

## Lab 7

In this lab you will create three Exception classes to be used in conjunction with the Time class that is in the zip file for this lab.

1. Download and read carefully the source code for Time.java.
2. Create a new project with a package called catchingtime. Place Time.java in this package.
3. You will be modifying this class *in a very specific and limited fashion* so that it throws exceptions if a client attempts to set invalid times. You will only be modifying the bodies of `Time`, `setTime`, `setHour`, `setMinute`, and `setSecond` to include `throw` statements when an error is encountered. In order to do this you will need to replace the current implementation of each method with code that tests for the error condition and throws the exception if it exists; otherwise it should assign the state variable the value of the valid parameter.

You may also modify the signatures of methods in this class with `throws` clauses. Here are the possible errors you should detect, each of which corresponds to a different exception class:

- a) Attempting to set the hour portion of a Time object to an illegal value (i.e., not within the range 0..23)
  - b) Attempting to set the minute portion of a Time object to an illegal value (i.e., not within the range 0..59)
  - c) Attempting to set the second portion of a Time object to an illegal value (i.e., not within the range 0..59)
4. Now, add the three new classes, one for each type of error. Each of these classes should be sub-classes of `Exception`. Make sure you pick appropriate names for your classes. Each class should have at least one constructor that takes a parameter so that the exception has a record of the value that caused the error. The exception error message should then use this value to report why the exception occurred.
  5. Add a `main` method to Time (or create a new class just for testing that contains a main method). Your main method should use try-catch blocks, report any exception by printing to the console, and then continue on to the next case. In this main method include code that tests each of the following cases (hours, minutes, seconds):

24 30 0	17 0 60
11 -1 0	0 11 10
18 25 0	07 11 0

75 80 85

23 23 23

Your code should contain ALL of these tests. It might be convenient for you put these test cases in a data structure that you can iterate over in order to minimize the number of separate try-catch blocks you will need.

6. Finally, you will need to modify the Javadocs specifications for each of the methods that now throws an exception, by adding a `@throws` clause that documents the methods behavior.
7. Deliverable: Zip up your entire `catchingtime` package and email it to prof. stucki...

All work must be done individually. Never look at someone else's code. Please refer to the course policies if you have any questions about academic integrity. If you have trouble with the assignment, I am always available for assistance.