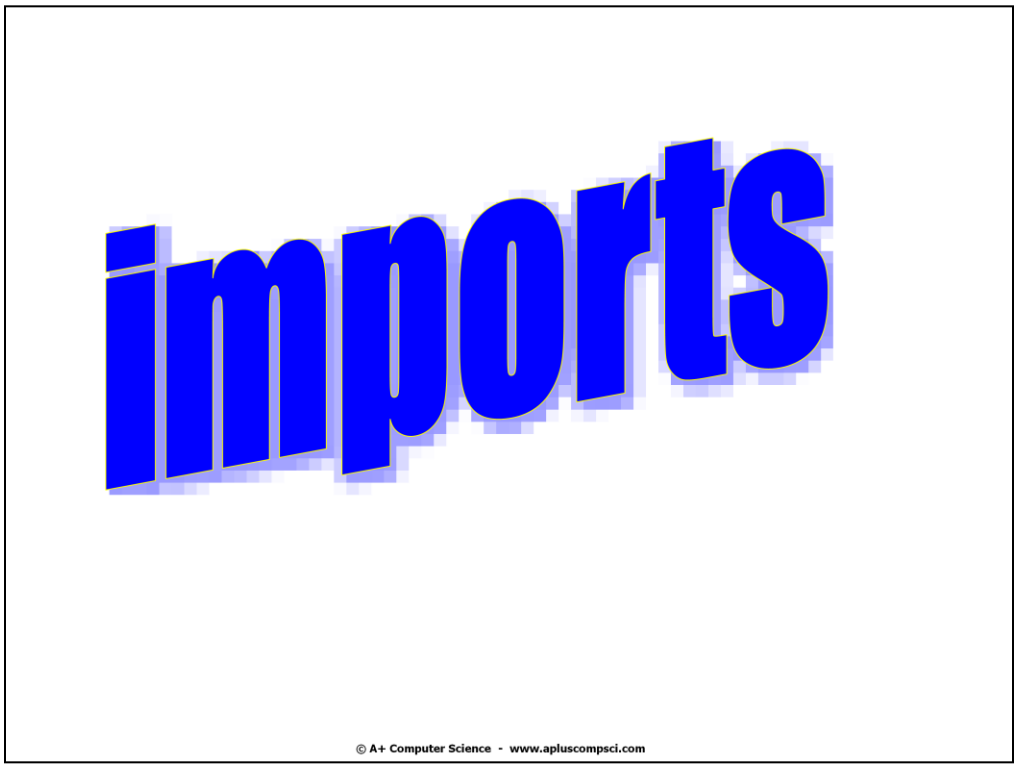
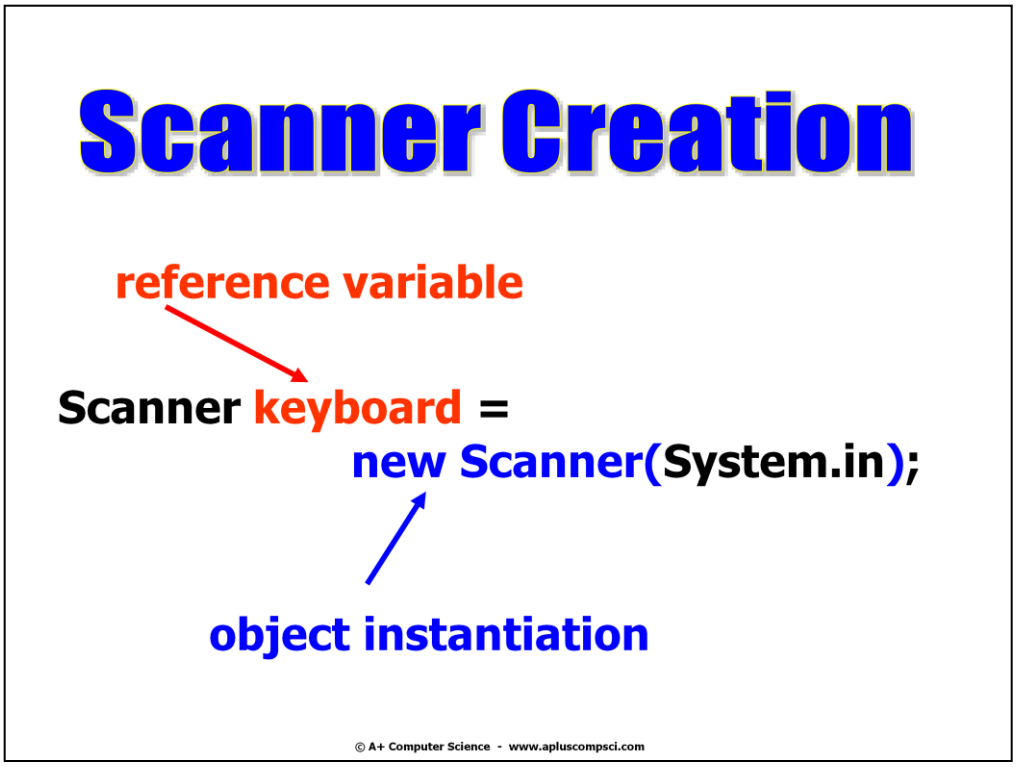
Java Input


imports
© A+ Computer Science - www.apluscompsci.com

In order to use Scanner, you must import `java.util.Scanner`.



