Understanding Method Groupings in the Java Completable Futures API (Part 1)

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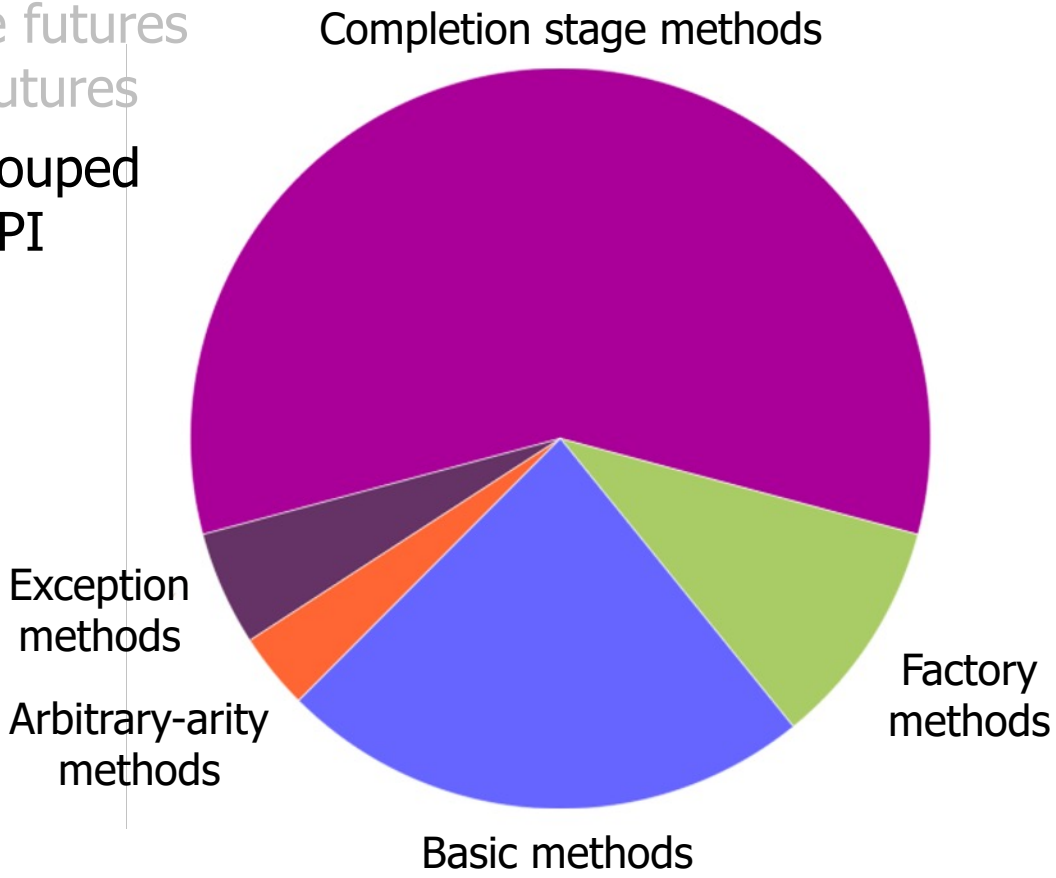
Learning Objectives in this Part of the Lesson

- Recognize how Java completable futures overcome limitations with Java futures
- Understand how methods are grouped in the Java completable future API



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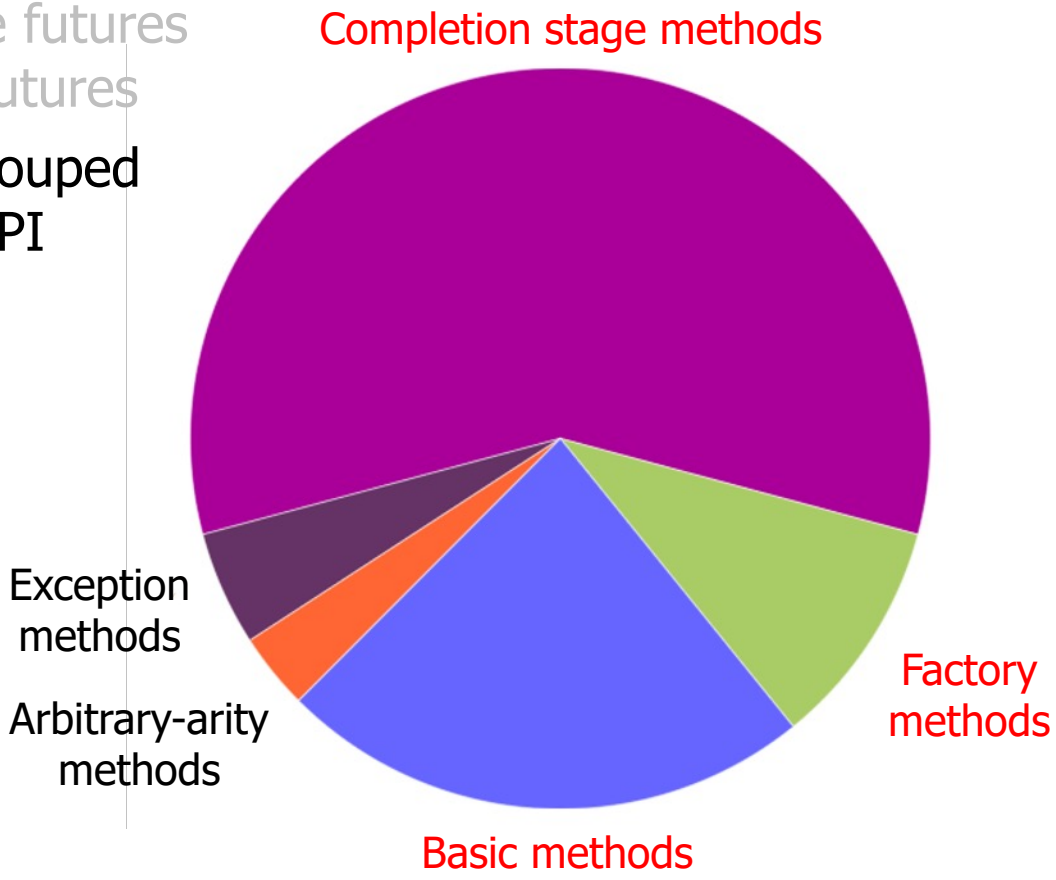

Birds-Eye View of the Java Completable Future API

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- The entire completable future framework resides in 1 public class with 60+ methods!!!

