



Fundamentals of Java

--Pritam Chatterjee

Objectives



What is a program ?



Steps before writing a program



Programming Approaches



Why Java



Steps to execute JAVA program



Development Environment



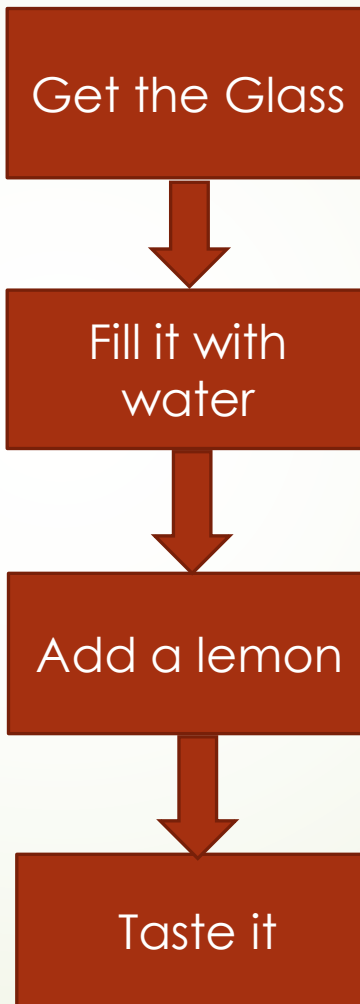
Sample Program



NetBeans IDE

What is a program?

