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Spring - Interview Questions and Answers on Dependency Injection

Q1. What are the benefits of using Spring Framework ?

Ans. Spring enables developers to develop enterprise-class applications using POJOs. The benefit of using only POJOs is that you do not need an EJB container product.

Spring is organized in a modular fashion. Even though the number of packages and classes are substantial, you have to worry only about ones you need and ignore the rest.

Spring does not reinvent the wheel instead, it truly makes use of some of the existing technologies like several ORM frameworks, logging frameworks, JEE, Quartz and JDK timers, other view technologies.

Testing an application written with Spring is simple because environment-dependent code is moved into this framework. Furthermore, by using JavaBean-style POJOs, it becomes easier to use dependency injection for injecting test data.

Spring's web framework is a well-designed web MVC framework, which provides a great alternative to web frameworks such as Struts or other over engineered or less popular web frameworks.

Spring provides a convenient API to translate technology-specific exceptions (thrown by JDBC, Hibernate, or JDO, for example) into consistent, unchecked exceptions.

Lightweight IoC containers tend to be lightweight, especially when compared to EJB containers, for example. This is beneficial for developing and deploying applications on computers with limited memory and CPU resources.

Spring provides a consistent transaction management interface that can scale down to a local transaction

Q2. Name few Dependency Injection frameworks ?

Ans. Google Guice , Spring , PicoContainer and Dagger.

Q3. Which web application framework you like and Why ?

Ans. I like Spring as it comes with inbuilt Dependency Injection framework. It has great online community and support and is proven to work well with ORMs like Hibernate. If we are not working with ORM and DI, Struts 2 is also good.

Spring framework - Interview Questions and Answers

Q1. What is Spring ?

Ans. Spring is a light weight Dependency Injection and AOP container and framework.

Q2. What is dependency injection or IOC ?

Ans. It's a mechanism of passing object creation to an external component wherein dependent objects are identified and created using configuration.

Q3. Difference between ApplicationContext module and BeanFactory ?

a. BeanFactory helps in Bean Instantiation whereas ApplicationContext provides additional capabilities like

Message Internationalization and event handling.

b. BeanFactory loads the beans lazily i.e it doesn't load all beans when factory is loaded whereas ApplicationContext loads the beans eagerly.

c. Access to low level resources is not convenient in BeanFactory whereas its easier in Application Context.

Q4. How can we manage Error Messages in the web application ?

Ans. Within message.properties file.

Q5. Difference between Java beans and Spring Beans ?

Ans. Java Beans managed by Spring IoC are called Spring Beans.

Q6. What are different modules of spring ?

Ans. There are seven core modules in spring

Spring MVC
The Core container
O/R mapping
DAO
Application context
Aspect Oriented Programming or AOP
Web module

Q7. Explain Flow of Spring MVC ?

Ans. The DispatcherServlet configured in web.xml file receives the request.

The DispatcherServlet finds the appropriate Controller with the help of HandlerMapping and then invokes associated Controller.

Then the Controller executes the logic business logic and then returns ModeAndView object to the DispatcherServlet.

The DispatcherServlet determines the view from the ModelAndView object.

Then the DispatcherServlet passes the model object to the View.

The View is rendered and the Dispatcher Servlet sends the output to the Servlet container. Finally Servlet Container sends the result back to the user.

Q8. What is Spring configuration file?

Ans. Spring configuration file is an XML file. This file contains the classes information and describes how these classes are configured and introduced to each other.

Q9. Q: What is default scope of bean in Spring framework?

Ans. The default scope of bean is Sing leton for Spring framework.

Q10. What bean scopes does Spring support? Explain them.

Ans. The Spring Framework supports following five scopes -

Singleton
prototype
request
session
global-session

Q11. What is bean auto wiring?

Ans. The Spring container is able to autowire relationships between collaborating beans. This means that it is possible to automatically let Spring resolve collaborators (other beans) for your bean by inspecting the contents of the BeanFactory without using <constructor-arg> and <property> elements.

Q12. What are different auto wiring types ?

Ans. byName , by Type and constructor.

Q13. What are the disadvantages of auto wiring ?

- exceptions
- explainCode
- fisheye
- Frameworks
- freemarker
- grails
- gwt
- hadoop
- heap
- hibernate
- hive
- hypergraph
- hypergraphdb
- IBM WCS
- index
- introduced
- j2ee
- Java
- java 8
- java 9
- java frameworks
- java.applet
- java.awt
- java.beans
- java.io
- java.lang
- java.math
- java.net
- java.nio
- java.rmi
- java.security
- java.sql
- java.util
- java5
- java6
- java7
- java8
- JavaScript
- javax.accessibility
- javax.activation
- javax.annotation
- javax.crypto
- javax.imageio
- javax.lang
- javax.nio
- javax.security
- javax.sound
- javax.sql
- javax.swing
- jaxb
- jdbc
- jersey
- jira
- jquery
- json
- jsp
- jstl
- jung
- junit
- jvm
- lucene
- maven
- mockito
- mongodb
- mvc
- nosql
- ocjp
- oops
- oozie
- openxava

Ans.

