15 Java Thread Interview Questions and answers

1) You have thread T1, T2 and T3, how will you ensure that thread T2 run after T1 and thread T3 run after T2?
This thread interview questions is mostly asked in first round or phone screening round of interview and purpose of this multi-threading question is to check whether candidate is familiar with concept of *"join"* method or not. Answer of this multi-threading questions is simple it can be achieved by using **join** method of Thread class.

2) What is the advantage of new Lock interface over synchronized block in Java? You need to implement a high performance cache which allows multiple reader but single writer to keep the integrity how will you implement it?
The major advantage of lock interfaces on multi-threaded and concurrent programming is they provide two separate lock for reading and writing which enables you to write high performance data structure like ConcurrentHashMap and conditional blocking. This java threads interview question is getting increasingly popular and more and more follow-up questions come based upon answer of interviewee. I would strongly suggest reading **Locks** before appearing for any *java multi-threading interview* because now days Its heavily used to build cache for electronic trading system on client and exchange connectivity space.

3) What are differences between wait and sleep method in java?
Another frequently asked thread interview question in Java mostly appear in phone interview. Only major difference is wait release the lock or monitor while sleep doesn't release any lock or monitor while waiting. Wait is used for inter-thread communication while sleep is used to introduce pause on execution. See my post wait vs sleep in Java for more differences

4) Write code to implement blocking queue in Java?
This is relatively tough java multi-threading interview question which servers many purpose, it checks whether candidate can actually write Java code using thread or not, it sees how good candidate is on understanding concurrent scenarios and you can ask lot of follow-up question based upon his code. If he uses `wait()` and `notify()` method to implement blocking queue, Once interviewee successfully writes it you can ask him to write it again using new java 5 concurrent classes etc.

5) Write code to solve the Produce consumer problem in Java?
Similar to above questions on thread but more classic in nature, some time interviewer ask follow up questions How do you solve producer consumer problem in Java, well it can be solved in multiple way, I have shared one way to solve producer consumer problem using BlockingQueue in Java , so be prepare for surprises. Some time they even ask to implement solution of dining philosopher problem as well.

6) Write a program which will result in deadlock? How will you fix deadlock in Java?
This is my favorite java thread interview question because even though deadlock is quite common while writing multi-threaded concurrent program many candidates not able to write deadlock free code and they simply struggle. Just ask them you have n resources and n thread and to complete an operation you require all resources. Here n can be replace with 2 for simplest case and higher number to make question more intimidating. see How to avoid deadlock in java for more information on deadlock in Java.

7) What is atomic operation? What are atomic operations in Java?
Simple java thread interview questions, another follow-up is do you need to synchronized an atomic operation? :) You can read more about java synchronization here.

8) What is volatile keyword in Java? How to use it? How is it different from synchronized method in Java?
Thread questions based on volatile keyword in Java has become more popular after changes made on it on Java 5 and Java memory model. It's good to prepare well about how volatile variables ensures visibility, ordering and consistency in concurrent environment.

9) What is race condition? How will you find and solve race condition?
Another multi-threading question in Java which appear mostly on senior level interviews. Most interviewer grill on recent

race condition you have faced and how did you solve it and some time they will write sample code and ask you detect race condition. See my post on Race condition in Java for more information. In my opinion this is one of the best java thread interview question and can really test the candidate's experience on solving race condition or writing code which is free of data race or any other race condition. Best book to get mastery of this topic is "`Concurrency practices in Java`".

10) How will you take thread dump in Java? How will you analyze Thread dump?
In UNIX you can use **kill -3** and then thread dump will print on log on windows you can use **"CTRL+Break".** Rather simple and focus thread interview question but can get tricky if he ask how you analyze it. Thread dump can be useful to analyze deadlock situations as well.

11) Why we call `start()` method which in turns calls `run()` method, why not we directly call `run()` method ?
Another classic java multi-threading interview question This was my original doubt when I started programming in thread. Now days mostly asked in phone interview or first round of interview at mid and junior level java interviews. Answer to this question is that, when you call `start()` method it creates new Thread and execute code declared in `run()` while directly calling `run()` method doesn’t create any new thread and execute code on same calling thread. Read my post Difference between start and run method in Thread for more details.

12) How will you awake a blocked thread in java?
This is tricky question on threading, blocking can result on many ways, if thread is blocked on IO then I don't think there is a way to interrupt the thread, let me know if there is any, on the other hand if thread is blocked due to result of calling `wait(), sleep() or join()` method you can interrupt the thread and it will awake by throwing `InterruptedException`. See my post How to deal with blocking methods in Java for more information on handling blocked thread.

13) What is difference between `CyclicBarriar` and `CountdownLatch` in Java ?
New java thread interview questions mostly to check familiarity with JDK 5 concurrent packages. One difference is that you can reuse `CyclicBarrier` once barrier is broken but you can not reuse `ContdownLatch`.

14) What is immutable object? How does it help on writing concurrent application?
Another classic interview questions on multi-threading, not directly related to thread but indirectly helps a lot. This java interview question can become more tricky if ask you to write an immutable class or ask you Why String is immutable in Java as follow-up.

15) What are some common problems you have faced in multi-threading environment? How did you resolve it?
Memory-interference, race conditions, deadlock, live lock and starvation are example of some problems comes in multi-threading and concurrent programming. There is no end of problem if you get it wrong and they will be hard to detect and debug. This is mostly experienced based interview question on java thread instead of fact based.

These were my favorite Java thread interview questions and mostly asked on Investment banks. This list is by no means complete so please contribute some of interesting java thread questions you have faced during interview. Purpose of this article is to collect and share great interview questions on multi-threading concept which not only helps on interview but opens door for learning new threading concept.

Read more: http://javarevisited.blogspot.com/2011/07/java-multi-threading-interview.html#ixzz3xc7uWpC8