`Scanner` is a class which must be instantiated before it can be used. In other words, you must make a new `Scanner` if you want to use `Scanner`. A reference must be used to store the location in memory of the `Scanner` object created.

`System.in` is the parameter passed to the `Scanner` constructor so that Java will know to connect the new `Scanner` to the keyboard. keyboard is a reference that will store the location/memory address of newly created `Scanner` object.

Scanner Methods

Scanner
frequently used methods

Name	Use
nextInt()	returns the next int value
nextDouble()	returns the next double value
nextFloat()	returns the next float value
nextLong()	returns the next long value
nextByte()	returns the next byte value
nextShort()	returns the next short value
next()	returns the next one word String
nextLine()	returns the next multi word String

```
import  java.util.Scanner;
```


This chart lists the Scanner methods that will be used most frequently. More Scanner methods will be introduced later.

Reading in Integers

```
Scanner keyboard =
            new Scanner(System.in);

out.print("Enter an integer :: ");
int num = keyboard.nextInt();
```

The `nextInt()` method is used to tell a Scanner object to retrieve the next integer value entered.

In the example, the next integer typed in on the keyboard would be read in and placed in the integer variable num.

`nextInt()` will read up to the first whitespace value entered.

Whitespace would be any enter(\n), tab(\t), or space.

Reading in Integers

```
out.print("Enter an integer :: ");
int num = keyboard.nextInt();
out.println(num);
```

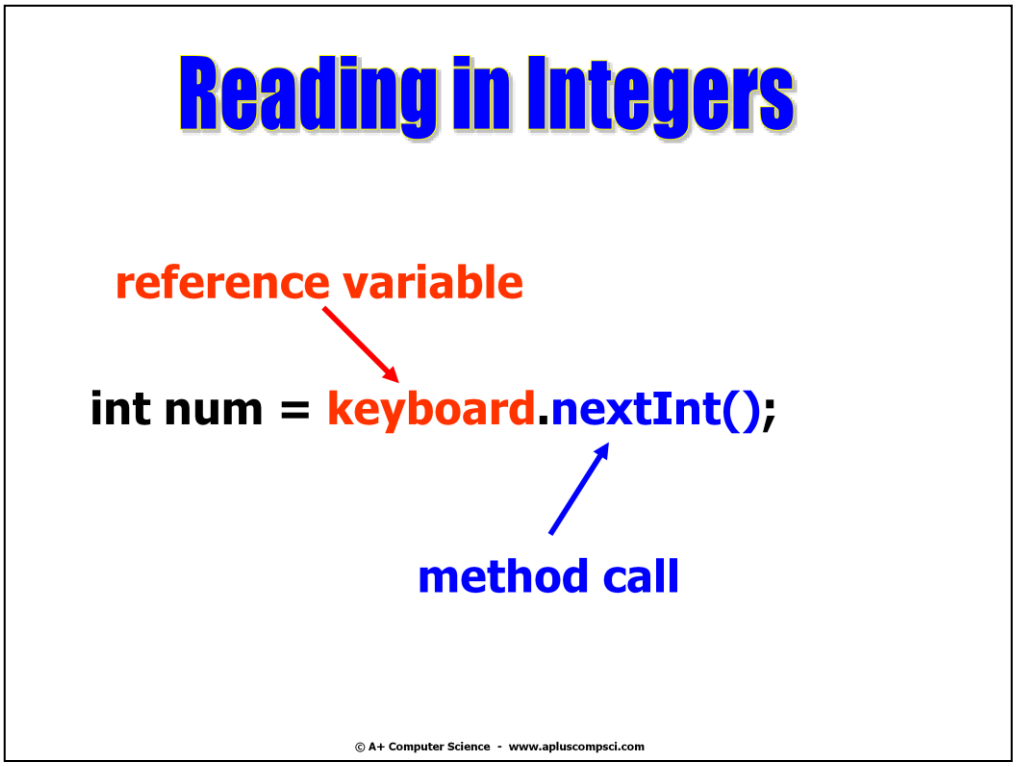
INPUT
931

OUTPUT
Enter an integer :: 931
931

The `nextInt()` method is used to tell a Scanner object to retrieve the next integer value entered.

