Software development with Scala

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What is this course about?

80% Programming in Scala

- Syntax
- Semantics

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- Syntax
- Semantics

20% Software development

- Programming languages
- Programming disciplines

What is the goal of this course?

The goal is to give a head start on learning Scala.

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Scala's learning curve

Part I

The Java Ecosystem

Outline

1 Fight metal programming

2 A History Lesson

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Portability

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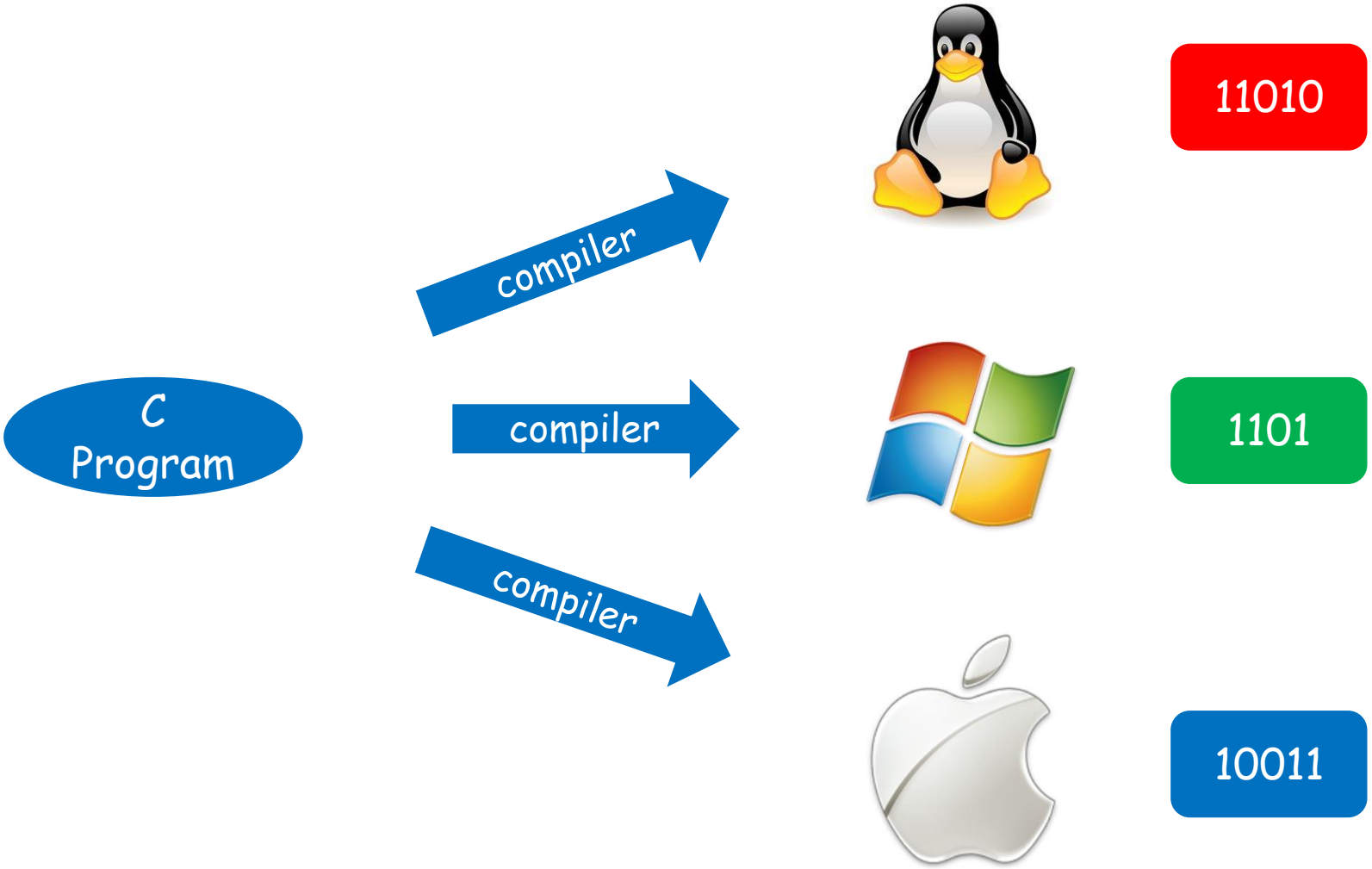
Platform Independency

Write Once, Run Anywhere.

