

Homework: Java Inheritance - Phone Shop

Problem Description:

You are tasked with creating a phone shop system using Java inheritance. In this system, there are two types of phones: Smartphone and NonSmartphone. Both types of phones have some common properties and behaviors, but they also have their own unique characteristics.

Your task is to create a parent class Phone, and two subclasses Smartphone and NonSmartphone. These subclasses should inherit common properties and methods from Phone but also have additional unique properties and methods.

Instructions:

1. Create a Parent Class: Phone

This class will represent general properties and behaviors for any phone.

Properties (fields):

- brand (String): The brand of the phone.
- model (String): The model name or number of the phone.
- price (double): The price of the phone.

Methods:

- makeCall(String phoneNumber): A method to simulate making a phone call.
- sendText(String phoneNumber, String message): A method to simulate sending a text message.

Constructor: Initialize the brand, model, and price.

2. Create a Subclass: Smartphone

This class will represent smartphones, which have additional features compared to basic phones.

Properties:

- operatingSystem (String): The OS used by the smartphone (e.g., Android, iOS).
- hasTouchscreen (boolean): Set to true for smartphones.

Methods:

- installApp(String appName): This method simulates installing an app.

Constructor: Initialize the common properties inherited from the Phone class, along with the new properties.

3. Create a Subclass: NonSmartphone

This class will represent non-smartphones, which are simpler and have different features.

Properties:

- hasPhysicalKeyboard (boolean): Indicates whether the phone has a physical keyboard.
- supportsMMS (boolean): Indicates whether the phone supports MMS.

Methods:

- playRadio(): This method simulates playing the radio.

Constructor Hint: The constructor should initialize both the common properties from the parent class and the additional properties for the NonSmartphone class. Here's a hint for the constructor:

```
public NonSmartphone(String brand, String model, double price, boolean hasPhysicalKeyboard,
boolean supportsMMS) {
    super(brand, model, price); // Call to the parent class constructor
    this.hasPhysicalKeyboard = hasPhysicalKeyboard;
    this.supportsMMS = supportsMMS;
}
```

4. Main Class: PhoneShop

- In the main method, create instances of both Smartphone and NonSmartphone.
- Set their properties and call the common methods such as makeCall and sendText.
- Also, call their specific methods like installApp for smartphones and playRadio for non-smartphones.
- Print the details of each phone, such as brand, model, price, and specific features.

Submission:

Submit your .java files with properly formatted code. Ensure that your classes follow the structure and behavior as described in the problem and instructions.