Concurrent programming languages

Week 3: Introduction to Java

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Overview

- Java is a (still) popular multi-purpose language
- It is used in commercial applications, in research, and teaching
- It can be used for desktop applications, server applications, embedded systems, and (historically) Java applets
- Java had a number of innovative features when it was designed, including:
  - Virtual machine ("write once, run everywhere")
  - Object-oriented design from scratch
  - Security features built in (no pointers etc.)
Overview

Java is/was a conservative language in some respects:

- Syntax is C-style
- Imperative inside the objects
- Largely sequential
- Newer versions have extended functional capabilities

- Support for parallel programming exists
- Support was extended with later versions (e.g. fork/join in Java 7)
Overview

I will demonstrate the main futures of Java. In the lab, we do exercises covering those points. The main points are

- The virtual machine and the JDK
- Imperative programming in Java
- Variables, data types, operators, control structures, ...
- Classes and objects
- Methods, constructors, and attributes
- Types, casting, polymorphism
- Some useful classes from the standard library