Defining Classes - Part 1

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)

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.

3 Enumeration

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

4 ToString

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

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.

6 Static field

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

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`.

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).

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>`.

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.

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.

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 a 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.