Problem - Unmanaged code



Problem - Unmanaged code 2

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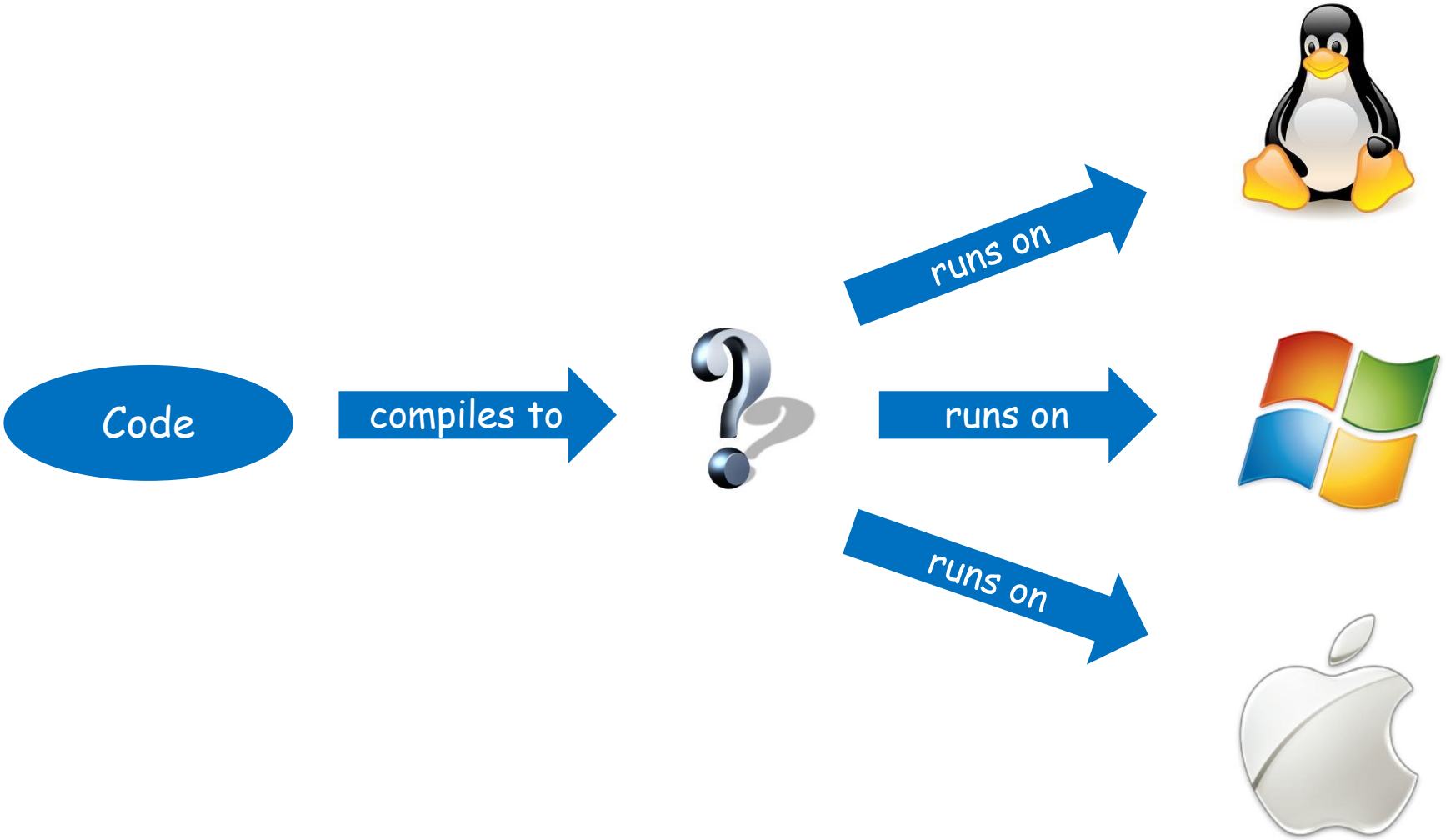
The problem, programming language designers are trying to solve:

Software development is not about programming the hardware, it is about abstracting over the hardware!

Solution - Managed code



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Wind of Change

- it is feasible to change a program.
- it is hard to change a programming language.
- it is very hard to change a platform, but platforms are not required to be frequently changed.