Hard to identify the wiring if the configuration size grows big.

Won't do autowire if the wiring has been specified explicitly.

If there is a conflict between multiple bean configuration, Spring won't resolve the conflict and reject all for autowiring.

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Java / J2EE Technical Lead - Interview Questions and Answers

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- spring mvc
- spring projects
- spring security
- springframework
- sql
- string
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Java / J2EE Technical Lead - Interview Questions and Answers

Q1. What is meant by an "asynchronous event." Give some examples ?

Ans. An asynchronous event is one that occurs at an unpredictable time outside the control of the program that the CPU is running. It is not "synchronized" with the program.

Q2. What are the benefits of using Spring Framework ?

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Q3. Why Struts 1 Classes are not Thread Safe whereas Struts 2 classes are thread safe ?

Ans. Struts 1 actions are singleton. So all threads operates on the single action object and hence makes it thread unsafe.

Struts 2 actions are not singleton and a new action object copy is created each time a new action request is made and hence its thread safe.

Q4. Name few tools for probing Java Memory Leaks ?

Ans. JProbe, OptimizeIt

Q5. Difference between SAX and DOM Parser ?

Ans. A DOM (Document Object Model) parser creates a tree structure in memory from an input document whereas A SAX (Simple API for XML) parser does not create any internal structure.

A SAX parser serves the client application always only with pieces of the document at any given time whereas A DOM parser always serves the client application with the entire document no matter how much is actually needed by the client.

A SAX parser, however, is much more space efficient in case of a big input document whereas DOM parser is rich in functionality.

Use a DOM Parser if you need to refer to different document areas before giving back the information. Use SAX is you just need unrelated nuclear information from different areas.

Xerces, Crimson are SAX Parsers whereas XercesDOM, SunDOM, OracleDOM are DOM parsers.

Q6. What are LDAP servers used for ?

Ans. LDAP servers are typically used in J2EE applications to authenticate and authorise users. LDAP servers are hierarchical and are optimized for read access, so likely to be faster than database in providing read access.

Q7. Explain Flow of Spring MVC ?

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Q8. What is session tracking and how do you track a user session in servlets?

Ans. Session tracking is a mechanism that servlets use to maintain state about a series requests from the same user across some period of time. The methods used for session tracking are:

User Authentication - occurs when a web server restricts access to some of its resources to only those clients that log in using a recognized username and password

Hidden form fields - fields are added to an HTML form that are not displayed in the client's browser. When the form containing the fields is submitted, the fields are sent back to the server

URL rewriting - every URL that the user clicks on is dynamically modified or rewritten to include extra information. The extra information can be in the form of extra path information, added parameters or some custom, server-specific URL change.

Cookies - a bit of information that is sent by a web server to a browser and which can later be read back from that browser.

HttpSession- places a limit on the number of sessions that can exist in memory.

Q9. What is connection pooling?

Ans. It's a technique to allow multiple clients to make use of a cached set of shared and reusable connection objects providing access to a database or other resource.

Q10. How Java provide high Performance ?

Ans. Java uses Just-In-Time compiler to enable high performance. Just-In-Time compiler is a program that turns Java bytecode into instructions that can be sent directly to the processor.

Q11. What things should be kept in mind while creating your own exceptions in Java?

Ans. All exceptions must be a child of Throwable.

If you want to write a checked exception that is automatically enforced by the Handle or Declare Rule, you need to extend the Exception class.

You want to write a runtime exception, you need to extend the RuntimeException class.

Q12. What are RESTful Web Services ?

Ans. REST or Representational State Transfer is a flexible architecture style for creating web services that recommends the following guidelines -

1. http for client server communication,
2. XML / JSON as formatiing language ,
3. Simple URI as address for the services and,
4. stateless communication.

Q13. Which markup languages can be used in restful web services ?

Ans. XML and JSON (Javascript Object Notation).

Q14. What is database deadlock ? How can we avoid them?

Ans. When multiple external resources are trying to access the DB locks and runs into cyclic wait, it may makes the DB unresponsive.

Deadlock can be avoided using variety of measures, Few listed below -

Can make a queue wherein we can verify and order the request to DB.

Less use of cursors as they lock the tables for long time.

Keeping the transaction smaller.

Q15. Difference between first level and second level cache in hibernate ?

