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Daffodil International University
Faculty of Science & Information Technology
Department of Software Engineering
Midterm Examination, Summer 26
Course Code: SE216; Course Title: Object Oriented Programming
Sections & Teachers: UKD(A,B,C), RJM(D,E,H), MBH(F), MSN(G), AJE(I), MIH(J)
Time: 1 Hour 30 Mins **Marks: 25**

Answer ALL Questions
[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)	**Convert** the below JAVA Code to the appropriate **Class Diagram.**
		
		public class Movie {
		protected String title;
		void showMovie() {
		System.out.println("Movie: " + title);
		}}
		public class Horror extends Movie {
		void showMovie() {
		System.out.println("Horror Movie: " + title);
		}
		protected void showHorror() {
		System.out.println("Scare Level: Goosebumps ");
		}}
		public class Thriller extends Movie {
		String suspenseLevel;
		public void showThriller() {
		System.out.println("Suspense Level: " + suspenseLevel);
		}}
		public class SupernaturalHorror extends Horror {
		String ghostType;
		protected void showHorror() {
		System.out.println("Supernatural Horror Level: creepy");
		}}
		public class PhysicalHorror extends SupernaturalHorror {
		private String injuryType;
		public void showInjury() {
		System.out.println("Physical Injury: " + injuryType);
		}}
			[5]	**CLO -2 Level -2**

	b)	A university is developing an employee management program. The system is divided into two packages named **pack1 and pack2. Rewrite** & design the classes using correct **access modifiers.** **Package 1**: pack1 holds class **Employee** 1. Class level: The class should be accessible from other packages. 2. **Variables**: • name: accessible only inside the same package • salary: accessible within the same package and in subclasses outside the package • id: should be fully hidden and only accessible inside the class • university: accessible from everywhere 3. **Method: showDetails():** display all employee information and be accessible from other packages. **Package 2: pack2** holds class **Main** **Tasks: Inside the Main class** • Create an object(non-parameterized) of Employee named **spy** • Try to access all variables directly: variables (name, salary, id, university) • Call showDetails() method	[5]	

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Observe and write:

- which ones are accessible from the class Main
- which ones give error
- why they are not accessible

c) **Compute** the output of the following code: **[5]**

```
public class Argentina {
    int score = 3;
    int bonus;
    static double rating = 10.5;
    public Argentina() {
        System.out.println("3 world cups");
    }
    public Argentina(int x) {}
    public void matchStart() {
        rating = 15.5;
        score = 6;
        System.out.println("Score: " + score);
        System.out.println("Rating: " + rating);
    }
    public void playGame() {
        int bonus= 50;
        System.out.println("Bonus Points: " + bonus);
        System.out.println("Score: " + score);
        rating= 20.0;
    }
    public void showStats() {
        System.out.println("Score " + score);
        System.out.println("Bonus " + bonus);
        System.out.println("Rating: " + rating);
    }
    public static void main(String[] args) {
        Argentina p1 = new Argentina();
        Argentina p2 = new Argentina(4);
        p2.matchStart();
        p1.playGame();
        p1.matchStart();
        p2.showStats(); }}
```

2. **Observe** the given code below to write a **Player & StarPlayer class** (Design class) to get the output as shown. Here, you have to deal with **Upcasting, constructor overloading and method overloading, Inheritance. // Rewrite your design codes here:** **[10]** **CLO -1 *Level -2***

Driver Code:

```
public class Main {
    public static void main(String[] args) {
        Player p1 = new Player("Messi", "Playmaker");
        Player p2 = new StarPlayer();
        StarPlayer p3 = new StarPlayer("Neymar");
        p1.showInfo();
        p2.showInfo();
        p3.showInfo();
        p1.updateStats(7);
        p2.updateStats(5);
        p3.updateStats("Neymar", "Winger");
        p1.updateStats("Captain");
        p1.Skill();
        p3.specialSkill();
    }}
```

Expected Output:

```
Messi is the star player
Unknown Star Player
Neymar is the star player
Messi scored 7 goals
Unknown Player scored 5 goals
Neymar played as winger
Messi played as captain
A Magical dribbler
A Clinical Finisher
```