Motivating the Need for Java 8 Completable Futures (Part 2)

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

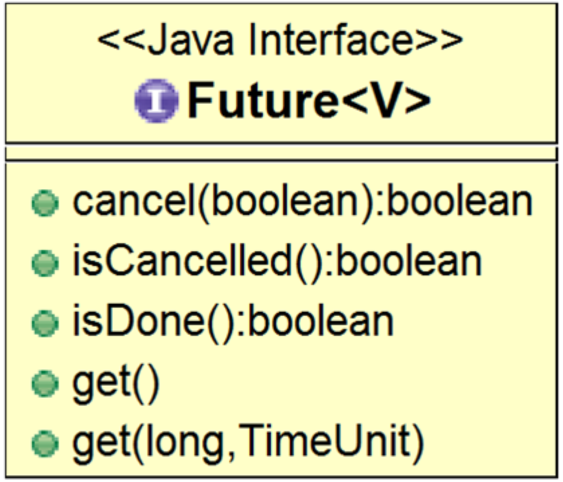
Professor of Computer Science

Institute for Software
Integrated Systems

Vanderbilt University
Nashville, Tennessee, USA

Learning Objectives in this Part of the Lesson

- Motivate the need for Java futures
- Motivate the need for Java 8 completable futures



Motivating the Need for Completable Futures

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- Pros & cons of asynchronous calls with Java futures

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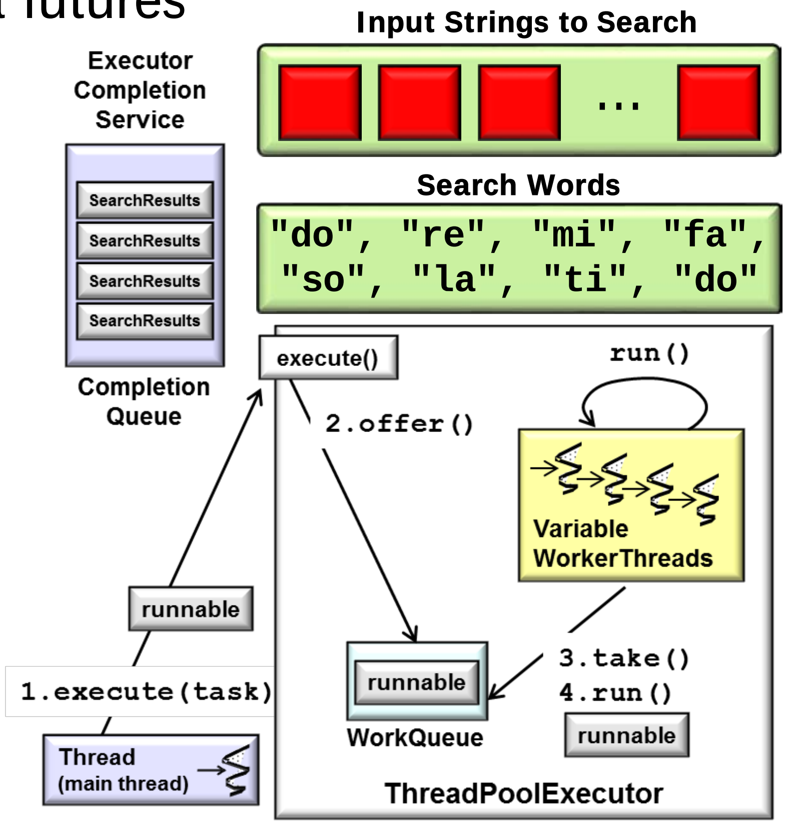
  - *Pros*
    - May leverage inherent parallelism more effectively with fewer threads