Ans. 1. First level cache is enabled by default whereas Second level cache needs to be enabled explicitly.

2. First level Cache came with Hibernate 1.0 whereas Second level cache came with Hibernate 3.0.

3. First level Cache is Session specific whereas Second level cache is shared by sessions that is why First level cache is considered local and second level cache is considered global.

Q16. What are the advantages of Hibernate ?

Ans. 1. No need to know SQL, RDBMS, and DB Schema.
2. Underlying Database can be changed without much effort by changing SQL dialect and DB connection.
3.Improved Performance by means of Caching.

Q17. Is It Good to use Reflection in an application ? Why ?

Ans. no, It's like challenging the design of application.

Q18. What is Lazy Initialization in Hibernate ?

Ans. It's a feature to lazily initialize dependencies , relationship and associations from the Database. Any related references marked as @OneToMany or @ManyToMany are loaded lazily i.e when they are accessed and not when the parent is loaded.

Q19. What are new features introduced with Java 8 ?

Ans. Lambda Expressions , Interface Default and Static Methods , Method Reference , Parameters Name , Optional , Streams, Concurrency.

Q20. What things you would care about to improve the performance of Application if its identified that its DB communication that needs to be improved ?

Ans. 1. Query Optimization (Query Rewriting , Prepared Statements)
2. Restructuring Indexes.
3. DB Caching Tuning (if using ORM)
4. Identifying the problems (if any) with the ORM Strategy (If using ORM)

Q21. Name few Java Mocking frameworks ?

Ans. Mockito, PowerMock, EasyMock, JMock, JMockit

Q22. Should we create system software (e.g Operating system) in Java ?

Ans. No, Java runs on a virtual machine called JVM and hence doesn't embed well with the underlying hardware. Though we can create a platform independent system software but that would be really slow and that's what we would never need.

Q23. What is the difference between JPA and Hibernate ?

Ans. JPA or Java Persistence API is a standard specification for ORM implementations whereas Hibernate is the actual ORM implementation or framework.

Q24. Which UML diagrams you usually use for design ?

Ans. Use Case Diagram, Component Diagram for High level Design and Class Diagram , Sequence Diagram for low level design.

Q25. How do you coordinate and communicate with the team developers ?

Ans. We as a team of developers , testers , analyst , lead and architect sit close to each other. Most of the time I would just jump to their seat and talk to them (if required). We have daily stand up where we discuss things that needs team attention.

Q26. What kind of software architecture your organization follow ?

Ans. We have multi tier architecture with multiple layers , We have series of web servers and applications in application tier, infrastructure libraries at middle tier and Database servers at the lower tier. We are using Oracle as Database, ESB (Enterprise service Bus) for asynchronous communication and Rest Web Services.

Q27. What Design pattern Wrapper Classes implement ?

Ans. Adapter.

Q28. Difference between Factory and Abstract Factory Design Pattern ?

Ans. Factory Pattern deals with creation of objects delegated to a separate factory class whereas Abstract Factory patterns works around a super-factory which creates other factories.

Q29. Difference between Factory and Builder Design Pattern ?

Ans. Builder pattern is the extension of Factory pattern wherein the Builder class builds a complex object in multiple steps.

Q30. Difference between Proxy and Adapter ?

Ans. Adapter object has a different input than the real subject whereas Proxy object has the same input as the real subject. Proxy object is such that it should be placed as it is in place of the real subject.

Q31. Difference between Adapter and Facade ?

Ans. The Difference between these patterns in only the intent. Adapter is used because the objects in current form cannot communicate where as in Facade , though the objects can communicate , A Facade object is placed between the client and subject to simplify the interface.

Q32. Difference between Builder and Composite ?

Ans. Builder is a creational Design Pattern whereas Composite is a structural design pattern. Composite creates Parent - Child relations between your objects while Builder is used to create group of objects of predefined types.

Q33. Example of Chain of Responsibility Design Pattern ?

Ans. Exception Handling Throw mechanism.

Q34. Example of Observer Design Pattern ?

Ans. Listeners.

Q35. Difference between Factory and Strategy Design Pattern ?

Ans. Factory is a creational design pattern whereas Strategy is behavioral design pattern. Factory revolves around the creation of object at runtime whereas Strategy or Policy revolves around the decision at runtime.

Q36. Shall we use abstract classes or Interfaces in Policy / Strategy Design Pattern ?

Ans. Strategy deals only with decision making at runtime so Interfaces should be used.

Q37. What are use cases?

Ans. It is part of the analysis of a program and describes a situation that a program might encounter and what behavior the program should exhibit in that circumstance.

Q38. Explain Singleton Design Pattern ?

