

**Core**

Professional Skills

**Java Interview Question Bank**

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# Java Interview Question Bank

## Technical

* **What do you know about collection framework?**

the collection framework is used to

* **What do you know about Threading?**

I know what a deadlock is, locking, producers and consumers problem. How to start a thread in java. Why threads are useful and how they work with java jvm memory.

* **What are soft, weak and phantom references and explain the difference.**

A soft reference is a weak reference that remains in memory a little longer. A weak reference is a reference that is eligible for garbage collection. Phantom lets u know if an object was garbage collected.

* Given the scenario below what is the most effective solution?
  + In a movie rental store, a client walks to a till and asks for a movie, the till staff will then ask a non till staff worker to find the movie.
  + The till staff will keep giving out the task so long as there are non till staff free, if there are none the till staff should wait until there are.

Hint: The Solution to this was being able to identify that it is a producer - consumer problem and to provide a producer - consumer solution.

* **What is the difference between list and set?**
  + A list is a collections framework abstract class that can have duplicates, a set cannot have duplicates.
* The remaining questions were code snippets asking for the output. Best solution to give is
  + Does it work? (mostly no)
  + What is the output?
  + Why does it not work?
  + What is a solution?
  + What would have been the output if it did work?
* **What are exceptions and how do you handle them?**

Exceptions are events that happen when something unexpected happens during code execution or compiliation. They are handled with try catch block or in a method signature that has throws new “exception”

* **Explain what polymorphism is.**

Polymorphism is changing code’s behaviour at runtime or compile time. It enables programmers to reuse code and makes code extensible.

* **What is extreme programming?**

A form of agile programming.

* **Explain what inheritance is.**

Inheritance is a way to set up relationships between objects, child-parent relationship. Children are able to inherit funtionacilty from parent objects.

* **What is regression testing?**
* **What is automation testing and what are the advantages of it?**
* **Explain the differences between functional and non-functional testing.**

functional testing is using mockito make mock objects and check if methods calls are done.

* What is quality assurance?
* What is the importance of testing?
* **Explain what SOLID is.**

Solid is 5 principles that object oriented programs should follow.

* Name different types of testing.
* What is SCRUM?
* **Which design patterns do you know?**

Decorater, builder, factory, singleton, observer, command, chain of responibility

* What tools do you know for automated testing?
* Explain what a test case is.
* **Discussion about abstract vs. Interfaces.**

Abstract classes are classes that could have members or concrete classes but also abstract methods. They cannot be instantiated but can be inherited.

* Write a piece of code to implement your own TreeSet structure.

It’s a red-black tree

* What are the advantages of Agile, testing and testing development?
* **Talk about Maven**

Maven is a project building tool. It allows you to specific which dependencies should be in a project. And it auto downloads whatever the project needs from its central repo. You can also change the project build based on situations.

* Given a piece of Java code, explain and improve it.
* Give a few examples of HTML tags.
* How do you divide a page in HTML?
* **What is JSP & Servlet?**

Jsp is a java server page and a servlet is a class that handles http requests that come in.

And it sends back a response to the web server that it received it from.

* How can you read XML files?

By parsing them and reading the tags.

* What project did you do with Java and JDBC?

My java webspotyify project used jdbc with spring.

* Describe how to use Ibatis in Java? How to implement Ibatis?
* How to draw a class diagram?
* Name and explain the access modifiers.

Public, protected, default, private

* REST vs. SOAP and XML.

Rest is representational state transaction. So it uses http and http responses with servlets to handle specific responses. Which allow for a predefined set of stateless operations. So if you do a get or post from an website, then the resrouce should give back the next representation which is transferred to the end user.

* How do hash code and equals work in the background?
* When are objects set to immutable?

When they are strings. Or private final. Use a builder to change immutable objects. And if they are in a collection that needs to be immutable. Then deep clone?

* TDD exercise (practical and paired with interviewer)
* Which is the bigger priority: Meeting deadlines, code quality or customer satisfaction?

Its about managing technical debt. There are many work arounds that could be done to meet deadlines therefore meet customer satisfaction. However if the technical debt causes the product itself to suffer then that should be managed.