<<Java Class>>

CompletableFuture<T>

- CompletableFuture()
- cancel(boolean):boolean
- isCancelled():boolean
- isDone():boolean
- get()
- get(long,TimeUnit)
- join()
- complete(T):boolean
- supplyAsync(Supplier<U>):CompletableFuture<U>
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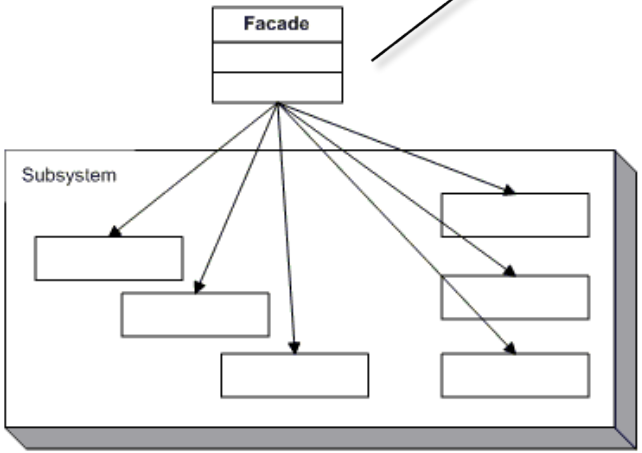
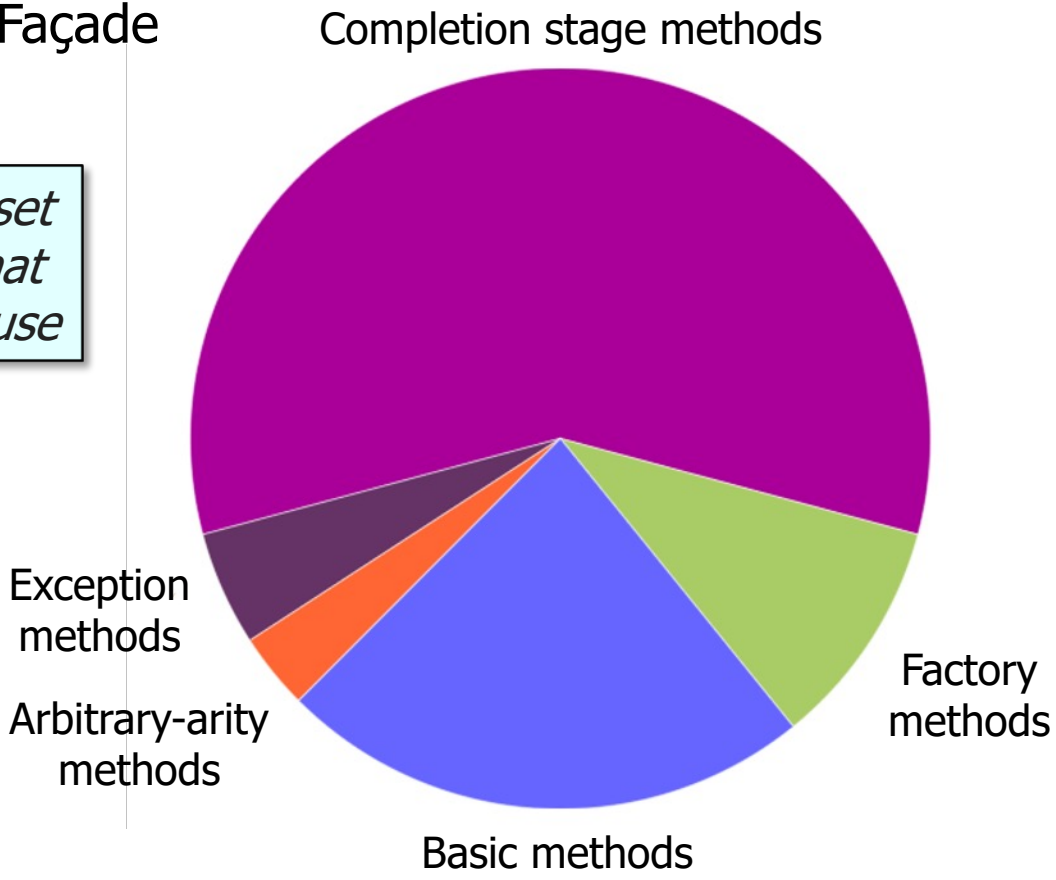
See docs.oracle.com/javase/8/docs/api/java/util/concurrent/CompletableFuture.html

Birds-Eye View of the Java Completable Future API

- This framework implements the Façade pattern

Provide a unified interface to a set of interfaces in a sub-system that makes the subsystem easier to use



