CompletionService Interface

This lesson talks about how to batch multiple tasks together

CompletionService Interface

In the previous lesson we discussed how tasks can be submitted to executors but imagine a scenario where you want to submit hundreds or thousands of tasks. You'll retrieve the future objects returned from the submit calls and then poll all of them in a loop to check which one is done and then take appropriate action. Java offers a better way to address this use case through the **CompletionService** interface. You can use the **ExecutorCompletionService** as a concrete implementation of the interface.

The completion service is a combination of a blocking queue and an executor. Tasks are submitted to the queue and then the queue can be polled for completed tasks. The service exposes two methods, one poll which returns null if no task is completed or none were submitted and two take which blocks till a completed task is available.

Below is an example program that demonstrates the use of completion service.

```
import java.util.Random;
import java.util.concurrent.ExecutorCompletionService;
import java.util.concurrent.Executors;
import java.util.concurrent.Future;
class Demonstration {
   static Random random = new Random(System.currentTimeMillis());
   public static void main( String args[] ) throws Exception {
      completionServiceExample();
   }
```

```
static void completionServiceExample() throws Exception {
        class TrivialTask implements Runnable {
            int n;
            public TrivialTask(int n) {
                this.n = n;
            }
            public void run() {
                try {
                    // sleep for one second
                    Thread.sleep(random.nextInt(101));
                    System.out.println(n*n);
                } catch (InterruptedException ie) {
                    // swallow exception
                }
            }
        }
        ExecutorService threadPool = Executors.newFixedThreadPool(3);
        ExecutorCompletionService<Integer> service =
                new ExecutorCompletionService<Integer>(threadPool);
        // Submit 10 trivial tasks.
        for (int i = 0; i < 10; i++) {
            service.submit(new TrivialTask(i), new Integer(i));
        }
        // wait for all tasks to get done
        int count = 10;
        while (count != 0) {
            Future<Integer> f = service.poll();
            if (f != null) {
                System.out.println("Thread" + f.get() + " got done.");
                count--;
            }
        }
       threadPool.shutdown();
    }
}
```





