Introduction to Programming in Java

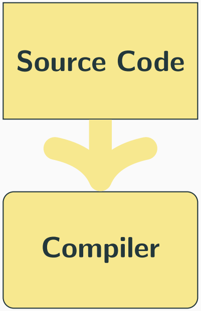
Shirley B. Chu

July 3, 2020

De La Salle University
College of Computer Studies

Compiled Languages

Compiled Languages



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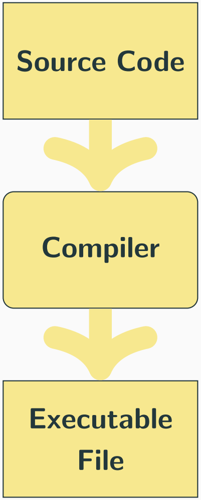

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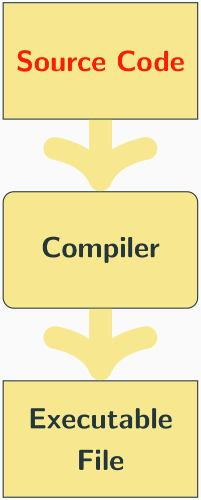

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e.g. C, C++, Pascal

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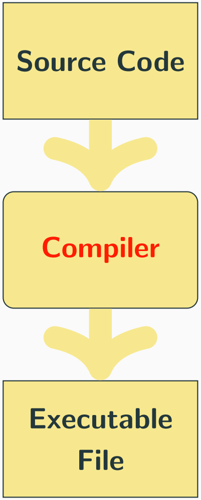

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A software program that translates high level language program into an executable machine language program.

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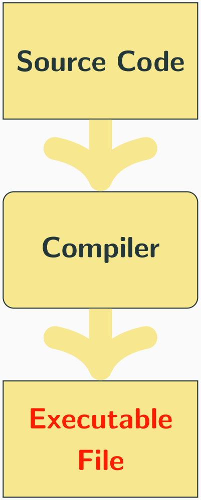

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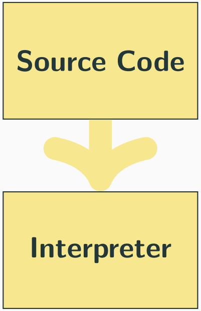
A software program that translates high level language program into an executable machine language program.

may be executed many times but on one type of computer only

Interpreted Languages



high-level programming languages,
e.g. Java, Python

translates and executes one instruction at a time

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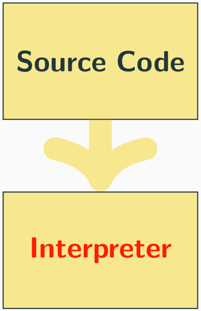

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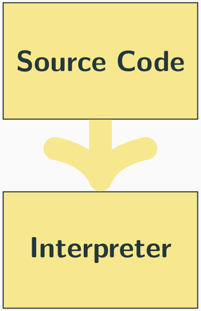

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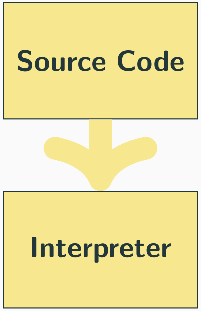
Fetch
a statement

Interpreted Languages



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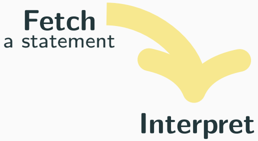

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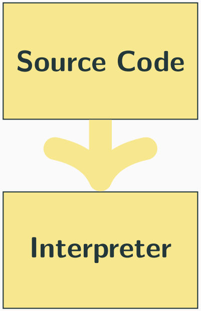

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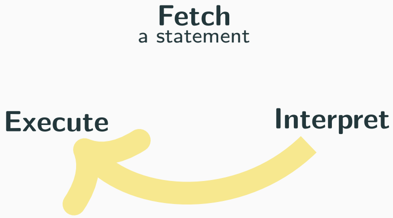

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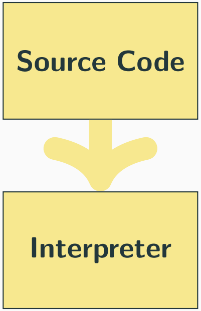

