

Multithreading

CSSE 221

Fundamentals of Software Development Honors

Rose-Hulman Institute of Technology

Announcements

Joe Armstrong, Programming in Erlang

The World is Concurrent

Multithreading

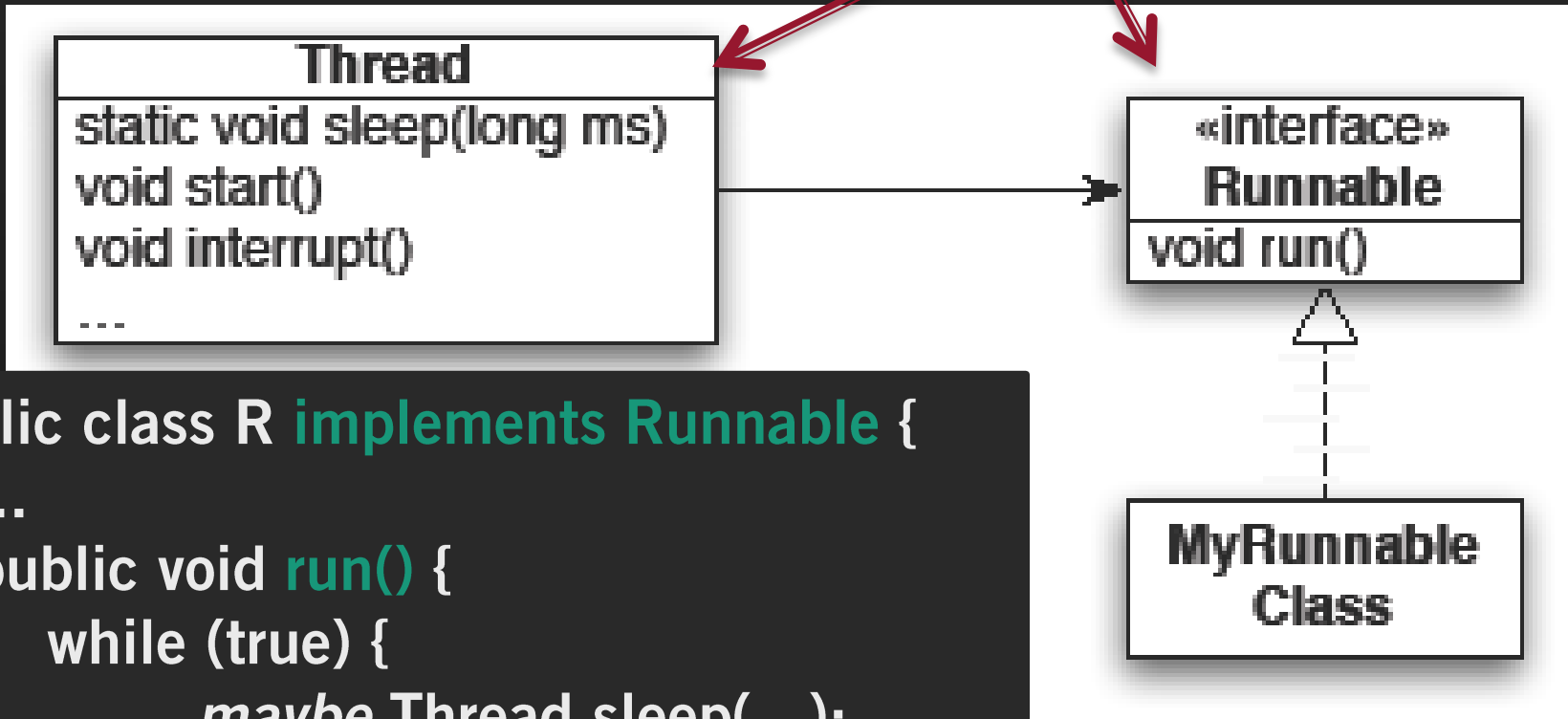
- A technique to:
 1. Run multiple pieces of code “simultaneously” on a single machine

Time → Slices	1	2	3	4	5	6	7	8	9	0	1	2	3	4
running thread 1														
running thread 2														

2. Run different parts of a program on different processor cores

Running Our Own Code Concurrently

From *java.lang*



```
public class R implements Runnable {
    ...
    public void run() {
        while (true) {
            ... maybe Thread.sleep(...);
        }
    }
}
```