Virtual Machines

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Well-known VMs

Java	Java Virtual Machine (JVM)
.Net	Common Language Runtime (CLR)
Android	Dalvik virtual machine
	and *many more*

Managed Programming Languages

JVM - runs everywhere

Java Statically typed OO language

CLR - runs only on Windows

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Managed Programming Languages 2

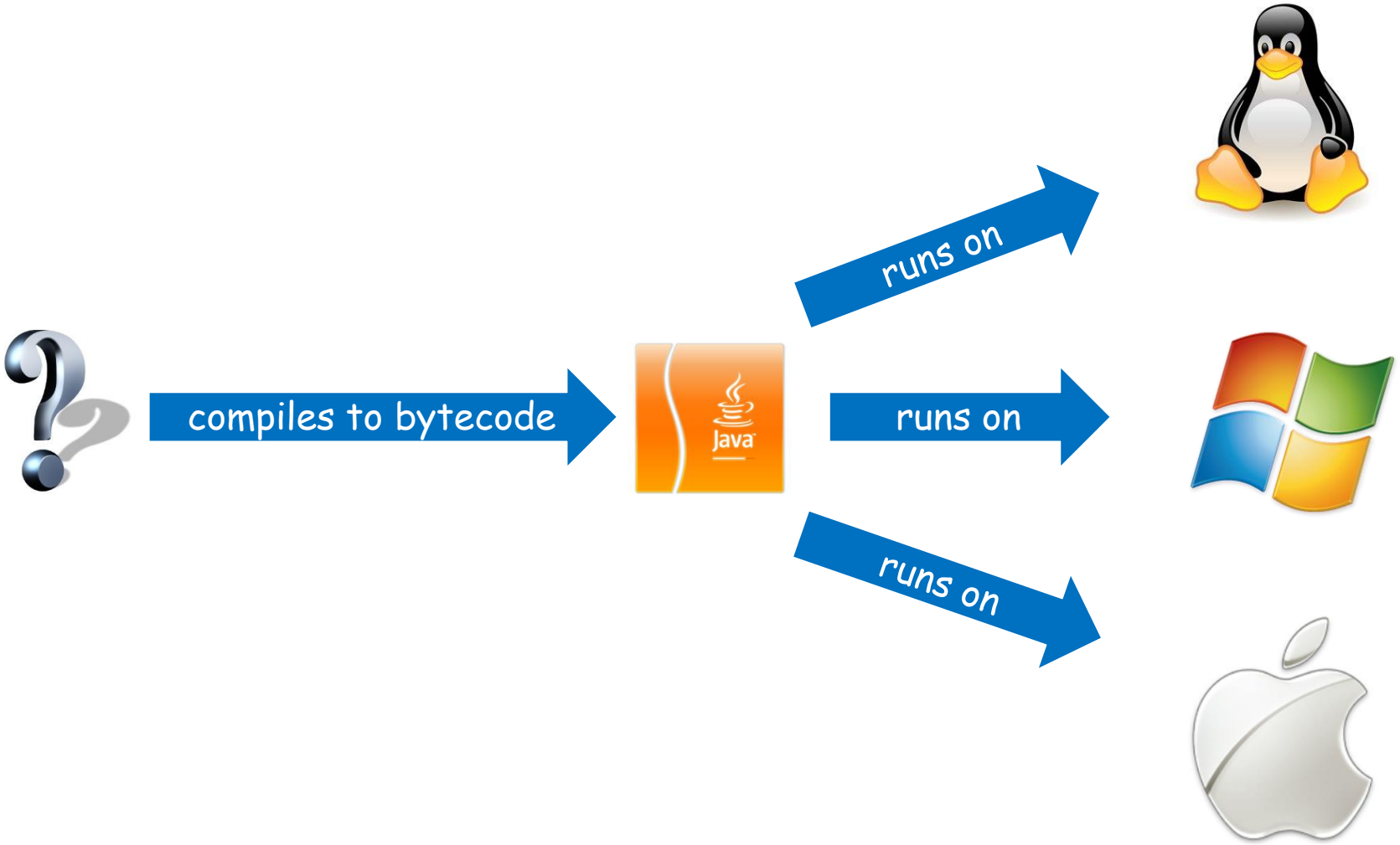
Dalvik - runs only on Android

Java is officially supported. Every JVM language should theoretically work. Scala works. *Few others* work as-well.

