Applying Java Structured Concurrency: Case Study ex5

Douglas C. Schmidt
d.schmidt@vanderbilt.edu
www.dre.vanderbilt.edu/~schmidt

Professor of Computer Science

Institute for Software
Integrated Systems

Vanderbilt University
Nashville, Tennessee, USA

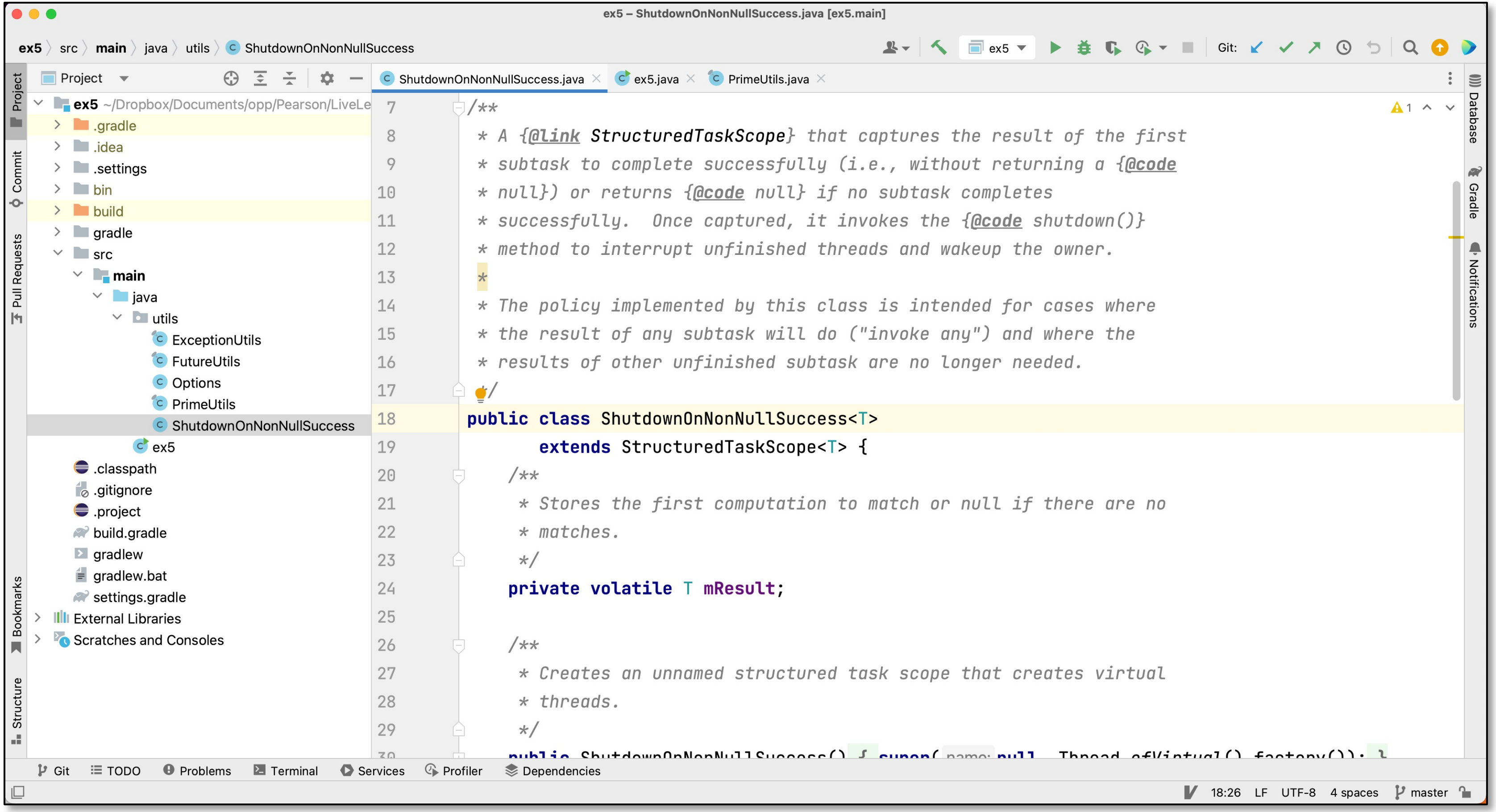
Learning Objectives in this Part of the Lesson

- Understand Java’s structured concurrency model
- Recognize the classes used to program Java’s structure concurrency model
- Evaluate the design & performance of various Java concurrency models
- Know how to implement a custom StructuredTaskScope
  - Case study ex5 shows how to create & apply a custom StructuredTaskScope

```
public class
ShutdownOnNonNullSuccess<T>
  extends StructuredTaskScope<T> {
  private volatile T mResult;
  protected void handleComplete
    (Future<T> future) {
    ...
    T result = future.resultNow();
    if (result != null) {
       mResult = result; shutdown();
    }
  }
  public T result()
  { return mResult; } ...
```

Applying Reactive Java Concurrency to Case Study ex5

Applying Reactive Java Concurrency to Case Study ex5



```java
/**
 * A {@link StructuredTaskScope} that captures the result of the first
 * subtask to complete successfully (i.e., without returning a {@code
 * null}) or returns {@code null} if no subtask completes
 * successfully.  Once captured, it invokes the {@code shutdown()}
 * method to interrupt unfinished threads and wakeup the owner.
 *
 * The policy implemented by this class is intended for cases where
 * the result of any subtask will do ("invoke any") and where the
 * results of other unfinished subtask are no longer needed.
 */
public class ShutdownOnNonNullSuccess<T>
        extends StructuredTaskScope<T> {
    /**
     * Stores the first computation to match or null if there are no
     * matches.
     */
    private volatile T mResult;

    /**
     * Creates an unnamed structured task scope that creates virtual
     * threads.
     */
    public ShutdownOnNonNullSuccess() { super( name: null, Thread.ofVirtual().factory()); }
```

See github.com/douglascraigschmidt/LiveLessons/tree/master/Loom/ex5

End of Applying Java Structured Concurrency: Case Study ex5