Model answers to the exam
Software Engineering

Exercise 1 (Course comprehension questions : 10 points):

1. **Which diagram is most commonly used to detail a use case ?**

   The most commonly used diagram for use cases is the sequence diagram.

2. **What condition must a component satisfy in order to replace another ?**

   The replacement component must have the same interfaces as the one being replaced.

3. **What is the purpose of the composite structure diagram ?**

   The purpose of the composite structure diagram is to describe the internal structure of a class or component by showing its internal parts, their relationships, and their collaborations.

4. **What solution is used in software engineering to resolve recurring problems?**
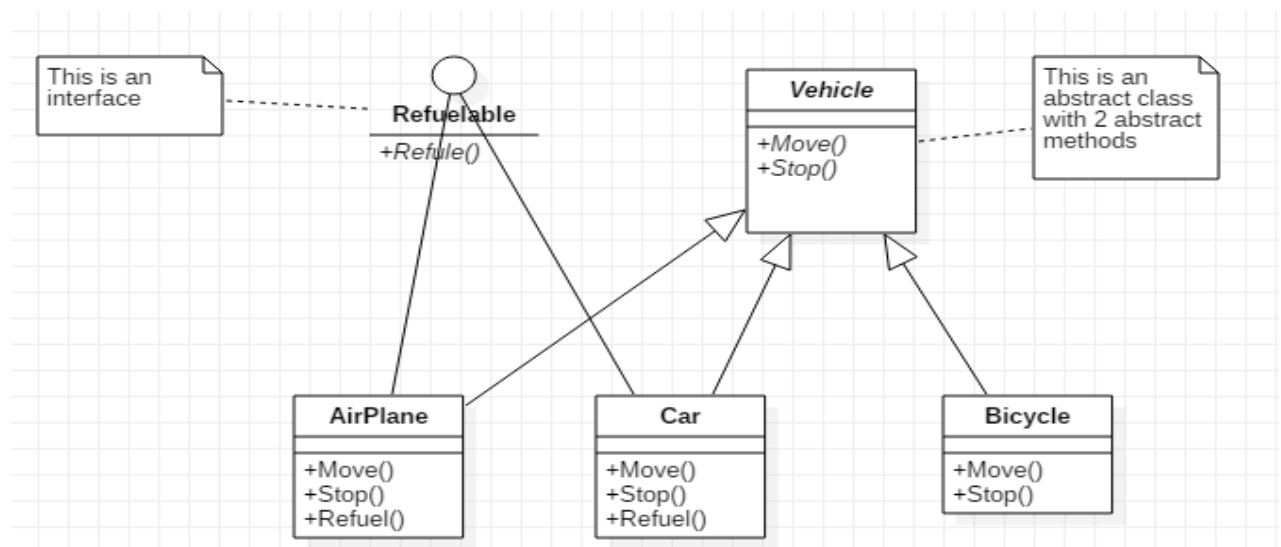
   In software engineering, design patterns are the solution used to resolve common and recurring problems.

5. **What is the name of the class from which only a single instance can be created? Provide its structure.**

   The class from which only a single instance can be created is called **Singleton**. Its structure is as follows:

Singleton
- singleton : Singleton
- Singleton() + getInstance() : Singleton

Exercise 2:

This is an interface

Refuelable
+Refule()

Vehicle
+Move()
+Stop()

This is an abstract class with 2 abstract methods

AirPlane
+Move()
+Stop()
+Refuel()

Car
+Move()
+Stop()
+Refuel()

Bicycle
+Move()
+Stop()

Exercise 3:

interaction PlaceOrerOnline

:Client | :Shop | :Delivery Service | :Notification Service

1 : Login(Id, Pw)

2 : PlaceOrder

opt

[Needs Confirmation]

3 : Confirm

loop

[For each item]

4 : Send(item)

5 : Check Status

alt

[Client Status=VIP]

6 : Send(item, courier)

[Client Status=Ordinary]

7 : Send(item, Orinary Mail)