

## Questions and Exercises

### Questions

1. What method in `Timer` or `TimerTask` can you use to determine when the task was most recently scheduled to execute? (*Hint:* You can find the answer by looking at the API documentation for `Timer` and `TimerTask`. Remember that these classes were introduced in version 1.3 of the Java platform.)
2. What is the effect of calling the `start` method on a `Thread` object?
3. What are the two ways you can provide the implementation for a thread's `run` method?

### Exercises

1. Convert `AnnoyingBeep.java`<sup>1</sup> so that the initial delay is 5 seconds, instead of 0.
2. Convert `AnnoyingBeep.java` to use the `scheduleAtFixedRate` method instead of `schedule` to schedule the task. Change the implementation of the `run` method so that if the `run` method is called too late for a warning beep (say, more than 5 milliseconds after it was scheduled to run), nothing happens—no beep and string are generated. (*Hint:* Remember your answer to question 1.)
3. Change the main program of `TwoThreadsDemo.java`<sup>2</sup> so that it creates a third thread, named “Bora Bora.” Compile and run the program again. Note that you will also need `SimpleThread.java`.<sup>3</sup> Does this change your vacation destiny?
4. Compile and run `RaceDemo.java`<sup>4</sup> and `SelfishRunner.java`<sup>5</sup> on your computer. Do you have a time-sliced system?
5. Well-behaved threads voluntarily relinquish the CPU periodically and give other threads an opportunity to run. Rewrite the `SelfishRunner` class to be a `PoliteRunner`. Be sure to modify the main program in `RaceDemo.java` to create `PoliteRunners` instead of `SelfishRunners`.

### Answers

You can find answers to these Questions and Exercises online:

<http://java.sun.com/docs/books/tutorial/essential/threads/QandE/answers.html>

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<sup>1</sup> `AnnoyingBeep.java` is included on the CD and is available online. See [Code Samples](#) (page 310).

<sup>2</sup> `TwoThreadsDemo.java` is included on the CD and is available online. See [Code Samples](#) (page 310).

<sup>3</sup> `SimpleThread.java` is included on the CD and is available online. See [Code Samples](#) (page 310).

<sup>4</sup> `RaceDemo.java` is included on the CD and is available online. See [Code Samples](#) (page 310).

<sup>5</sup> `SelfishRunnerDemo.java` is included on the CD and is available online. See [Code Samples](#) (page 310).