Assignment 1

★ In analyzing the solution for the vehicle scenario, it becomes apparent that certain classes are used solely as base classes and are not intended for direct instantiation. Convert these classes to abstract classes to clearly define them as foundational structures for subclass inheritance.

★ In C++, making a class abstract requires the inclusion of at least one pure virtual function. Pure virtual functions act as interfaces, mandating that all derived classes implement them. Any derived class that does not override a pure virtual function will itself become abstract. Identify functions that are meant to serve as interfaces for derived classes and convert them to pure virtual functions.

★ Virtual functions are beneficial when derived classes are expected to provide their own implementations, as they enable polymorphic behavior through base class pointers or references. If a base class's virtual function is not overridden in a derived class, the base class version will be invoked. Identify and convert appropriate functions to virtual functions to support polymorphism effectively.

★ For proper memory management in inheritance hierarchies, ensure that destructors are virtual if the class is not final, thus allowing derived class destructors to execute correctly upon deletion. Add destructors where necessary and declare them virtual as appropriate.

★ Utilize virtual inheritance to prevent duplication of data members across multiple inheritance paths.

★ **Modifications in the `Branch` Class:** Currently, the `Branch` class stores different vehicle types (e.g., car, motorcycle) as arrays of specific vehicle objects.

- Modify this to use a single array of vehicle pointers, allowing for storage of various vehicle types.
- Create an `addVehicle(const Vehicle* v)` function to add any vehicle type to the array of vehicle pointers.
- Apply similar changes to the `Employee` class to handle different employee types consistently.
- Finally, implement a `maintenance_all_vehicle()` function to invoke the maintenance process for each vehicle in a branch, ensuring appropriate procedures are followed for each vehicle type.