

# Java Fundamentals 4-4

## Strings Practice Activities

### Lesson Objectives:

- Instantiate (create) a String
- Describe what happens when a String is modified
- Use the + and += operators for concatenating Strings
- Interpret escape sequences in String literals
- Recognize the difference between a String and a primitive char data type
- Test Strings with the compareTo() and equals() method
- Describe why the == operator does not always work when testing String equality
- Use String methods length(), substring(), indexOf(), and charAt()

### Try It/Solve It:

**1. Write three different ways to declare and instantiate a String object called “myString” and containing “abc”.**

**Using a string literal:**

String myString = "abc";

```
public class StringExample1 {  
    public static void main(String[] args) {  
        String myString = "abc";  
        System.out.println(myString);  
    }  
}
```

**Output:**



abc

**Using the new keyword with a string literal:**

String myString = new String("abc");

```
public class StringExample2 {
    public static void main(String[] args) {
        String myString = new String("abc");
        System.out.println(myString);
    }
}
```

**Output:**

```
abc
```

Using a character array:

```
public class StringExample3 {
    public static void main(String[] args) {
        char[] charArray = {'a', 'b', 'c'};
        String myString = new String(charArray);
        System.out.println(myString);
    }
}
```

**Output:**

```
abc
```

**2. Given the three String objects below, what will each of the following return?**

**String s1 = "ABC";**

**String s2 = new String("DEF");**

**String s3 = "AB" + "C";**

**a. s1.compareTo(s2);**

```
public class CompareStrings {
    public static void main(String[] args) {
```

```
String s1 = "ABC";  
String s2 = new String("DEF");  
int result = s1.compareTo(s2);  
System.out.println("s1.compareTo(s2): " + result);  
  
}  
}
```

### Code and output:

```
1 package strings;  
2  
3 public class compare {  
4     public static void main(String[] args) {  
5         String s1 = "ABC";  
6         String s2 = new String("DEF");  
7         int result = s1.compareTo(s2);  
8         System.out.println("s1.compareTo(s2): " + result);  
9     }  
10 }  
11  
12  
13  
14
```

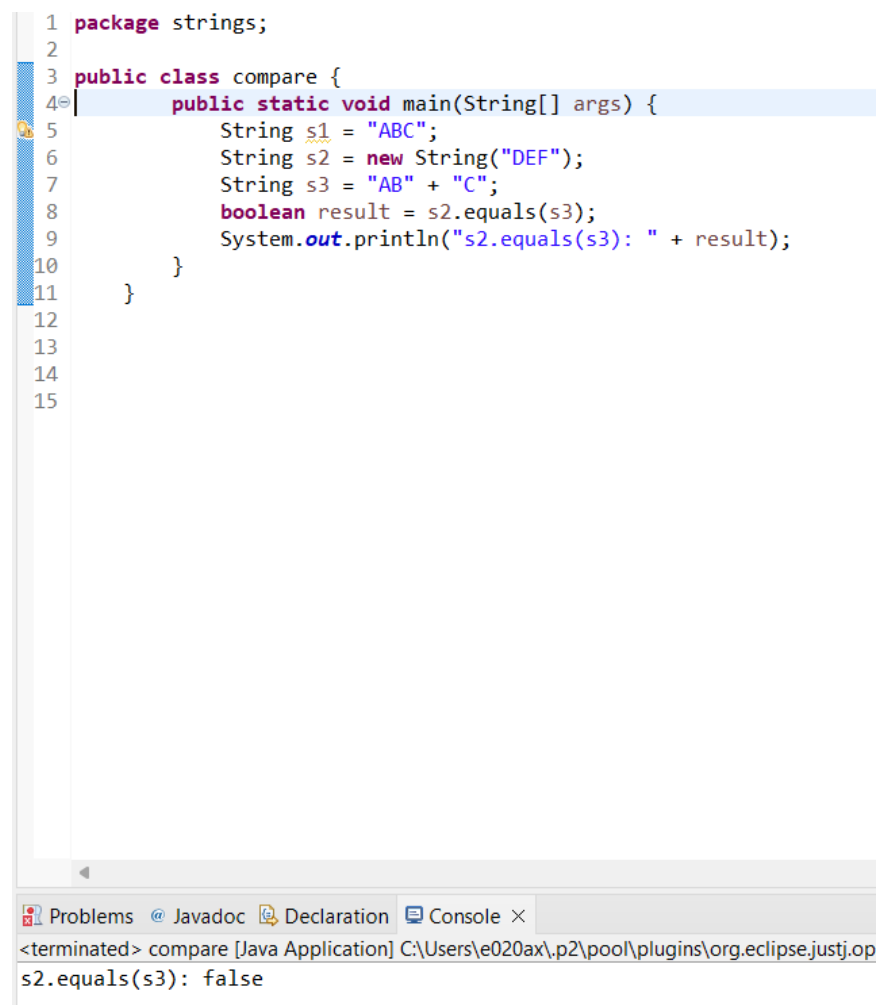
Problems @ Javadoc Declaration Console ×

