**## Advanced Java Study Guide**

You should be able to explain and apply the following topics:

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| **### Threads and Garbage Collection** | |
| - Lifecycle of a thread |  |
| - Thread states |  |
| - Creating threads |  |
| - Thread class & thread methods |  |
| - Runnable interface |  |
| - Deadlock and ways to prevent it |  |
| - Livelock |  |
| - How to invoke Garbage Collection |  |
|  |  |
| **### Reflections API** | |
| - Benefits and purpose of Reflection API |  |
| - Classes and interfaces |  |
| - Class |  |
| - Method |  |
| - Modifier |  |
| - Parameter |  |
| - Constructor |  |
|  |  |
| **### Java 8** | |
| - Functional interfaces |  |
| - Lamdba functions |  |
|  |  |
| **### JUnit** | |
| - Test-driven development (TDD) |  |
| - JUnit annotations |  |
| - @Test |  |
| - @Before |  |
| - @After |  |
| - @BeforeClass |  |
| - @AfterClass |  |
| - @Ignore |  |
| - Order of execution of these annotated methods |  |
| - Assert class methods |  |
| - Testing best practices |  |
| - Dependency injection |  |
| - Writing testable code |  |
| - Mocking |  |
| - Measuring code coverage |  |
| - Externalize data |  |
|  |  |
| **### Log4j** | |
| - Benefits / purpose of logging |  |
| - Log4j configuration |  |
| - Log4j logging levels and threshold |  |
| - ALL |  |
| - DEBUG |  |
| - INFO |  |
| - WARN |  |
| - ERROR |  |
| - FATAL |  |
| - OFF |  |