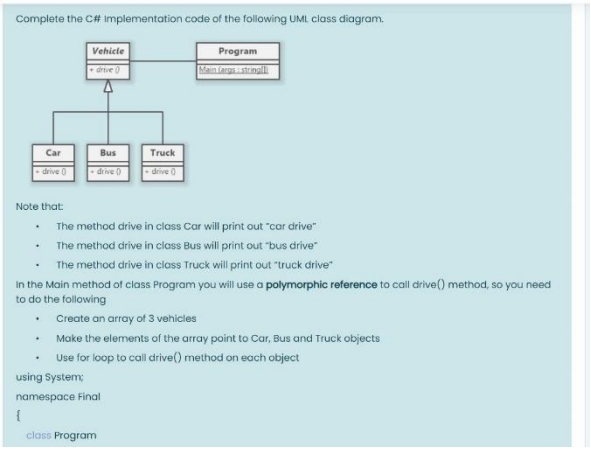
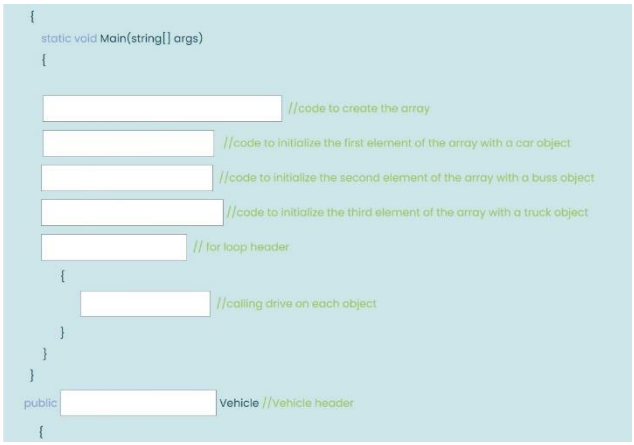




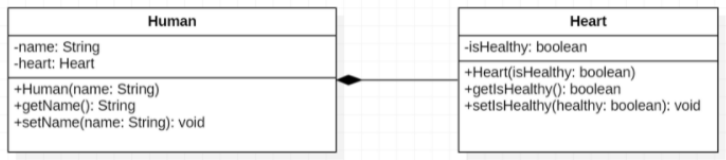

```
using System;

namespace Final
{
    class Program
    {
        static void Main(string[] args)
        {
            Vehicle[] array = new Vehicle[3];    //code to create the
array

            array[0] = new Car();     //code to initialize the first
element of the array with a car object
            array[1] = new Bus();     //code to initialize the second
element of the array with a bus object
            array[2] = new Truck();   //code to initialize the third
element of the array with a truck object

            for (int i = 0; i < array.Length; i++)    // for loop header
            {
                array[i].drive();   //calling drive on each object

            }
        }
    }

    public interface Vehicle    //Vehicle header
    {
        void drive();      // code for drive method
```

```
}

public class Car : Vehicle  // Car Header
{
    public void drive()        // drive method header
    {
        Console.WriteLine("car drive");   // drive method body
    }
}

public class Bus : Vehicle   // Bus header
{
    public void drive()      // drive method header
    {
        Console.WriteLine("bus drive");   // drive method body
    }
}

public class Truck : Vehicle   // Truck header
{
    public void drive()    // drive method header
    {
        Console.WriteLine("truck drive");   // drive method body
    }
}
                                                                                    }
```

---

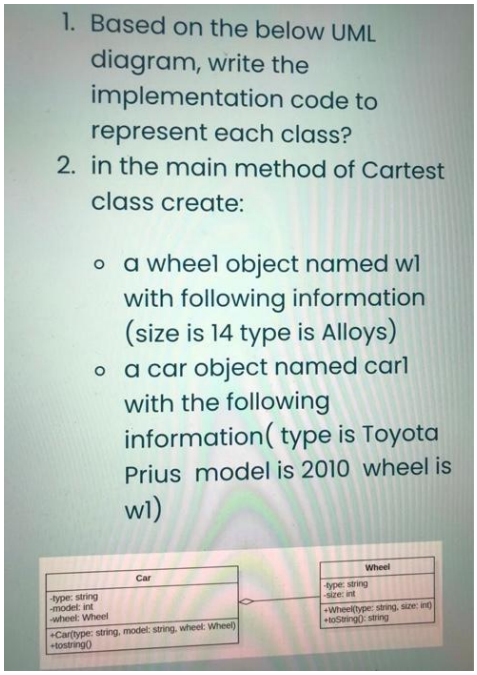
1. Based on the below UML diagram, write the implementation code to represent each class?
2. in the main method of HumanTest class create:

- a Human object named human1 with the following information(name is "Ali" with a healthy heart)



