Interview Theory Questions

1. **What is the purpose of using labeled statements in Java?**
   Labeled statements are primarily used to control the flow of execution within nested loops or blocks. They provide a way to break out of or continue to a specific point within the nested structure.

2. **Explain the difference between labeled and unlabeled statements.**
   Labeled Statement: A statement with a label, allowing you to refer to that statement using the label in control flow constructs like break and continue.
   Unlabeled Statement: A regular statement without a label.

3. **Explain the difference between break and continue statements.**
   break: Terminates the current loop or switch statement and continues with the next statement after the loop or switch.
   continue: Skips the current iteration of a loop and proceeds to the next iteration.

4. **What precautions should you take when using break or continue statements in nested loops?**
   When using break or continue statements in nested loops, ensure that you are breaking or continuing from the intended loop. Using labels can help clarify the scope of the action.

5. **How are variables passed to methods in Java?**
   In Java, variables can be passed to methods by value or by reference. When primitives are passed, their values are copied. When objects are passed, their references (memory addresses) are copied.

6. **Explain the difference between passing by value and passing by reference.**
   Passing by Value: In this case, a copy of the variable's value is passed to the method. Changes made to the parameter inside the method do not affect the original variable outside the method.
   Passing by Reference: In this case, a copy of the variable's reference (memory address) is passed to the method. Changes made to the object inside the method are reflected outside the method.

7. **How do you pass an object reference variable to a method?**
   Object reference variables are also passed by value, but the reference (memory address) is copied. Changes to the object's properties inside the method are reflected outside.

8. **What is an infinite loop, and how can the break statement help prevent it?**
   An infinite loop is a loop that runs indefinitely. The break statement can be used to exit an infinite loop when a certain condition is met, preventing the loop from running indefinitely.

9. **What are initialization blocks in java?**
   Initialization blocks in Java are code blocks that are used to initialize instance variables or perform any necessary setup before an object is created or a constructor is invoked. There are two types of initialization blocks: instance initialization blocks and static initialization blocks.

10. **What are static and instance initialization blocks in java?**
    Instance initialization blocks are non-static code blocks that are executed each time an instance of the class is created. They are useful for performing complex initialization tasks or setting up resources that are specific to each instance.
    Static initialization blocks are executed when the class is loaded by the class loader. They are used to perform one-time initialization tasks that apply to the class as a whole, such as initializing static variables.