

1. Difference between $(a == b)$ and $a.equals(b)$ in Java.

Ans: There is two same strings:

```
String a = new String("Hello");
```

```
String b = new String("Hello");
```

$(a == b)$: In this case, it checks if a and b are the exact same object in the memory. It compares the reference of two strings, doesn't the actual value or text inside the object.

```
System.out.println(a == b);
```

```
// false (different object)
```

$a.equals(b)$: In this case, it checks the content of a and b strings. It compares the actual text or characters inside the string.

```
System.out.println(a.equals(b));
```

```
// true (same text)
```

2. Why are Java strings immutable?

Basically, immutable strings can't be changed, when we try to change, a new string will be created in the memory.

Java 'Strings' immutable. Because,

- **Security:** Strings are used ~~for~~ in passwords, URLs, file paths. If strings are changeable hackers could misuse them.
- **Memory Efficiency:** Java uses a string pool. Immutable string can be shared to save memory.
- **Thread safety:** Multiple threads can safely use a string safely without any risk of it being change.
- **Performance:** Immutable strings can cache their hashcode, which makes them faster when used in collections like hashmap.