is part of the Java standard library and is used for generating random numbers. **T**
3. A class diagram in UML represents the structure of a class, including its fields and methods. **T**
4. The toString method can only be called explicitly in Java. **F**
5. Java automatically initializes all elements of an array to null. **F**
6. A two-dimensional array cannot be visualized as a grid with rows and columns. **T**
7. The index of an array always starts at 1. **F**

Question 2: Choose the correct answer for the following question:

1. Which of the following is NOT a principle of object-oriented programming?

- A) Encapsulation
- B) Inheritance
- C) Compilation
- D) Polymorphism

2. Which method is typically used to convert an object to a string representation?

- A) toString()
- B) valueOf()
- C) print()
- D) getString()

3. In the context of the Rectangle class, which of the following fields is NOT typically included?

- A) length
- B) width
- C) area
- D) perimeter

4. What happens if a class has multiple overloaded constructors?

- A) The compiler will throw an error.
- B) The appropriate constructor is called based on the arguments provided.
- C) Only the first constructor is used.
- D) All constructors must be defined as public.



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Question 4: Write a Java program to count the number of vowels in a given string.

aeiou

```
public int countvowels(String s){  
    int count=0;  
    for(int i=0;i<s.Length();i++){  
        char c=s.charAt(i);  
        if(c=='a' || c=='e' || c=='i' || c=='o' || c=='u')  
            count++;  
    }  
    return count;  
}
```



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5. If a reference variable is set to null, which of the following is true?

- A. The object is destroyed immediately.
- ☒ B. The reference variable points to nothing.
- C. The object is copied.
- D. The reference variable is deleted.

6. What will the following code output?

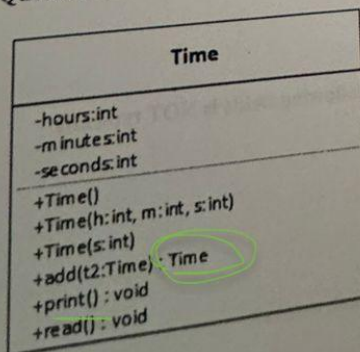
```
String[] names = {"Alice", "Bob", "Charlie"};  
System.out.println(names[1].length());
```

- ☒ A) 3
- B) 4
- C) 5
- D) 6

7. How do you declare a two-dimensional array?

- ☒ A) int[][] arr;
- B) int arr[][];
- C) Both A and B
- D) int arr[2][3];

Question 3: Convert the UML class diagram to Java code.



```
public class Time{  
    private int hours;  
    private int minutes;  
    private int seconds;  
    public Time(){  
        hours=0;  
        minutes=0;  
        seconds=0;  
    }  
    public Time(int h, int m,int s){  
        hours=h;  
        minutes=m;  
        seconds=s;  
    }  
    public Time add(Time t2){  
        Time t3= new Time();  
        t3.hours= hours +t2.hours;  
        t3.minutes = minutes +t2.minutes;  
        t3.seconds = seconds +t2.seconds;  
        return t3;  
    }  
    public void print(){  
        System.out.println(hours+" : "+  
        minutes+" : "+  
        seconds);  
    }  
    public void read(){  
        Scanner k =  
        new Scanner(System.in);  
        System.out.println("Enter hour ,  
        minute , second");  
        hours= k.nextInt();  
        minutes= k.nextInt();  
        seconds= k.nextInt();  
    }  
}
```