String In Java

- in Java, a string is a sequence of characters. An array of characters works the same as Java string. For example: `"hello"` is a string containing a sequence of characters `'h'`, `'e'`, `'l'`, `'l'`, and `'o'`.
  - Example:

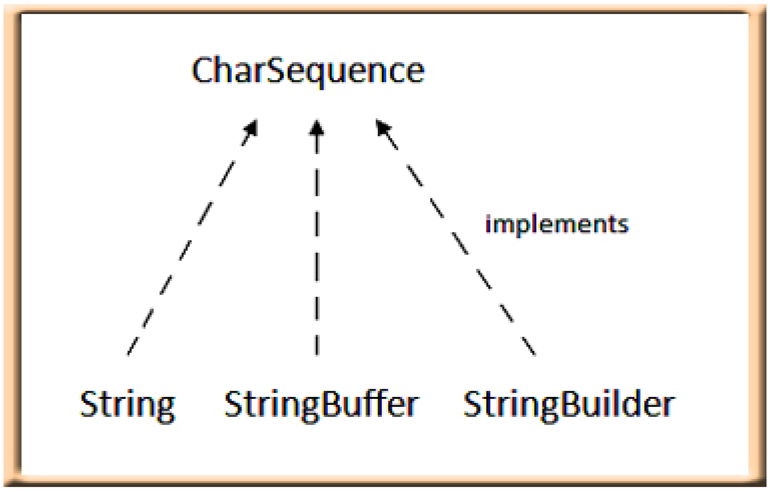
    ```java
    char chr[] = {'h','e','l','l','o'};
    String s = new String(chr);
    ```

    is same as:

    ```java
    String s = "hello";
    ```

CharSequence Interface

- The CharSequence interface is used to represent the sequence of characters. String, StringBuffer and StringBuilder classes implement it. It means, we can create strings in java by using these three classes.



- The Java String is immutable which means it cannot be changed. Whenever we change any string, a new instance is created. For mutable strings, you can use StringBuffer and StringBuilder classes.

Creating a String

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

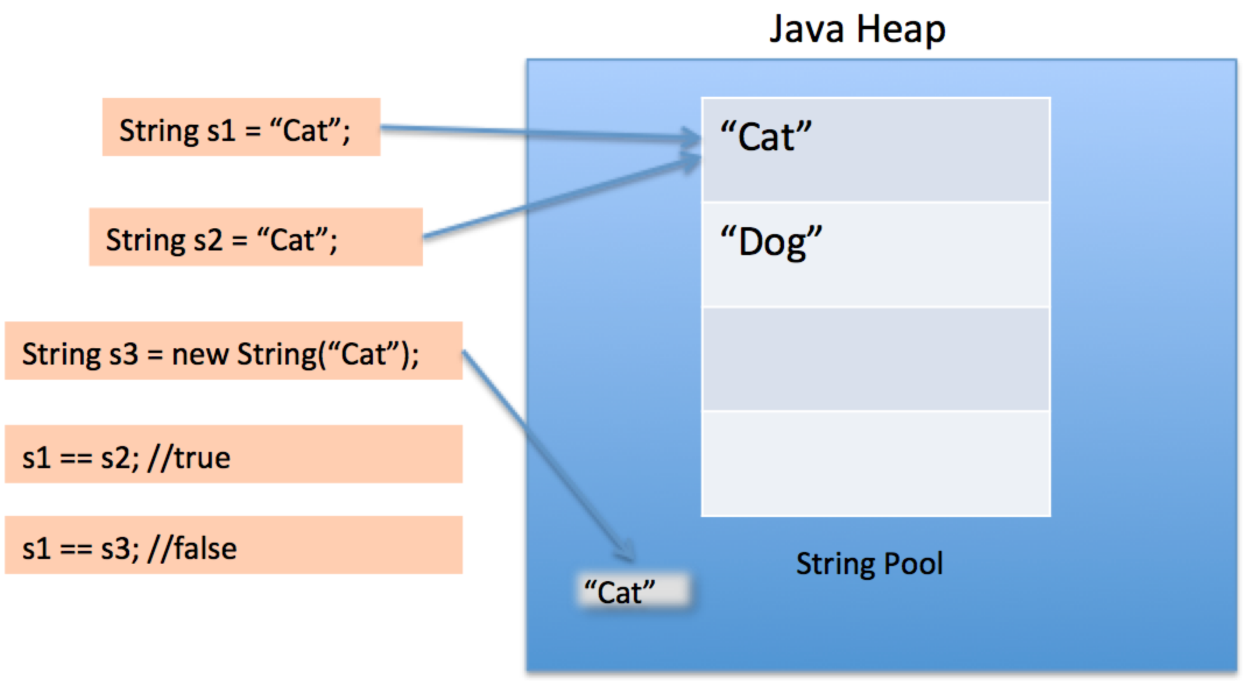
    ```java
    String s = "hello";
    ```

