Here's a breakdown of how the full system works

**System Flow Summary**

**1. HTML Page**

The user clicks on a link to invoke the servlet asynchronously with a time delay (8000 ms or 9999 ms):

<a href="AsyncLongRunningServlet?time=8000">

**2. AppContextListener**

On server startup (contextInitialized), a custom ThreadPoolExecutor is created and stored in the ServletContext.

**3. AsyncLongRunningServlet**

* Begins async processing using request.startAsync()
* Attaches a custom AppAsyncListener to handle lifecycle events (onTimeout, onComplete, etc.)
* Submits AsyncRequestProcessor to the thread pool for execution.

**4. AsyncRequestProcessor**

* Simulates a long-running task using Thread.sleep(secs)
* Writes the response once the processing is done
* Calls asyncContext.complete() to end async processing

**5. AppAsyncListener**

Handles events:

* onComplete() for cleanup
* onError() for exception reporting
* onTimeout() to notify if request takes too long