

The Java Executor Framework:

Key Interfaces

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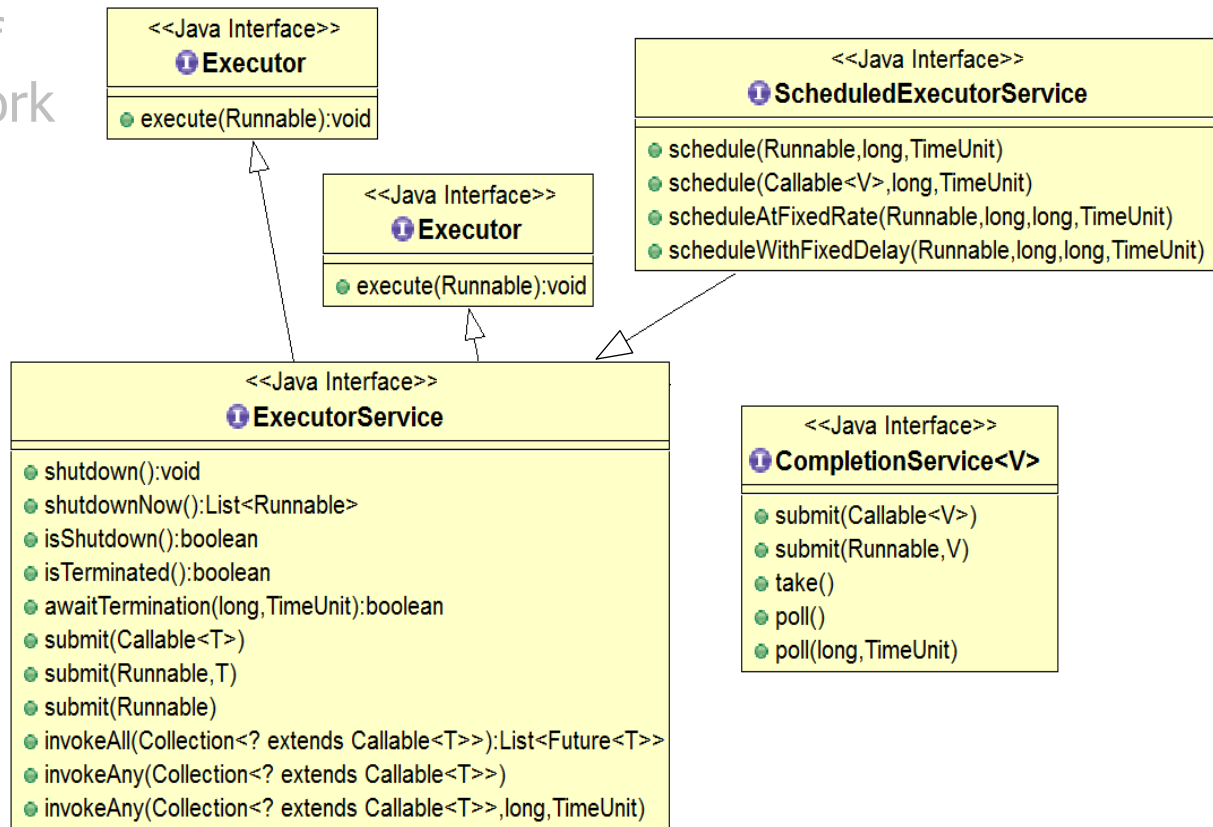
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Learning Objectives in this Part of the Lesson