  - When we use double quotes to create a String, it first looks for String with the same value in the `String pool`, if found it just returns the reference else it creates a new String in the pool and then returns the reference.
    => Reused string, make more memory efficient
  - Example:

    ```
    String s1="Cat";
    String s2="Cat";
    ```

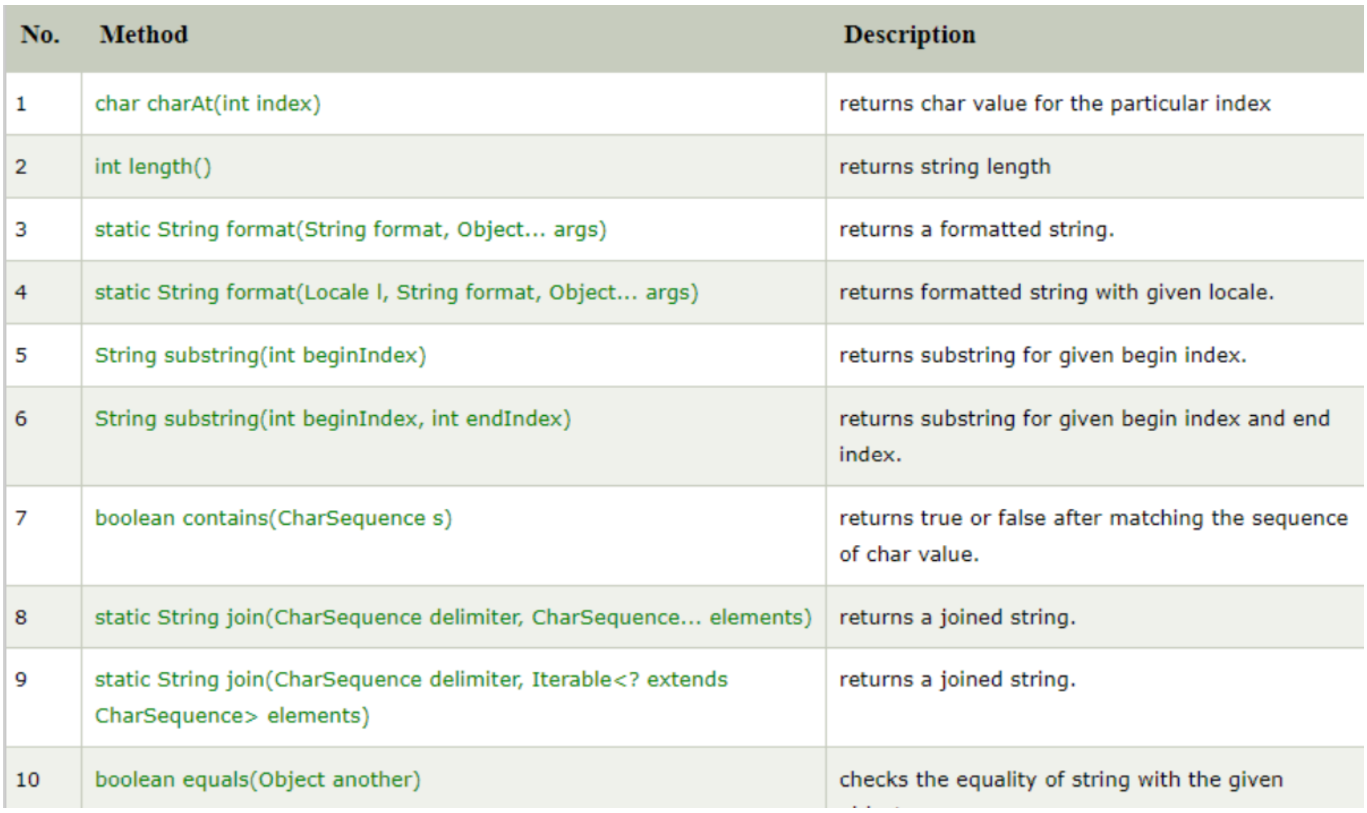
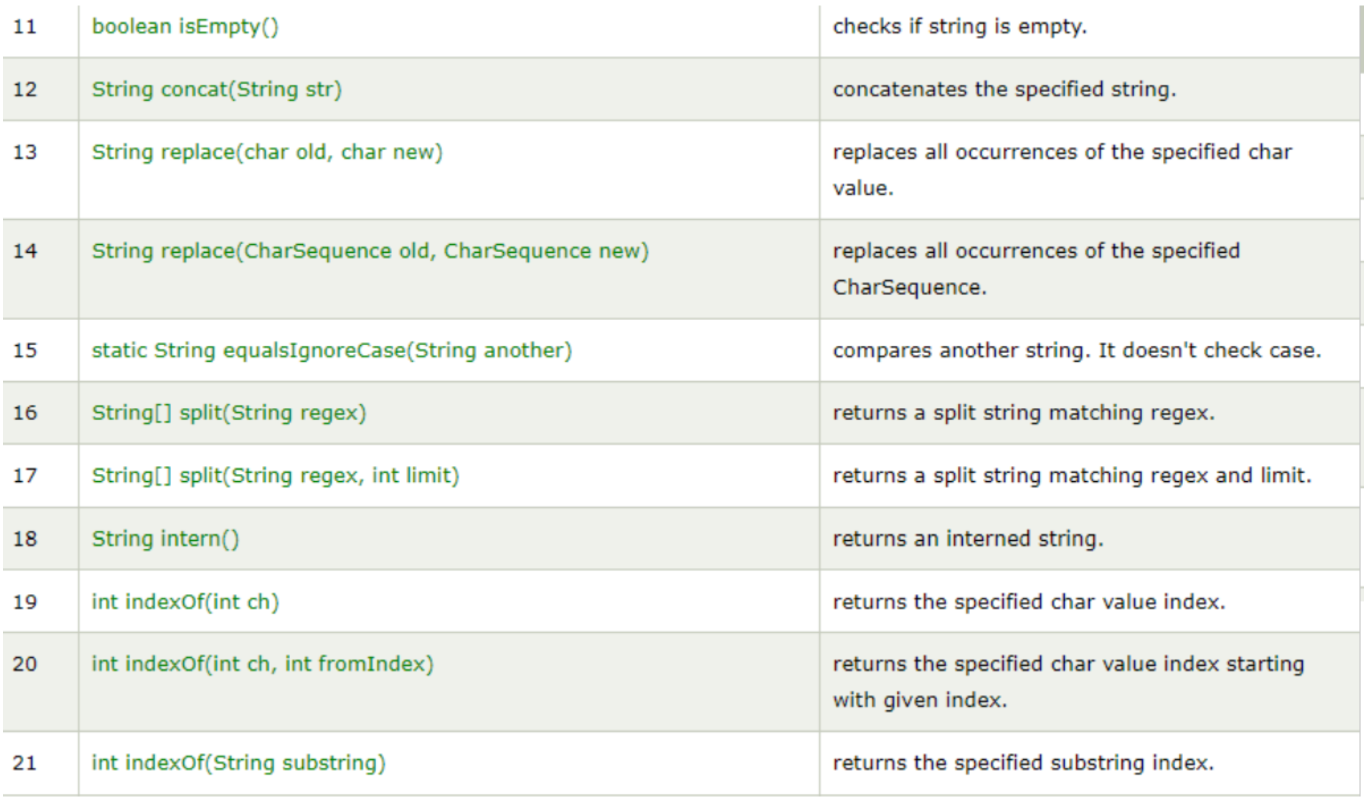
- Using New Keyword
  - However using new operator, we force String class to create a new String object in heap space. We can use `intern()`method to put it into the pool or refer to another String object from the string pool having the same value

