Submission Instructions

For each of the exercises below, you must submit:
1. All source code, project files and any other files required to run the programs.
2. Screenshots of the program's output or error messages if the program doesn't work.

Concepts applied in these exercises

- Classes
- Instance variables
- Encapsulation
- Methods
- Constructors
- Design

Exercise 1

A) Write a class called **SportsCar** containing the two instance variables **maxSpeed** and **horsepower** of type int. Both these instance variables must, in any **SportsCar** object hold values that are greater than certain pre-specified values; otherwise, they do not qualify as proper **SportsCar** objects. In our case, the minimum value for **maxSpeed** is 200 km/hour, and the minimum value for **horsepower** is 250hp. Include suitable member variables in the **SportsCar** class to hold these values (**maxSpeedRequirement** and **horsepowerRequirement**) and write a method called **SportsCheck** that returns true if both of the **maxSpeed** and **horsepower** for a particular **SportsCar** object are above the minimum requirements; otherwise false.
Write accessor and mutator methods for **maxSpeed**, **horsepower**, **maxSpeedRequirement** and **horsepowerRequirement**.

Exercise 2

A) Write a class called **Robot** with the following three instance variables: **name** (String), **age** (int), **isOn** (bool). The program should initialize the instance variables to “unknown”, 0, and false, respectively. Include accessor and mutator methods to assign and retrieve the values of these instance variables.

B) Allow the users of the Robot class to set the initial values of the three instance variables when a Robot object is created. To this end declare one constructor with three formal parameters and one default constructor.

C) Include a member variable called **robotsCreated** that keeps track of the number of Robot objects created. Make the constructors update the robotsCreated variable so it is always up to date. Implement the following logic: If robotsCreated is less than 5 when the constructor is called, set isOn to true; otherwise false.