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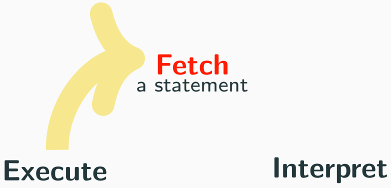

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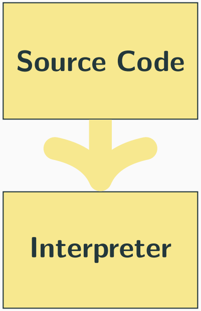

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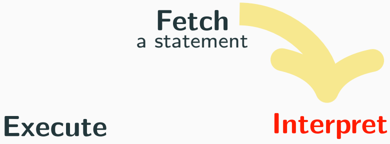

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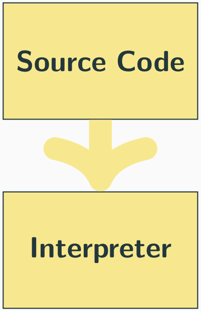

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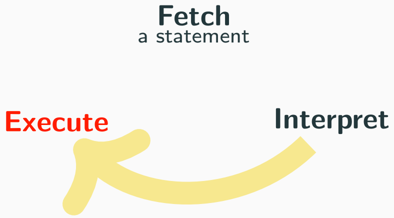

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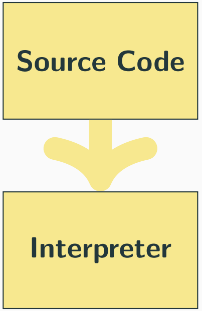

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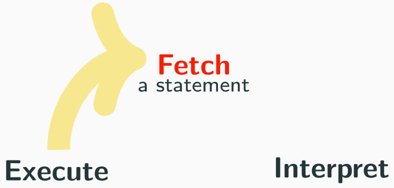

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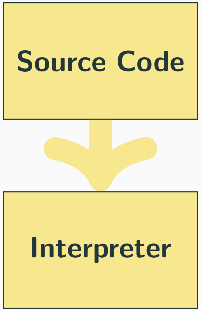

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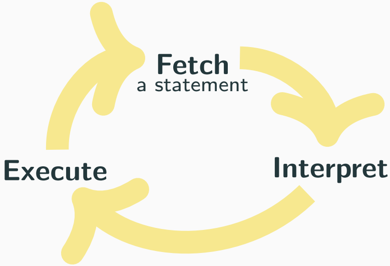

Structure

- A Java application consists of **one or more** classes.
- All lines of code to be executed must be in a class.

Class Definition

```
public class SimpleApp
{
}
```

- Class name is `SimpleApp`
- Class names in Java starts with an uppercase letter.
- File name must be `SimpleApp.java`
- The keyword `class` is used to declare a new Java class.
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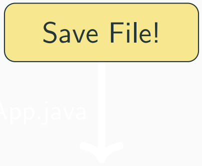
Compiling and Running Java Programs



Source Code: SimpleApp.java

Compiling and Running Java Programs

Source Code SimpleApp.java

Compiling and Running Java Programs

Save File!

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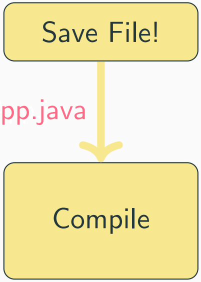

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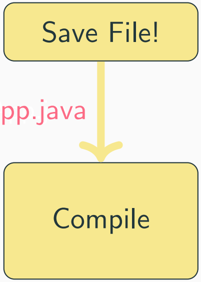

Source Code: SimpleApp.java

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javac SimpleApp.java
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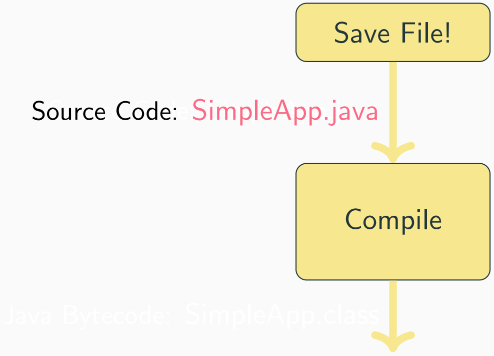