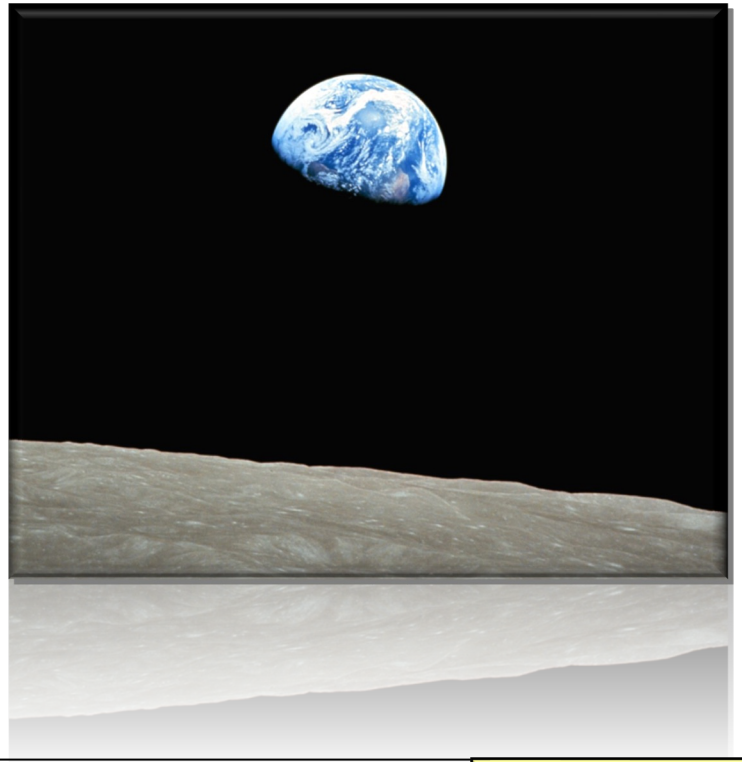


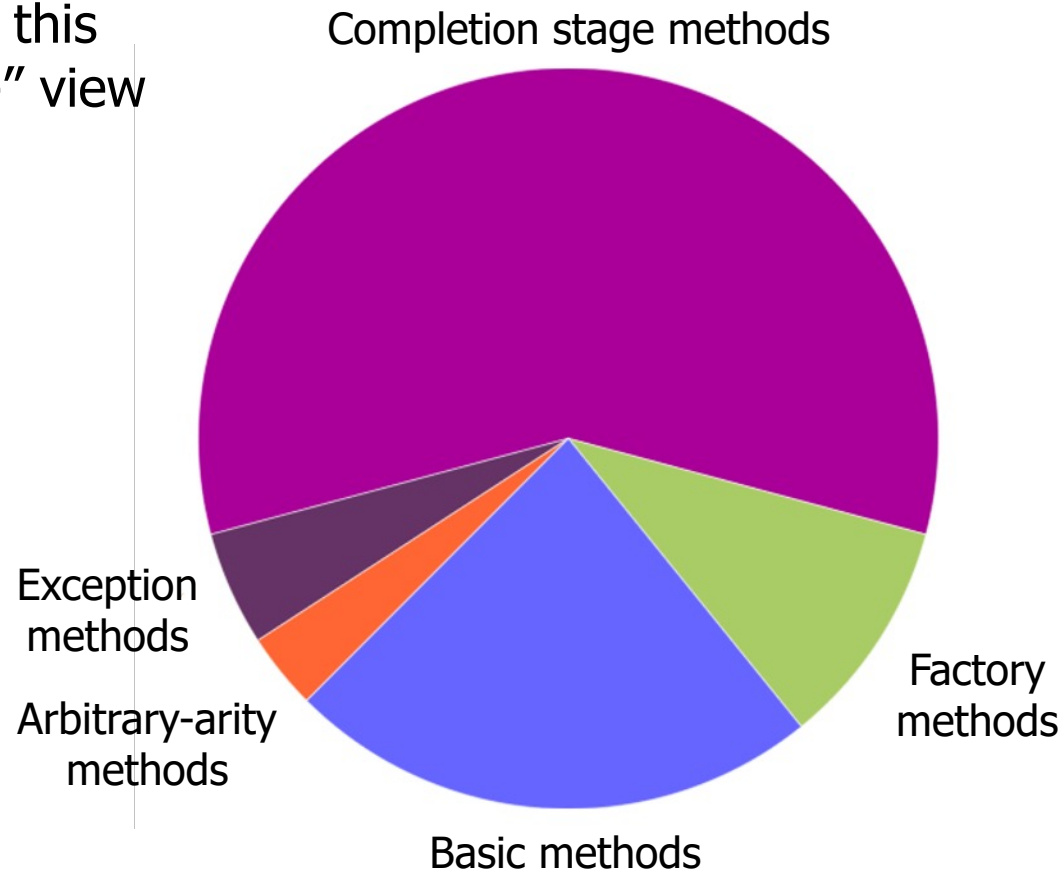
See en.wikipedia.org/wiki/Facade_pattern

