# CSCI 345 - Object Oriented Design

# Assignment 06

# Design Patterns – Listener Pattern – Timer

# Program Specification

Mr. Pumphry, the renowned project manager of all quirky projects, has tasked you, the newly hired junior software developer, to implement the following UML Class Diagram:

Graphical user interface, text, application, chat or text message

Description automatically generated

1. The program is designed to model the interaction between a Timer object and a TimerListener object.
2. Create a class named TimerListener. Define a constructor that receives a string and assigns the string parameter to a private string field named name that represents the listener’s name. Define a method named Notify that receives no parameters and has a void return type. The Notify method should simply output a message to the console that outputs the value in the name field and the message “wake up!”. For example, if the name field is storing the string “Sally”, the output should be “Sally, wake up!”.
3. Create a class named Timer. The Timer class should have a private integer field named timerPeriod that represents the amount of time in seconds the timer should be set for.
4. Create a method named SetTimePeriod that receives an integer parameter. The method should use the parameter to set the timerPeriod field.
5. Create a method in the Timer class named RegisterTimerListener. This method should receive a reference to a TimerListener object and store the TimerListener reference in a private field named listener declared in the Timer class.
6. Create a method named Activate that receives no parameters and has a void return type. The Activate method should activate the timing process and call the Notify method of the TimerListener class when the timer goes off. Specifically, the Activate method should call the Thread class’ static Sleep method to suspend the thread’s execution:

Java: Thread.sleep(timerPeriod \* MILLISECONDS\_PER\_SECOND);

C#: Thread.Sleep(timerPeriod \* MILLISECONDS\_PER\_SECOND);

The amount of time the thread is suspended is based on the value in the Timer class’s timerPeriod field. Also output the message “Activating timer…” when this method is called.

1. A test program is uploaded.