Let's make
lemon juice

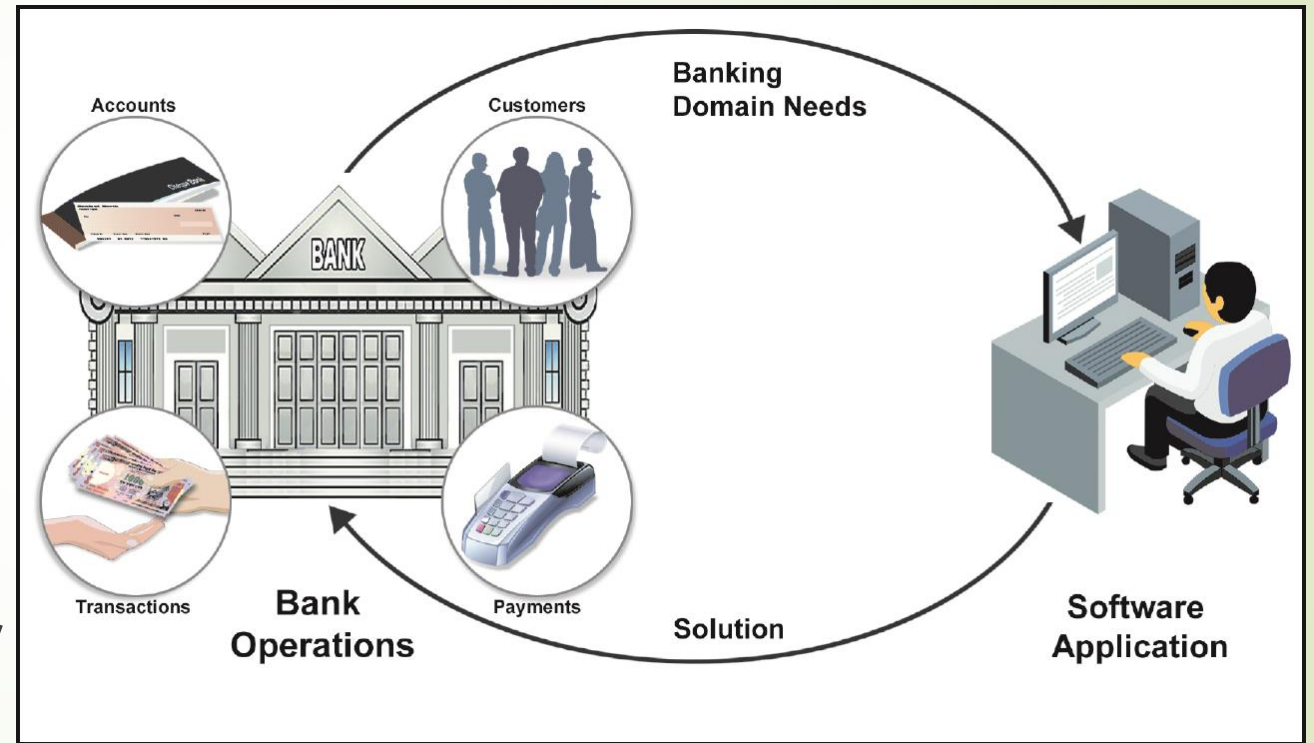


What is a program?

- Series of computer **instructions**
- **Communicate** with the computer
- **Problem** ➔ **Program** ➔ **Translator**
➔ **Machine** ➔ **Process**
➔ **Solution**
- **Software Application**
- Example – Google **Chrome**, MS **Office** Application

Three steps before writing a Program

- Identify **Problem**
- Identify **Users**
- Target **Computer**

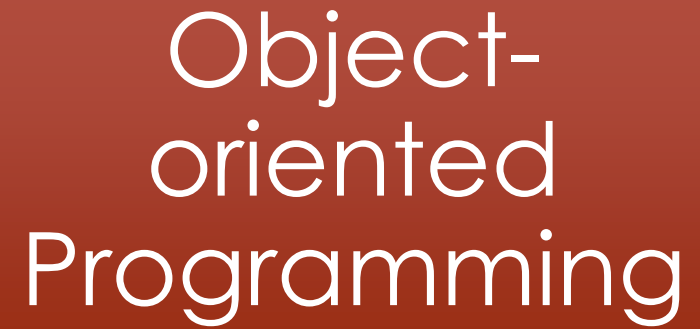




Programming Approach



Structured
Programming



Object-
oriented
Programming

Structured Programming

- Divides the program into **small Modules**.
- **Function** or Procedure
- Ex: **C** Programming

```
Add(int num1,  
int num2)
```

```
Subtract(int  
num1, int  
num2)
```

