**Java/J2EE Questions**

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| This page is for Java/J2EE job seekers and interviewers and for people interested in self assessments on Java/J2EE technologies. There are numerous books and articles on the market covering specific topics like Java, J2EE, EJB, Design Patterns, ANT, Maven, CVS, Multi-Threading, Servlets, JSP, emerging technologies like AOP (Aspect Oriented Programming), Test Driven Development (TDD), Dependency Injection Dl (aka IoC – Inversion of Control) etc. But from an interview perspective it is not possible to brush up on all these books where each book usually has from 300 pages to 600 pages. The basic purpose of this page is to cover question (and only questions)  on all the core concepts and key areas, which all Java/J2EE developers, designers and architects should be conversant with to perform well in their current jobs and to launch a successful career by doing well at interviews. The interviewer can also use this book to make sure that they hire the right candidate depending on their requirements.  **Multi-Threading**   * What language features are available to allow shared access to data in a multi-threading environment? (Hint: Synchronized block,Synchronized method,wait, notify) * What is the difference between synchronized method and synchronized block? (Hint: Block on subset of data. Smaller code segment). * What Java language features would you use to implement a producer (one thread) and a consumer (another thread) passing data via a stack? (Hint: wait, notify)   **Java language**   * What Java classes are provided for date manipulation? (Hint: Calendar, Date) * What is the difference between String and StringBuffer? (Hint: mutable, efficient) * How do you ensure a class is Serializable? (Hint: Implement Serializable) * What is the difference between static and instance field of a class? (Hint: Per class vs. Per Object) * What methods do you need to implement to store a class in Hashtable or HashMap? (Hint: hashCode(), equals()) . * How do you exclude a field of a class from serialization? (Hint: transient)   **Inheritance**   * What is the difference between an Interface and an abstract base class? (Hint: interface inheritance, implementation inheritance.) * What does overriding a method mean? (Hint: Inheritance) * What about overloading? (Hint: different signature)   **Memory**   * What is the Java heap, and what is the stack? (Hint: dynamic, program thread execution.) * Why does garbage collection occur and when can it occur? (Hint: To recover memory, as heap gets full.) * If I have a circular reference of objects, but I no longer reference any of them from any executing thread, will these cause garbage collection problems? (Hint: no)   **Exceptions**   * What is the problem or benefits of catching or throwing type “java.lang.Exception”? (Hint: Hides all subsequent exceptions.) * What is the difference between a runtime exception and a checked exception? (Hint: Must catch or throw checked exceptions.)   **JSP**   * What is the best practice regarding the use of scriptlets in JSP pages? Why? (Hint: Avoid)How can you avoid scriptlet code? (Hint: custom tags, Java beans) * What do you understand by the term JSP compilation? (Hint: compiles to servlet code)   **Servlets**   * What does Servlet API provide to store user data between requests? (Hint: HttpSession) * What is the difference between forwarding a request and redirecting? (Hint: redirect return to browser ) * What object do you use to forward a request? (Hint: RequestDispatcher) * What do you need to be concerned about with storing data in a servlet instance fields? (Hint: Multi-threaded.) * What’s the requirement on data stored in HttpSession in a clustered (distributable) environment? (Hint: Serializable) * If I store an object in session, then change its state, is the state replicated to distributed Session? (Hint: No, only on setAttribute() call.) * How does URL-pattern for servlet work in the web.xml? (Hint: /ddd/\* or \*.jsp) * What is a filter, and how does it work? (Hint: Before/after request, chain.)   **JDBC**   * What form of statement would you use to include user-supplied values? (Hint: PreparedStatement) * Why might a preparedStatement be more efficient than a statement? (Hint: Execution plan cache.) * How would you prevent an SQL injection attack in JDBC? (Hint: PreparsedStatement ) * What is the performance impact of testing against NULL in WHERE clause on Oracle? (Hint: Full table scan. ) * List advantages and disadvantages in using stored procedures? (Hint: Pro: integration with existing dbase, reduced network trafficCon: not portable, mutliple language knowledge required ) * What is the difference between sql.Date, sql.Time, and sql.Timestamp? (Hint: Date only, time only, date and time ) * If you had a missing int value how do you indicate this to PreparedStatement? (Hint: setNull(pos, TYPE)) * How can I perform multiple inserts in one database interaction? (Hint: executeBatch)Given this problem: Program reads 100,000 rows, converts to Java class in list, then converts list to XML file using reflection. Runs out of program memory. How would you fix? (Hint: Read one row at time, limit select, allocate more heap (result set = cursor) ) * How might you model object inheritance in database tables? (Hint: Table per hierarchy, table per class, table per concrete class)   **JNDI**   * What are typical uses for the JNDI API within an enterprise application? (Hint: Resource management, LDAP access) * Explain the difference between a lookup of these “java:comp/env/ejb/MyBean” and “ejb/MyBean”? (Hint: logical mapping performed for java:comp/env ) * What is the difference between new InitialContext() from servlet or from an EJB? (Hint: Different JNDI environments initialized EJB controller by ejb-jar.xml, servlet by web.xml.) * What is an LDAP server used for in an enterprise environment? (Hint: authentication, authorization) * What is authentication, and authorization? (Hint: Confirming identity, confirming access rights )   **EJB**   * What is the difference between Stateless and Stateful session beans (used?) (Hint: Stateful holds per client state ) * What is the difference between Session bean and Entity bean (when used?) (Hint: Entity used for persistence ) * With Stateless Session bean pooling, when would a container typically take a instance from the pool and when would it return it? (Hint: for each business method ) * What is the difference between “Required”, “Supports”, “RequiresNew” “NotSupported”, “Mandatory”, “Never”? (Hint: Needs transaction, existing OK but doesn’t need, must start new one, suspends transaction, must already be started, error if transaction) * What is “pass-by-reference” and “pass-by-value”, and how does it affect J2EE applications? (Hint: Reference to actual object versus copy of object. RMI pass by value.) * What EJB patterns, best practices are you aware of? Describe at least two? (Hint: Façade, delegate, value list, DAO, value object). * Describe some issues/concerns you have with the J2EE specification? (Hint: Get their general opinion of J2EE) * What do you understand by the term “offline optimistic locking” or long-lived business transaction? How might you implement this using EJB? (Hint: version number, date, field comparisons.) * Explain performance difference between getting a list of summary information (e.g. customer list) via finder using a BMP entity vs. Session using DAO? (Hint: BMP: n+1 database reads, n RMI calls.) * What is meant by a coarse-grained and a fine-grained interface? (Hint: Amount of data transferred per method call)   **XML/XSLT**   * What is the difference between a DOM parser and a SAX parser? (Hint: DOM: reads entire model, SAX: event published during parsing.) * What is the difference between DTD and XML Schema? (Hint: level of detail, Schema is in XML.) * What does the JAXP API do for you? (Hint: Parser independence. )What is XSLT and how can it be used? (Hint: XML transformation. ) * What would be the XPath to select any element called table with the class attribute of info? (Hint: Table[@class=’info’])   **JMS**   * How can asynchronous events be managed in J2EE? (Hint: JMS) * How do transactions affect the onMessage() handling of a MDB? (Hint: Taking off queue. ) * If you send a JMS message from an EJB, and transaction rollback, will message be sent? (Hint: yes) * How do you indicate what topic or queue MDB should react to? (Hint: deployment descriptor ) * What is the difference between a topic and a queue? (Hint: broadcast, single)   **SOAP**   * What is a Web service, and how does it relate to SOAP? (Hint: SOAP is the protocol.) * What is a common transport for SOAP messages? (Hint: HTTP ) * What is WSDL? How would you use a WSDL file? (Hint: XML description of Web Service: interface and how to bind to it. ) * With new J2EE SOAP support what is: JAXR, JAX-RPC, and SAAJ? (Hint: registry, rpc, attachments)   **Security**   * Where can container level security be applied in J2EE application? (Hint: Web Uri’s, EJB methods) * How can the current user be obtained in a J2EE application (Web and Enterprise)? (Hint: getUserPrincipal, getCallerPrincipal ) * How can you perform role checks in a J2EE application (Web and enterprise)? (Hint: IsUserInRole(), IsCallerInRole() )   **Design**   * Name some types of UML diagrams? (Hint: class, sequence, activity, use case) * Describe some types of relationships can you show on class diagrams? (Hint: generalization, aggregation, uses) * What is the difference between association, aggregation, and generalization? (Hint: Relationship, ownership, inheritance) * What is a sequence diagram used to display? ( Hint: Object instance interactions via operations/signals)What design patterns do you use. Describe one you have used (not singleton)? (Hint: e.g. Builder, Factory, Visitor, Chain of Command ) * Describe the observer pattern and an example of how it would be used (Hint: e.g. event notification when model changes to view ) * What are Use Cases? (Hint: Define interaction between actors and the system )What is your understanding of encapsulation? (Hint: Encapsulate data and behavior within class ) * What is your understanding of polymorphism? (Hint: Class hierarchy, runtime determine instance )   **Process**   * Have you heard of or used test-driven development? (Hint: e.g. XP process ) * What development processes have you followed in the past? (Hint: Rational, XP, waterfall ) * How do you approach capturing client requirements? (Hint: Numbered requirements, use cases ) * What process steps would you include between the capture of requirements and when coding begins? (Hint: Architecture, Design, UML modeling, etc ) * How would you go about solving performance issue in an application? (Hint: Set goals, establish bench, profile application, make changes one at a time ) * What developer based testing are you familiar with (before system testing?) (Hint: Unit test discussion ) * How might you test a business system exposed via a Web interface? (Hint: Automated script emulating browser) * What is your experience with iterative development? (Hint: Multiple iteration before release)   **Distributed Application**   * Explain a typical architecture of a business system exposed via Web interface? (Hint: Explain tiers (presentation, enterprise, resource) Java technology used in each tiers, hardware distribution of Web servers, application server, database server ) * Describe what tiers you might use in a typical large scale (> 200 concurrent users) application and the responsibilities of each tier (where would validation, presentation, business logic, persistence occur). (Hint: Another way of asking same question as above if their answer wasn’t specific enough) * Describe what you understand by being able to “scale” an application? How does a J2EE environment aid scaling? (Hint: Vertical and Horizontal scaling. Thread management, clustering, split tiers ) * What are some security issues in Internet based applications? (Hint: authentication, authorization, data encryption, denial service, xss attacks, SQL injection attacks )   **General**   * What configuration management are you familiar with? (Hint: e.g. CVS, ClearCase ) * What issue/tracking process have you followed? (Hint: Want details on bug recording and resolution process). * What are some key factors to working well within a team? (Hint: Gets a view on how you would work within interviewer’s environment.) * What attributes do you assess when considering a new job? (what makes it a good one)? (Hint: Insight into what motivates you.) * What was the last computing magazine you read? Last computing book? * What is a regular online magazine/reference you use? (Hint: Understand how up to date you keep yourself.)   Note: You will find answers to most of the above questions in the 400+ Java/J2EE Interview Questions and Answers companion book. |