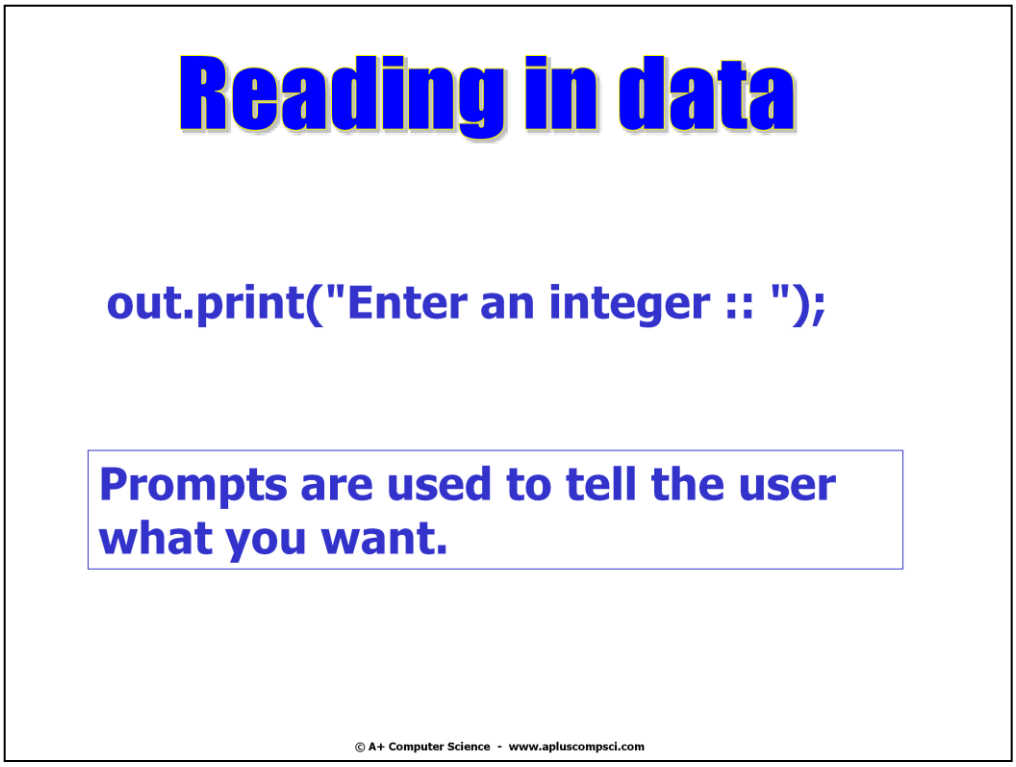
In the example, the next integer typed in on the keyboard would be read in and placed in the integer variable num.

`nextInt()` will read up to the first whitespace value entered.



The `nextInt()` method will read in the next integer. If a non-integer value is encountered such as a decimal value, the result will be run-time exception.

keyboard is a reference that refers to a Scanner object.



When performing input operations, it is a must to use prompts. A prompt is a way of indicating to a user what type of data to enter.

The prompt above indicates that an integer value is expected.

Open scannerints.java

Reading in Doubles

```
Scanner keyboard =
            new Scanner(System.in);

out.print("Enter a double :: ");
double num = keyboard.nextDouble();
```

The `nextDouble()` method will read in the next numeric value entered. Any integer or decimal value will be accepted.

In the example, the next numeric value entered on the keyboard would be read in and placed in variable num.

`nextDouble()` will read up to the first whitespace value entered.

Reading in Doubles

```
out.print("Enter a double :: ");
double num = keyboard.nextDouble();
out.println(num);
```

