

## CMSC 124 - Design and Implementation of Programming Languages

### Topic: Inheritance

### Laboratory #3

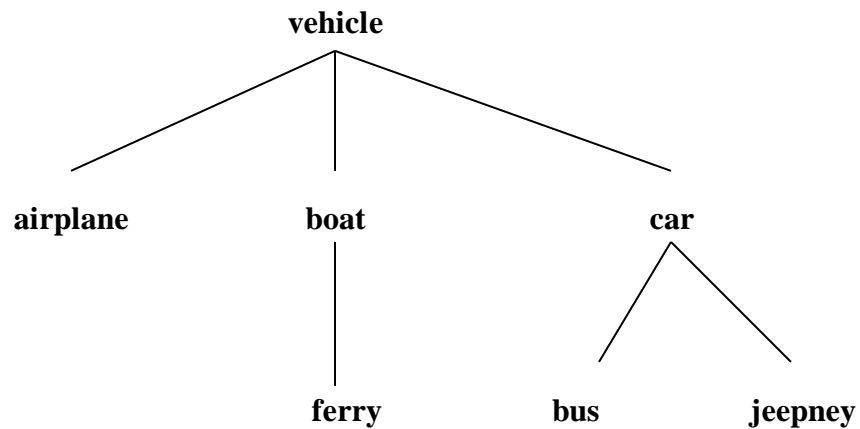
Name: Elaine T. Pajarillo Date Submitted: September 18, 2024

Score: \_\_\_\_\_

#### Objectives

1. To be able to analyze how inheritance is used in Java
2. To be able to implement the concept of inheritance in Java

For the questions, refer to the following class hierarchy:



1. What is/are the derived classes of class vehicle?

airplane, boat, car

2. What is/are the base classes of class airplane?

vehicle

3. Define the class structure of each of the classes. Think of what member and data functions are unique to a class. For a base class, think of what member data and functions are common to all of its derived classes. Write a driver program that tests that your classes are working properly.

#### **Class Vehicle**

- **Member Data:** type (stores the type of vehicle)
- **Member Functions:** displayType() (prints the type of vehicle)

#### **Class Airplane**

- Inherits from Vehicle
- **Member Data:** airline (stores the name of the airline)
- **Member Functions:** displayAirline() (prints the airline name)

#### **Class Boat**

- Inherits from Vehicle
- **Member Data:** capacity (stores passenger capacity)
- **Member Functions:** displayCapacity() (prints the boat's capacity)

#### **Class Car**

- Inherits from Vehicle
- **Member Data:** model (stores the model of the car)
- **Member Functions:** displayModel() (prints the car's model)

#### **Class Ferry**

- Inherits from Boat
- **Member Data:** routes (stores operating routes)
- **Member Functions:** displayRoutes() (prints the ferry's routes)

#### **Class Bus**

- Inherits from Car
- **Member Data:** routeNumber (stores the route number)
- **Member Functions:** displayRouteNumber() (prints the bus route number)

#### **Class Jeepney**

- Inherits from Car
- **Member Data:** fare (stores the standard fare)
- **Member Functions:** displayFare() (prints the jeepney's fare)

The driver program is on a separate .java file passed with this document.