**Java Scanner Class**

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# **1. Scanner class overview**

[**Scanner class**](https://docs.oracle.com/en/java/javase/11/docs/api/java.base/java/util/Scanner.html) in Java is found in the [**java.util**](https://docs.oracle.com/en/java/javase/11/docs/api/java.base/java/util/Scanner.html) package. **Java provides various ways to read input from the keyboard, the** [**java.util.Scanner**](https://docs.oracle.com/en/java/javase/11/docs/api/java.base/java/util/Scanner.html) **class is one of them.**

The Java Scanner class breaks the input into tokens using a **delimiter** which is **whitespace** by default. It provides many methods to read and parse various primitive values.

The [**Java Scanner class**](https://docs.oracle.com/en/java/javase/11/docs/api/java.base/java/util/Scanner.html) is widely used to parse text for strings and primitive types using a **regular expression**. It is the simplest way to get input in Java. With the help of Scanner in Java, we can get input from the user in primitive types as well as strings such as int, long, double, byte, float, short, strings, etc.

The below class diagram shows all the APIs/methods of *Scanner* class:

* **Scanner(Readable)**
* **Scanner(InputStream)**
* **Scanner(InputStream,String)**
* **Scanner(File)**
* **Scanner(File,String)**
* **Scanner(Path)**
* **Scanner(Path,String)**
* **Scanner(String)**
* **Scanner(ReadableByteChannel)**
* **Scanner(ReadableByteChannel,String)**
* **close():void**
* **ioException():IOExceptipon**
* **delimiter():Pattern**
* **useDelimiter(Pattern):Scanner**
* **useDelimiter(String):Scanner**
* **locale():locale**
* **useLocale(LOCALE):Scanner**
* **redix():int**
* **useRedix(int):Scanner**
* **match():MatchResult**
* **toString():String**
* **hasNext():boolean**
* **next():String**
* **remove():void**
* **hasNext(String):boolean**
* **next(String):String**
* **hasNext(Pattern):boolean**
* **next(Pattern):String**
* **hasNextLine():boolean**
* **nextLine():String**
* **findInLine(String):String**
* **findInLine(Pattern):String**
* **findWithinHorizon(String,int):String**
* **findWithinHorizon(Pattern,int):String**
* **skip(Pattern):Scanner**
* **skip(String):Scanner**
* **hasNextBoolean():boolean**
* **nextBoolean():boolean**
* **hasNextByte():boolean**
* **hasNextByte(int):boolean**
* **nextByte():byte**
* **nextByte(int):byte**
* **hasNextShort():boolean**
* **hasNextShort(int):boolean**
* **nextShort():short**
* **nextShort(int):short**
* **hasNextInt():boolean**
* **hasNextInt(int):boolean**
* **nextInt():int**
* **nextInt(int):int**
* **hasNextLong():boolean**
* **hasNextLong(int):boolean**
* **nextLong():long**
* **nextLong(int):long**
* **hasNextFloat():boolean**
* **nextFloat():float**
* **hasNextDouble():boolean**
* **nextDouble():double**
* **hasNextBigInteger():boolean**
* **hasNextBigInteger(int):boolean**
* **nextBigInteger():BigInteger**
* **nextBigInteger(int):BigInteger**
* **hasNextBigDecimal():boolean**
* **nextBigDecimal():BigDecimal**
* **reset():Scanner**

# **2. How does a Scanner work?**

Basically, a Scanner breaks its input into tokens using a delimiter pattern, which by default matches whitespace (blanks, tabs, and line terminators). The parsed tokens can be converted into primitive types and Strings using various next methods.

Here’s the simplest example of using a *Scanner* to read String from the user:

System.out.println("Enter string input: ");

Scanner scanner = new Scanner(System.in);

String str = scanner.nextLine();

# **How to use the Java Scanner class to read input**

Here is the complete Java program to read primitive types and strings from User's input:

package net.javaguides.examples;

import java.util.Scanner;

/\*\*

\* Scanner class examples

\* @author Abhishek Kumar Tiwari

\*

\*/

public class ScannerExamples {

public static void main(String[] args) {

// Create Scanner object

Scanner scanner = new Scanner(System.in);

// read user input as string

System.out.println("Enter string input: ");

scanner.nextLine();

// read user input as integer

System.out.println("Enter integer input");

scanner.nextInt();

// read user input as long

System.out.println("Enter long input");

scanner.nextLong();

// read user input as float

System.out.println("Enter float input");

scanner.nextFloat();

// read user input as byte

System.out.println("Enter byte input");

scanner.nextByte();

// read user input as short

System.out.println("Enter short input");

scanner.nextShort();

// read user input as boolean

System.out.println("Enter boolean input");

scanner.nextBoolean();

// read user input as BigDecimal

System.out.println("Enter BigDecimal input");

scanner.nextBigDecimal();

// read user input as BigInteger

System.out.println("Enter BigInteger input");

scanner.nextBigInteger();

scanner.close();

}

}

Output:

Enter string input:

Ramesh

Enter integer input

100

Enter long input

120

Enter float input

12

Enter byte input

12

Enter short input

1

Enter boolean input

true

Enter BigDecimal input

120.01

Enter BigInteger input

12346

# **4. How to read the file line by line with an example**

The following Java program uses the *nextLine()* method to read a text file line by line, and add all lines to a list of Strings:

package net.javaguides.examples;

import java.io.File;

import java.io.FileNotFoundException;

import java.util.Scanner;

/\*\*

\* Scanner class file read example

\* @author Abhishek Kumar Tiwari

\*

\*/

public class ScannerFileReadExample {

public static void main(String[] args) throws FileNotFoundException {

String fileName = "sample.txt";

try (Scanner scanner = new Scanner(new File(fileName))) {

while (scanner.hasNext()) {

String line = scanner.nextLine();

System.out.println(line);

}

}

}

}

Create a file named "sample.txt" and add a few lines to it and run the above program to read a text file line by line using *Scanner* class.

# **5. Convert InputStream to String**

Here is a java program to convert an *InputStream* into a String using a *Scanner*:

package net.javaguides.examples;

import java.io.FileInputStream;

import java.io.FileNotFoundException;

import java.util.Scanner;

public class ScannerConvertInputStreamToString {

public static void main(String[] args) throws FileNotFoundException {

FileInputStream inputStream

= new FileInputStream("sample.txt");

Scanner scanner = new Scanner(inputStream);

scanner.useDelimiter("A");

String result = scanner.next();

System.out.println(result);

scanner.close();

}

}

Output:

Hello

Java Student