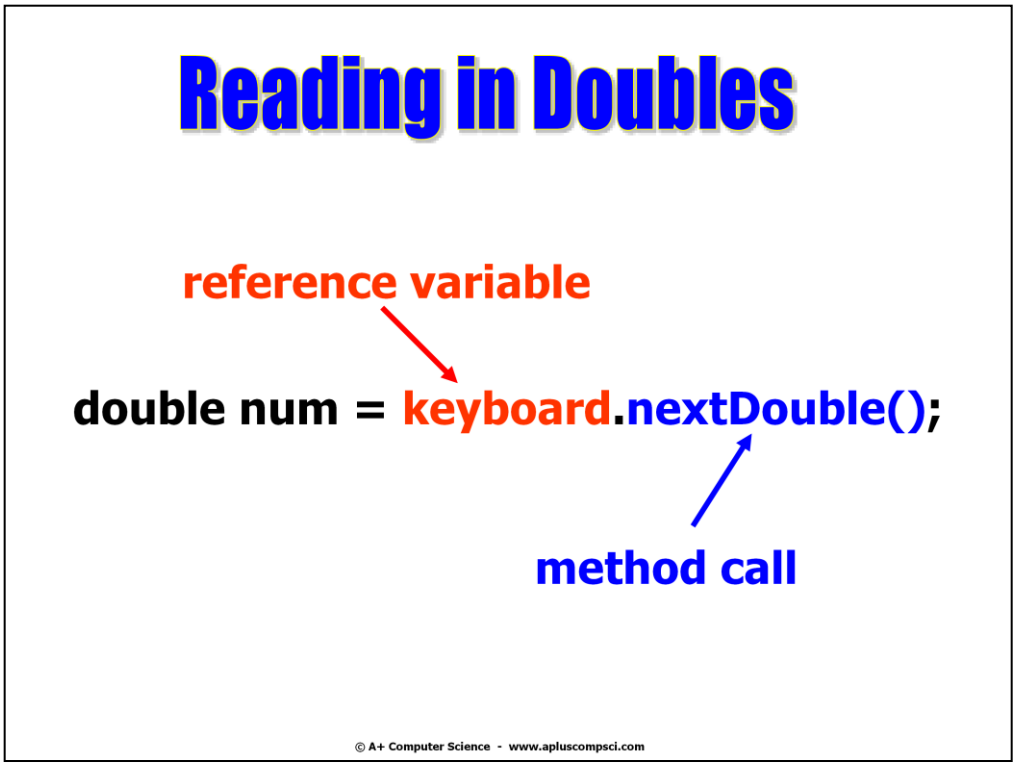
INPUT
34.33

OUTPUT
Enter a double :: 34.33
34.33

The `nextDouble()` method will read in the next numeric value entered. Any integer or decimal value will be accepted.

In the example, the next numeric value entered on the keyboard would be read in and placed in variable num.

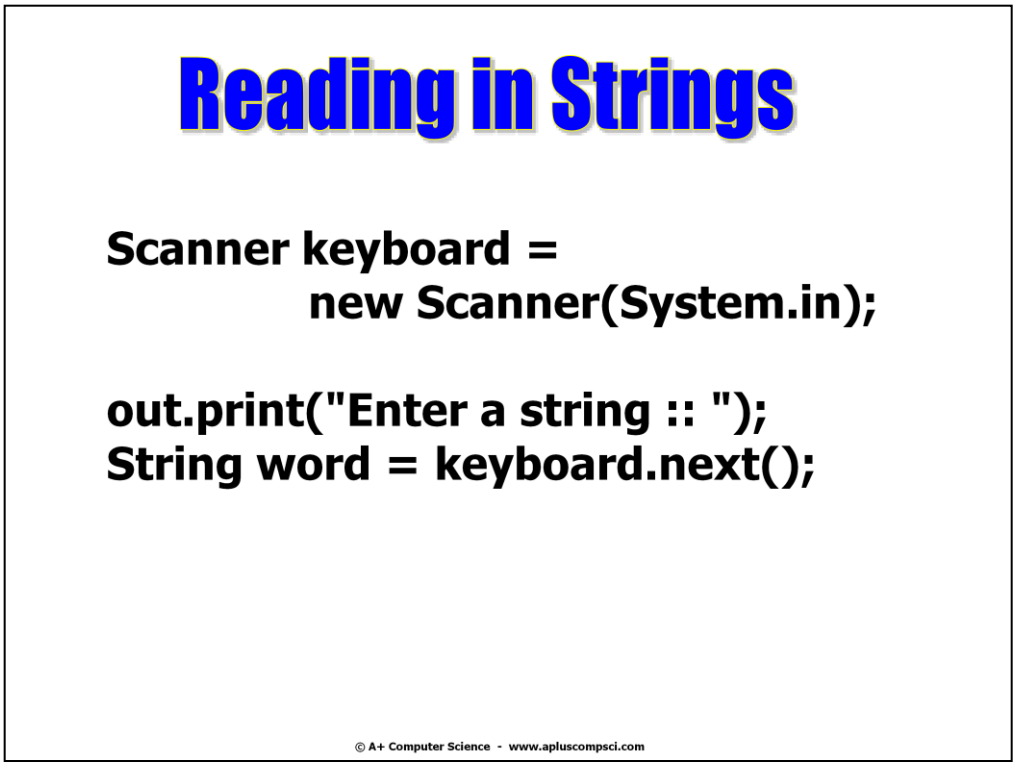
`nextDouble()` will read up to the first whitespace value entered.



The `nextDouble()` method will read in the next numeric value. If a non-numeric value is encountered such as a text value or word, the result will be run-time exception.

keyboard is a reference that refers to a Scanner object.

