

practice coding questions based on object-oriented programming (OOP) in Python:

Q1. Class Inheritance:

Create a base class **Shape** with methods **area** and **perimeter**. Create two derived classes, **Rectangle** and **Circle**. Implement the necessary methods in each derived class.

Q2. Polymorphism:

Create a class **Animal** with a method **make_sound**. Create three derived classes, **Dog**, **Cat**, and **Bird**, each overriding the **make_sound** method with appropriate sound outputs. Demonstrate polymorphism by calling the **make_sound** method on instances of each class.

Q3. Composition:

Create classes **Engine** and **Car**. Use composition to model a **Car** class that contains an **Engine** object. The **Car** class should have a method **start** that calls the **start** method of the **Engine** object.

Q4. Encapsulation:

Create a class **Person** with private attributes **__name**, **__age**, and **__salary**. Provide methods to set and get these attributes. Ensure that the age and salary are not set to negative values.

Q5. Multiple Inheritance:

Create three classes, **A**, **B**, and **C**. Class **A** has a method **display_a**, class **B** has a method **display_b**, and class **C** has a method **display_c**. Create a class **D** that inherits from both **A** and **B**, and a class **E** that inherits from **D** and **C**. Demonstrate the use of methods from all classes in instances of class **E**.