

SDConnect Interview Questions

Set# 1 with NexGen

NexGen Technologies, Inc.: 1. Which of the following Java operators is a one line replacement for an if-then-else construct?

- a. unary
- b. ternary
- c. bitwise
- d. binary

NexGen Technologies, Inc.: 2. Can an interface define protected methods?

- a. Yes
- b. No

NexGen Technologies, Inc.: 3. Name the primitive types in Java.

NexGen Technologies, Inc.: 4. Is String a primitive type?

- a. Yes
- b. No

NexGen Technologies, Inc.: 5. In a try-catch block, is the order of the catch clauses significant?

- a. Yes
- b. No

NexGen Technologies, Inc.: 6. I have a String variable named s and an Object variable named o. I want to assign o to s. Do I need a cast?

- a. Yes
- b. No

NexGen Technologies, Inc.: 7. With the same s and o variables, do I need a cast if I want to assign s to o?

- a. Yes
- b. No

NexGen Technologies, Inc.: 8. Which of the following most closely describes method overloading?

- a. A method in a class has the same signature as a method in the superclass
- b. New class code is introduced into a running application, replacing the old code
- c. Two or more methods in the same class have the same name but different arguments

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d. None of the above

NexGen Technologies, Inc.: 9. I have a class in which the toString() method is overridden. At run time an instance of this class is assigned to an Object variable and then the toString() method is called against the Object reference. What is this an example of?

- a. Encapsulation
- b. Data Hiding
- c. Polymorphism
- d. Inheritance

NexGen Technologies, Inc.: 10. What is a Singleton?

- a. A class of which only one instance can exist in an application
- b. A class containing only one method or field member
- c. An interface specifying only one method

NexGen Technologies, Inc.: 12. In SOAP web service calls, what is the format of the data sent between the client and the server?

- a. HTML
- b. XML
- c. JSON
- d. The format is application specific

NexGen Technologies, Inc.: 11. An application reads people's names from some source and collects them in a data structure such that duplicate names are ignored. When iterating over this structure the order that the names appear is unimportant. What type of structure is best suited to this?

- a. A List
- b. A Map
- c. A Set
- d. Something else (specify)

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NexGen Technologies, Inc.: 13. In a RESTful web service, which HTTP method would be used to update an existing resource?

- a. GET
- b. PUT
- c. POST
- d. MODIFY

NexGen Technologies, Inc.: 14. What is the most basic mechanism for preventing two threads modifying a data structure at the sametime?

- a. wait and notify
- b. try and catch
- c. synchronized
- d. Make the data structure protected

NexGen Technologies, Inc.: 15. What is a memory leak?

- a. A bug in which the references to unused objects are not removed, preventing those objects from being garbage-collected
- b. A threading issue where one thread passes objects to another but does not recover them and ultimately runs out of memory
- c. A bug where an application attempts to create an object that is larger than the remaining available memory

NexGen Technologies, Inc.: 16. What is a Weak Reference?

- a. A reference to an object that has been declared as volatile
- b. A reference that allows the referenced object to be garbage-collected when it contains no remaining strong references
- c. A reference to an object declared with the weak modifier

NexGen Technologies, Inc.: 17. What is a shutdown hook?

- a. A signal from the operating system that tells an application to terminate
- b. A user-provided method overriding `System.exit()` that can prevent or modify the default shutdown sequence of an application
- c. A user-provided method that is called by the JVM during the shutdown of an application

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Set# 2

What is OOP?

What is a constructor?

What are the access modifiers?

What's the difference between an abstract class and an interface?

What is inheritance?

What are the types of coupling?

What is polymorphism?

What's an overridden method?

What's an overloaded method?

Why do we need exceptions?

Set# 3 with Capgemini

I was asked to swap two numbers without using a third variable ($x = 7, y = 5$ basically $x = x + y$ so x is now 12; $y = x - y$ so y is now 7; $x = x - y$ so now x is 5 and the numbers are swapped)

I was asked about how JSON gets converted to a java object (object mapped class) I was asked about the list interface (I stumbled on this one) I was asked about removing something from a list (use a for loop and call remove on it)

I was asked about the difference between the String class and StringBuilder class (when you concatenate on a string, it creates a new object in memory while string builder does not create a new object in memory).