When taking TD, companies are able to speed up the release cycles to the customer, which can increase customer satisfaction and provide advantage in the market. Another benefit for companies is customer feedback ([Yli-Huumo et al., 2015b](https://www.sciencedirect.com/science/article/pii/S016412121630053X" \l "bib0059)). Companies are able to adjust the product and its business model based on faster customer feedback. This way the companies can identify and prevent both intentional and unintentional TD more efficiently, when customer feedback provides knowledge about the most important development needs in the software (ibid.). Therefore, while TD in the software is never a benefit, actions that incur TD into software can be beneficial to a software company in terms of acquiring business advantage and knowledge of customer and business needs.

Customer satisfaction

* What is a thread?

A thread is a sequence of instrutions that are executed by a scheduler. Multiple threads can exist in a process sharing the same memory.

* What issues are there in using threading?

Deadlocks, global variables, not thread safe operations change global vars so that the value can become anything.

* Discuss the use of Agile and SCRUM methods.
* A high level explanation of OOP.
* What is unit testing?

Unit testing is testing a small piece of code.

* How would you use IoC in JUnit test?
* Asked about threading, collections, serialization and inheritance.
* Explain OOP in programming.
* What is deadlock?

When a thread is ending for a resource that is being held by another thread.

And the thread waiting for a reason is holding a recourse that the other one needs.

* Explain 4 pillars of OOP?

Inhertinace, encapsulate, abstraction and polymorphism.

* Why Spring framework?
* What classes can be used to read XML and HTML files?
* Write a linear algorithm.

Just a program that runs over a array once for example, 0(n) time.

* Write some Java code that does bubble search.

Two for loops i<length-1

J<length-i-1

* Write a code to implement your own LinkedList structure.

ez

* Tell me about your java projects and give a bit of technical information on how it operates.
* How did you store the information
* What if it was a threaded program what would you change?
* Would you use synchronization?
* What is the different types of collections and what are the differences between them?

Set, list, map, queue

* How does a hashmap work?

A hashmap is unsorted and similar to a hashtable expect that it is unsychronized and allows for nulls.

* Explain hash code and equals.

A hashcode is an objects code that equals by default uses to compare two objects.

* Explain the comparator and comparable interfaces.
* What design patterns do you know?
* Explain the singleton pattern and show how it works.
* Explain the factory pattern and show how it works.
* How did you test your java programmes?
* What do you know about Agile Development?
* What do you know about Scrum?
* What do you know about Test Driven Development?
* What is Hibernate? Have you used it?
* What is Spring? Have you used it?
* Differences between ArrayList and LinkedList
* Advantages of LinkedList over ArrayList
* Explain the modules in the MVC pattern
* Given 9 statements and 6 design patterns, match them (e.g. abstract factory, command, facade etc)
* Identify differences in statement and a prepared statement.
* Identify problems in a piece of code with mixed access and non access modifiers.
* What is transient?
* Explain the difference between synchronized block and synchronized method.
* If you created 2 instances of the same class can 2 threads access a synchronized method at the same time?
* When you have try and catch and you have 3 catch statements does it matter what order they are in?
* Give me 3 exceptions and order them.
* What methods does an object inherit from the Object class?
* Can you communicate using UML?
* What is the difference between composition and inheritance?
* What is Encapsulation?

## Interviews with financial clients

When interviewing for a role with a financial client the following preparation could prove to be invaluable:

* Have a look at the Investment Banking definitions and information for help or have a look on these websites:  investopedia.com, wikipedia.com, fsa.gov.uk
* Look at the financial sites- <http://www.lsespreads.com/financial_markets>  ,Bloomberg and Reuters. Familiarise yourself with the latest news in finance. Investment Bankers would be checking this on a daily basis.
* What is the difference between an Investment Bank and a Retail Bank?
* What is a derivative?
* How would you use a derivative?
* What is the difference between a share and a bond?
* What is a credit default swop?
* What do you know about investment banking?
* What is a credit derivative?
* What do you know about FX?
* Why do you want to work for a bank?
* Why do you want to work in finance?
* What is equity?
* Describe the FTSE 100.
* What is a stock?
* What is a bond?
* What is the difference between equity and bonds?
* What is an IPO?