<terminated> compare [Java Application] C:\Users\e020ax\p2\pool\plugins\org.eclipse.justj.openjdk.hot  
s1.compareTo(s2): -3

**b. s2.equals(s3);**

```
public class CompareStrings {  
    public static void main(String[] args) {  
        String s1 = "ABC";  
        String s2 = new String("DEF");  
        String s3 = "AB" + "C";  
        boolean result = s2.equals(s3);  
        System.out.println("s2.equals(s3): " + result);  
        // Output will be false because "DEF" is not equal to "ABC".  
    }  
}
```

**Code and output:**



The screenshot shows the Eclipse IDE with a Java project. The editor displays the following code:

```
1 package strings;  
2  
3 public class compare {  
4     public static void main(String[] args) {  
5         String s1 = "ABC";  
6         String s2 = new String("DEF");  
7         String s3 = "AB" + "C";  
8         boolean result = s2.equals(s3);  
9         System.out.println("s2.equals(s3): " + result);  
10    }  
11 }  
12  
13  
14  
15
```

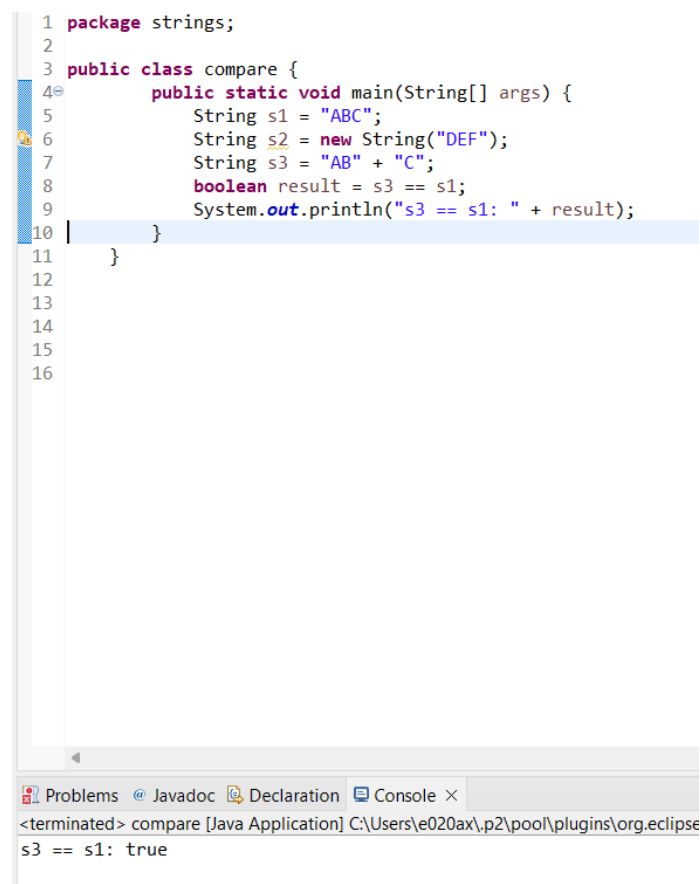
At the bottom, the Console window shows the output:

```
<terminated> compare [Java Application] C:\Users\e020ax\p2\pool\plugins\org.eclipse.justj.op  
s2.equals(s3): false
```