Grouping the Java Completable Future API

Grouping the Java Completable Future API

- Given the large # of methods in this API it helps to have a "birds-eye" view

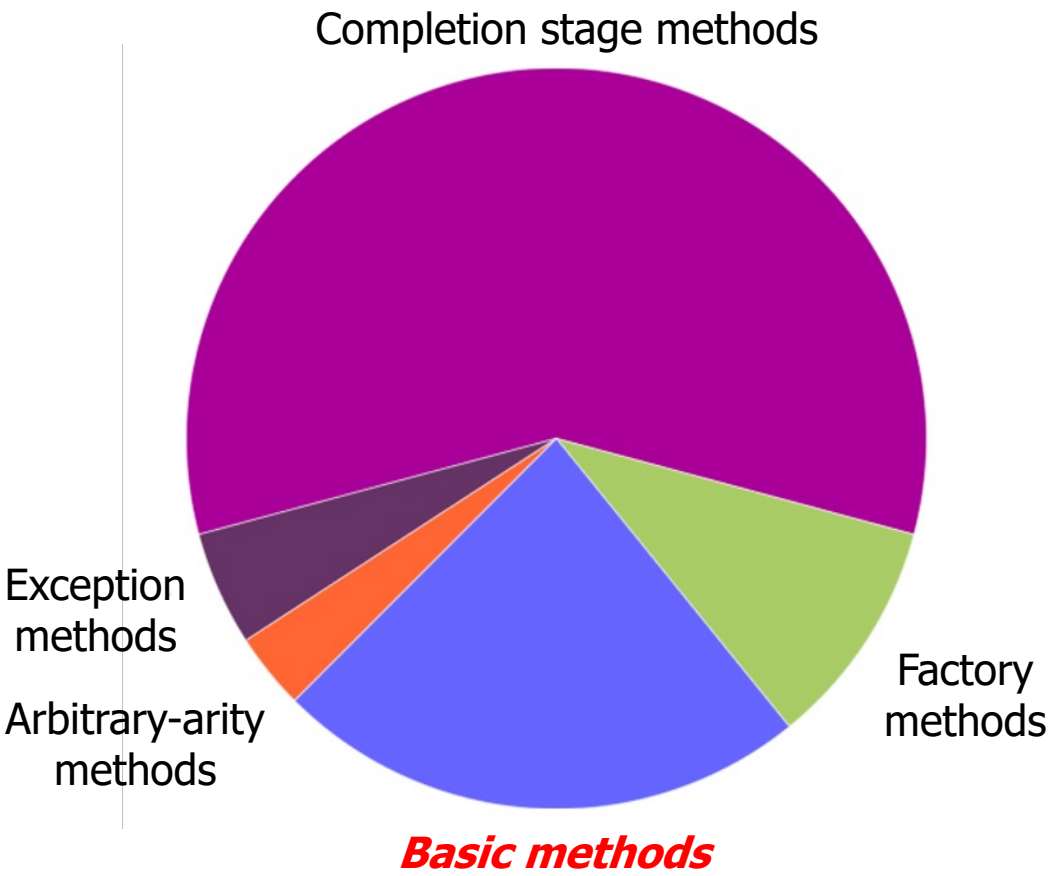




See en.wikipedia.org/wiki/Earthrise

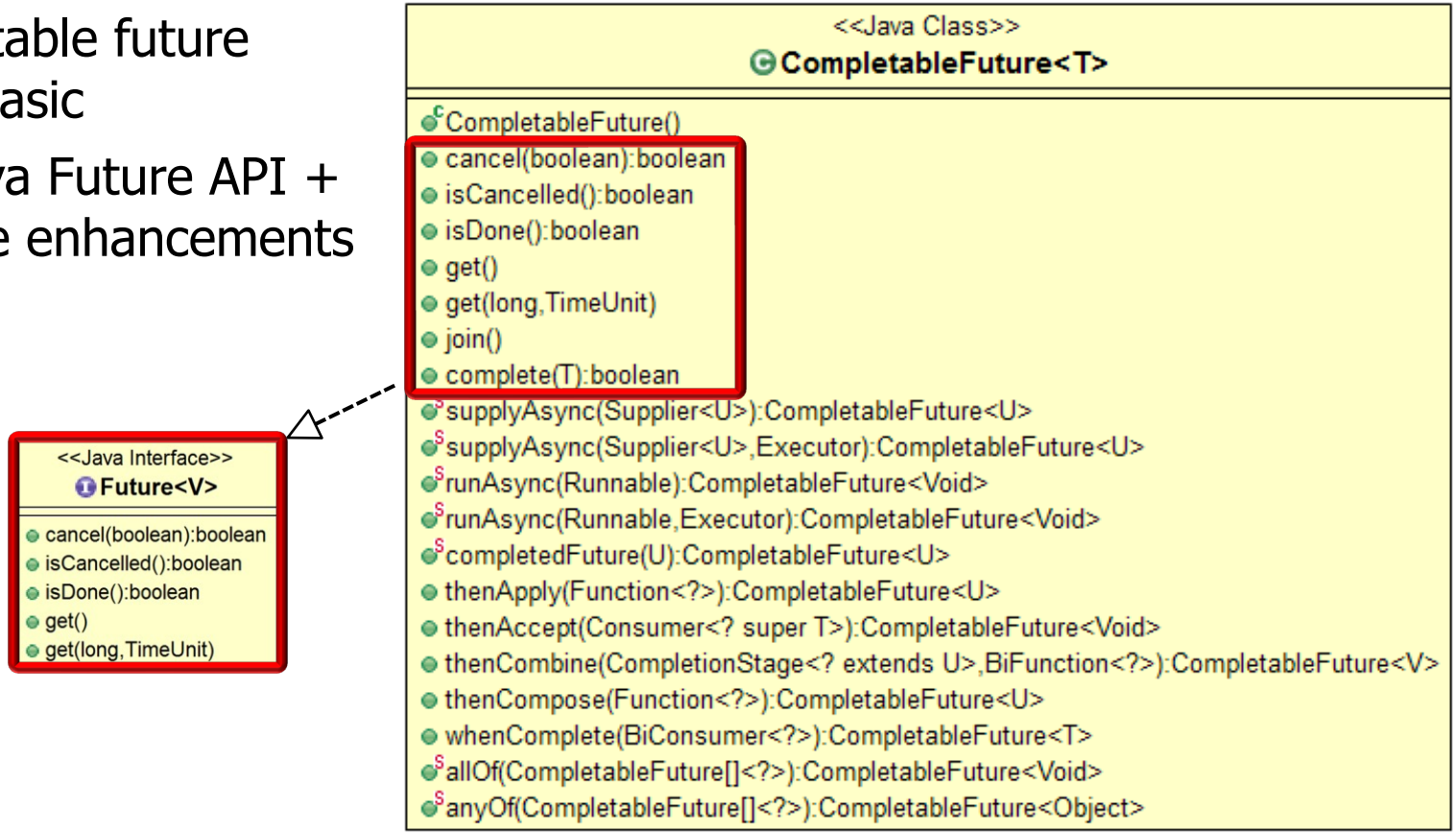
Grouping the Java Completable Future API