    ```
    String s3 = new String("Cat");
    ```

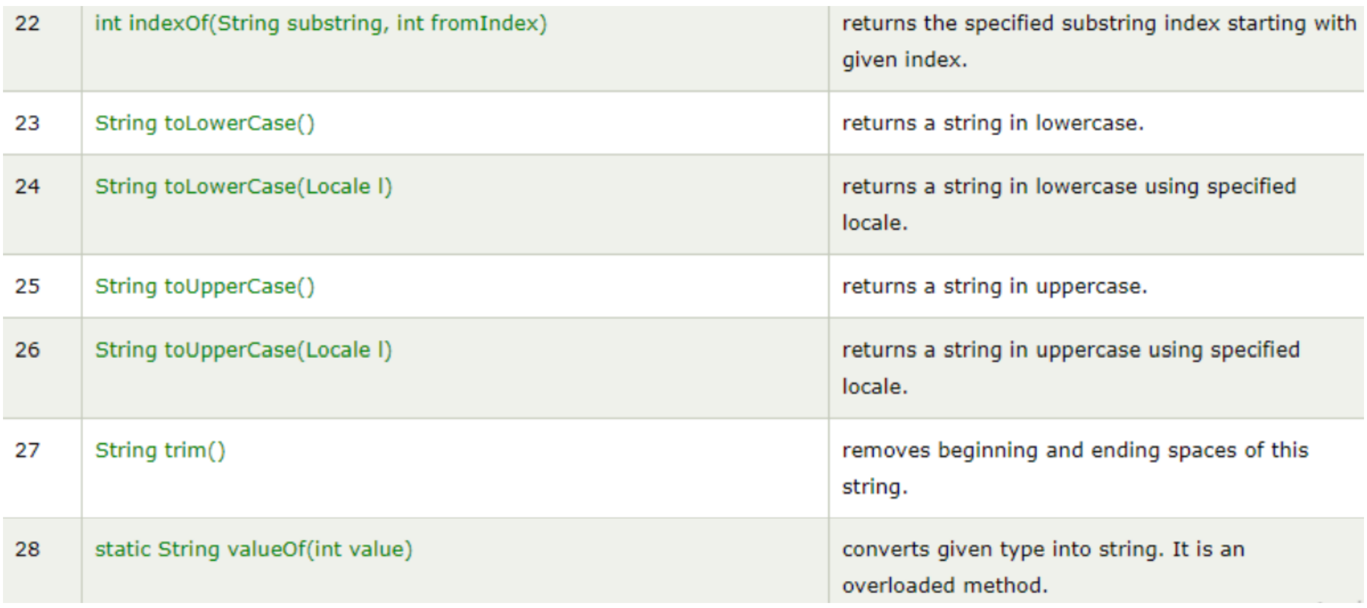


String methods

- The java.lang.String class provides many useful methods to perform operations on sequence of char values.

No.	Method	Description
1	char charAt(int index)	returns char value for the particular index
2	int length()	returns string length
3	static String format(String format, Object... args)	returns a formatted string.
4	static String format(Locale l, String format, Object... args)	returns formatted string with given locale.
5	String substring(int beginIndex)	returns substring for given begin index.
6	String substring(int beginIndex, int endIndex)	returns substring for given begin index and end index.
7	boolean contains(CharSequence s)	returns true or false after matching the sequence of char value.
8	static String join(CharSequence delimiter, CharSequence... elements)	returns a joined string.
9	static String join(CharSequence delimiter, Iterable<? extends CharSequence> elements)	returns a joined string.
10	boolean equals(Object another)	checks the equality of string with the given
11	boolean isEmpty()	checks if string is empty.
12	String concat(String str)	concatenates the specified string.
13	String replace(char old, char new)	replaces all occurrences of the specified char value.
14	String replace(CharSequence old, CharSequence new)	replaces all occurrences of the specified CharSequence.
15	static String equalsIgnoreCase(String another)	compares another string. It doesn't check case.
16	String[] split(String regex)	returns a split string matching regex.
17	String[] split(String regex, int limit)	returns a split string matching regex and limit.
18	String intern()	returns an interned string.
19	int indexOf(int ch)	returns the specified char value index.
20	int indexOf(int ch, int fromIndex)	returns the specified char value index starting with given index.
21	int indexOf(String substring)	returns the specified substring index.



22	int indexOf(String substring, int fromIndex)	returns the specified substring index starting with given index.
23	String toLowerCase()	returns a string in lowercase.
24	String toLowerCase(Locale l)	returns a string in lowercase using specified locale.
25	String toUpperCase()	returns a string in uppercase.
26	String toUpperCase(Locale l)	returns a string in uppercase using specified locale.
27	String trim()	removes beginning and ending spaces of this string.
28	static String valueOf(int value)	converts given type into string. It is an overloaded method.

Demo

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

        //creat string
        String s1 = "hello";
        String s2 = "hello";
        String s3 = new String("hello");
        char chr []= {' ','w','o','l','d'};
        String s4 = new String(chr); // convert char array to String

        //print string
        System.out.println("S1: "+s1);
        System.out.println("S2: "+s2);
        System.out.println("S3: "+s3);
        System.out.println("S4: "+s4);

        //compare string
        System.out.printf("S1 = S2: %b\n",s1 == s2);
        System.out.printf("S1 = S3: %b\n",s1 == s3);
        System.out.printf("S1 equal S3: %b\n",s1.equals(s3));


        // CONTAT()
        System.out.println("Contcat:");
        String s = s1.concat(s4);
        System.out.println("s1.concat(s4) = " + s);

        //Substring()
        String substr = s.substring(5);
        System.out.println("substr =" + substr);

        // INDEXOF()
        System.out.println();
        System.out.println("IndexOf:");
        String str = "This is text";
        int idx = str.indexOf('i');
        System.out.println("- indexOf('i') = " + idx);
        idx = str.indexOf("te");
        System.out.println("- indexOf(\"te\") = " + idx);

    }
}
```

Output

```


S1: hello
S2: hello
S3: hello
S4:  wold
S1 = S2: true
S1 = S3: false
S1 equal S3: true
Contcat:
s1.concat(s4) = hello wold
substr = wold

IndexOf:
- indexOf('i') = 2
- indexOf("te") = 8
```