**c. s3 == s1;**

```
public class CompareStrings {  
    public static void main(String[] args) {  
        String s1 = "ABC";  
        String s2 = new String("DEF");  
        String s3 = "AB" + "C";  
        boolean result = s3 == s1;  
        System.out.println("s3 == s1: " + result);  
    }  
}
```

**Code and output:**



The screenshot shows an IDE with a Java file named 'compare'. The code is as follows:

```
1 package strings;  
2  
3 public class compare {  
4     public static void main(String[] args) {  
5         String s1 = "ABC";  
6         String s2 = new String("DEF");  
7         String s3 = "AB" + "C";  
8         boolean result = s3 == s1;  
9         System.out.println("s3 == s1: " + result);  
10    }  
11 }  
12  
13  
14  
15  
16
```

The console output at the bottom shows:

```
<terminated> compare [Java Application] C:\Users\...  
s3 == s1: true
```

**d. s2.compareTo(s3);**

```
public class CompareStrings {  
    public static void main(String[] args) {
```

```

String s1 = "ABC";

String s2 = new String("DEF");

String s3 = "AB" + "C";

int result = s2.compareTo(s3);

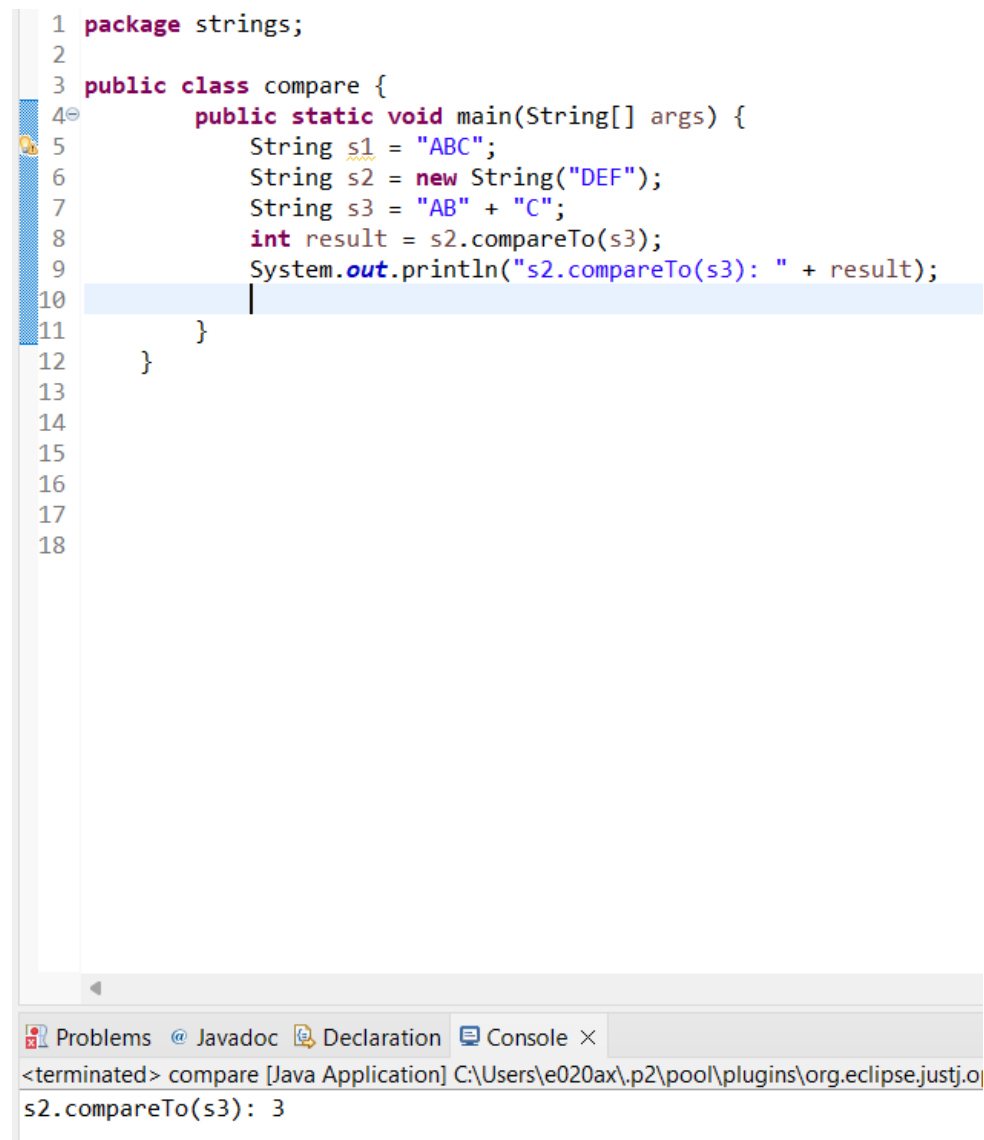
System.out.println("s2.compareTo(s3): " + result);

}

}