- Some completable future features are basic



Grouping the Java Completable Future API

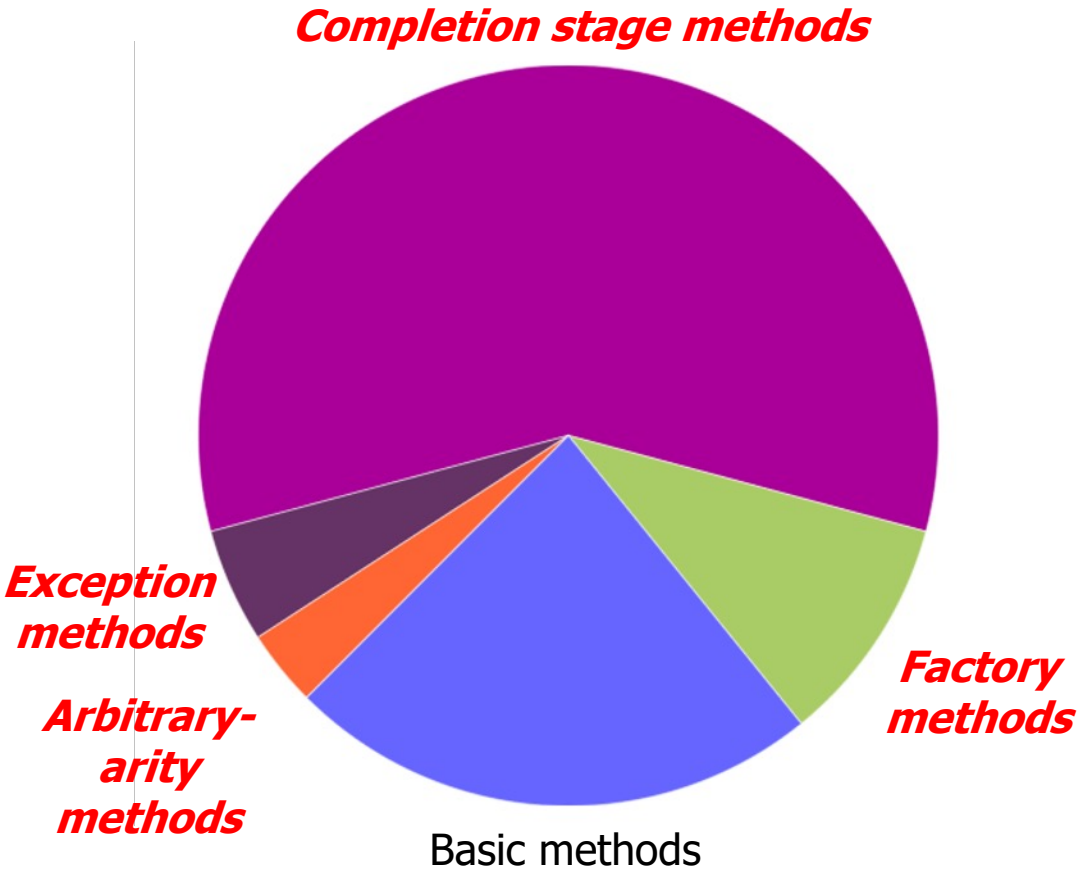
- Some completable future features are basic
  - e.g., the Java Future API + some simple enhancements



Only slightly better than the conventional Future interface

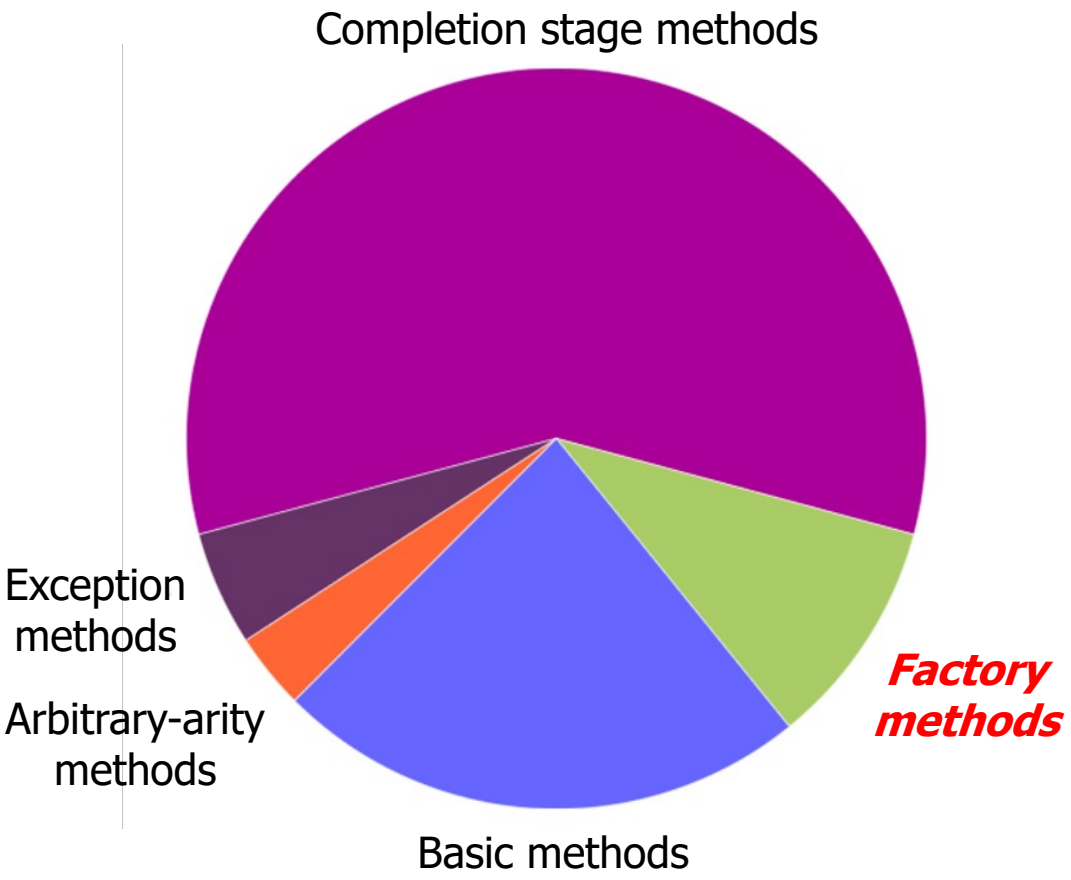
Grouping the Java Completable Future API