I was asked about how the array list works in memory (array list creates a new array in memory Every time you have enough objects to fill half of the of it. E.g. array list will create a new primitive array with two spots at one object, create a new primitive array with four spots at two objects and so on. The previous arrays are still in memory and will have to be garbage collected).

I was asked about the volatile keyword (didn't know it) I was asked in words I can't recall about how stuff gets sent from the front end (with angular requests get sent back as JSON, if querying for stuff, it comes back as a promise).

I was asked about views in Spring (requests hit the controller route which sets the view to whatever HTML or JSP you provided) I was asked about bad requests (can validate with HTML, the controller, dao implementation or your database).

I was asked about exceptions. Method One with a try finally calls Method Two that also has a try finally. Which finally executes first? (Method Two finally block executed first. Got that one right).

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Set# 4

What is inheritance?

How do you troubleshoot (back end use stack traces and sysouts to see if I'm hitting my controller or calling my methods, front end use console logs)?

What are access modifiers?

What is dependency injection (I used http session as an example, you can say a method takes a http session as an argument, and it is provided by the browser)?

If you weren't in the spring framework, how would you use session objects? (An obvious follow up. Basically you will have to import the web stuff like you would when you import collections to use array lists)

Set# 5 Screening Question for FirstBank

Thanks for all your time and patience. We have these screening questions for this role and I would require answers to these questions before I submit your profile. Please pen down your experience/familiarity/understanding on those.

Name and briefly explain the differences between Java access modifiers: What is the difference between JRE, JDK, JVM and JIT?

What are checked and unchecked exceptions?

Name some of the primary design principles used when creating a REST service?

Mention what are the HTTP methods supported by REST?

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Set# 6

Get comfortable with common data structures such as simple arrays and collections specifically **hashmap**. You guys will do sample problems at the end of the course and it helps a lot. As long as you can communicate with the interviewer you guys can solve the problems together.

There are recurring themes that are very current and cutting edge in the tech industry and if you can show an understanding of those it will set you apart. One of them is **Restful API design**. Companies are rushing to modernize their backend systems by making them restful. This means that they are as generic as possible and they are resource based (as opposed to method based in old soap calls). The idea is that anything should be able to consume the API without any special requirements. If today for example a web app is consuming the API, tomorrow it might be a client of some sort. In a year it might be Alexa. If an API is restful anyone can consume it without any modifications required on the back end or special handshake between the two. Long story short, there is an industry standard in creating API's and it's called '12 factor app'. It's a little complicated but just know that it exists and google it. A good API will have filtering, pagination, error handling, validation and logging. Those are the main ones.

Another thing that continuously comes up is the **MVC design pattern**. Be able to talk about it and the separation of concerns between the controller, the service and the Dao. Those are the main layers and usually there is another layer between the controller and the service called an interceptor class. It intercepts the data and performs validation before sending it to the controller. The way it's done in school is exactly how we do it in the real world.

Test driven development is another one. And I don't just mean how you did Junit in school. In TDD you write all your special cases that the method needs to pass. Then you write the method. You make the method pass one test case (from simplest to most complex) at a time then you code to the next test case and make it pass. An important principle is that the test must always fail first, then adjust the method to make it pass. The 3 step cycle of TDD is Fail, pass, refactor. If in a coding challenge you start by writing out test cases in the form of if statements before you code, the interviewer will probably melt. Keep in mind, if you write test cases out in the form of if statements that is legitimate unit testing. It doesn't have to be Junit. I don't think I fully understood that concept while I was in school.

Agile is something that comes up in every interview. You need to be fan of agile and love it to be taken seriously in interviews. Be able to talk about the 4 celebrations of agile... sprint planning, daily stand up, backlog refinement/grooming, and sprint retrospective. Along with these celebrations agile consists of taking required tasks,

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separating them into user stories and story pointing them. By the way we use fibonnaci numbers to point stories. There are 1, 2, 3 5 and 8's. We never do 8's. If a story is deemed an 8 it get separated into smaller user stories. The highest point you should ever have pointed out is a 5. Agile is so important to industry standards now that you need to be enthusiastic about it in interviews. Tell them how much sense it makes. Have you ever worked in an agile environment? The answer is yes and it was amazing. Tell them that it's such a perfect system that you even use it your personal life. For example you can say you story pointed out your long term and short term goals and organized them on Trello and assigned points them and you use these principles to stay on track and it changed your life.