```

### Code and output:



```

1 package strings;
2
3 public class compare {
4     public static void main(String[] args) {
5         String s1 = "ABC";
6         String s2 = new String("DEF");
7         String s3 = "AB" + "C";
8         int result = s2.compareTo(s3);
9         System.out.println("s2.compareTo(s3): " + result);
10    }
11 }
12
13
14
15
16
17
18

```

Problems @ Javadoc Declaration Console ×

<terminated> compare [Java Application] C:\Users\e020ax\p2\pool\plugins\org.eclipse.justj.o  
s2.compareTo(s3): 3

**e. s3.equals(s1);**

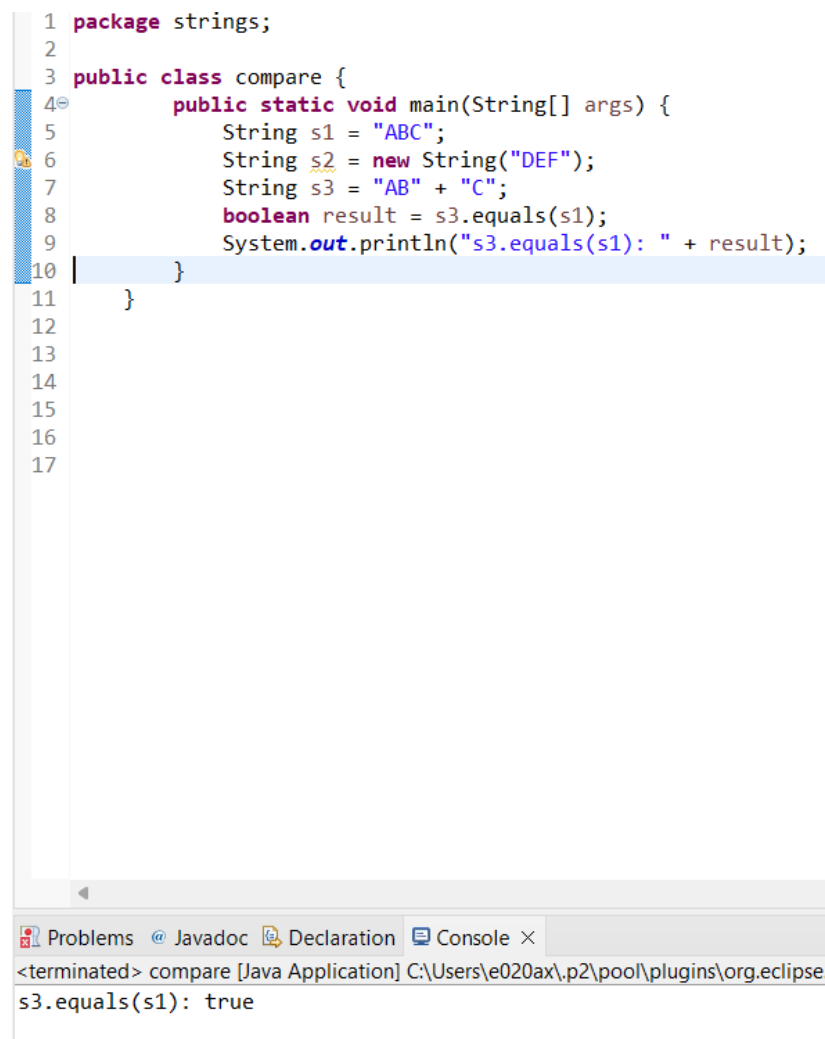
```

public class CompareStrings {
    public static void main(String[] args) {
        String s1 = "ABC";
        String s2 = new String("DEF");
        String s3 = "AB" + "C";
        boolean result = s3.equals(s1);
        System.out.println("s3.equals(s1): " + result);

    }
}

