Strings in Java

1. What is a String in Java?

A String in Java is an object that represents a sequence of characters. It is a built-in class in Java and is widely used for storing and manipulating textual data.

2. Types of String in Java are?

In Java, there are two types of String:

a) Immutable String: Once created, its value cannot be changed. Any operation that seems to modify the String actually creates a new String object.

b) Mutable String: It is not a built-in type in Java, but it can be achieved using the StringBuilder or StringBuffer classes. Mutable Strings can be modified in-place, without creating a new object.

3. In how many ways can you create string objects in Java?

There are several ways to create String objects in Java:

a) Using string literals: String str = "Hello";

b) Using the new keyword: String str = new String("Hello");

c) Using the StringBuilder or StringBuffer classes: StringBuilder sb = new StringBuilder("Hello");

4. What is a string constant pool?

The string constant pool is a special memory area in Java where String literals are stored. When a String literal is encountered, Java checks if it already exists in the pool. If it does, a reference to the existing String object is returned. If not, a new String object is created and added to the pool.

5. What do you mean by mutable and immutable objects?

In Java, mutable objects are those whose state (values) can be modified after they are created. For example, StringBuilder and StringBuffer are mutable classes, as their contents can be changed. On the other hand, immutable objects are those whose state cannot be modified once they are created. String objects in Java are immutable, meaning their values cannot be changed after creation.

6. Where exactly is the string constant pool located in the memory?

The string constant pool is located in the Java heap memory. It is a part of the runtime data area, specifically within the PermGen (Permanent Generation) or Metaspace (in Java 8+) memory region. However, starting from Java 8, the string constant pool has been moved to the main heap memory along with the objects, due to the removal of PermGen in favor of Metaspace.