# 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 classes used to program Java's structure concurrency model
- Evaluate the design & performance of various Java concurrency models
- Learn how StructuredTaskScope is implemented
- Know how to implement a custom StructuredTaskScope
  - Case study ex5 shows how to create/apply a custom StructuredTaskScope & compares it to applying ShutdownOnSuccess with exceptions

```
try (var scope = new
       ShutdownOnNonNullSuccess
         <Integer>()) {
  numbers
    .forEach(number -> scope
      .fork(() ->
            isPrime(number) == 0
            ? number
            : null));
  scope.join();
  return scope.result();
}
```

## Applying Reactive Java Concurrency to Case Study ex5

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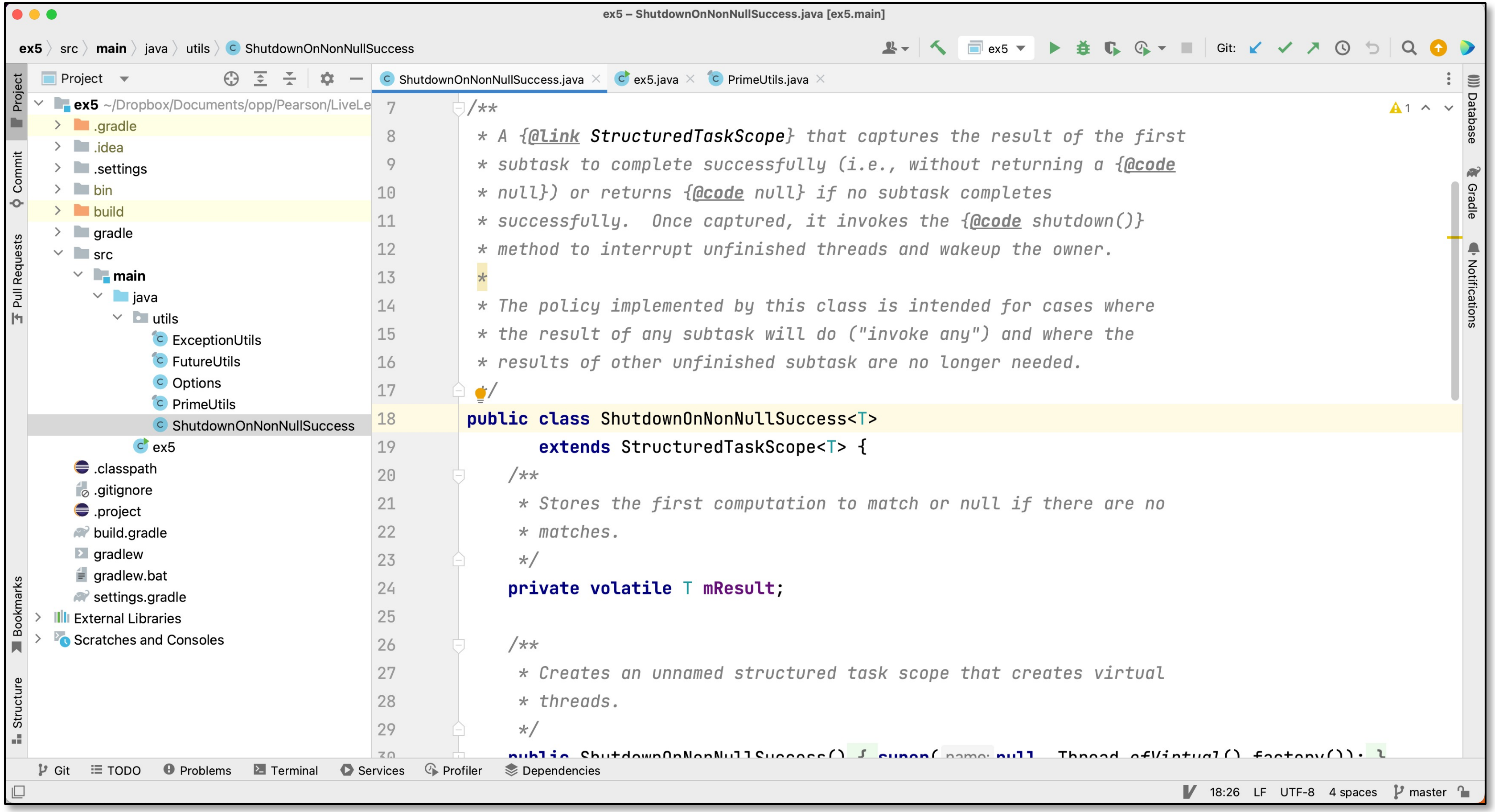

```java
/**
 * A {@link StructuredTaskScope} that captures the result of the first
 * subtask to complete successfully (i.e., without returning a {@code
 * null}) or returns {@code null} if no subtask completes
 * successfully.  Once captured, it invokes the {@code shutdown()}
 * method to interrupt 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