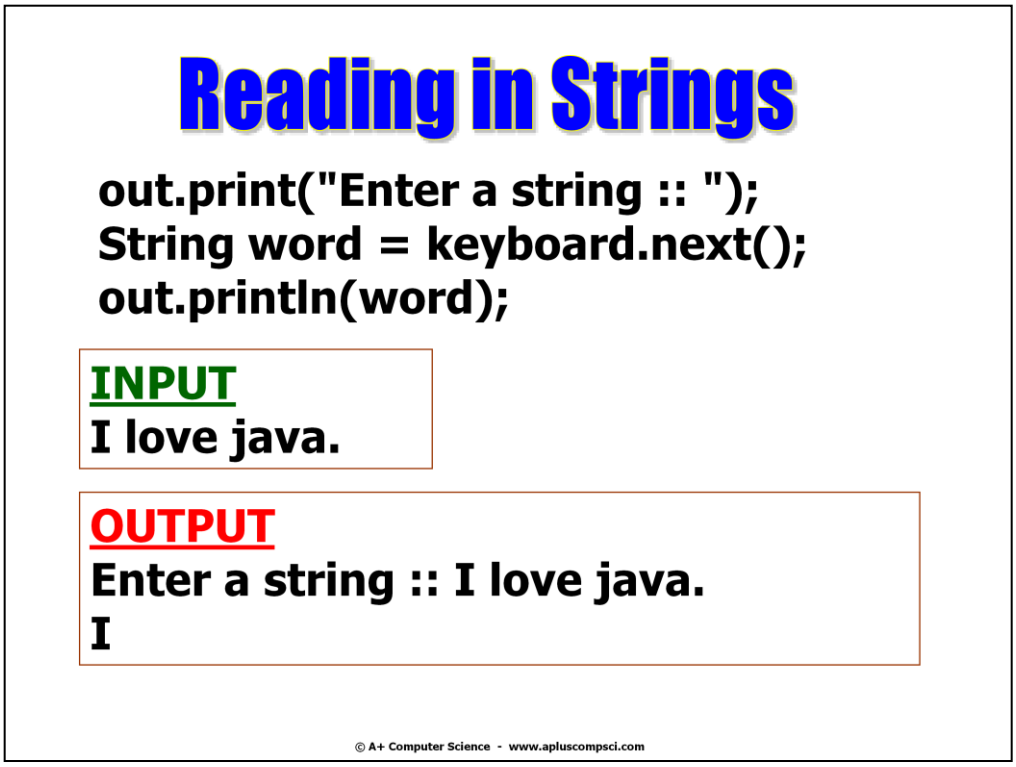
Open scannerreals.java



The `next()` method will read in the next text value entered. A numeric or non-numeric text value will be accepted.

In the example, the next text entered on the keyboard would be read in and placed in variable word.

The `next()` method would read up to the first whitespace encountered. Whitespace would be any space, any tab, or any enter key.



The `next()` method will read in the next text value entered. A numeric or non-numeric text value will be accepted.

In the example, the next text entered on the keyboard would be read in and placed in variable word.

The `next()` method would read up to the first whitespace encountered. Whitespace would be any space, any tab, or any enter key.

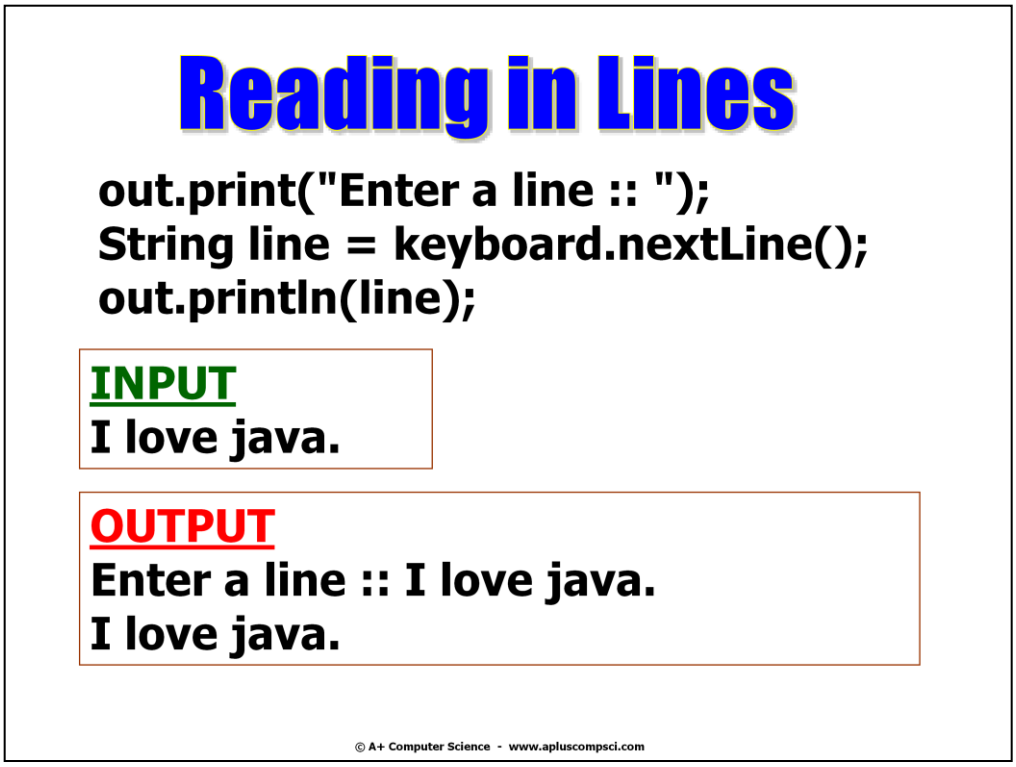
Reading in Lines

```
Scanner keyboard =
            new Scanner(System.in);

out.print("Enter a sentence :: ");
String sentence = keyboard.nextLine();
```

