Key Methods in Java FutureTask

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Learning Objectives in this Part of the Lesson

- Understand how Java FutureTask conveys a result from a computation running in a thread to thread(s) retrieving the result
- Recognize key methods in Java FutureTask
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- Key methods in `FutureTask` class

```java
class FutureTask<V> implements RunnableFuture<V> {
    public FutureTask (Callable<V> callable) {...}
    public void run() {...}
    public boolean isCancelled() {...}
    public boolean isDone() {...}
    public boolean cancel(boolean mayInterruptIfRunning) {...}
    public V get() {...}
    protected void done() {...}
...
```

See [docs.oracle.com/javase/8/docs/api/java/util/concurrent/FutureTask.html](docs.oracle.com/javase/8/docs/api/java/util/concurrent/FutureTask.html)
Key Methods in Java FutureTask

- Key methods in FutureTask, e.g.

- Constructs a future task with a callable to run later

- The run() method invokes call() on the callable

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See docs.oracle.com/javase/8/docs/api/java/util/concurrent/Callable.html
Key Methods in Java FutureTask

- Key methods in FutureTask, e.g.
  - Constructs a future task with a callable to run later
  - Runs the task
    - i.e., forward to the call() method on the callable

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    public FutureTask (Callable<V> callable) { ... }
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    public V get() { ... }
    protected void done() { ... }
    ...
}
```

Sets the future task to the result of its computation unless it’s been cancelled
Key Methods in Java FutureTask

- Key methods in FutureTask, e.g.
  - Constructs a future task with a callable to run later
  - Runs the task
  - Checks whether the task was cancelled or finished normally

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        (Callable<V> callable) {...}
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```
Key Methods in Java FutureTask

- Key methods in FutureTask, e.g.
  - Constructs a future task with a callable to run later
  - Runs the task
  - Checks whether the task was cancelled or finished normally
  - Cancels a future task

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  - Checks whether the task was cancelled or finished normally
  - Cancels a future task
  - Gets the result
    - Blocks until task finishes

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    ...
```
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  - Runs the task
  - Checks whether the task was cancelled or finished normally
  - Cancels a future task
  - Gets the result
    - Blocks until task finishes
    - There’s also a timed version of get(), just like Future

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    public boolean isCancelled() {...}
    public boolean isDone() {...}
    public boolean cancel(boolean mayInterruptIfRunning) {...}
    public V get(long, TimeUnit) {...}
    protected void done() {...}
    ...
```

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  - Constructs a future task with a callable to run later
  - Runs the task
  - Checks whether the task was cancelled or finished normally
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  - Gets the result
  - Hook method called back in the run() hook method if the call() hook method is successful

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    protected void done() {...}
    ...
}
```

Subclasses may override this method, e.g., to invoke completion callbacks
End of Key Methods in Java FutureTask