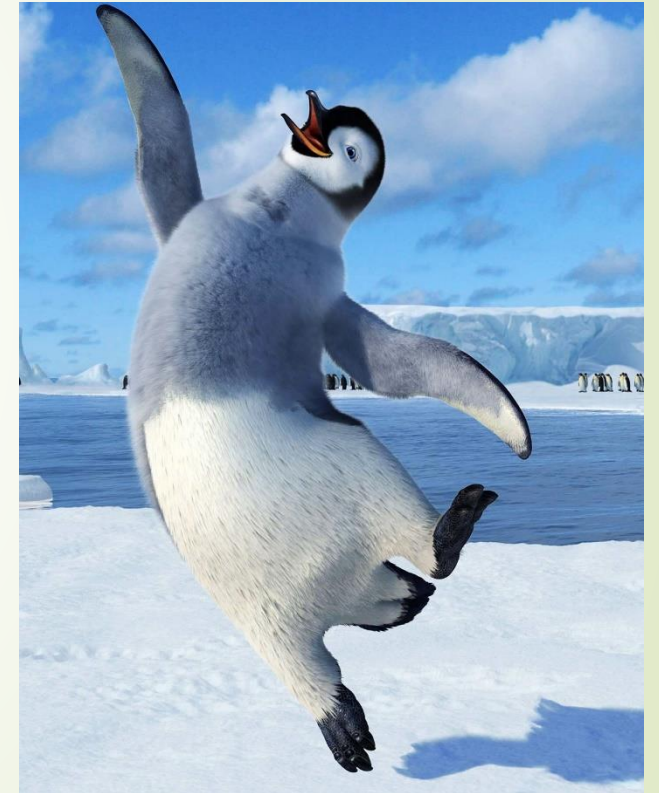

Disadvantages of Structured Programming

- ✘ Data is shared globally
- ✘ Top-down Approach
- ✘ Less security



Object Oriented Programming

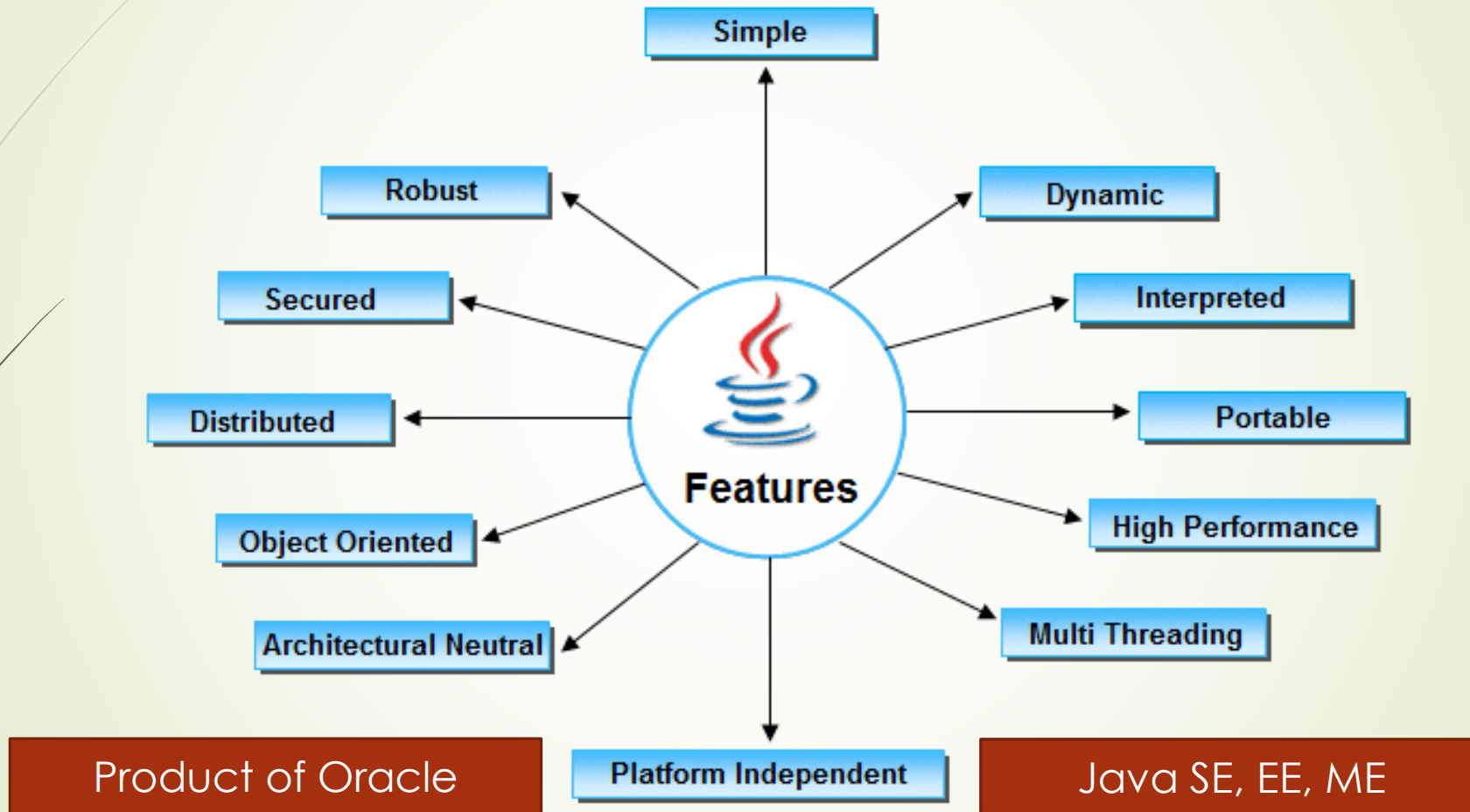
- ✓ Cost Reduction
- ✓ Reusable software components
- ✓ More real world approach
- ✓ Object
- ✓ Class Abstraction, Encapsulation
- ✓ Inheritance, Polymorphism