See Lesson 2.3 on the Java Executor Framework

Motivating the Need for Completable Futures

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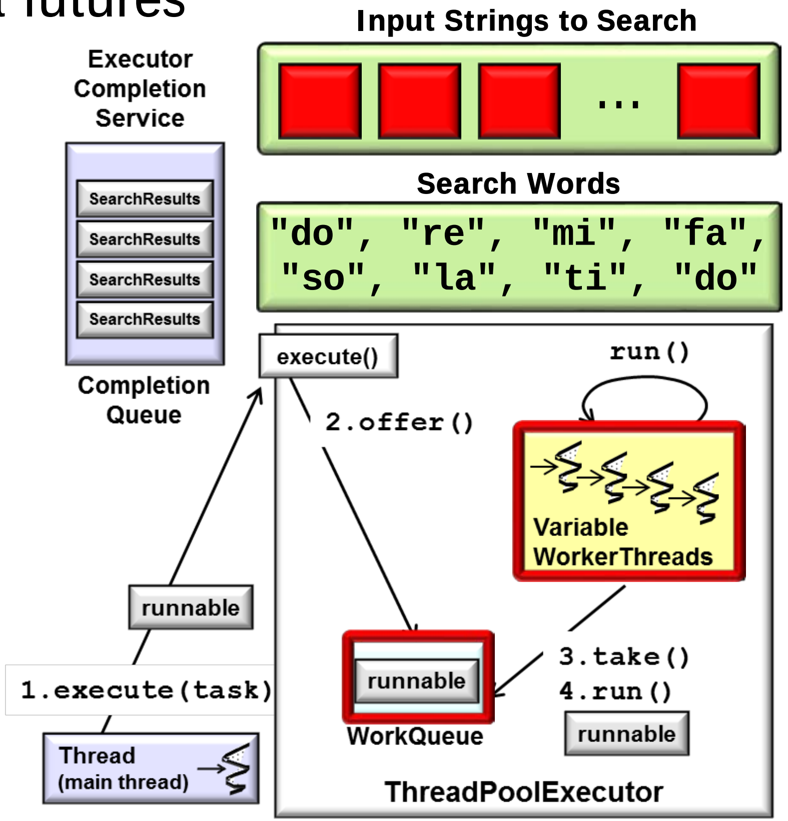
      - Queue async computations for execution in a pool of threads



See github.com/douglascraigschmidt/LiveLessons/tree/master/SearchTaskGang

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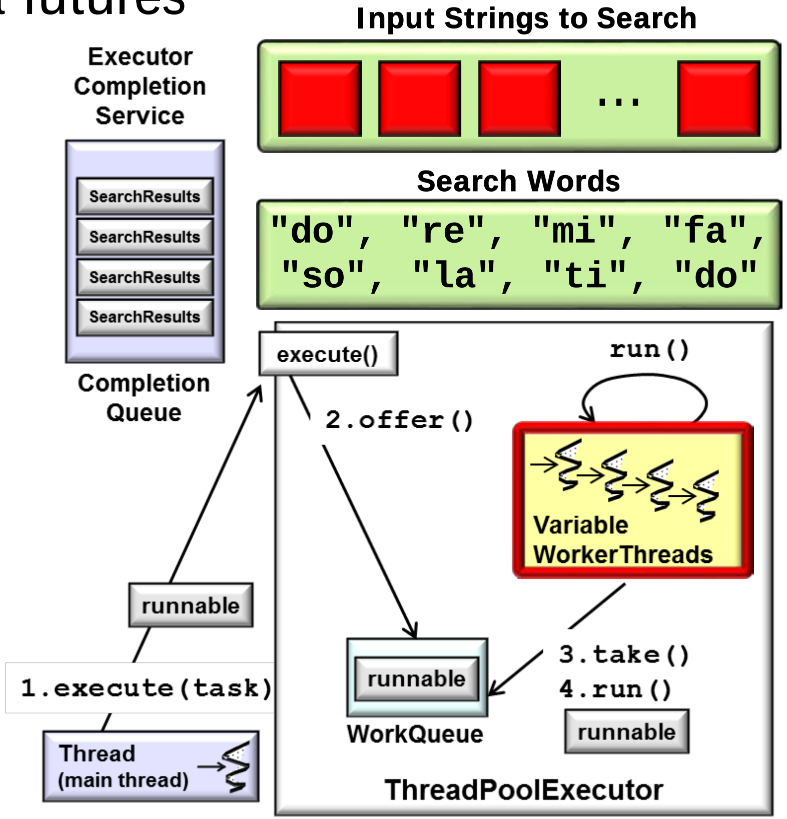

