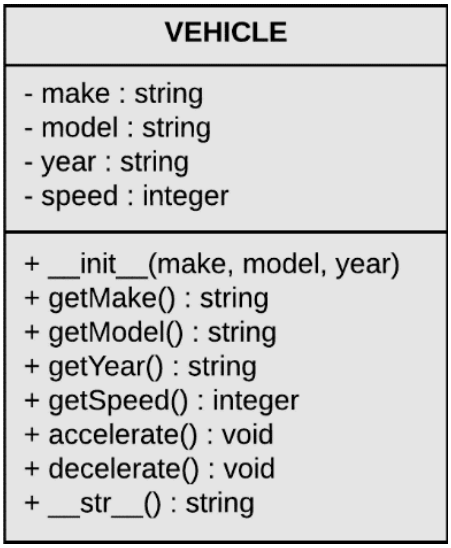
CITC-1301 Introduction to Programming

Chapter 10 Lab – Vehicle Class

Part I – `Vehicle` Class



Write a class named **`Vehicle`** that has the following data attributes:

- **`__make`** – make of a car (string)
- **`__model`** – model of a car (string)
- **`__year`** – car's year (string)
- **`__speed`** – car's current speed (integer)

The **`Vehicle`** class shall have an **`__init__()`** method that accepts a vehicle's year, make, and model as arguments. These values shall be assigned to the object's **`__make`**, **`__model`**, and **`__year`** data attributes. Assign 0 to the **`__speed`** data attribute.

The class shall also have the following methods:

- Accessor methods for each attribute
- **`accelerate()`** – add 5 to the **`__speed`** attribute each time it is called.
- **`decelerate()`** – subtract 5 from the **`__speed`** attribute each time it is called.
  - Do not allow the **`__speed`** attribute to be decreased below zero.
- **`__str__()`** - returns the following string: "The <year> <make> <model> vehicle is traveling at <speed> MPH."
  - Example value: "The 2015 Chevy Spark is traveling at 40 MPH."

Part II – `Vehicle` Class Test Program

Create a program that creates a **`Vehicle`** object that calls the **`accelerate()`** method five times. After each call to the **`accelerate()`** method, output the current speed of the vehicle.

After calling the **`accelerate()`** function five times, call the **`decelerate()`** method five times. After each call to the **`decelerate()`** method, output the current speed of the vehicle (by passing the vehicle object to a **`print()`** function call).

Design Requirements

- Create a **`main()`** function containing the mainline logic of the program.
- Place both the **`Vehicle`** class and **`main()`** function in the same source file.

Example output:

```
Vehicle Class Test Program

Accelerating...
Current speed: 5
Current speed: 10
Current speed: 15
Current speed: 20
Current speed: 25

Braking...
The 2015 Chevy Spark is traveling at 20 MPH.
The 2015 Chevy Spark is traveling at 15 MPH.
The 2015 Chevy Spark is traveling at 10 MPH.
The 2015 Chevy Spark is traveling at 5 MPH.
The 2015 Chevy Spark is traveling at 0 MPH.
```

Submission Instructions

- Upload your Python script (i.e., your .py file) to the appropriate dropbox on D2L.