Ans. http://www.buggybread.com/2014/03/java-design-pattern-singleton-interview.html

Q39. How to implement an immutable class ?

Ans. We can make a class immutable by

1. Making all methods and variables as private.
2. Setting variables within constructor.

```
Public Class ImmutableClass{
    private int member;
    ImmutableClass(int var){
       member=var;
    }
}
```

and then we can initialize the object of the class as

```
ImmutableClass immutableObject = new ImmutableClass(5);
```

Now all members being private , you can't change the state of the object.

Q40. What is the best practice configuration usage for files in Maven - pom.xml or settings.xml ?

Ans. The best practice guideline between settings.xml and pom.xml is that configurations in settings.xml must be specific to the current user and that pom.xml configurations are specific to the project.

Q41. How substring() method of String class create memory leaks?

Ans. substring method would build a new String object keeping a reference to the whole char array, to avoid copying it. Hence you can inadvertently keep a reference to a very big character array with just a one character string.

Q42. Difference between first level and second level cache in hibernate ?

Ans. 1. First level cache is enabled by default whereas Second level cache needs to be enabled explicitly.

2. First level Cache came with Hibernate 1.0 whereas Second level cache came with Hibernate 3.0.

3. First level Cache is Session specific whereas Second level cache is shared by sessions that is why First level cache is considered local and second level cache is considered global.

Q43. What are different types of second level cache ?

Ans. 1. EHCache (Easy Hibernate)
2. OSCache (Open Symphony)
3. Swarm Cache (JBoss)
4. Tree Cache (JBoss)

Q44. What are new features introduced with Java 8 ?

Ans. Lambda Expressions , Interface Default and Static Methods , Method Reference , Parameters Name , Optional , Streams, Concurrency.

Q45. What things you would care about to improve the performance of Application if its identified that its DB communication that needs to be improved ?

Ans. 1. Query Optimization (Query Rewriting , Prepared Statements)
2. Restructuring Indexes.
3. DB Caching Tuning (if using ORM)
4. Identifying the problems (if any) with the ORM Strategy (If using ORM)

Q46. If I try to add Enum constants to a TreeSet, What sorting order will it use ?

Ans. Tree Set will sort the Values in the order in which Enum constants are declared.

Q47. Why do we need Inner classes ? Can't we just work with outer classes wherever we implement Inner classes ?

Ans. Yes, we can substitute outer classes wherever we need to have inner classes but Inner classes have advantage in certain cases and hence preferred -

Ease - Why to implement a class outside if its objects are only intended to be part of an outer object. Its easy to define the class within another class if the use is only local.

Protection - Making a call an outer exposes a threat of it being used by any of the class. Why should it be made an outer class if its object should only occur as part of other objects.

For example - You may like to have an class address whose object should have a reference to city and by design that's the only use of city you have in your application. Making Address and City as outer class exposes City to any of the Class. Making it an inner class of Address will make sure that its accessed using object of Address.

Q48. What things you will look for if you get following exception while making DB call ?

table or view does not exist

Ans. First will check if the table or view actually exist in the DB

If it does , Will make sure to see that the application has rights on the schema that holds the respective Table.

Will then make sure that we have prefixed the schema with the table name while accessing it.

Will then make sure that its not DB Cache that's causing it as the table DDL might have been created recently.

Q49. What is a transitive dependency in Maven ? Can we override Transitive Dependency version and If Yes, how ?

Ans. Transitive dependency is the dependencies not defined directly in the current POM but the POM of the dependent projects.

Yes we can override transitive dependency version by specifying the dependency in the current POM.

Q50. Which UML diagrams you usually use for design ?

Ans. Use Case Diagram, Component Diagram for High level Design and Class Diagram , Sequence Diagram for low level design.

Q51. How do you coordinate and communicate with the team developers ?

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Java / J2EE Technical Architect - Interview Questions and Answers

Q1. Should we create system software (e.g Operating system) in Java ?

Ans. No, Java runs on a virtual machine called JVM and hence doesn't embed well with the underlying hardware. Though we can create a platform independent system software but that would be really slow and that's what we would never need.

Q2. What are the different types of memory used by JVM ?

Ans. Class , Heap , Stack , Register , Native Method Stack.

Q3. What are the benefits of using Spring Framework ?

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Lightweight IoC containers tend to be lightweight, especially when compared to EJB containers, for example. This is beneficial for developing and deploying applications on computers with limited memory and CPU resources.

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Q4. What are various types of Class loaders used by JVM ?

Ans. Bootstrap - Loads JDK internal classes, java.* packages.

Extensions - Loads jar files from JDK extensions directory - usually lib/ext directory of the JRE

System - Loads classes from system classpath.

Q5. What is PermGen or Permanent Generation ?

