9) Describe the purpose of executor service and how it simplifies running tasks in asynchronous mode.

The Java ExecutorService is the interface which allows us to execute tasks on threads asynchronously. The Java ExecutorService interface is present in the java.util.concurrent package. The ExecutorService helps in maintaining a pool of threads and assigns them tasks. It also provides the facility to queue up tasks until there is a free thread available if the number of tasks is more than the threads available.

Steps:

1. Instantiating ExecutorService
2. Assigning tasks to the ExecutorService

We can assign tasks to the ExecutorService using several methods including execute(), which is inherited from the Executor interface, and also submit(), invokeAny() and invokeAll().

1. Shutting down an ExecutorService

To properly shut down an ExecutorService, we have the shutdown() and shutdownNow() APIs.