

Java provides a wrapper class **Character** in java.lang package. An object of type Character contains a single field, whose type is char.

- **Creating a Character object :**

```
Character ch = new Character('a');
```

The above statement creates a Character object which contain 'a' of type char. There is only one constructor in Character class which expect an argument of char **data type**.

- If we pass a primitive char into a method that expects an object, the compiler automatically converts the char to a Character class object. This feature is called **Autoboxing and Unboxing**.
- **Note :** The Character class is immutable like String class i.e once it's object is created, it **cannot** be changed.

Methods in Character Class :

1. **boolean isLetter(char ch)** : This method is used to determine whether the specified char value(ch) is a letter or not. The method will return true if it is letter([A-Z],[a-z]), otherwise return false. In place of character, we can also pass ASCII value as an argument as char to int is implicitly typecasted in java.

Syntax :

```
boolean isLetter(char ch)
```

Parameters :

ch - a primitive character

Returns :

returns true if ch is a alphabet, otherwise return false

```
// Java program to demonstrate isLetter() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.isLetter('A'));

        System.out.println(Character.isLetter('0'));
    }
}
```

Output:

```
true
false
```

2. **boolean isDigit(char ch)** : This method is used to determine whether the specified char value(ch) is a digit or not. Here also we can pass ASCII value as an argument.

Syntax :

```
boolean isDigit(char ch)
```

Parameters :

ch - a primitive character

Returns :

returns true if ch is a digit, otherwise return false

```
// Java program to demonstrate isDigit() method
public class Test
{
    public static void main(String[] args)
    {
        // print false as A is character
        System.out.println(Character.isDigit('A'));

        System.out.println(Character.isDigit('0'));
    }
}
```

Output:

```
false
true
```

3. **boolean isWhitespace(char ch)** : It determines whether the specified char value(ch) is white space. A whitespace includes space, tab, or new line.

Syntax :

boolean isWhitespace(char ch)

Parameters :

ch - a primitive character

Returns :

returns true if ch is a whitespace.
otherwise return false

```
// Java program to demonstrate isWhitespace() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.isWhitespace('A'));
        System.out.println(Character.isWhitespace(' '));
        System.out.println(Character.isWhitespace('\n'));
        System.out.println(Character.isWhitespace('\t'));

        //ASCII value of tab
        System.out.println(Character.isWhitespace(9));

        System.out.println(Character.isWhitespace('9'));
    }
}
```

Output:


```
false
true
true
true
true
false
```

4. **boolean isUpperCase(char ch)** : It determines whether the specified char value(ch) is uppercase or not.

Syntax :

```
boolean isUpperCase(char ch)
```

```
// Java program to demonstrate isUpperCase() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.isUpperCase('A'));
        System.out.println(Character.isUpperCase('a'));
        System.out.println(Character.isUpperCase(65));
    }
}
```



Output:

```
true
false
true
```

5. **boolean isLowerCase(char ch)** : It determines whether the specified char value(ch) is lowercase or not.

Syntax :

```
boolean isLowerCase(char ch)
```

```
// Java program to demonstrate isLowerCase() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.isLowerCase('A'));
        System.out.println(Character.isLowerCase('a'));
        System.out.println(Character.isLowerCase(97));
    }
}
```

Output:

```
false
true
true
```

6. **char toUpperCase(char ch)** : It returns the uppercase of the specified char value(ch). If an ASCII value is passed, then the ASCII value of it's uppercase will be returned.

Syntax :

char toUpperCase(char ch)

Parameters :

ch - a primitive character

Returns :

returns the uppercase form of the specified char value.

```
// Java program to demonstrate toUpperCase() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.toUpperCase('a'));
        System.out.println(Character.toUpperCase(97));
        System.out.println(Character.toUpperCase(48));
    }
}
```

Output:

```
A
65
48
```

7. **char toLowerCase(char ch)** : It returns the lowercase of the specified char value(ch).

Syntax :

char toLowerCase(char ch)

Parameters :

ch - a primitive character

Returns :

returns the lowercase form of the specified char value.

```
// Java program to demonstrate toLowerCase() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.toLowerCase('A'));
        System.out.println(Character.toLowerCase(65));
        System.out.println(Character.toLowerCase(48));
    }
}
```

Output:

```
a
97
48
```

8. **toString(char ch)** : It returns a String class object representing the specified character value(ch) i.e a one-character string. Here we **cannot** pass ASCII value.

