

Example Problem 1: Classes

- a. Design a class `Time` which stores hour and minute. The class members should not be directly accessible and the class should have the methods to support the following:
 - The time value is initialized to the value provided by the user or to zero if no value is provided by the user
 - A `Time` object can be constructed from another `Time` object
 - User may increment/decrement minutes
 - User may get and set minute as well as hour
 - The time can be displayed in the form `hh:mm`
 - The correct keywords are used. For example, methods that are not supposed to modify the class members should be declared with the keyword **const**.
- b. We want to add the time zone to the description of time. Here, we assume that the time zone is represented by an integer number between -11 and 12. We derive the **class** `TimeZone` from the **class** `Time` with the following properties:
 - The time zone value is initialized to the value provided by the user or to zero if no value is provided by the user
 - Users can change the time zone. When the time zone changes, also the time value has to change correctly
 - Users can get the time zone value
 - Users can display the time together with the time zone. The format of the time zone display should be “GMT+hh:mm” or “GMT-hh:mm”.
 - A `TimeZone` object can be constructed from another `TimeZone` object