**Assignment: Inheritance in Java**

**Objective:** To demonstrate your understanding of inheritance in Java and its practical applications.

**Instructions:**

1. Create a Java program with the following classes: `Vehicle`, `Car`, and `Motorcycle`.

2. The `Vehicle` class should have the following attributes:

- `make` (String): representing the make of the vehicle.

- `model` (String): representing the model of the vehicle.

- `year` (int): representing the year of the vehicle.

- `fuelType` (String): representing the type of fuel the vehicle uses.

- appropriate getter and setter methods for each attribute.

3. The `Car` class should inherit from the `Vehicle` class and have the following additional attributes:

- `numDoors` (int): representing the number of doors the car has.

- `numSeats` (int): representing the number of seats in the car.

- appropriate getter and setter methods for each attribute.

4. The `Motorcycle` class should also inherit from the `Vehicle` class and have the following additional attributes:

- `hasSidecar` (boolean): representing whether the motorcycle has a sidecar or not.

- `isSportsBike` (boolean): representing whether the motorcycle is a sports bike or not.

- appropriate getter and setter methods for each attribute.

5. Implement a constructor for each class that initializes the attributes.

6. Write a method in each class called `displayInfo()` that prints out the information about the vehicle, including its make, model, year, fuel type, and any additional attributes specific to the class.

7. In the main method of your program, create at least one instance of each class (Vehicle, Car, Motorcycle) and demonstrate the usage of the `displayInfo()` method for each object.

8. Add any additional methods or attributes to the classes that you find necessary or interesting.

9. Compile and run your program to ensure it functions as expected.

10. Document your code with comments to explain the purpose of each class, method, and attribute.

11. Test your program with different scenarios to verify its correctness and handle any potential errors or exceptions.

12. Once you have completed the assignment, submit your Java source code file (.java) for evaluation.

.Good luck with your assignment!