Objects and classes - Lets build a car - Due date 23.03.2018

Classes

1. Create a class called Car
2. Create a class called Human
3. Create a class called IgnitionKey
4. Create a class called Tyre
5. Create a class called Engine

Car

In class Car create the following properties of their respective types

1. ImmobilizerId - int
2. Brand - string
3. Model - string
4. Tyres - array of type Tyre with size of 4 (remember how we created a property inside human of type Pet)
5. IgnitionKey - IgnitionKey
6. Engine - Engine
7. Driver - Human

Human

In class Human create the following properties of their respective types

1. Name - string
2. Age - short

IgnitionKey

In class IgnitionKey create the following properties of their respective types

1. ImmobilizerId- int

Tyre

In class Tyre create the following properties of their respective types

1. Type - string hint: (Winter, Summer)
2. Size - short

Engine

In class Engine create the following properties of their respective types

1. Volume - double
2. FuelType - string (Petrol, Diesel)
3. Gears - short (how many)
4. IsRunning - bool

Methods

Now to be able to put all objects into a story, we need to add some functionality to them.

In class Car create the following methods.

EnterTheCar(Human human);

Inside EnterTheCar method, check if the human is older than 18 and display an appropriate message in the console if Human is allowed to drive or not.

InsertKey(IgnitionKey key);

StartEngine();

Inside StartEngine method, check if there is IgnitionKey in the car (remember the **null** magic word?)

Inside StartEngine method, check whether the IgnitionKey's ImmobilizerId and Car's ImmobilizerId are equal. Only then the can start. In both instances display an appropriate message in the console.

Inside StartEngine method, check if engine is running and display an appropriate message in the console if attempting to start a running engine.

StopEngine();

Inside StopEngine method, check if engine is running and display an appropriate message in the console if attempting to stop a still engine.

Main method

Create a main method, create an instance of class Car in it.
Create 2 instances of class Human, one older than 18 and one younger than 18.
Create 2 instances of class IgnitionKey. One that matches the ImmobilizerId in Car and one that doesn't.

//Read about how to populate an array with specific objects.
Create an array of 4 new tyres.

Use EnterTheCar method to insert one of the Human objects inside of it.
Use InsertIgnitionKey method to insert one of the ignition keys.

Try calling StartEngine and StopEngine.

Experiment with the 2 different Humans and IgnitionKeys, make sure you display appropriate messages if something is wrong

Challenge

Inside the Main method create a variable Season of type string. You will be assigning 2 values to it (Summer, Winter)

Invent a method (either in Car class or somewhere else) which is called from EnterTheCar method and **if**

1. Any or all of the 4 tyres are of type “Summer” and the Season variable is set to “Winter” you will display a message in the console “I am afraid, I won’t drive this car!”
2. If any mix of tyres is used and the Season variable is set to Summer you will display a message in the console “Let’s roll!”