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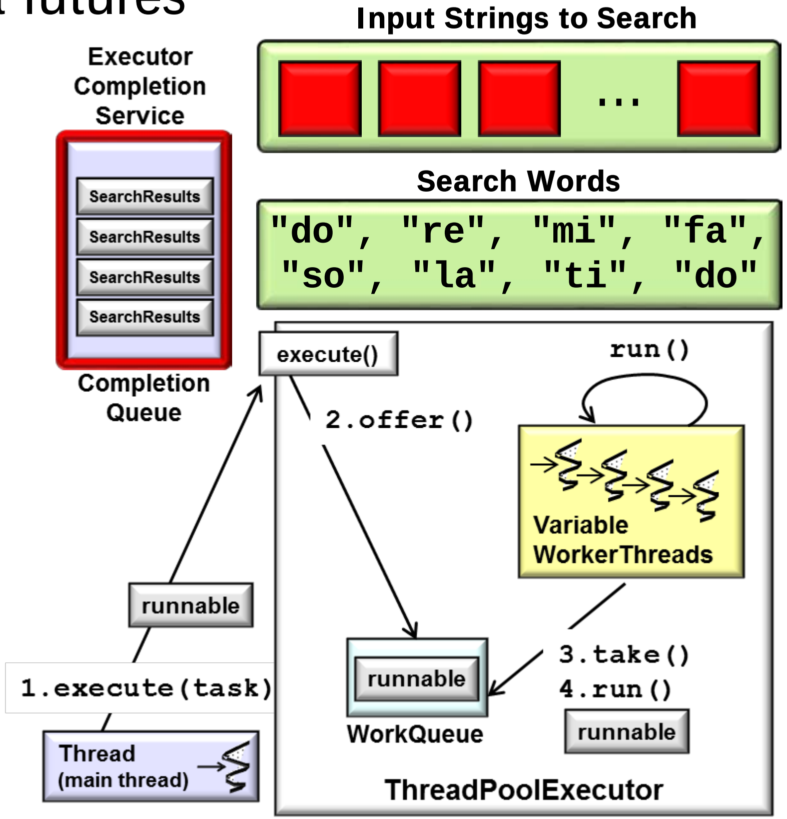
      - Queue async computations for execution in a pool of threads
      - Automatically tune variable number of threads based on the workload
      - Queue of futures can be triggered to get the results



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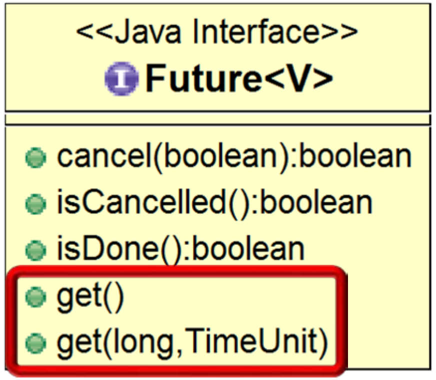
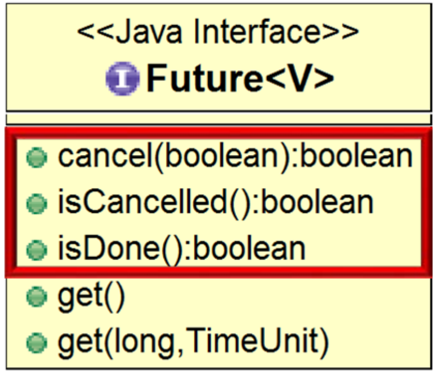


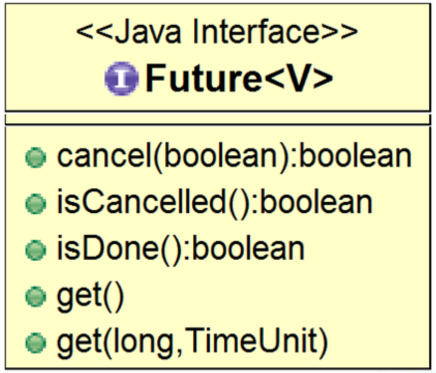
Motivating the Need for Completable Futures

- Pros & cons of asynchronous calls with Java futures
  - *Pros*
    - May leverage inherent parallelism more effectively with fewer threads
    - Can lock until the result of an async two-way task is available
    - Can be canceled & tested to see if a task is done