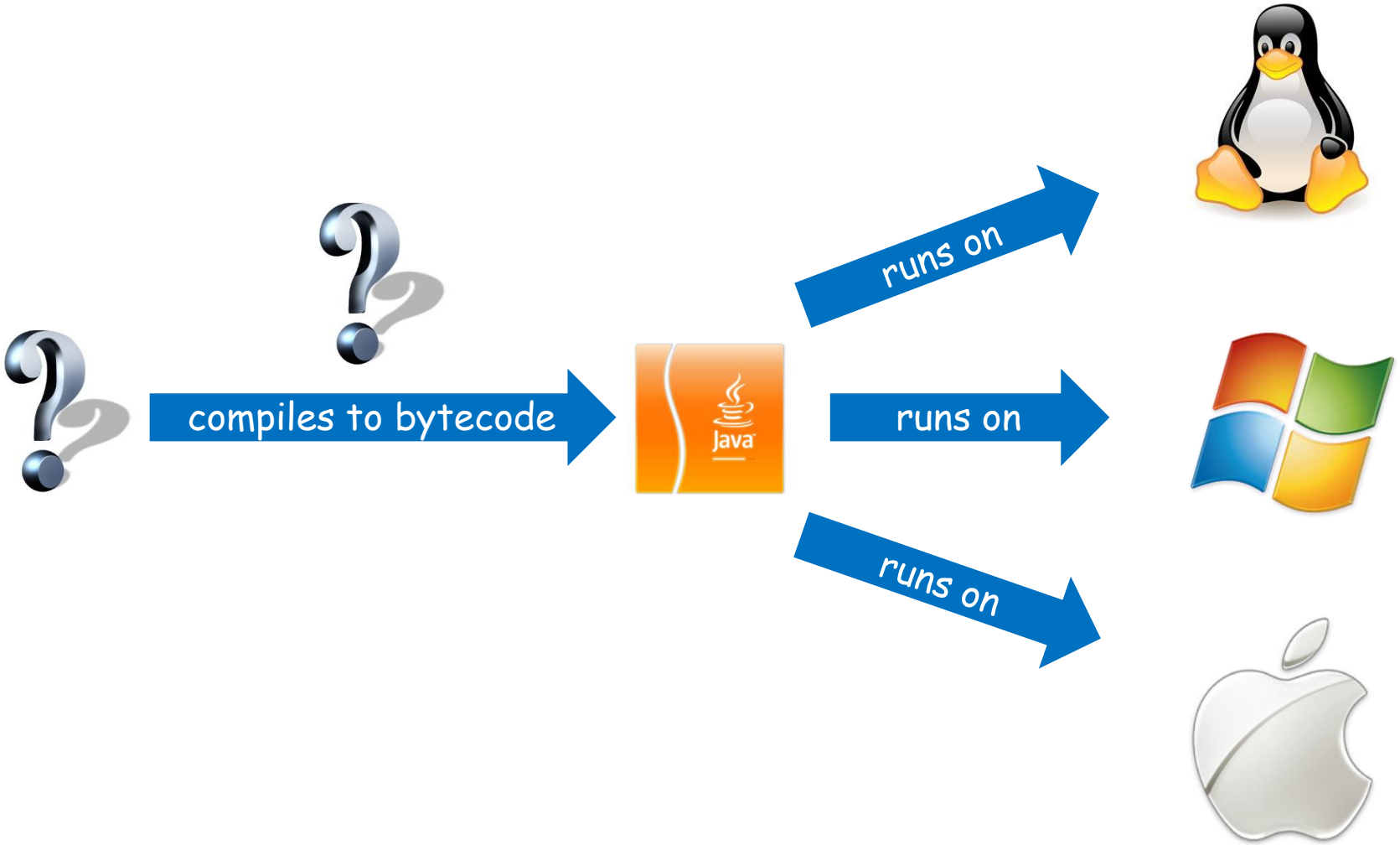
JVM - People's Choice

The code is not compiled to binary .
The code is compiled to the so called byte-code .
The JVM is a software component, which runs the byte-code .
A JVM implementation exists for almost every platform .
Java is the most used language on the JVM .
The most used Java compiler is called javac .

What language should we use for the JVM?



Can we reuse the java compiler for this language?



Outline

1. Fight metal programming
2. A History Lesson

Part II

Introducing Scala

Part III

Programming Paradigms

Part IV

Scala's Development Environment

Part V

Programming Styles

Part VI

Higher-Order Functions

Part VII

Growing The Language

Part VIII

Test-driven Development & Clean Code

Part IX

Pattern Matching

Part X

Traits

Part XI

Collections

Part XII

Concurrency

Part XIII

Domain Specific Languages

Part XIV

Higher-Kinded Types