Executor Framework

This lesson discusses thread management using executors.

Creating and running individual threads for small applications is acceptable however if you are writing an enterprise-grade application with several dozen threads then you'll likely need to offload thread management in your application to library classes which free a developer from worrying about thread house-keeping.

Task

A task is a logical unit of work. Usually, a task should be independent of other tasks so that it can be completed by a single thread. A task can be represented by an object of a class implementing the `Runnable` interface. We can consider HTTP requests being fielded by a web-server as tasks that need to be processed. A database server handling client queries can similarly be thought of as independent tasks.

Executor Framework

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- Task Execution

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- `Executor Interface`
- `ExecutorService`
- `ScheduledExecutorService`

The `Executor` interface forms the basis for the asynchronous task execution framework in Java.

You don't need to create your own executor class as Java's `java.util.concurrent` package offers several types of executors that are suitable for different scenarios. However, as an example, we create a dumb executor which implements the Executor Interface.

Java

main.java Saved

```java
import java.util.concurrent.Executor;
class ThreadExecutorExample {

 public static void main( String args[] ) {
    DumbExecutor myExecutor = new DumbExecutor();
    MyTask myTask = new MyTask();
    myExecutor.execute(myTask);
 }

 static class DumbExecutor implements Executor {
    // Takes in a runnable interface object
    public void execute(Runnable runnable) {
```

Run

A Dumb Thread Executor

The `Executor` requires implementing classes to define a method `execute(Runnable runnable)` which takes in an object of interface `Runnable`. Fortunately, we don't need to define complex executors as Java already provides several that we'll explore in following chapters.