Syntax :

String toString(char ch)

Parameters :

ch - a primitive character

Returns :

returns a String object.

```
// Java program to demonstrate toString() method
public class Test
{
    public static void main(String[] args)
    {
        System.out.println(Character.toString('x'));
        System.out.println(Character.toString('y'));
    }
}
```

Output:

```
x
y
```

9. **static int charCount(int codePoint)**: This method determines the number of char values needed to represent the specified character (Unicode code point).
10. **char charValue()**: This method returns the value of this Character object.
11. **static int codePointAt(char[] a, int index)**: This method returns the code point at the given index of the char array.
12. **static int codePointAt(char[] a, int index, int limit)**: This method returns the code point at the given index of the char array, where only array elements with index less than limit can be used.
13. **static int codePointAt(CharSequence seq, int index)**: This method returns the code point at the given index of the CharSequence.

14. **static int codePointBefore(char[] a, int index):** This method returns the code point preceding the given index of the char array.
15. **static int codePointBefore(char[] a, int index, int start):** This method returns the code point preceding the given index of the char array, where only array elements with index greater than or equal to start can be used.
16. **static int codePointBefore(CharSequence seq, int index):** This method returns the code point preceding the given index of the CharSequence.
17. **static int codePointCount(char[] a, int offset, int count):** This method returns the number of Unicode code points in a subarray of the char array argument.
18. **static int codePointCount(CharSequence seq, int beginIndex, int endIndex):** This method returns the number of Unicode code points in the text range of the specified char sequence.
19. **static int codePointOf(String name):** This method returns the code point value of the Unicode character specified by the given Unicode character name.
20. **static int compare(char x, char y):** This method compares two char values numerically.
21. **int compareTo(Character anotherCharacter):** This method compares two Character objects numerically.
22. **static int digit(char ch, int radix):** This method returns the numeric value of the character ch in the specified radix.
23. **static int digit(int codePoint, int radix):** This method returns the numeric value of the specified character (Unicode code point) in the specified radix.
24. **boolean equals(Object obj):** This method compares this object against the specified object.
25. **static char forDigit(int digit, int radix):** This method determines the character representation for a specific digit in the specified radix.
26. **static byte getDirectionality(char ch):** This method returns the Unicode directionality property for the given character.
27. **static byte getDirectionality(int codePoint):** This method returns the Unicode directionality property for the given character (Unicode code point).
28. **static String getName(int codePoint):** This method returns the Unicode name of the specified character codePoint, or null if the code point is unassigned.
29. **static int getNumericValue(char ch):** This method returns the int value that the specified Unicode character represents.
30. **static int getNumericValue(int codePoint):** This method returns the int value that the specified character (Unicode code point) represents.
31. **static int getType(char ch):** This method returns a value indicating a character's general category.
32. **static int getType(int codePoint):** This method returns a value indicating a character's general category.
33. **int hashCode():** This method returns a hash code for this Character; equal to the result of invoking charValue().
34. **static int hashCode(char value):** This method returns a hash code for a char value; compatible with Character.hashCode().
35. **static char highSurrogate(int codePoint):** This method returns the leading surrogate (a high surrogate code unit) of the surrogate pair representing the specified supplementary character (Unicode code point) in the UTF-16 encoding.
36. **static boolean isAlphabetic(int codePoint):** This method determines if the specified character (Unicode code point) is an alphabet.

37. **static boolean isBmpCodePoint(int codePoint):** This method determines whether the specified character (Unicode code point) is in the Basic Multilingual Plane (BMP).
38. **static boolean isDefined(char ch):** This method determines if a character is defined in Unicode.
39. **static boolean isDefined(int codePoint):** This method determines if a character (Unicode code point) is defined in Unicode.
40. **static boolean isHighSurrogate(char ch):** This method determines if the given char value is a Unicode high-surrogate code unit (also known as leading-surrogate code unit).
41. **static boolean isIdentifierIgnorable(char ch):** This method determines if the specified character should be regarded as an ignorable character in a Java identifier or a Unicode identifier.
42. **static boolean isIdentifierIgnorable(int codePoint):** This method determines if the specified character (Unicode code point) should be regarded as an ignorable character in a Java identifier or a Unicode identifier.
43. **static boolean isIdeographic(int codePoint):** This method determines if the specified character (Unicode code point) is a CJKV (Chinese, Japanese, Korean and Vietnamese) ideograph, as defined by the Unicode Standard.
44. **static boolean isISOControl(char ch):** This method determines if the specified character is an ISO control character.
45. **static boolean isISOControl(int codePoint):** This method determines if the referenced character (Unicode code point) is an ISO control character.
46. **static boolean isJavaIdentifierPart(char ch):** This method determines if the specified character may be part of a Java identifier as other than the first character.
47. **static boolean isJavaIdentifierPart(int codePoint):** This method determines if the character (Unicode code point) may be part of a Java identifier as other than the first character.
48. **static boolean isJavaIdentifierStart(char ch):** This method determines if the specified character is permissible as the first character in a Java identifier.
49. **static boolean isJavaIdentifierStart(int codePoint):** This method determines if the character (Unicode code point) is permissible as the first character in a Java identifier.
50. **static boolean isLowSurrogate(char ch):** This method determines if the given char value is a Unicode low-surrogate code unit (also known as trailing-surrogate code unit).
51. **static boolean isLetterOrDigit(char ch):** This method determines if the specified character is a letter or digit.
52. **static boolean isLetterOrDigit(int codePoint):** This method determines if the specified character (Unicode code point) is a letter or digit.
53. **static boolean isMirrored(char ch):** This method determines whether the character is mirrored according to the Unicode specification.
54. **static boolean isMirrored(int codePoint):** This method determines whether the specified character (Unicode code point) is mirrored according to the Unicode specification.
55. **static boolean isSpaceChar(char ch):** This method determines if the specified character is a Unicode space character.
56. **static boolean isSpaceChar(int codePoint):** This method determines if the specified character (Unicode code point) is a Unicode space character.
57. **static boolean isSupplementaryCodePoint(int codePoint):** This method determines whether the specified character (Unicode code point) is in the supplementary character range.
58. **static boolean isSurrogate(char ch):** This method determines if the given char value is a Unicode surrogate code unit.