- Other completable future features are more advanced



Grouping the Java Completable Future API

- Other completable future features are more advanced
  - Factory methods



See en.wikipedia.org/wiki/Factory_method_pattern

Grouping the Java Completable Future API

- Other completable future features are more advanced
  - Factory methods
    - Initiate async computations without explicit thread use

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- Other completable future features are more advanced
  - Factory methods
    - Initiate async computations without explicit thread use
      - Both one-way & two-way

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Help make programs more *elastic* by leveraging a pool of worker threads

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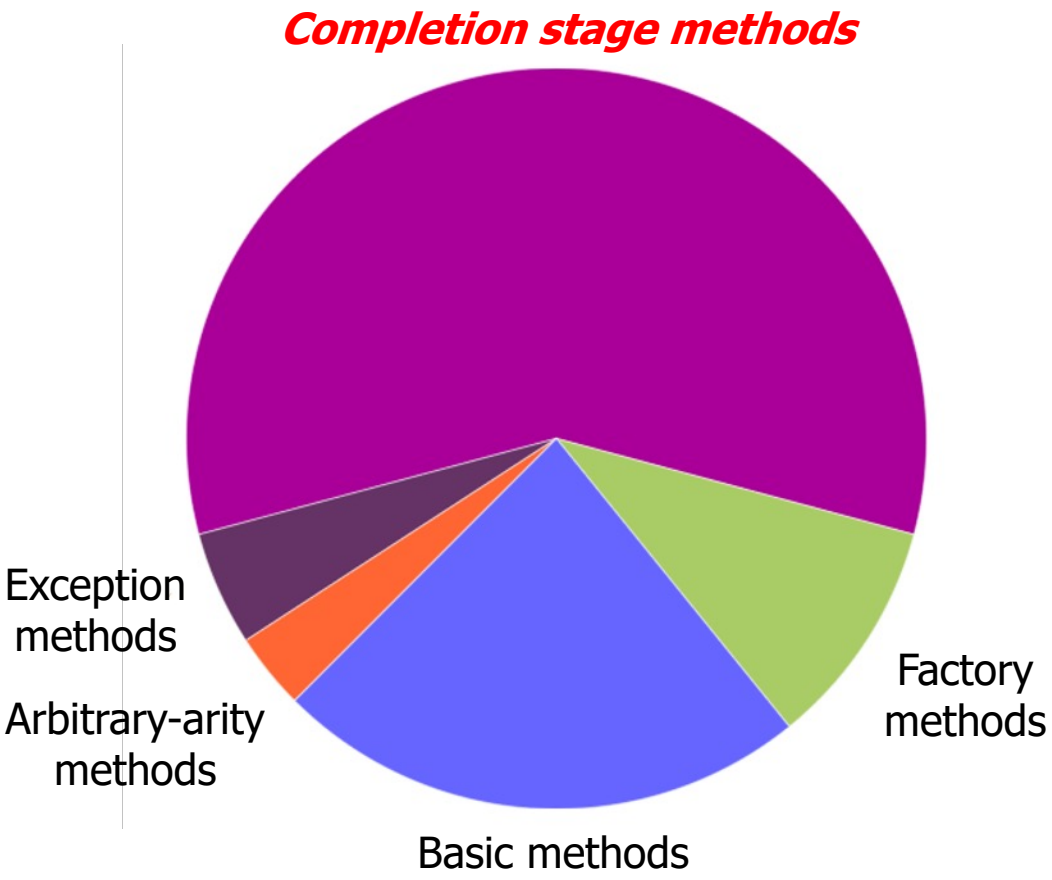
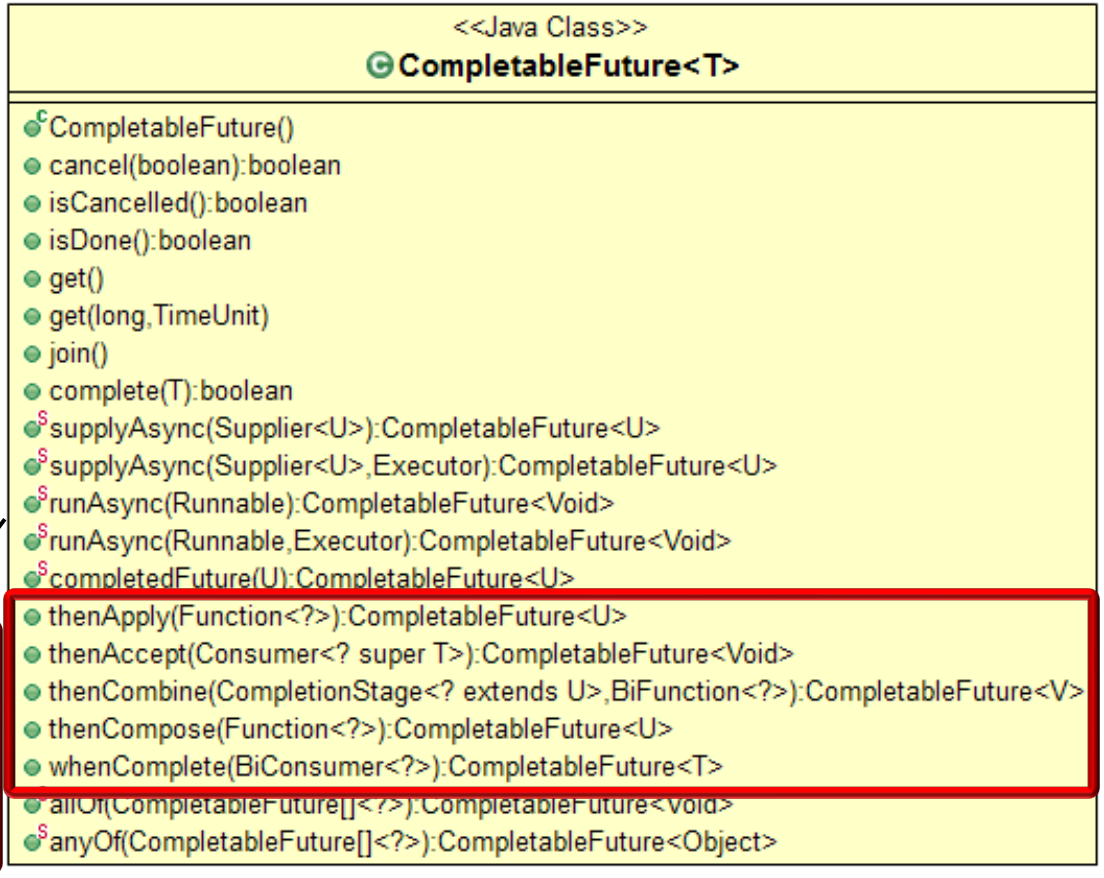
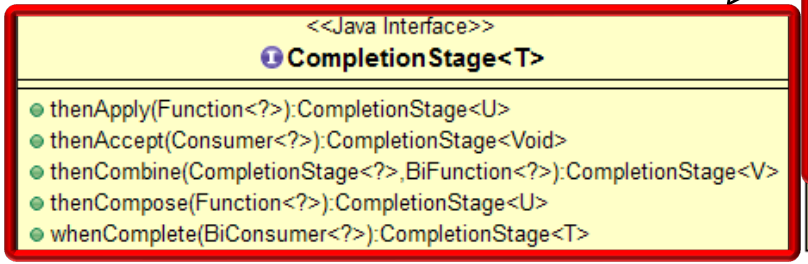
  - Factory methods
  - Completion stage methods



