Inheritance Examples

1. **Banking System**
   Create a program for a **banking system** where a base class `Account` contains common attributes like `accountNumber` and `balance`. A derived class `SavingsAccount` extends it with additional features like `interestRate`. Implement a function to calculate interest based on the balance.

2. **Smartphone System**
   Develop a program for a **smartphone system** where:

   - Class `Camera` has attributes like `resolution` and a method `capturePhoto()`.
   - Class `MusicPlayer` has attributes like `playlist` and a method `playMusic()`.
   - Class `Smartphone` combines functionalities from both `Camera` and `MusicPlayer`.
     Implement a demonstration where a smartphone object can use both camera and music player features.

3. **Student Grading System**
   Design a **student grading system** with:

   - `Person` as the base class with attributes like `name` and `age`.
   - `Student` extending `Person` and adding `studentID`.
   - `Exam` further extending `Student` by adding marks for subjects.
     Implement a function to calculate and display the total marks of a student.

4. **Vehicle Management System**
   Develop a **vehicle management system** where:

   - `Vehicle` is a base class containing attributes like `brand` and `speed`.
   - `Car` extends `Vehicle` by adding attributes like `numDoors` and `fuelType`.
   - `Bike` extends `Vehicle` by adding attributes like `engineCC` and `type`.
     Implement methods to display details of both cars and bikes.

5. **University Employee Management System**
   Create a **university employee management system** where:

   - `Person` is a base class with `name` and `age`.
   - `Employee` extends `Person` by adding `employeeID` and `salary`.
   - Two more classes:
     - `Professor`, extending `Employee`, adds `subject`.
     - `Administrator`, extending `Employee`, adds `department`.
   - A `Dean` role combines both `Professor` and `Administrator` functionalities, managing academic and administrative roles.
     Implement a function to display details of a Dean.

🚀 🚀 🚀