59. **static boolean isSurrogatePair(char high, char low)**: This method determines whether the specified pair of char values is a valid Unicode surrogate pair.
60. **static boolean isTitleCase(char ch)**: This method determines if the specified character is a titlecase character.
61. **static boolean isTitleCase(int codePoint)**: This method determines if the specified character (Unicode code point) is a titlecase character.
62. **static boolean isUnicodeIdentifierPart(char ch)**: This method determines if the specified character may be part of a Unicode identifier as other than the first character.
63. **static boolean isUnicodeIdentifierPart(int codePoint)**: This method determines if the specified character (Unicode code point) may be part of a Unicode identifier as other than the first character.
64. **static boolean isUnicodeIdentifierStart(char ch)**: This method determines if the specified character is permissible as the first character in a Unicode identifier.
65. **static boolean isUnicodeIdentifierStart(int codePoint)**: This method determines if the specified character (Unicode code point) is permissible as the first character in a Unicode identifier.
66. **static boolean isValidCodePoint(int codePoint)**: This method determines whether the specified code point is a valid Unicode code point value.
67. **static char lowSurrogate(int codePoint)**: This method returns the trailing surrogate (a low surrogate code unit) of the surrogate pair representing the specified supplementary character (Unicode code point) in the UTF-16 encoding.
68. **static int offsetByCodePoints(char[] a, int start, int count, int index, int codePointOffset)**: This method returns the index within the given char subarray that is offset from the given index by codePointOffset code points.
69. **static int offsetByCodePoints(CharSequence seq, int index, int codePointOffset)**: This method returns the index within the given char sequence that is offset from the given index by codePointOffset code points.
70. **static char reverseBytes(char ch)**: This method returns the value obtained by reversing the order of the bytes in the specified char value.
71. **static char[] toChars(int codePoint)**: This method converts the specified character (Unicode code point) to its UTF-16 representation stored in a char array.
72. **static int toChars(int codePoint, char[] dst, int dstIndex)**: This method converts the specified character (Unicode code point) to its UTF-16 representation.
73. **static int toCodePoint(char high, char low)**: This method converts the specified surrogate pair to its supplementary code point value.
74. **static char toTitleCase(char ch)**: This method converts the character argument to titlecase using case mapping information from the UnicodeData file.
75. **static int toTitleCase(int codePoint)**: This method converts the character (Unicode code point) argument to titlecase using case mapping information from the UnicodeData file.
76. **static Character valueOf(char c)**: This method returns a Character instance representing the specified char value.

Escape Sequences :

A character preceded by a backslash (\) is an escape sequence and has special meaning to the compiler.

The following table shows the Java escape sequences:

ESCAPE SEQUENCE	DESCRIPTION
-----------------	-------------

<code>\t</code>	Insert a tab in the text at this point.
<code>\b</code>	Insert a backspace in the text at this point.
<code>\n</code>	Insert a newline in the text at this point.
<code>\r</code>	Insert a carriage return in the text at this point.
<code>\f</code>	Insert a formfeed in the text at this point.
<code>\'</code>	Insert a single quote character in the text at this point.
<code>\"</code>	Insert a double quote character in the text at this point.
<code>\\</code>	Insert a backslash character in the text at this point.

When an escape sequence is encountered in a print statement, the compiler interprets it accordingly. For example, if you want to put quotes within quotes you must use the escape sequence, `\`, on the interior quotes. To print the sentence

```
She said "Hello!" to me.
```

you would write

```
System.out.println("She said \"Hello!\" to me.");
```

This article is contributed by **Gaurav Miglani**. If you like GeeksforGeeks and would like to contribute, you can also write an article using contribute.geeksforgeeks.org or mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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