Grouping the Java Completable Future API

- Other completable future features are more advanced
  - Factory methods
  - Completion stage methods
    - Chain actions that process results of async operations





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

Grouping the Java Completable Future API

- Other completable future features are more advanced
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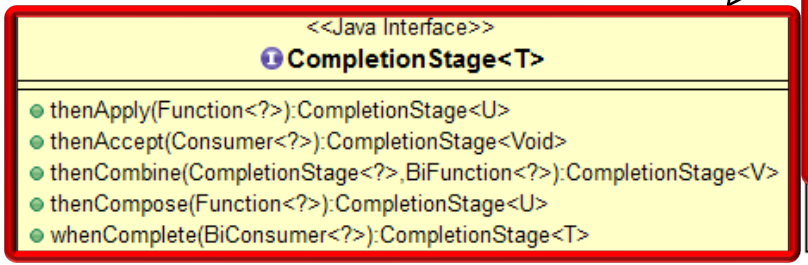
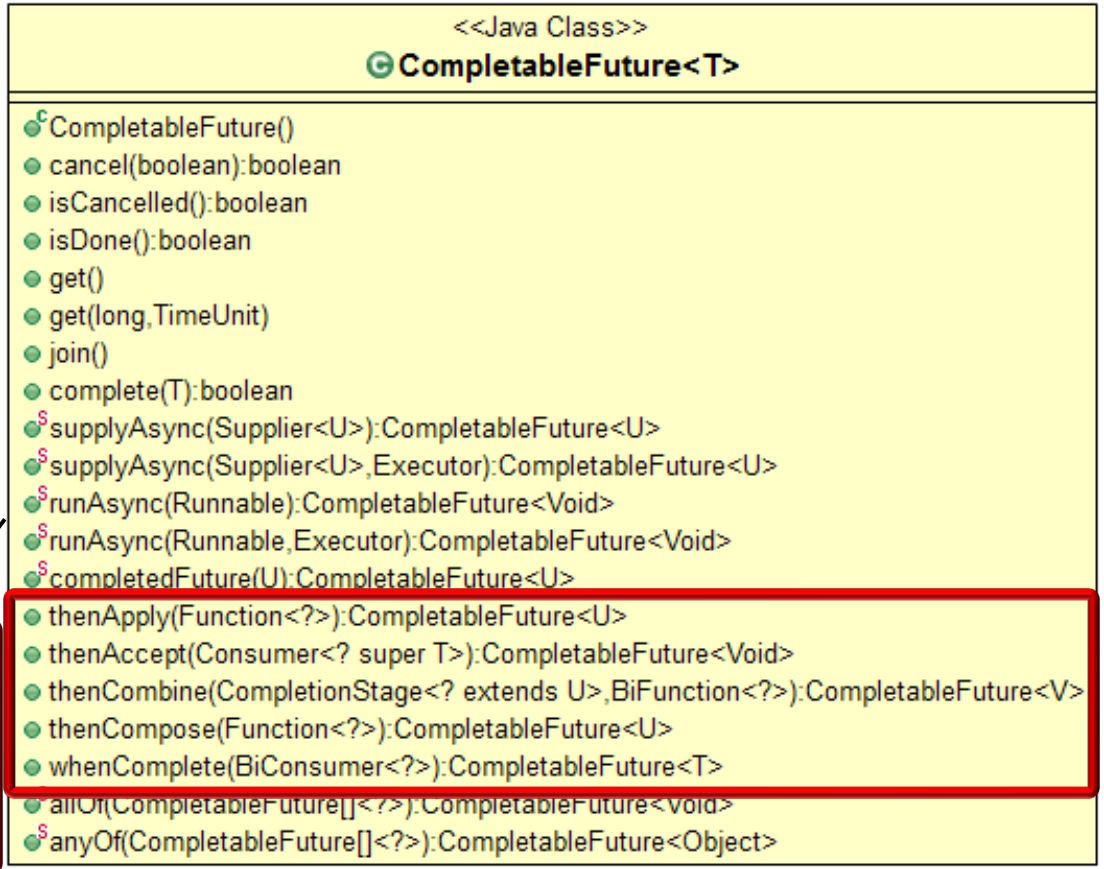
    - Chain actions that process results of async operations
    - Can trigger actions based on 1 or more prior operations