Ans. The memory pool containing all the reflective data of the java virtual machine itself, such as class and method objects. With Java VMs that use class data sharing, this generation is divided into read-only and read-write areas. The Permanent generation contains metadata required by the JVM to describe the classes and methods used in the application. The permanent generation is populated by the JVM at runtime based on classes in use by the application. In addition, Java SE library classes and methods may be stored here.

Q6. What is metaspace ?

Ans. The Permanent Generation (PermGen) space has completely been removed and is kind of replaced by a new space called Metaspace. The consequences of the PermGen removal is that obviously the PermSize and MaxPermSize JVM arguments are ignored and you will never get a java.lang.OutOfMemoryError: PermGen error.

Q7. How does volatile affect code optimization by compiler?

Ans. Volatile is an instruction that the variables can be accessed by multiple threads and hence shouldn't be cached. As volatile variables are never cached and hence their retrieval cannot be optimized.

Q8. What things should be kept in mind while creating your own exceptions in Java?

Ans. All exceptions must be a child of Throwable.

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Ans. The best practice guideline between settings.xml and pom.xml is that configurations in settings.xml must be specific to the current user and that pom.xml configurations are specific to the project.

Q10. Can you provide some implementation of a Dictionary having large number of words ?

Ans. Simplest implementation we can have is a List wherein we can place ordered words and hence can perform Binary Search.

Other implementation with better search performance is to use HashMap with key as first character of the word and value as a LinkedList.

Further level up, we can have linked Hashmaps like ,

hashmap {
a (key) -> hashmap (key-aa , value (hashmap(key-aaa,value)
b (key) -> hashmap (key-ba , value (hashmap(key-baa,value)
.....
z(key) -> hashmap (key-za , value (hashmap(key-zaa,value)
}

upto n levels (where n is the average size of the word in dictionary.

Q11. What is database deadlock ? How can we avoid them?

Ans. When multiple external resources are trying to access the DB locks and runs into cyclic wait, it may makes the DB unresponsive.

Deadlock can be avoided using variety of measures, Few listed below -

Can make a queue wherein we can verify and order the request to DB.

Less use of cursors as they lock the tables for long time.

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Q12. Why Web services use HTTP as the communication protocol ?

Ans. With the advent of Internet, HTTP is the most preferred way of communication. Most of the clients (web thin client , web thick clients , mobile apps) are designed to communicate using http only. Web Services using http makes them accessible from vast variety of client applications.

Q13. Why using cookie to store session info is a better idea than just using session info in the request ?

Ans. Session info in the request can be intercepted and hence a vulnerability. Cookie can be read and write by respective domain only and make sure that right session information is being passed by the client.

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3. First level Cache is Session specific whereas Second level cache is shared by sessions that is why First level cache is considered local and second level cache is considered global.

Q15. What are the ways to avoid LazyInitializationException ?

Ans. 1. Set lazy=false in the hibernate config file.

2. Set @Basic(fetch=FetchType.EAGER) at the mapping.

3. Make sure that we are accessing the dependent objects before closing the session.

4. Using Fetch Join in HQL.

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Q17. What things you would care about to improve the performance of Application if its identified that its DB communication that needs to be improved ?

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Q18. If you are given a choice to implement the code to either Insert a Record or Update if already exist, Which approach will you follow ?

1. Insert into the DB Table. If exception occurs, update the existing record.
2. Check if the record exists and update it if it exists, If not insert a new record.

Ans. In first case, there would be 2 DB calls in worst case and 1 in best case. In 2nd approach there will be always 2 DB calls.

Decision on the approach should depend on the following considerations -

1. How costly is the call to DB ? Are we using indices , hibernate etc

If calls to DB are costly , 1st approach should be the choice.

2. Exception Book keeping load upon exception.

The benefit of saving 1st call in approach 1 should be bigger than the Book keeping for the exception.

3. Probability of the exception in first apparoach.

If the DB Table is almost empty, it makes sense to follow Approach 1 as majority of the 1st calls will pass through without exception.

Q19. What would you do if you have to add a jar to the project using Maven ?

Ans. If its already there in Maven local repository, We can add that as a dependency in the project pom file with its Group Id, Artifact Id and version.

We can provide additional attribute SystemPath if its unable to locate the jar in the local repository.

If its not there in the local repository, we can install it first in the local repository and then can add it as dependency.

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Ans. No, Java runs on a virtual machine called JVM and hence doesn't embed well with the underlying hardware. Though we can create a platform independent system software but that would be really slow and that's what we would never need.

Q21. Which UML diagrams you usually use for design ?

Ans. Use Case Diagram, Component Diagram for High level Design and Class Diagram , Sequence Diagram for low level design.