The `nextLine()` method will read in an entire line of text including whitespace(enter keys, spaces, tabs, etc.). Any text value entered will be accepted, including a line containing spaces.

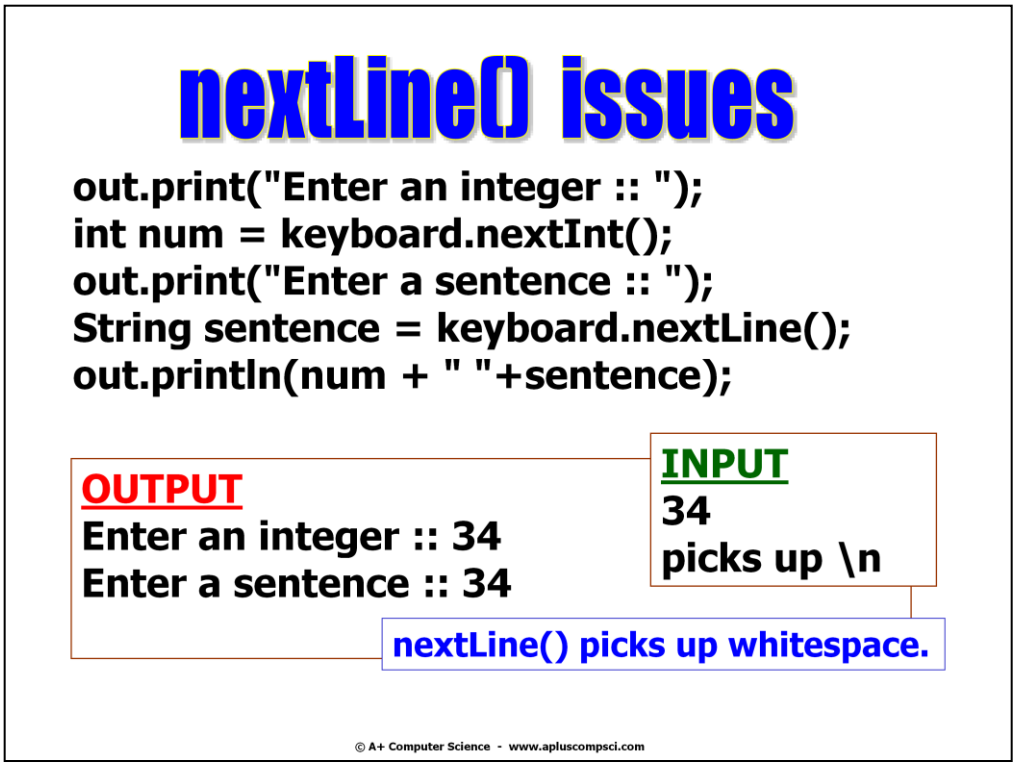
In the example, the next line of data entered on the keyboard would be read in and placed in variable sentence.



The `nextLine()` method will read in an entire line of text including whitespace(enter keys, spaces, tabs, etc.). Any text value entered will be accepted, including a line containing spaces.

In the example, the next line of data entered on the keyboard would be read in and placed in variable sentence.