3 Billion Devices Run Java




Why Java





Steps to Execute Java Program

- Download JDK
 - Install JDK
 - Write code in any Editor
 - Compile & Run from command prompt.
- 

Development Environment

JDK

JRE

JVM

Development Tools

Compiler +

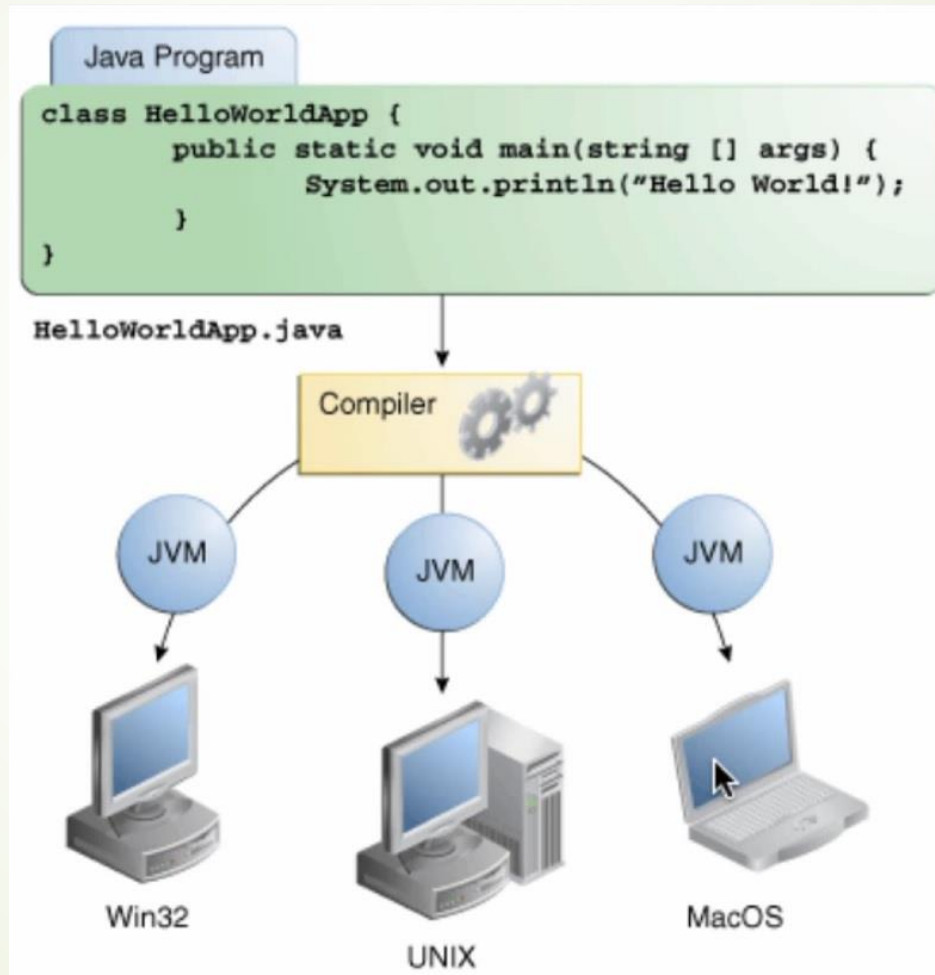
ClassLoader

Bytecode verifier

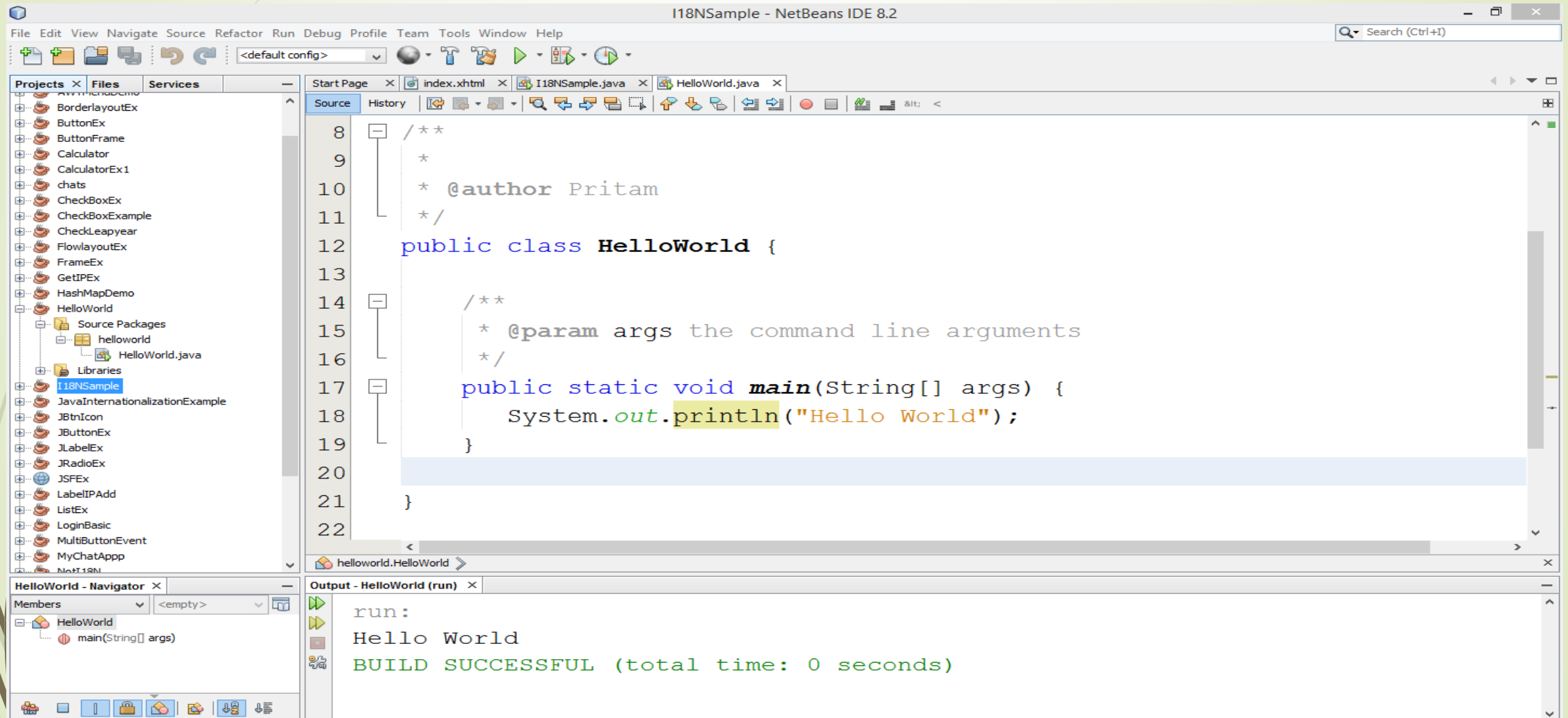
Interpreter

JIT

Sample Program



Sample Program in NetBeans- Hello World



The screenshot displays the NetBeans IDE 8.2 interface. The main window shows the source code for a Java class named `HelloWorld.java`. The code is as follows:

```
8  /**
9   *
10  * @author Pritam
11  */
12  public class HelloWorld {
13
14      /**
15       * @param args the command line arguments
16       */
17      public static void main(String[] args) {
18          System.out.println("Hello World");
19      }
20
21  }
22
```

The `main` method is highlighted in blue. The `System.out.println` call is highlighted in yellow. The `Output - HelloWorld (run)` window at the bottom shows the following output:

```
run:
Hello World
BUILD SUCCESSFUL (total time: 0 seconds)
```

The `Projects` window on the left shows the project structure, including the `helloworld` package and the `HelloWorld.java` file. The `Output` window also shows the `helloworld.HelloWorld` class being run.