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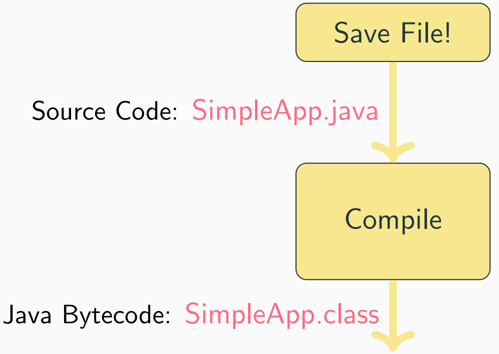

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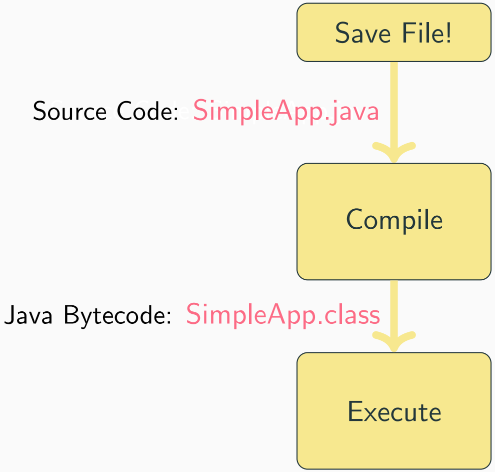

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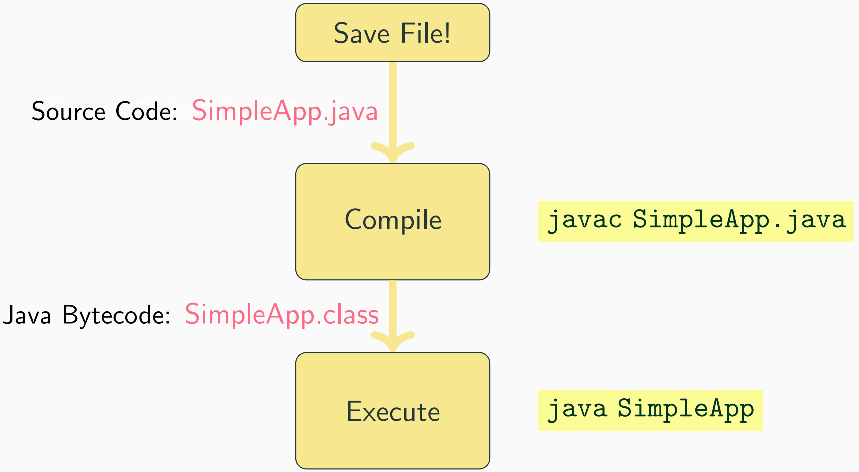

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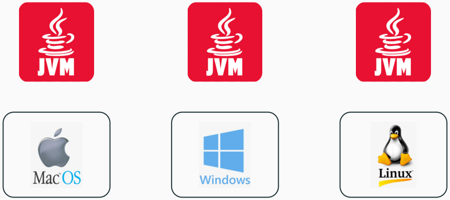

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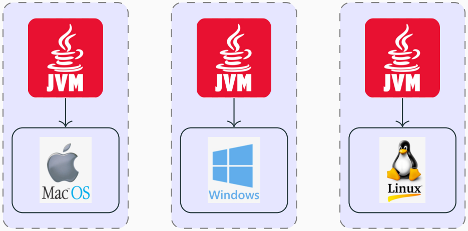