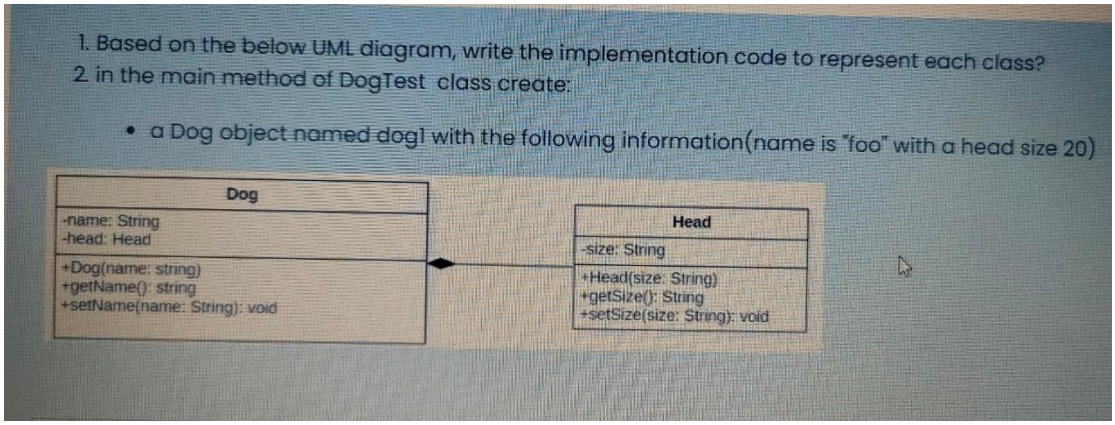

```
using System;
public class Heart
{
    //creating variable
    private bool isHealthy;
    //constructor
    public Heart(bool isHealthy)
    {
        //setting value
        this.isHealthy = isHealthy;
    }

    //getter and setter method
    public bool getItsHealthy()
    {
        return isHealthy;
    }

    public void setItsHealthy(bool isHealthy)
    {
        this.isHealthy = isHealthy;

    }
}
public class Human
{
    //creating variable
    private string name;
    private Heart heart;
    //constructor
    public Human(string name, Heart heart)
    {
        //setting value
        this.name = name;
        this.heart = heart;
    }
    //getter and setter method
    public string getName()
    {
        return name;
    }
    public void setName(string name)
    {
        this.name = name;
    }
}
class HumanTest
{
    static void Main()
```

```
    {
        //create Heart and Human object
        Heart heart = new Heart(true);
        Human human1 = new Human("Ali", heart);
        //print details
        Console.WriteLine("Name : " + human1.getName());
        Console.WriteLine("Is Healthy Heart? " + heart.getItsHealthy());
    }
                                                                                }
```




```java
public class Car
{
    private String type; //attributes
    private int model;
    private Wheel w;
    Car(String t, int m, Wheel w1) //Constructor
    {
        type = t;
        model = m;
        w = w1;

    }
    public String toString() //toString method
    {
        return type + " " + model + " " + w.toString();


    }

}


public class Wheel
{
    private String type; //attributes
    private int size;
    Wheel(String t, int s) //Constructor
    {
        type = t;
        size = s;

    }
```

```
    public String toString() //Tostring Method
    {
        return type + " " + size;
    }

}



public class Cartest
{

    public static void main(String[] args)
    {
        Wheel w1 = new Wheel("Alloys", 14); //object made
        Car car1 = new Car("Toyota Prius", 2010, w1);
    Console.WriteLine(car1);

    }

}
```

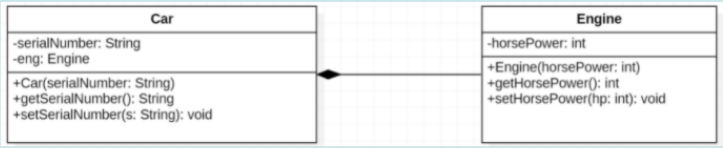



```
using System.IO;
using System.Xml.Linq;

public class Cartest

{

    static void Main(string[] args)

    {
        Head head = new Head("20");
        Dog dog1 = new Dog("foo ", head);

        Console.WriteLine(dog1.toString());

    }

}
public class Dog

{
    string size;
    Head head;
    public Dog(string size, Head head)
    {
        this.size = size;
        this.head = head;
    }
    public string getSerialNumber()
    {
        return size;
    }
    public void setSerialNumber(string Size)
    {
        Size = size;
    }
    public string toString()
    {
        return "name is " + size + "with a head size " + head ;
    }

}
public class Head
```

```
{
    string name;
    public Head(string name)
    {
        this.name = name;
    }
    public string getHorsePower()
    {
        return name;
    }
    public void setHorsePower(string Name)
    {
        Name = name;
    }

}
```

1. Based on the below UML diagram, write the implementation code to represent each class?
2. in the main method of CarTest class create:

   - a Car object named car1 with the following information(serial Number is "2020foo" with a 350 horse power engine)




```
using System.IO;

public class Cartest

{

    static void Main(string[] args)

    {
        Engine engine = new Engine(350);
        Car car1 = new Car("2020foo ", engine);

        Console.WriteLine(car1.toString());

    }

}
public class Car

{
    string serialNumber;
    Engine eng;
    public Car(string serialNumber, Engine eng)
    {
        this.serialNumber = serialNumber;
        this.eng = eng;
    }
    public string getSerialNumber()
    {
        return serialNumber;
    }
    public void setSerialNumber(string s)
    {
        s = serialNumber;
    }
    public string toString()
    {
```

```
        return "serial Number is " + serialNumber + "with a " + eng +
"horse power engine ";
    }

}
public class Engine

{
    int horsePower;
    public Engine(int horsePower)
    {
        this.horsePower = horsePower;
    }
    public int getHorsePower()
    {
        return horsePower;
    }
    public void setHorsePower(int hp)
    {
        hp = horsePower;
    }

}
```