Open scannerstrings.java

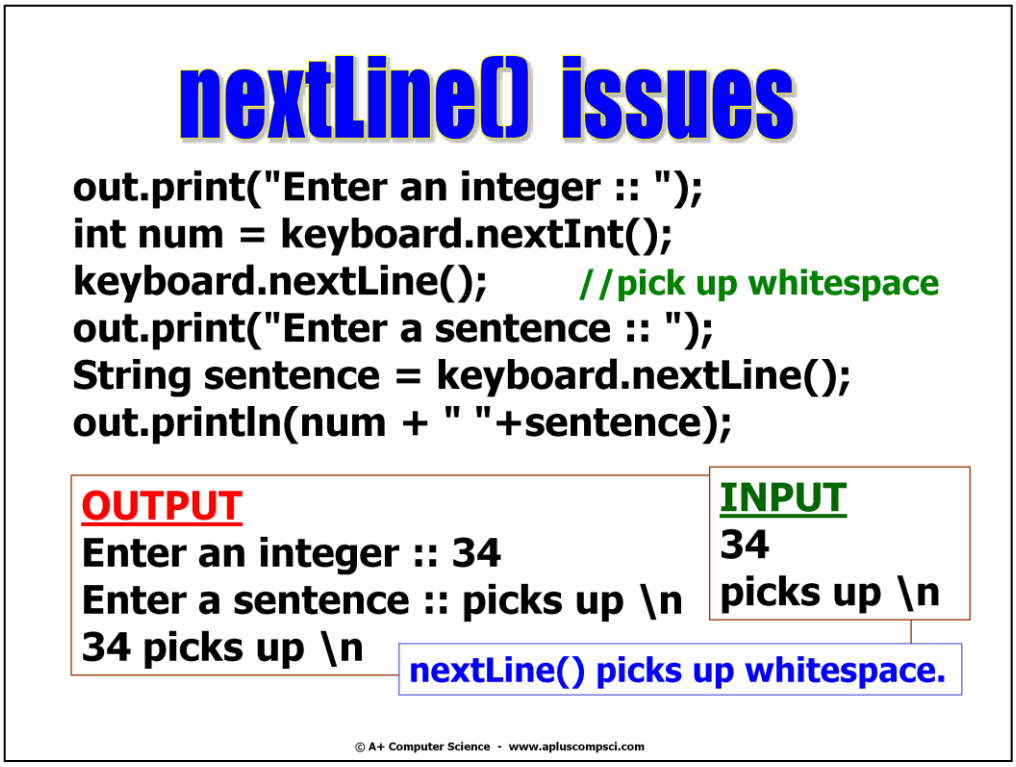


The `nextLine()` method will read in an entire line of text including the enter key. Any text value entered will be accepted, including a line containing spaces.

After 34 is typed in, enter must be pressed to get the system to register the 34.

`nextInt()` reads in the 34 and stores it in num.
`nextInt()` reads up to the enter key(\n) typed in after the 34.

`nextLine()` reads in the enter(\n) and stores it in sentence. This is a problem.



The `nextLine()` method will read in an entire line of text including the enter key. Any text value entered will be accepted, including a line containing spaces.

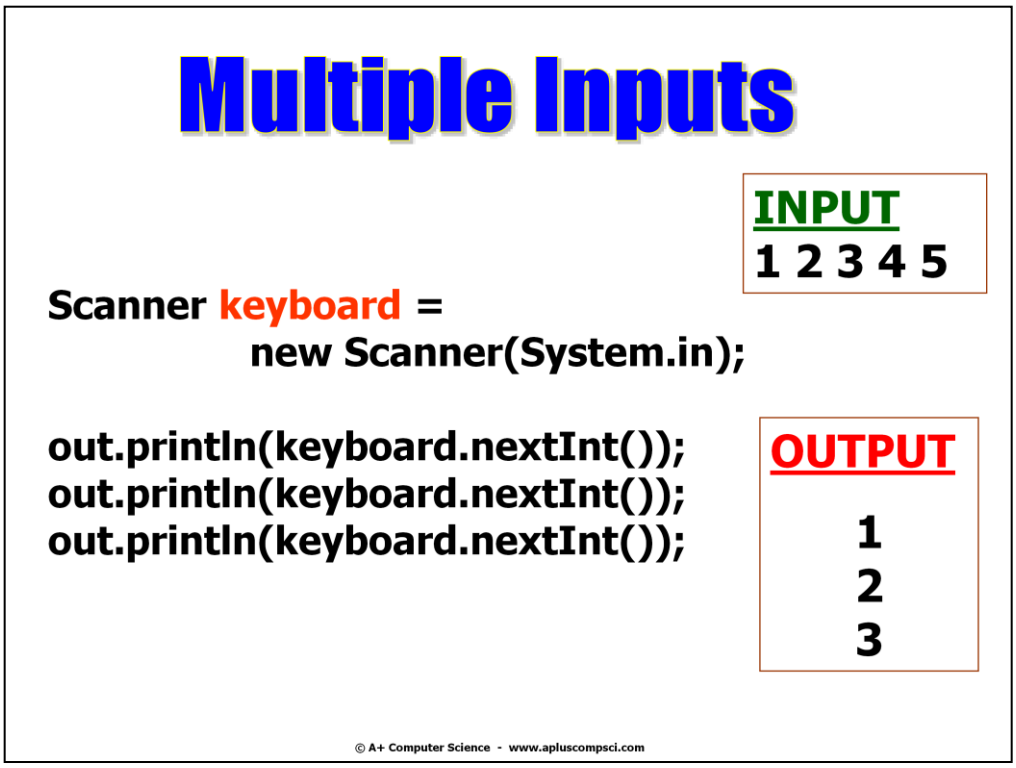
After 34 is typed in, enter must be pressed to get the system to register the 34.