Q22. How do you coordinate and communicate with the team developers ?

Ans. We as a team of developers , testers , analyst , lead and architect sit close to each other. Most of the time I would just jump to their seat and talk to them (if required). We have daily stand up where we discuss things that needs team attention.

Q23. What kind of software architecture your organization follow ?

Ans. We have multi tier architecture with multiple layers , We have series of web servers and applications in application tier, infrastructure libraries at middle tier and Database servers at the lower tier. We are using Oracle as Database, ESB (Enterprise service Bus) for asynchronous communication and Rest Web Services.

Q24. Difference between Proxy and Adapter Deisgn Patterns ?

Ans. Adapter object has a different input than the real subject whereas Proxy object has the same input as the real subject. Proxy object is such that it should be placed as it is in place of the real subject.

Q25. Difference between Adapter and Facade ?

Ans. The Difference between these patterns in only the intent. Adapter is used because the objects in current form cannot communicate where as in Facade , though the objects can communicate , A Facade object is placed between the client and subject to simplify the interface.

Q26. Difference between Builder and Composite ?

Ans. Builder is a creational Design Pattern whereas Composite is a structural design pattern. Composite creates Parent - Child relations between your objects while Builder is used to create group of objects of predefined types.

Q27. Difference between Factory and Strategy Design Pattern ?

Ans. Factory is a creational design pattern whereas Strategy is behavioral design pattern. Factory revolves around the creation of object at runtime whereas Strategy or Policy revolves around the decision at runtime.

Q28. Shall we use abstract classes or Interfaces in Policy / Strategy Design Pattern ?

Ans. Strategy deals only with decision making at runtime so Interfaces should be used.

Java - What are the difference between composition and inheritance in Java ?

Composition - has-a relationship between classes.
Inheritance - is-a relationship between classes.

Composition - Composing object holds a reference to composing classes and hence relationship is loosely bound.
Inheritance - Derived object carries the base class definition in itself and hence its tightly bound.

Composition - Used in Dependency Injection
Inheritance - Used in Runtime Polymorphism

Composition - Single class objects can be composed within multiple classes.
Inheritance - Single class can only inherit 1 Class.

Composition - Its the relationship between objects.
Inheritance - Its the relationship between classes.

Interview Questions and Answers on Java Related Technologies

Q1. What are the benefits of using Spring Framework ?

Ans. Spring enables developers to develop enterprise-class applications using POJOs. The benefit of using only POJOs is that you do not need an EJB container product.

Spring is organized in a modular fashion. Even though the number of packages and classes are substantial, you have to worry only about ones you need and ignore the rest.

Spring does not reinvent the wheel instead, it truly makes use of some of the existing technologies like several ORM frameworks, logging frameworks, JEE, Quartz and JDK timers, other view technologies.

Testing an application written with Spring is simple because environment-dependent code is moved into this framework. Furthermore, by using JavaBean-style POJOs, it becomes easier to use dependency injection for injecting test data.

Spring's web framework is a well-designed web MVC framework, which provides a great alternative to web frameworks such as Struts or other over engineered or less popular web frameworks.

Spring provides a convenient API to translate technology-specific exceptions (thrown by JDBC, Hibernate, or JDO, for example) into consistent, unchecked exceptions.

Lightweight IoC containers tend to be lightweight, especially when compared to EJB containers, for example. This is beneficial for developing and deploying applications on computers with limited memory and CPU resources.

Spring provides a consistent transaction management interface that can scale down to a local transaction

Q2. Difference between C++ and Java ?

Ans. Java does not support pointers.

Java does not support multiple inheritances.

Java does not support destructors but rather adds a finalize() method. Finalize methods are invoked by the garbage collector prior to reclaiming the memory occupied by the object, which has the finalize() method.

Java does not include structures or unions because the traditional data structures are implemented as an object oriented framework.

C++ compiles to machine language , when Java compiles to byte code .

In C++ the programmer needs to worry about freeing the allocated memory , where in Java the Garbage Collector takes care of the the unneeded / unused variables.

Java is platform independent language but c++ is depends upon operating system.

Java uses compiler and interpreter both and in c++ their is only compiler.

C++ supports operator overloading whereas Java doesn't.

Internet support is built-in Java but not in C++. However c++ has support for socket programming which can be used.

Java does not support header file, include library files just like C++ .Java use import to include different Classes and methods.

There is no goto statement in Java.

There is no scope resolution operator :: in Java. It has . using which we can qualify classes with the namespace they came from.

Java is pass by value whereas C++ is both pass by value and pass by reference.

Java Enums are objects instead of int values in C++

C++ programs runs as native executable machine code for the target and hence more near to hardware whereas Java program runs in a virtual machine.