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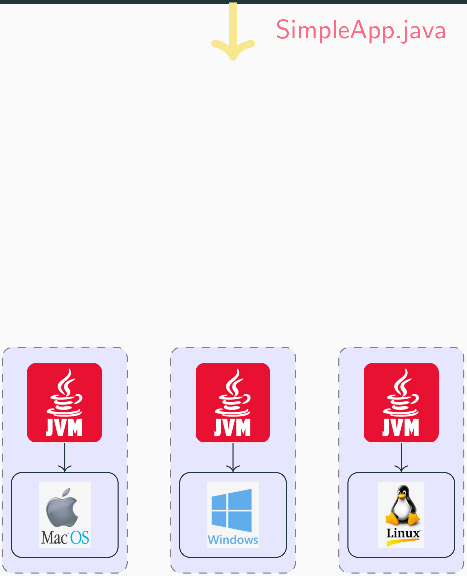

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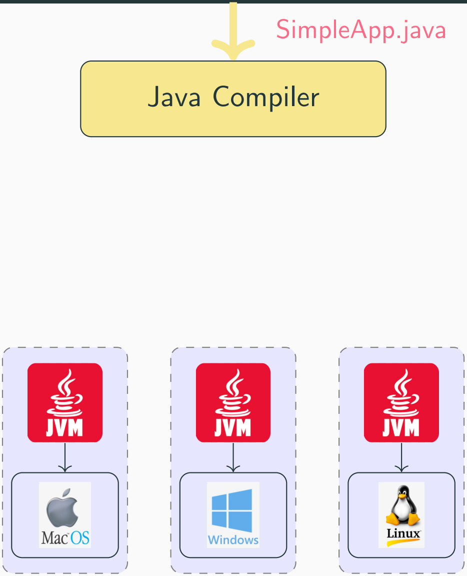

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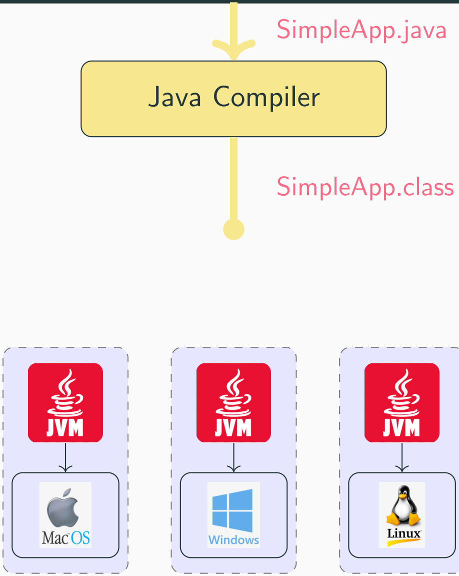

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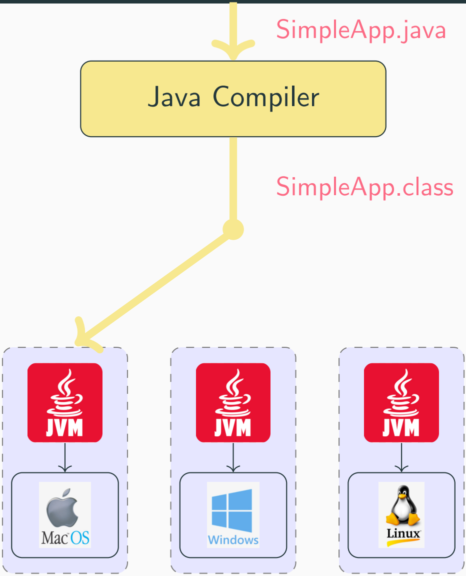

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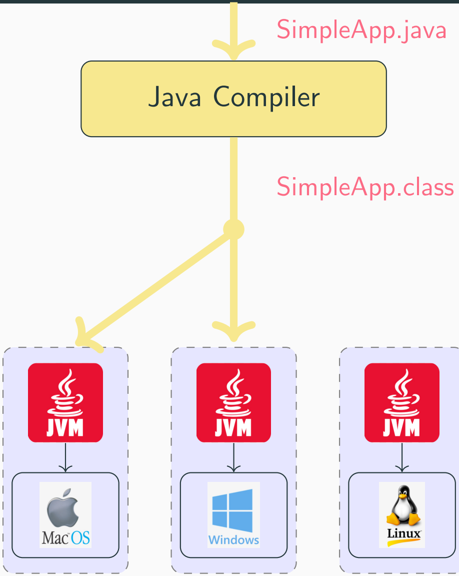