`nextInt()` reads in the 34 and stores it in num.
`nextInt()` reads up to the enter key(\n) typed in after the 34.

A `nextLine()` is placed after the `nextInt()` to read in the enter(\n). The additional `nextLine()` picks up the enter(\n) left behind by `nextInt();`

Now, `nextLine()` can read in the line and store it in sentence. The problem has been solved.

Open nextlineissues.java



Scanner can be used to read in multiple values on one line as long as whitespace is entered in between each value on the line. If whitespace is not used to separate the values, the values would be considered one value.

For the example,if `1 2 3 4 5` is entered. Only values `1 2 3` are read in because the code only had 3 `nextInt()` method calls.

If `12345`, was entered with no spaces, then `12345` would be the first and only value read in.

Open multiread.java

Old School Input

```
BufferedReader keyboard =
  new BufferedReader(
     new  InputStreamReader( System.in ) );

System.out.print("Enter a word :: ");
String s = keyboard.readLine();

System.out.println(s + '\n' );
```


Back in the day, BufferedReader was used to perform basic input operations. You can still use it today, but with the introduction of the Scanner class, there is really no reason to use BufferedReader.

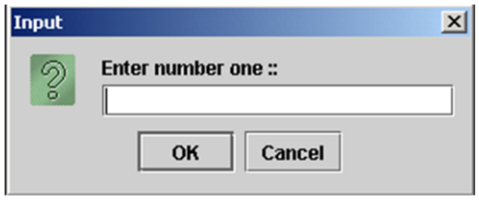
Old School Input

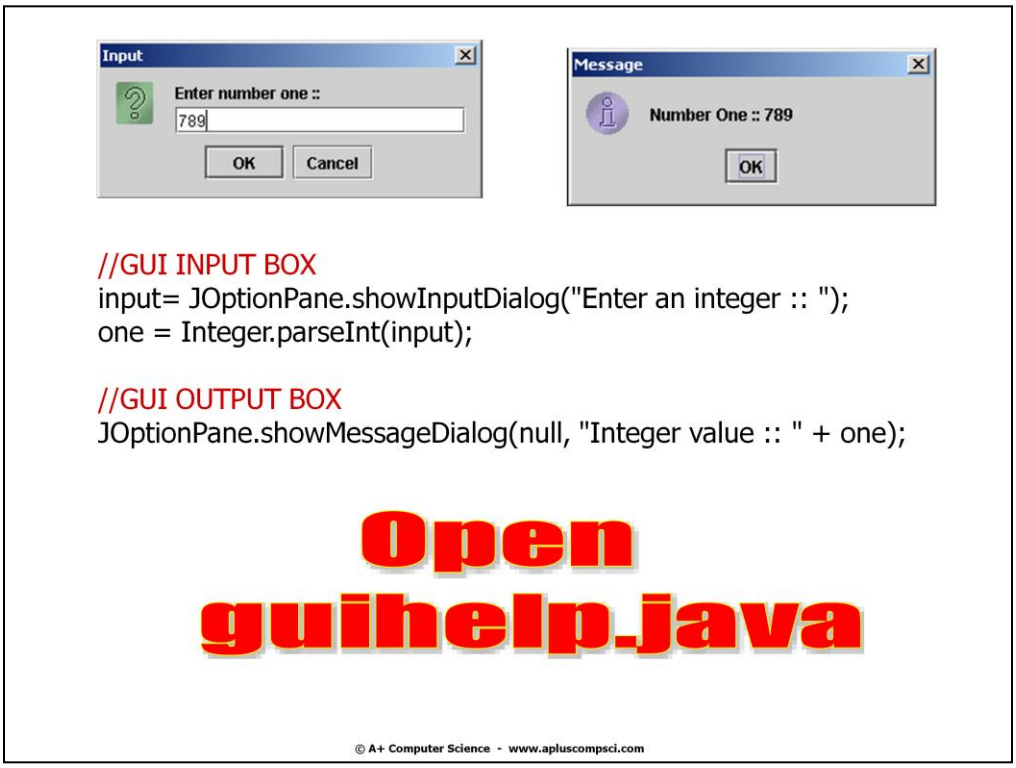
readLine() reads in all data as text / string data.
The text you read in must be converted over to the appropriate type before it can be stored.

```
System.out.print("Enter an integer :: ");
one = Integer.parseInt(keyboard.readLine());

System.out.print("Enter a double :: ");
two  = Double.parseDouble(keyboard.readLine());
```

Open
oldschoolone.java
oldschooltwo.java





GUI boxes for input and output are very fun and look really cool. These boxes can be used to perform the same input operations as performed with Scanner.


Start work
on the labs
© A+ Computer Science - www.apluscompsci.com