Abstract Classes & Interface

Write a Java program that demonstrates method overriding by creating a superclass called Animal and two subclasses called Dog and Cat. ● The Animal class should have a method called makeSound(), which simply prints "The animal makes a sound." ● The Dog and Cat classes should override this method to print "TheCat/The dog meows/barks" respectively. ● The program should allow the user to create and display objects of each class. [Hint:Use multilevel inheritance]

```
import java.util.Scanner;

class Animal {
    public void makeSound() {
        System.out.println("The animal makes a sound.");
    }
}

class Dog extends Animal {
    @Override
    public void makeSound() {
        System.out.println("The dog barks.");
    }
}

class Cat extends Dog {
    @Override
    public void makeSound() {
        System.out.println("The cat meows.");
    }
}

public class AnimalDemo {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Create objects
        Animal animal = new Animal();
        Dog dog = new Dog();
        Cat cat = new Cat();

        // Display default sounds
```

```
        System.out.println("Default sounds:");
        animal.makeSound();
        dog.makeSound();
        cat.makeSound();

        // Allow the user to create and display objects
        System.out.println("\nEnter 1 for Animal, 2 for Dog, 3 for Cat:");
        int choice = scanner.nextInt();

        Animal userAnimal;
        switch (choice) {
            case 1:
                userAnimal = new Animal();
                break;
            case 2:
                userAnimal = new Dog();
                break;
            case 3:
                userAnimal = new Cat();
                break;
            default:
                System.out.println("Invalid choice. Defaulting to Animal.");
                userAnimal = new Animal();
        }

        // Display sound
        System.out.println("User's choice sound:");
        userAnimal.makeSound();

        scanner.close();
    }
}
```

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