Java platform provides the String class to create and manipulate strings.

Creating Strings

The most direct way to create a string is to write −

String greeting = "Hello world!";

Whenever it encounters a string literal in your code, the compiler creates a String object with its value in this case, "Hello world!'.

As with any other object, you can create String objects by using the new keyword and a constructor. The String class has 11 constructors that allow you to provide the initial value of the string using different sources, such as an array of characters.

Example:

```
public class StringDemo {

   public static void main(String args[]) {

      char[] helloArray = { 'h', 'e', 'l', 'l', 'o', '.' };

      String helloString = new String(helloArray);

      System.out.println( helloString );

   }

}
```

This will produce the following result −

Output

hello.

Note − The String class is immutable, so that once it is created a String object cannot be changed. If there is a necessity to make a lot of modifications to Strings of characters, then you should use String Buffer & String Builder Classes.

What is String in java

Generally, String is a sequence of characters. But in Java, string is an object that represents a sequence of characters. The java.lang.String class is used to create a string object.

How to create a string object?

There are two ways to create String object:

By string literal

By new keyword

1) String Literal

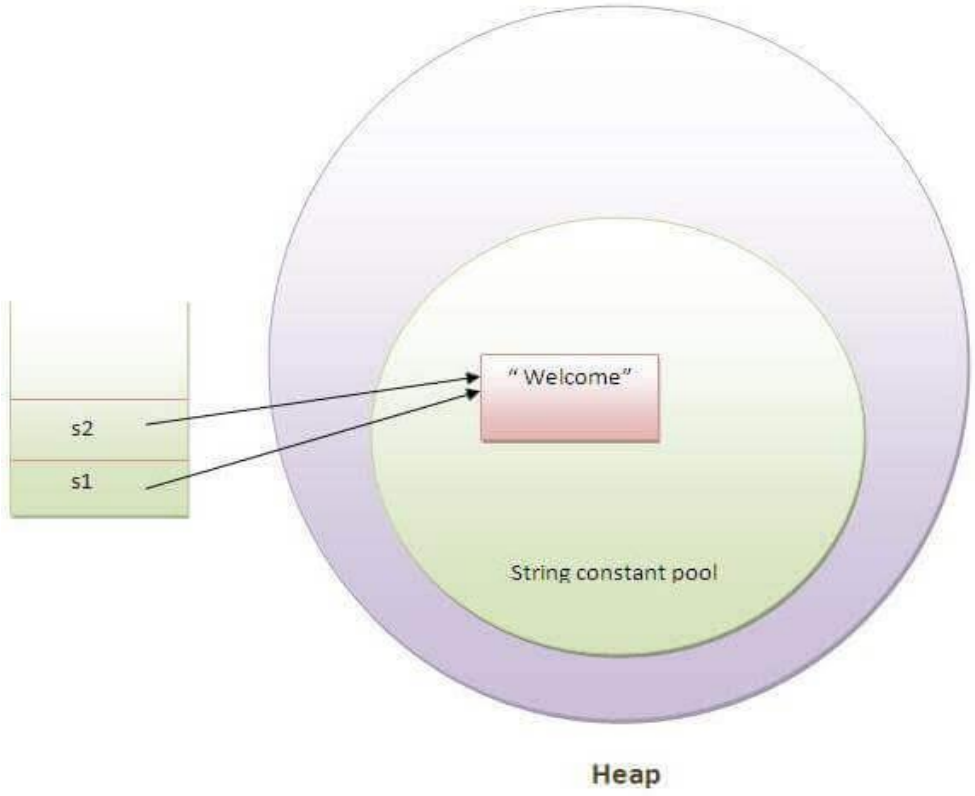
Java String literal is created by using double quotes. For Example:

String s="welcome";

Each time you create a string literal, the JVM checks the "string constant pool" first. If the string already exists in the pool, a reference to the pooled instance is returned. If the string doesn't exist in the pool, a new string instance is created and placed in the pool. For example:

String s1="Welcome";

String s2="Welcome";//It doesn't create a new instance



In the above example, only one object will be created. Firstly, JVM will not find any string object with the value "Welcome" in string constant pool, that is why it will create a new object. After that it will find the string with the value "Welcome" in the pool, it will not create a new object but will return the reference to the same instance.

Why Java uses the concept of String literal?

To make Java more memory efficient (because no new objects are created if it exists already in the string constant pool).

2) By new keyword

String s=new String("Welcome");//creates two objects and one reference variable

In such case, JVM will create a new string object in normal (non-pool) heap memory, and the literal "Welcome" will be placed in the string constant pool. The variable s will refer to the object in a heap (non-pool).

Java String Example

```
public class StringExample{

public static void main(String args[]){

String s1="java";//creating string by java string literal

char ch[]={'s','t','r','i','n','g','s'};

String s2=new String(ch);//converting char array to string

String s3=new String("example");//creating java string by new keyword

System.out.println(s1);

System.out.println(s2);

System.out.println(s3);

}}
```

Output:

```
java

strings

example
```

String Methods

Here is the list of methods supported by String class −

Sr.No.	Method & Description
1	char charAt(int index) Returns the character at the specified index.
2	int compareTo(Object o) Compares this String to another Object.
3	int compareTo(String anotherString) Compares two strings lexicographically.
4	int compareToIgnoreCase(String str) Compares two strings lexicographically, ignoring case differences.
5	String concat(String str) Concatenates the specified string to the end of this string.
6	boolean contentEquals(StringBuffer sb) Returns true if and only if this String represents the same sequence of characters as the specified StringBuffer.
7	static String copyValueOf(char[] data) Returns a String that represents the character sequence in the array specified.
8	static String copyValueOf(char[] data, int offset, int count) Returns a String that represents the character sequence in the array specified.