Wherever you want to start the Thread:
`new Thread(object of type R).start();`

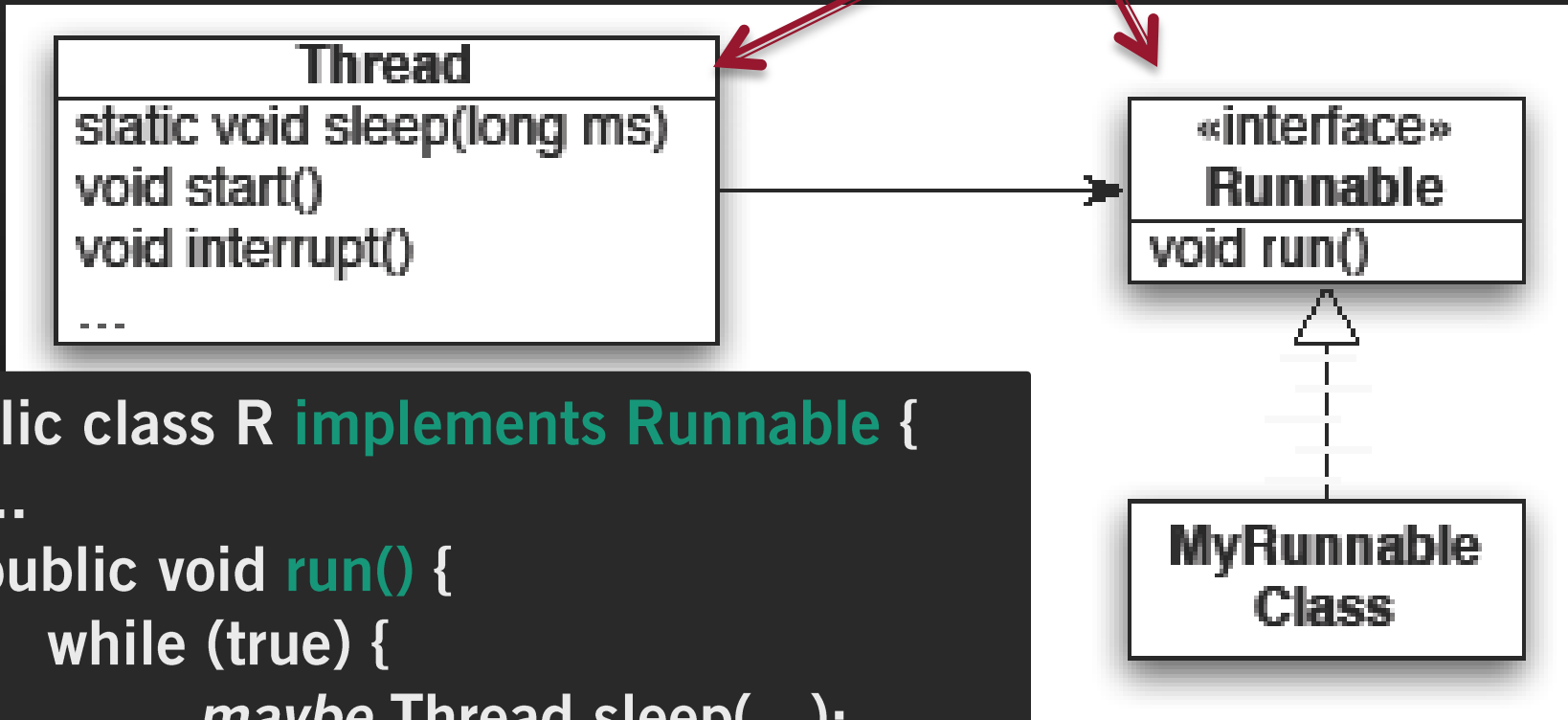
Thread methods



Demo

Running Our Own Code Concurrently

From *java.lang*



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Other Uses for Threads

- Web servers: many users connecting
 - Any client-server architecture
- Desktop applications:
 - layout, spellchecking, auto-save, ...
- Scientific computing
- Weather forecasting
 - Any simulation (hint, hint)

Caution!

- What if one thread is in the middle of performing an action when its time slice ends?
- What if a second thread's action interferes the first's action?
- Demo bank example