# Module 9.6 Class - Inheritance: Coding Questions

## Question 1: Design a base class for Vehicles and derive classes for Car, Truck, and Motorcycle with specific attributes like cargo capacity for trucks.

Hint: Focus on the constructor \_\_init\_\_ method for setting unique attributes in derived classes and consider overriding methods.

## Question 2: Create a class hierarchy for a university system, with a base class Person and derived classes Student and Instructor, including specific methods like enroll for students.

Hint: Use inheritance to share common attributes like name and address, and add specific methods to derived classes.

## Question 3: Implement a base class for Electronic Devices and derived classes for Mobile and Laptop, including battery life as a specific attribute for mobiles.

Hint: Consider how to utilize the base class to hold common attributes and methods, such as power on/off, and extend functionality in derived classes.

## Question 4: Develop a game with a base class Character and derived classes for types of characters like Wizard, Knight, and Archer, each with unique abilities.

Hint: Think about character common attributes like health and methods such as attack, and how abilities can be implemented in subclasses.

## Question 5: Write a class hierarchy for a restaurant system with a base class MenuItem and derived classes for DrinkItem and FoodItem, each with specific attributes like is\_alcoholic for drinks.

Hint: The base class should hold common details such as name and price, with subclasses extending additional details.

## Question 6: Design a base class Shape with derived classes Circle, Rectangle, and Triangle, each implementing a method to calculate area differently.

Hint: Focus on polymorphism by implementing a common interface method in each derived class to calculate the area.

## Question 7: Create a class hierarchy for a transportation system, where the base class Transport has derived classes LandTransport and WaterTransport, each with specific methods like drive or sail.

Hint: Think about shared attributes in the base class and how each derived class can represent unique transport types.

## Question 8: Implement a base class for all types of bank accounts and derive specific classes for CheckingAccount and SavingsAccount, including interest rate calculation for savings.

Hint: Use the base class to define common attributes like balance and common methods such as deposit/withdraw, with derived classes adding specific functionalities.

## Question 9: Design a base class Product with derived classes for perishable and non-perishable items, including a method to check item expiration for perishables.

Hint: Include attributes such as product ID, name, and price in the base class, and extend with expiration dates for perishables.

## Question 10: Develop a content management system class hierarchy with a base class Content and derived classes for Video, Article, and Podcast, each including methods to display content differently.

Hint: Consider how each type of content is displayed to the user and implement specific display methods in each subclass.