Difference between Callable and Runnable in Java - Thread Interview question

The difference between the Callable and Runnable interface in Java is one of the interesting questions from my list of Top 15 Java multi-threading questions, and it's also very popular in various Java Interviews. The Callable interface is newer than the Runnable interface and was added on Java 5 release along with other major changes e.g. Generics, Enum, Static imports, and variable argument method. Though both Callable and Runnable interfaces are designed to represent a task, which can be executed by any thread, there is some significant difference between them.

In my opinion, the major difference between the Callable and Runnable interface is that Callable can return the result of an operation performed inside the call() method, which was one of the limitations of the Runnable interface.

Another significant difference between the Runnable and Callable interfaces is the ability to throw checked exceptions. The Callable interface can throw checked exceptions because its call method throws Exceptions.

By the way, sometimes this question is also asked as a follow-up question of another classic difference between Runnable and Thread in Java. Commonly FutureTask is used along with Callable to get the result of asynchronous computation task performed in call() method.

Callable vs Runnable interface in Java

As I explained the major differences between a Callable and Runnable interface in the last section. Sometimes this question is also asked as the difference between call() and run() method in Java. All the points discussed here are equally related to that question as well. Let's see them in point format for better understanding :

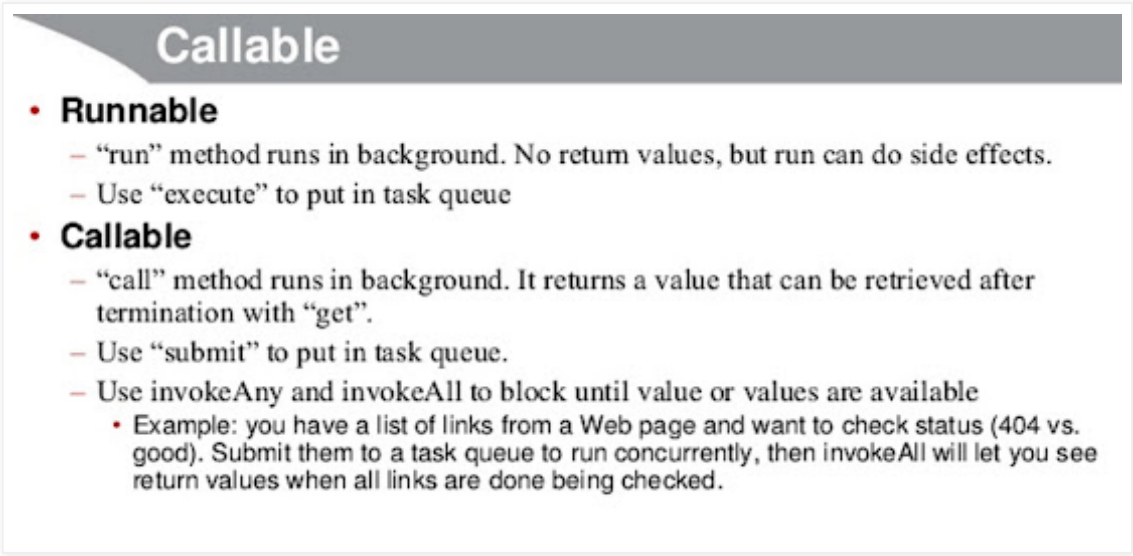
1) The Runnable interface is older than Callable which is there from JDK 1.0, while Callable is added on Java 5.0.

2) Runnable interface has run() method to define task while Callable interface uses call() method for task definition.

3) run() method does not return any value, its return type is void while the call method returns a value. The Callable interface is a generic parameterized interface and a Type of value is provided when an instance of Callable implementation is created.

4) Another difference in the run and call method is that the run method can not throw checked exceptions while the call method can throw checked exceptions in Java.

Here is a nice summary of all the **differences between Callable and Runnable in Java**:



That's all on the difference between Callable and Runnable interface in Java or difference between call() and run() method.