C++ was designed mainly for systems programming, extending the C programming language whereas Java was created initially to support network computing.

C++ allows low-level addressing of data. You can manipulate machine addresses to look at anything you want. Java access is controlled.

C++ has several addressing operators . * & -> where Java has only one: the .

We can create our own package in Java(set of classes) but not in c and c++.

Q3. Why Struts 1 Classes are not Thread Safe whereas Struts 2 classes are thread safe ?

Ans. Struts 1 actions are singleton. So all threads operates on the single action object and hence makes it thread unsafe.

Struts 2 actions are not singleton and a new action object copy is created each time a new action request is made and hence its thread safe.

Q4. What are some Java related technologies used for distributed computing ?

Ans. sockets, RMI. EJB

Q5. What is the difference between AWT and Swing?

Ans. Swing provides both additional components like JTable, JTree etc and added functionality to AWT-replacement components.

Swing components can change their appearance based on the current “look and feel” library that’s being used.

Swing components follow the MVC paradigm, and thus can provide a much more flexible UI.

Swing provides extras for components, such as icons on many components, decorative borders for components, tool tips for components etc.

Swing components are lightweight than AWT.

Swing provides built-in double buffering ,which means an off-screen buffer is used during drawing and then the resulting bits are copied onto the screen.

Swing provides paint debugging support for when you build your own component.

Q6. Name few tools for probing Java Memory Leaks ?

Ans. JProbe, OptimizeIt

Q7. Difference between SAX and DOM Parser ?

Ans. A DOM (Document Object Model) parser creates a tree structure in memory from an input document whereas A SAX (Simple API for XML) parser does not create any internal structure.

A SAX parser serves the client application always only with pieces of the document at any given time whereas A DOM parser always serves the client application with the entire document no matter how much is actually needed by the client.

A SAX parser, however, is much more space efficient in case of a big input document whereas DOM parser is rich in functionality.

Use a DOM Parser if you need to refer to different document areas before giving back the information. Use SAX is you just need unrelated nuclear information from different areas.

Xerces, Crimson are SAX Parsers whereas XercesDOM, SunDOM, OracleDOM are DOM parsers.

Q8. What is DTD ?

Ans. DTD or Document Type Definition is a standard agreed upon way of communication between two parties. Your application can use a standard DTD to verify that data that you receive
from the outside world is valid and can be parsed by your parser.

Q9. What is XSD ?

Ans. XSD or Xml Schema Definition is an extension of DTD. XSD is more powerful and extensible than DTD

Q10. What is JAXP ?

Ans. Stands for Java API for XML Processing. This provides a common interface for creating and using SAX, DOM, and XSLT APIs in Java regardless of which vendor's implementation is actually being used.

Q11. What is JAXB ?

Ans. Stands for Java API for XML Binding. This standard defines a mechanism for writing out Java objects as XML and for creating Java objects from XML structures.

Q12. What are LDAP servers used for ?

Ans. LDAP servers are typically used in J2EE applications to authenticate and authorise users. LDAP servers are hierarchical and are optimized for read access, so likely to be faster than database in providing read access.

Q13. Explain Flow of Spring MVC ?

Ans. The DispatcherServlet configured in web.xml file receives the request.

The DispatcherServlet finds the appropriate Controller with the help of HandlerMapping and then invokes associated Controller.

Then the Controller executes the logic business logic and then returns ModeAndView object to the DispatcherServlet.

The DispatcherServlet determines the view from the ModelAndView object.

Then the DispatcherServlet passes the model object to the View.

The View is rendered and the Dispatcher Servlet sends the output to the Servlet container. Finally Servlet Container sends the result back to the user.

Q14. Difference between socket and servlet ?

Ans. servlet is a small, server-resident program that typically runs automatically in response to user input.
A network socket is an endpoint of an inter-process communication flow across a computer network.

We can think of it as a difference between door and gate. They are similar as they both are entry points but they are different as they are put up at different areas.

Sockets are for low-level network communication whereas Servlets are for implementing websites and web services

Q15. What is a Listener ?

Ans. In GUI programming, an object that can be registered to be notified when events of
some given type occur. The object is said to "listen" for the events.

Q16. What is unicode ?

Ans. A way of encoding characters as binary numbers. The Unicode character set includes characters used in many languages, not just English. Unicode is the character set that is used internally by Java.

Q17. What is PermGen or Permanent Generation ?

Ans. The memory pool containing all the reflective data of the java virtual machine itself, such as class and method objects. With Java VMs that use class data sharing, this generation is divided into read-only and read-write areas. The Permanent generation contains metadata required by the JVM to describe the classes and methods used in the application. The permanent generation is populated by the JVM at runtime based on classes in use by the application. In addition, Java SE library classes and methods may be stored here.

