**Homework: Defining Classes - Part 1**

**Problem 1. Define class**

* Define a class that holds information about a mobile phone device: model, manufacturer, price, owner, battery characteristics (model, hours idle and hours talk) and display characteristics (size and number of colors).
* Define 3 separate classes (class GSM holding instances of the classes Battery and Display).

**Problem 2. Constructors**

* Define several constructors for the defined classes that take different sets of arguments (the full information for the class or part of it).
* Assume that model and manufacturer are mandatory (the others are optional). All unknown data fill with null.

**Problem 3. Enumeration**

* Add an enumeration BatteryType (Li-Ion, NiMH, NiCd, …) and use it as a new field for the batteries.

**Problem 4. ToString**

* Add a method in the GSM class for displaying all information about it.
* Try to override ToString().

**Problem 5. Properties**

* Use properties to encapsulate the data fields inside the GSM, Battery and Display classes.
* Ensure all fields hold correct data at any given time.

**Problem 6. Static field**

* Add a static field and a property IPhone4S in the GSM class to hold the information about iPhone 4S.

**Problem 7. GSM test**

* Write a class GSMTest to test the GSM class:
  + Create an array of few instances of the GSM class.
  + Display the information about the GSMs in the array.
  + Display the information about the static property IPhone4S.

**Problem 8. Calls**

* Create a class Call to hold a call performed through a GSM.
* It should contain date, time, dialled phone number and duration (in seconds).

**Problem 9. Call history**

* Add a property CallHistory in the GSM class to hold a list of the performed calls.
* Try to use the system class List<Call>.

**Problem 10. Add/Delete calls**

* Add methods in the GSM class for adding and deleting calls from the calls history.
* Add a method to clear the call history.

**Problem 11. Call price**

* Add a method that calculates the total price of the calls in the call history.
* Assume the price per minute is fixed and is provided as a parameter.

**Problem 12. Call history test**

* Write a class GSMCallHistoryTest to test the call history functionality of the GSM class.
  + Create an instance of the GSM class.
  + Add few calls.
  + Display the information about the calls.
  + Assuming that the price per minute is 0.37 calculate and print the total price of the calls in the history.
  + Remove the longest call from the history and calculate the total price again.
  + Finally clear the call history and print it.