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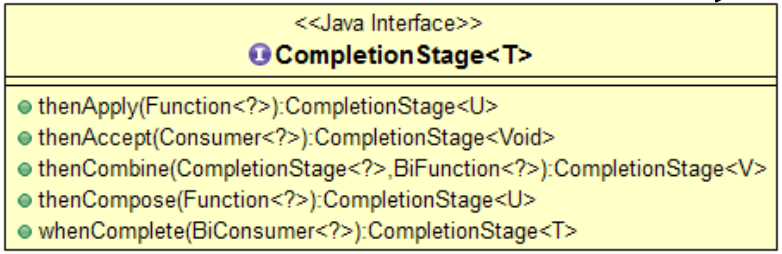

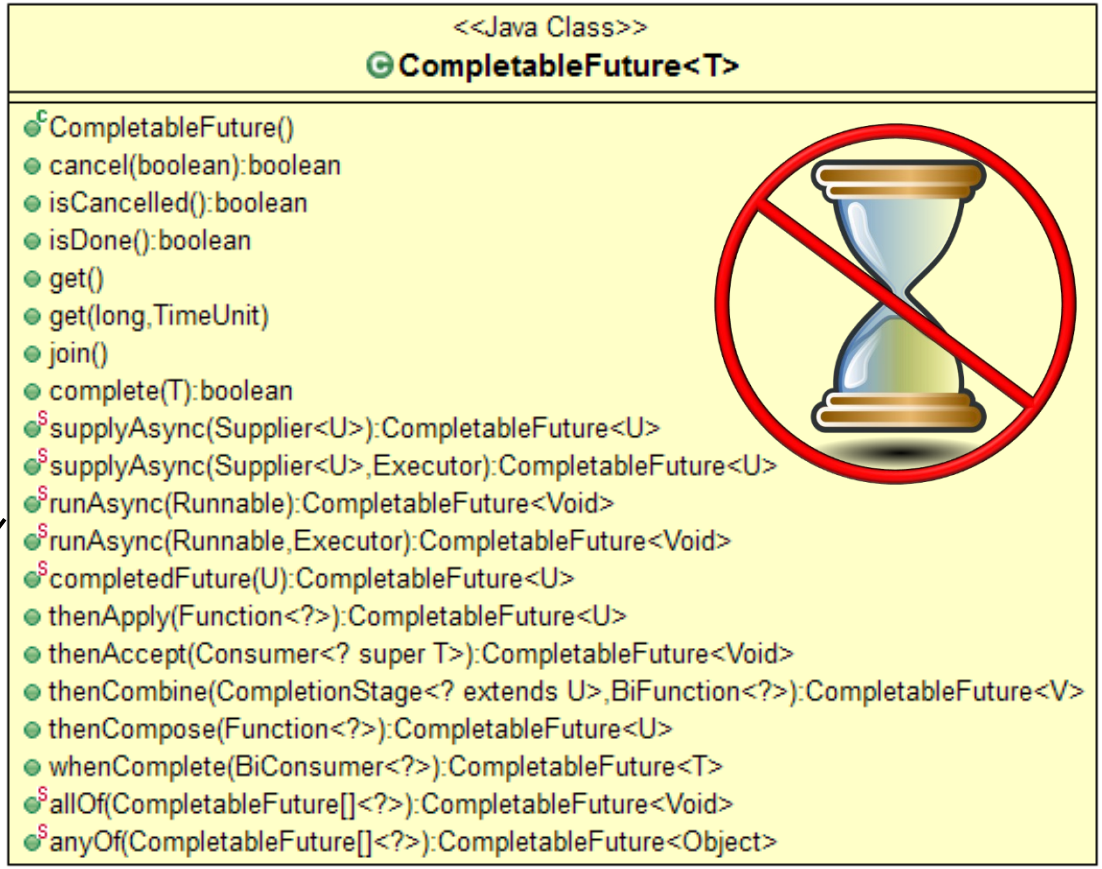

Help make programs more *responsive* by not blocking caller code

End of Understanding Method Groupings in the Java Completable Futures API (Part 1)