Q18. What is metaspace ?

Ans. The Permanent Generation (PermGen) space has completely been removed and is kind of replaced by a new space called Metaspace. The consequences of the PermGen removal is that obviously the PermSize and MaxPermSize JVM arguments are ignored and you will never get a java.lang.OutOfMemoryError: PermGen error.

Q19. What is an applet? What is the lifecycle of an applet?

Ans. Applet is a dynamic and interactive program that runs inside a web page displayed by a java capable browser.

Lifecycle methods of Applet -

init( ) method - Can be called when an applet is first loaded
start( ) method - Can be called each time an applet is started
paint( ) method - Can be called when the applet is minimized or maximized
stop( ) method - Can be used when the browser moves off the applet's page
destroy( ) method - Can be called when the browser is finished with the applet

Q20. What is session tracking and how do you track a user session in servlets?

Ans. Session tracking is a mechanism that servlets use to maintain state about a series requests from the same user across some period of time. The methods used for session tracking are:

User Authentication - occurs when a web server restricts access to some of its resources to only those clients that log in using a recognized username and password

Hidden form fields - fields are added to an HTML form that are not displayed in the client's browser. When the form containing the fields is submitted, the fields are sent back to the server

URL rewriting - every URL that the user clicks on is dynamically modified or rewritten to include extra information. The extra information can be in the form of extra path information, added parameters or some custom, server-specific URL change.

Cookies - a bit of information that is sent by a web server to a browser and which can later be read back from that browser.

HttpSession- places a limit on the number of sessions that can exist in memory.

Q21. What is connection pooling?

Ans. It's a technique to allow multiple clients to make use of a cached set of shared and reusable connection objects providing access to a database or other resource.

Q22. How does volatile affect code optimization by compiler?

Ans. Volatile is an instruction that the variables can be accessed by multiple threads and hence shouldn't be cached. As volatile variables are never cached and hence their retrieval cannot be optimized.

Q23. How Java provide high Performance ?

Ans. Java uses Just-In-Time compiler to enable high performance. Just-In-Time compiler is a program that turns Java bytecode into instructions that can be sent directly to the processor.

Q24. What are the advantages and Disadvantages of Sockets ?

Ans. Sockets are flexible and sufficient. Efficient socket based programming can be easily implemented for general communications. It cause low network traffic.

Socket based communications allows only to send packets of raw data between applications. Both the client-side and server-side have to provide mechanisms to make the data useful in any way.

Q25. What are RESTful Web Services ?

Ans. REST or Representational State Transfer is a flexible architecture style for creating web services that recommends the following guidelines -

1. http for client server communication,
2. XML / JSON as formatiing language ,
3. Simple URI as address for the services and,
4. stateless communication.

Q26. Which markup languages can be used in restful web services ?

Ans. XML and JSON (Javascript Object Notation).

Q27. Why Web services use HTTP as the communication protocol ?

Ans. With the advent of Internet, HTTP is the most preferred way of communication. Most of the clients (web thin client , web thick clients , mobile apps) are designed to communicate using http only. Web Services using http makes them accessible from vast variety of client applications.

Q28. What is Hibernate ?

Ans. Hibernate is a Java ORM Framework.

Q29. What are the advantages of Hibernate ?

Ans. 1. No need to know SQL, RDBMS, and DB Schema.
2. Underlying Database can be changed without much effort by changing SQL dialect and DB connection.
3.Improved Performance by means of Caching.

Q30. Difference between TCP and UDP ?

Ans. http://www.cyberciti.biz/faq/key-differences-between-tcp-and-udp-protocols/

Q31. Name few Java Mocking frameworks ?

Ans. Mockito, PowerMock, EasyMock, JMock, JMockit

Q32. Should we create system software (e.g Operating system) in Java ?

Ans. No, Java runs on a virtual machine called JVM and hence doesn't embed well with the underlying hardware. Though we can create a platform independent system software but that would be really slow and that's what we would never need.

Q33. What is Java primarily used for ?

Ans. For creating platform independent software applications.

Q34. What is the difference between JPA and Hibernate ?

Ans. JPA or Java Persistence API is a standard specification for ORM implementations whereas Hibernate is the actual ORM implementation or framework.

Q35. What is the advantage of JPA ?

Ans. Its a specification that guides the implementation of ORM frameworks. Implementations abiding by the specification would mean that one can be replaced with other in an application without much hassle. Only the Features that are added over the specification needs to be taken care of if any such change is made.

Q36. Which version control (VC) or software configuration management (SCM) systems work with Merge?

Ans. You can use Tortoise SVN,which has Merge Utility embedded in it.

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