9	boolean endsWith(String suffix) Tests if this string ends with the specified suffix.
10	boolean equals(Object anObject) Compares this string to the specified object.
11	boolean equalsIgnoreCase(String anotherString) Compares this String to another String, ignoring case considerations.
12	byte getBytes() Encodes this String into a sequence of bytes using the platform's default charset, storing the result into a new byte array.
13	byte[] getBytes(String charsetName) Encodes this String into a sequence of bytes using the named charset, storing the result into a new byte array.
14	void getChars(int srcBegin, int srcEnd, char[] dst, int dstBegin) Copies characters from this string into the destination character array.
15	int hashCode() Returns a hash code for this string.
16	int indexOf(int ch) Returns the index within this string of the first occurrence of the specified character.
17	int indexOf(int ch, int fromIndex) Returns the index within this string of the first occurrence of the

	specified character, starting the search at the specified index.
18	int indexOf(String str) Returns the index within this string of the first occurrence of the specified substring.
19	int indexOf(String str, int fromIndex) Returns the index within this string of the first occurrence of the specified substring, starting at the specified index.
20	String intern() Returns a canonical representation for the string object.
21	int lastIndexOf(int ch) Returns the index within this string of the last occurrence of the specified character.
22	int lastIndexOf(int ch, int fromIndex) Returns the index within this string of the last occurrence of the specified character, searching backward starting at the specified index.
23	int lastIndexOf(String str) Returns the index within this string of the rightmost occurrence of the specified substring.
24	int lastIndexOf(String str, int fromIndex) Returns the index within this string of the last occurrence of the specified substring, searching backward starting at the specified index.

25	int length() Returns the length of this string.
26	boolean matches(String regex) Tells whether or not this string matches the given regular expression.
27	boolean regionMatches(boolean ignoreCase, int toffset, String other, int ooffset, int len) Tests if two string regions are equal.
28	boolean regionMatches(int toffset, String other, int ooffset, int len) Tests if two string regions are equal.
29	String replace(char oldChar, char newChar) Returns a new string resulting from replacing all occurrences of oldChar in this string with newChar.
30	String replaceAll(String regex, String replacement Replaces each substring of this string that matches the given regular expression with the given replacement.
31	String replaceFirst(String regex, String replacement) Replaces the first substring of this string that matches the given regular expression with the given replacement.
32	String[] split(String regex) Splits this string around matches of the given regular expression.
33	String[] split(String regex, int limit)

	Splits this string around matches of the given regular expression.
34	boolean startsWith(String prefix) Tests if this string starts with the specified prefix.
35	boolean startsWith(String prefix, int toffset) Tests if this string starts with the specified prefix beginning a specified index.
36	CharSequence subSequence(int beginIndex, int endIndex) Returns a new character sequence that is a subsequence of this sequence.
37	String substring(int beginIndex) Returns a new string that is a substring of this string.
38	String substring(int beginIndex, int endIndex) Returns a new string that is a substring of this string.
39	char[] toCharArray() Converts this string to a new character array.
40	String toLowerCase() Converts all of the characters in this String to lower case using the rules of the default locale.
41	String toLowerCase(Locale locale) Converts all of the characters in this String to lower case using the rules of the given Locale.

42	String toString() This object (which is already a string!) is itself returned.
43	String toUpperCase() Converts all of the characters in this String to upper case using the rules of the default locale.
44	String toUpperCase(Locale locale) Converts all of the characters in this String to upper case using the rules of the given Locale.
45	String trim() Returns a copy of the string, with leading and trailing whitespace omitted.
46	static String valueOf(primitive data type x) Returns the string representation of the passed data type argument.

Java Arrays

Arrays are used to store multiple values in a single variable, instead of declaring separate variables for each value.

To declare an array, define the variable type with square brackets:

String[] cars;

We have now declared a variable that holds an array of strings. To insert values to it, we can use an array literal - place the values in a comma-separated list, inside curly braces:

String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};

To create an array of integers, you could write:

```
int[] myNum = {10, 20, 30, 40};
```

Access the Elements of an Array

You access an array element by referring to the index number.

This statement accesses the value of the first element in cars:

Example

```
String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
System.out.println(cars[0]);
// Outputs Volvo
```

Change an Array Element

To change the value of a specific element, refer to the index number:

Example

```
cars[0] = "Opel";
```

Example

```
String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
cars[0] = "Opel";
System.out.println(cars[0]);
// Now outputs Opel instead of Volvo
```

Array Length

To find out how many elements an array has, use the `length` property:

Example

```
String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
System.out.println(cars.length);
// Outputs 4
```

Loop Through an Array

You can loop through the array elements with the `for` loop, and use the `length` property to specify how many times the loop should run.

The following example outputs all elements in the cars array:

Example

```
String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
for (int i = 0; i < cars.length; i++) {
  System.out.println(cars[i]);
}
```

Multidimensional Arrays

A multidimensional array is an array containing one or more arrays.

To create a two-dimensional array, add each array within its own set of curly braces:

Example

```
int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };
```

myNumbers is now an array with two arrays as its elements.

To access the elements of the myNumbers array, specify two indexes: one for the array, and one for the element inside that array. This example accesses the third element (2) in the second array (1) of myNumbers:

Example

```
int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };
int x = myNumbers[1][2];
System.out.println(x); // Outputs 7
```