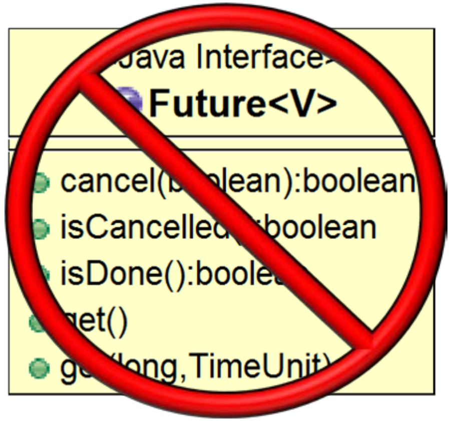
Motivating the Need for Completable Futures

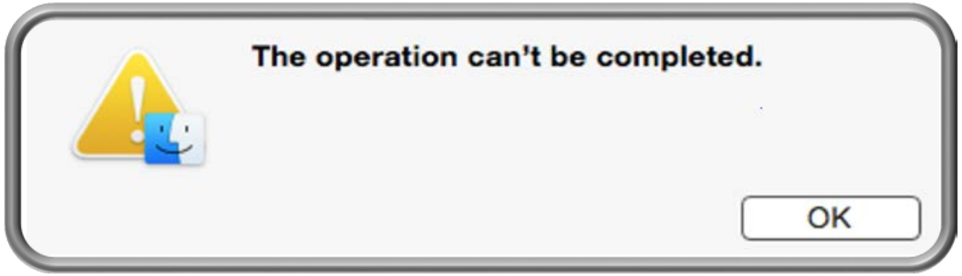
- Pros & cons of asynchronous calls with Java futures
  - *Pros*
  - *Cons*
    - Limited feature set



Motivating the Need for Completable Futures

- Pros & cons of asynchronous calls with Java futures
  - *Pros*
  - *Cons*
    - Limited feature set
      - *Cannot* be completed explicitly
        - e.g., additional mechanisms like FutureTask are needed





The operation can't be completed.

See docs.oracle.com/javase/8/docs/api/java/util/concurrent/FutureTask.html

Motivating the Need for Completable Futures

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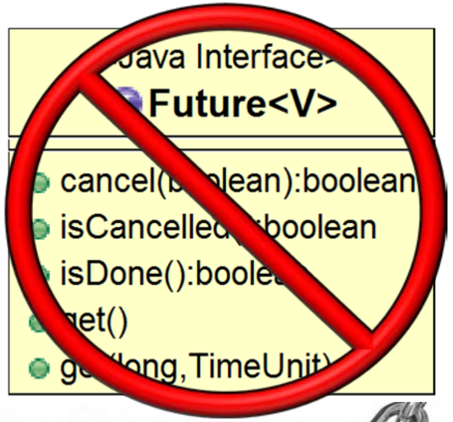

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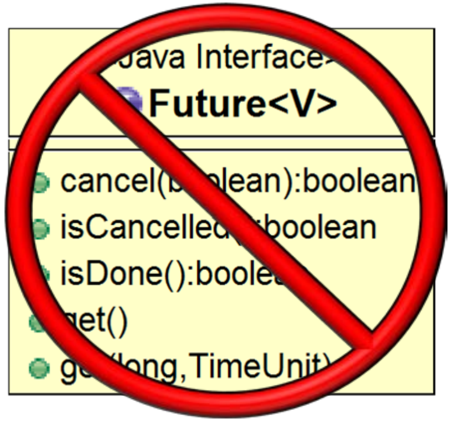

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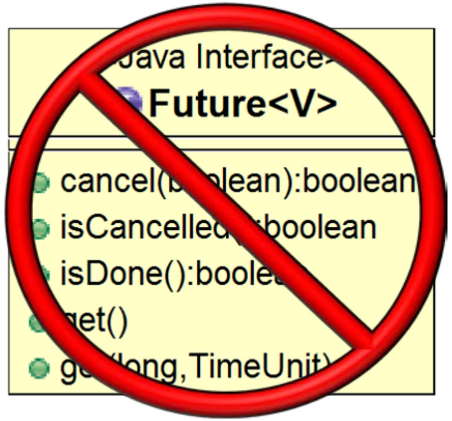

It's awkward & inefficient to try & "compose" multiple futures

End of Motivating the Need for Java 8 Completable Futures (Part 2)