```

### Code and output:



The screenshot shows the Eclipse IDE with a Java file named 'compare'. The code is as follows:

```

1 package strings;
2
3 public class compare {
4     public static void main(String[] args) {
5         String s1 = "ABC";
6         String s2 = new String("DEF");
7         String s3 = "AB" + "C";
8         boolean result = s3.equals(s1);
9         System.out.println("s3.equals(s1): " + result);
10    }
11 }

```

The output console at the bottom shows the result of the program execution:

```

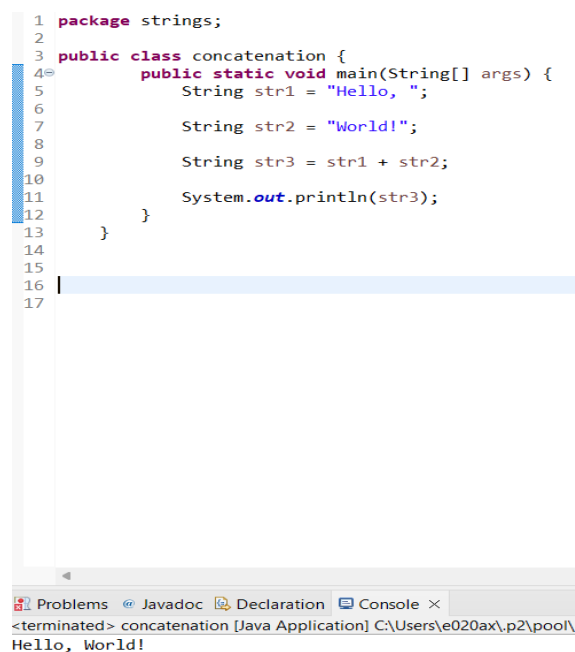
<terminated> compare [Java Application] C:\Users\e020ax\p2\pool\plugins\org.eclipse
s3.equals(s1): true

```

**3. Declare and instantiate two separate String objects, and then concatenate them together and assign them to a third arbitrary String object.**

```
public class Concatenate {  
    public static void main(String[] args) {  
        String str1 = "Hello, ";  
  
        String str2 = "World!";  
  
        String str3 = str1 + str2;  
  
        System.out.println(str3);  
    }  
}
```

**Code and output:**



The screenshot shows an IDE window with a Java file named 'concatenation.java'. The code is as follows:

```
1 package strings;  
2  
3 public class concatenation {  
4     public static void main(String[] args) {  
5         String str1 = "Hello, ";  
6  
7         String str2 = "World!";  
8  
9         String str3 = str1 + str2;  
10  
11         System.out.println(str3);  
12     }  
13 }  
14  
15  
16  
17
```

Below the code editor, the 'Console' tab is active, showing the output of the program:

```
<terminated> concatenation [Java Application] C:\Users\eo20ax\p2\pool\  
Hello, World!
```