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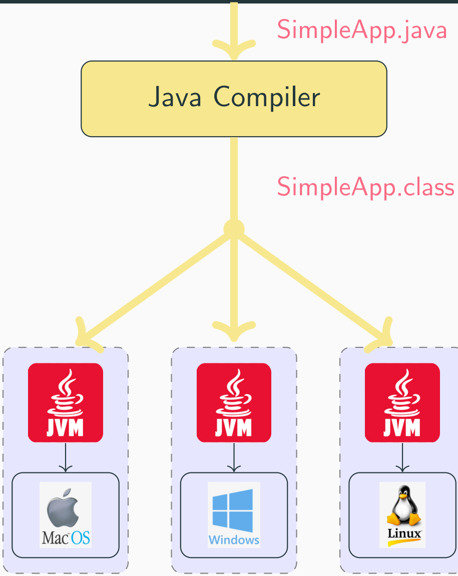

Comment

- used for internal documentation
- Types include
    1. line comment `// till end of this line`

Comment

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- Types include
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```
// till end of this line
/* muli-line possible
next line comment
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Refer to: How to write Javadoc comments

Data

- Java is a strongly-typed language.

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Primitive Types	

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Primitive Types	Reference Types

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Primitive Types		Reference Types
`boolean`	`int`	
`byte`	`long`	
`char`	`float`	
`short`	`double`	

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	`double`
		all non-primitive types, e.g. classes

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holds exactly one value of its declared type at a time		

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Primitive Types		Reference Types
`boolean` `byte` `char` `short`	`int` `long` `float` `double`	all non-primitive types, e.g. classes
holds exactly one value of its declared type at a time		stores addresses

Output Statements

- Commonly used are

```
System.out.print()
System.out.println()
```

- Examples:

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- Examples:

```
System.out.print(3 + 5);
```

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- Examples:

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System.out.print("Hello");
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- Examples:

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System.out.print('h' + "ello");
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  Error!

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System.out.print("ID" + 119);
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System.out.println()
```

- Examples:

```
System.out.print(3 + 5);                           8
System.out.print("Hello");                     Hello
System.out.print('h' + "ello");                hello
System.out.print();                           Error!
System.out.println();
System.out.print("ID" + 119);                  ID119
System.out.print("ID" + 100 + 19);           ID10019
System.out.print("ID" + (100 + 19));           ID119
System.out.print(100 + 19 + "ID");             119ID
System.out.print('A' + 4);                        69
System.out.print("A" + 4);                        A4
```

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       Scanner kb;
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     int nVal = kb.nextInt ();
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  5. close this Scanner
     ```
     kb.close ();
     ```

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        nOne = kb.nextInt ();
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    {
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        int nOne, nTwo;

        System.out.print ("Enter a number:  ");
        nOne = kb.nextInt ();
        System.out.print ("Enter another number:  ");
        nTwo = kb.nextInt ();

        System.out.println ("Sum is " + (nOne + nTwo));
        kb.close ();
    }
}
```

Scanner

- Other methods in `Scanner`

```
nextInt ();
nextDouble ();
nextBoolean ();
next ();
nextLine ();
```

- To resolve issues when reading inputs, instead of directly using these methods, read the input as a `String` then convert to the appropriate type, e.g.
  - to read integer inputs,
    ```
    int nOne = Integer.parseInt (kb.nextLine ());
    ```
  - to read real-number inputs,
    ```
    double dVal = Double.parseDouble (kb.nextLine ());
    ```

Simple Sample... modified

The program computes for the sum of two numbers given by the user.

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public class SimpleSample
{
    public static void main (String[] args)
    {
        Scanner kb = new Scanner (System.in);
        int nOne, nTwo;

        System.out.print ("Enter a number:  ");
        nOne = Integer.parseInt (kb.nextLine ());
        System.out.print ("Enter another number:  ");
        nTwo = Integer.parseInt (kb.nextLine ());

        System.out.println ("Sum is " + (nOne + nTwo));
        kb.close ();
    }
}
```

☺ **Thank you!** ☺