# Week 6 Classroom Exercise: Putting it All Together

## Objective:

* Put everything you have learned about Object-Oriented Programming into practice.

### Practice:

* Classes
* Abstract classes
* Default methods in interfaces
* Has-a relationships
* inheritance - all three types
* instanceof keyword
* Interfaces
* Multiple inheritance using interfaces
* Is-a relationships
* Object class and methods
* Polymorphism
* Type casting of objects.

### Steps

1. Create an abstract class Vehicle with an abstract method move() and a concrete method fuelType().
2. Create three subclasses: Car, Bike, and Truck, each providing its implementation for move().
3. Demonstrate the is-a relationship by extending Vehicle and adding specific attributes to Car, Bike, and Truck.
4. Override the equals() method in Car to compare two Car objects based on their attributes. (e.g., model, year)
5. Demonstrate the has-a relationship by adding a Driver class that a Car object has.
6. Create a method that accepts a Vehicle object and calls the move() method.
7. Use the instanceof keyword to check if the object is an instance of Car and print a specific message.
8. Typecast the object to Car and invoke a specific Car method.
9. Demonstrate polymorphism by calling move() on different Vehicle objects stored in an array and use the toString() method to print the details of each vehicle.
10. Create an interface named Electric with a method chargeBattery().
11. Make a Car implement Electric and override chargeBattery().
12. Demonstrate multiple inheritance by having Car implement Electric and another interface like FourWheeledVehicle.