Concurrent Programming in Java

February 9, 2011

- Brian Goetz, Tim Peierls, Joshua Bloch, Joseph Bowbeer, David Holmes and Doug Lea. Java Concurrency in Practice. Addison-Wesley, 2006.

- Mary Campione, Kathy Walrath and Alison Huml. The Java Tutorial. Lesson: Threads: Doing Two or More Tasks At Once.

- James Gosling, Bill Joy, Guy L. Steele Jr. and Gilad Bracha. The Java Language Specification. Third edition.

Thread Creation

In Java, threads are created dynamically:

```
// create and initialize a Thread object
Thread thread = new Thread();
// start the thread
thread.start();
```

The class `Thread` is part of package `java.lang` (and, hence, does not need to be imported).

Question

Develop a Java class called `Printer` that is a `Thread` and prints its name 1000 times.

Question

Develop an app that creates two `Printer`s with names 1 and 2 and run them concurrently.

The following is not allowed in Java.

```
public class Printer extends Applet, Thread
```

```
// create and initialize a Runnable object
Runnable runnable = new ...();
// create and initialize a Thread object
Thread thread = new Thread(runnable);
// start the thread
thread.start();
```

The interface `Runnable` is part of package `java.lang` (and, hence, does not need to be imported).

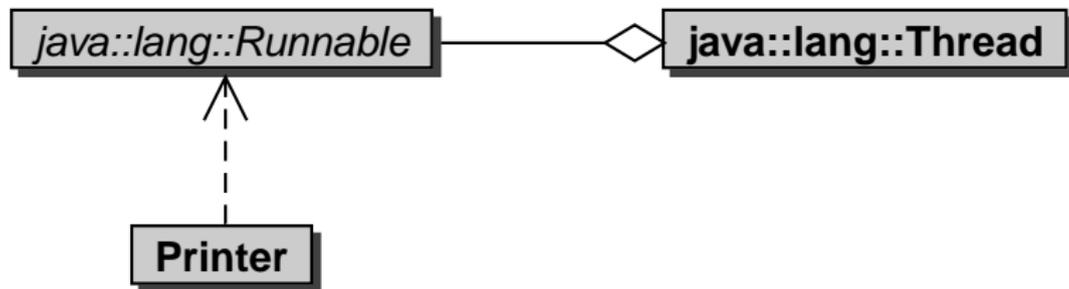In Java, you cannot create instances of an interface.

```
public class Printer implements Runnable
{
    ...
}
```

The assignment

```
Runnable printer = new Printer();
```

is valid since the class `Printer` implements the interface `Runnable`.

java::lang::Runnable   —————<> **java::lang::Thread**

Printer

Question

Develop a Java class called `Printer` that implements `Runnable` and prints the thread's name 1000 times.