Romercio David Jr

11/05/2024

Professor Sai, COSC 412.001

**Question 1**

a) **Methods of the Sports Car class:**

* PressClutch
* Move
* Stop
* Turn
* SetSpeedMPH
* GetSpeedMPH
* GetSpeedKPH
* SetMileage

b) **SetMileage method in the Station Wagon class (True/False):** This is true because StationWagon is inherited the Car class which has the SetMileage defined.

c) **Generalization in class diagrams:** Generalization represent an “is-a” relationship i.e., a subclass inherits the attributes and methods from a super class.

* Vehicle is a generalization of Car
* Vehicle is a generalization of Bicycle
* Vehicle is a generalization of RollerSkates
* Car is a generalization of SportsCar
* Car is a generalization of StationWagon

**Question 2**

a) **Open-Close Principle:** The Open-Close Principle suggests that classes should be open for extension but closed for modification.

A diagram of a cat

Description automatically generated

b) **Dependency Inversion Principle:** The Dependency Inversion Principle suggests that a components/classes should depend on abstractions and not concretions.

A diagram of a cat

Description automatically generated

**Question 3**

a) **Square Adapter Design:**

A computer screen shot of a program code

Description automatically generated

b) **Output of the Main Method:** Since a Square has equals sides so when setting the width and height, they will always be equal. A Rectangle allows different values for width and height so when setting either width or height on the adapter ultimately sets the side of the Square, this results in equal width and height which is the incorrect behavior for a Rectangle.

A screen shot of a computer

Description automatically generated

c) **Class Diagram for Adapter Pattern:** ­­­

A screenshot of a diagram

Description automatically generated