

Work Sample Exercise

As part of our hiring process, we have applicants for software engineering positions develop a small “work sample” in an object-oriented language. It’s a chance for us to see how you would tackle the kind of work we do here at Syncroness.

That said, this is NOT meant to be a full-blown application with UI/database/installer, we’re just looking for a small demonstration of design approach and coding style that should take you no more than a couple hours.

You may use C#, Java, C++ or Python to complete the exercise. Please reply to this email to submit your completed work sample, including details of your OS, language and compiler or IDE, and instructions on how to build.

Overview

The goal of this exercise is to develop a small solution for managing an inventory of vehicles.

Note: This is NOT meant to be a complete application and doesn’t need a database. It does need to be an object-oriented solution that demonstrates design approach, code structure, and coding style. We’re looking for things like good use of abstraction, SOLID principles, and design patterns.

Application Features

Provide a way to represent vehicles:

- Each vehicle should have a vehicle identification number (VIN), manufacturer (such as BMW, Ford, etc.), model, year, and color. Other than the manufacturer, these can be simple primitive types (e.g., int, string, enum). We are not designing an actual vehicle inventory system!
- A vehicle should contain manufacturer information for the vehicle, consisting of a manufacturer name and a country.
- A vehicle should be able to return a string representation of itself that consists of the color, year, manufacturer name, model, and VIN.
 - If the vehicle is a BMW, then the string must end with “© BMW AG, Munich, Germany”.
 - If the vehicle is a Tesla, then the string must end with “(Batteries Included!)”.

Create a repository with the following functionality:

- A way to add a vehicle to, and remove a vehicle from, the inventory.
- A way to fetch a list of vehicles that match a specified year.
- A way to fetch a list of vehicles that of a given manufacturer.

When executed, the application should populate the inventory with a some example vehicles, and then print to the console:

- A list of all the vehicles in the inventory.
- A list of vehicles from a specific year or manufacturer.