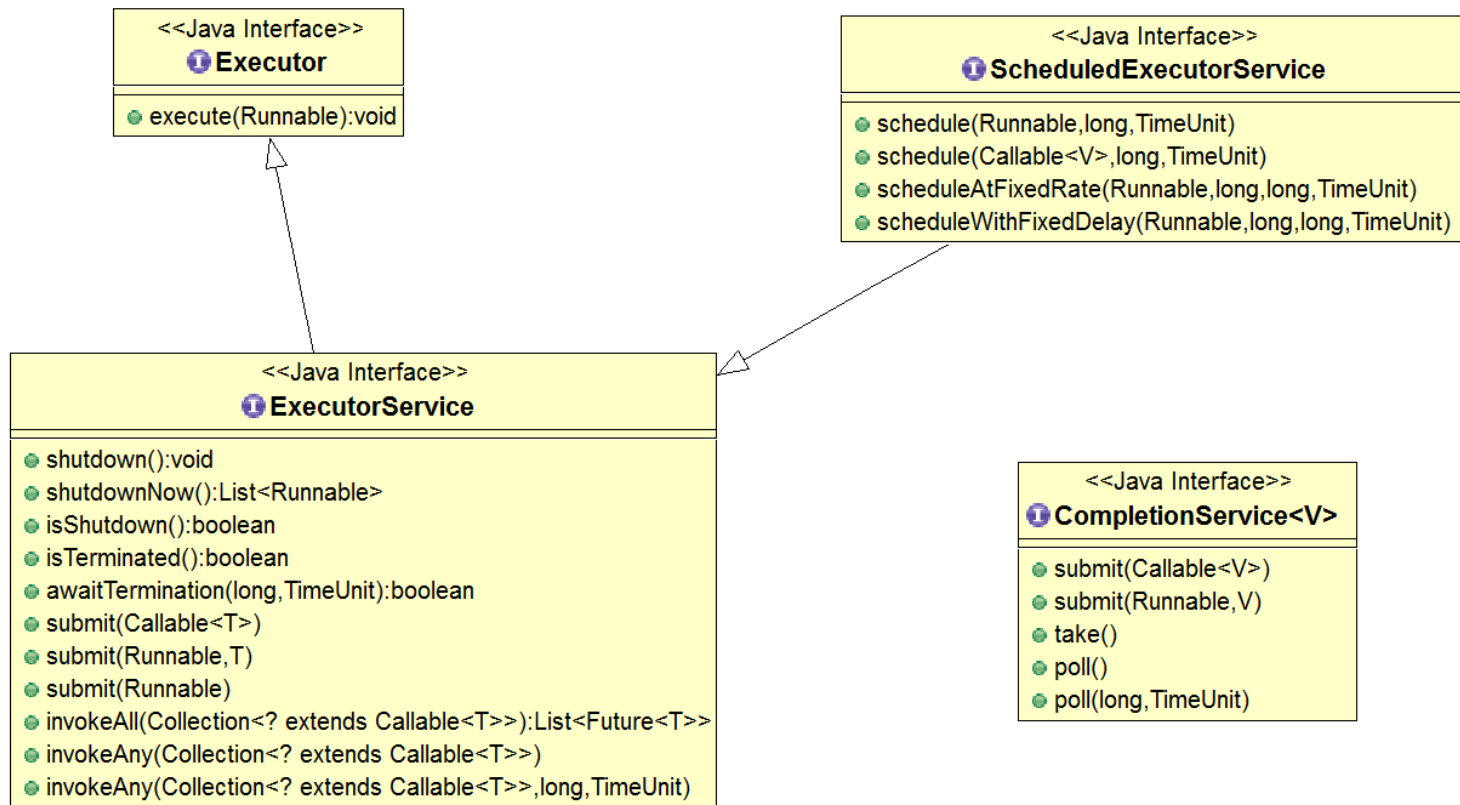
- Understand the purpose of the Java executor framework
- Recognize the features & benefits of thread pools
- Note a human known use of thread pools
- Know the Java Executor framework thread pools
- Learn the key interfaces the framework provides



Key Java Executor Framework Interfaces

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces



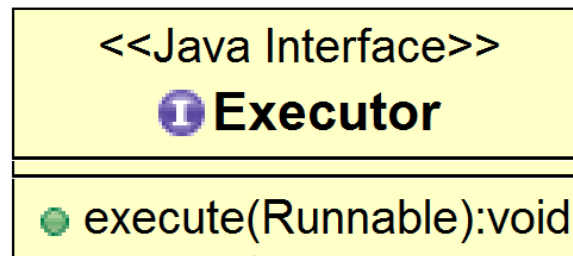
See docs.oracle.com/javase/tutorial/essential/concurrency/executors.html

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces

- **Executor**

- Provides a means of submitting new runnable tasks for execution



Defines a simple functional interface that decouples task submission from the mechanics of how each task will be run

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces

- **Executor**

- **ExecutorService**

- Extends Executor to manage task & executor lifecycles



<<Java Interface>>

ExecutorService

- shutdown():void
- shutdownNow():List<Runnable>
- isShutdown():boolean
- isTerminated():boolean
- awaitTermination(long,TimeUnit):boolean
- submit(Callable<T>):Future<T>
- submit(Runnable,T):Future<T>
- submit(Runnable):Future<?>
- invokeAll(Collection<? extends Callable<T>>):List<Future<T>>
- invokeAny(Collection<? extends Callable<T>>)
- invokeAny(Collection<? extends Callable<T>>,long,TimeUnit)

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

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces

- **Executor**
- **ExecutorService**
- **ScheduledExecutorService**
 - Extends ExecutorService to support future and/or periodic execution of tasks

<<Java Interface>>

ScheduledExecutorService

- `schedule(Runnable,long,TimeUnit)`
- `schedule(Callable<V>,long,TimeUnit)`
- `scheduleAtFixedRate(Runnable,long,long,TimeUnit)`
- `scheduleWithFixedDelay(Runnable,long,long,TimeUnit)`



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

Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces

- **Executor**
- **ExecutorService**
- **ScheduledExecutorService**

- **CompletionService**

- Decouples task invocation from processing of completed task results



<<Java Interface>>

CompletionService<V>

- submit(Callable<V>):Future<V>
- submit(Runnable,V):Future<V>
- take():Future<V>
- poll():Future<V>
- poll(long,TimeUnit):Future<V>

End of the Java Executor Framework: Key Interfaces