Java

Documentation

lots of it

(Javadoc)

JVM (Java Virtual Machine)

Java class
VM is a program that pretends to be hardware.

(c)

Source code → assembly → executable

(gcc)

Java

Source code → compiled

byte code
In C, write a different version of source for each architecture.
Write Once, Run Anywhere
(write once, debug everywhere)
Java program is slower than a C program (usually)

Object-oriented

Timothy Budd "An oo language is neither necessary nor sufficient for doing oo programming."
What is OO?

Encapsulation

What  How

Inheritance (extends)

reuse code → hard
Classes

> Classifying the world into useful objects

> Using this classification to organize code.

Prototype-based languages do not have classes but do
In Java every class has exactly one parent.

In C++, classes may have multiple parents.
Widget

Class

widget = (new Widget());

Naming a variable

Creates an object

Calling a particular method

Widget

widget

Widget

widget
String s = "blue";

The widget class

Widget

String "blue"
this class object is an instance of widget
Java.lang

Reflection

java.lang.Class

Class stringClass = Class.getClass("string");

String s = stringClass.newInstance("blue");

All sorts of weirdness
Widget $w = \text{new Widget}(12)$
What does static mean?

In C: a static variable
exists throughout the program's
lifeline

In Java: slightly different meaning