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Introduction to Java
Welcome to the Coders.Bay

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Lukas Wais

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Code is everywhere

Figure: Electronic Devices

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Computer on Wheels

Figure: Electric Car

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Programming Languages

What are Programming Languages?

Definition (Programming Language)

A programming language is a formal language comprising
a set of instructions that produce various kinds of output. Programming languages
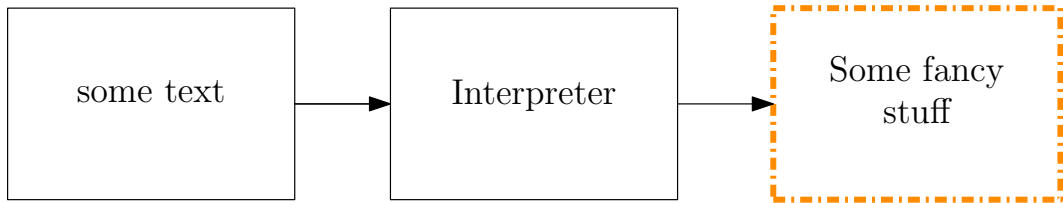are used in computer programming to implement algorithms. [1]

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Programming Languages

Script Languages

Figure: Interpretation of Scripted Languages

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Programming Languages

Script Languages - Examples

- Shell Script
- Batch Files
- PHP
- JavaScript

Programming Languages

Compiled Languages

Figure: Compilation Process

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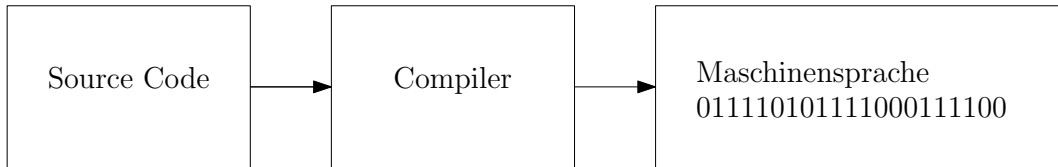
Compiled Languages - Examples

- C
- C++
- **Java**
- Go

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Java

Java Compilation

Figure: Compilation Process

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Whats is Java?

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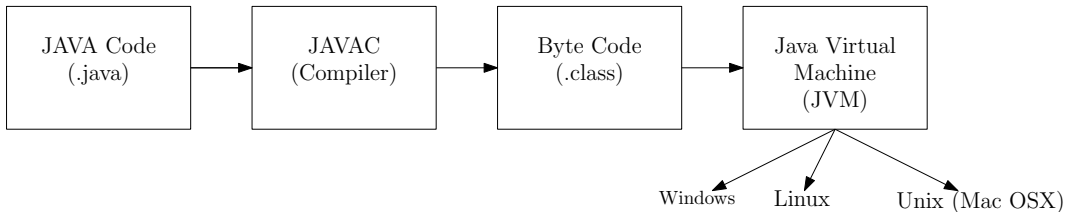
This is Java

Java is an Island

Figure: Java Island

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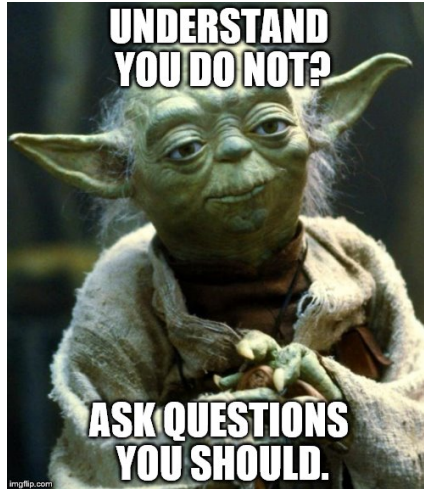○
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This is Java

But this is also Java

```java
@Override
public boolean equals(Object obj) {
  if (obj instanceof Person) {
    Person other = (Person) obj;
    return this.lastname.equals(other.lastname)
        && this.firstname.equals(other.firstname);
  }
  return false;
}
```

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This is Java

Java Versions

- JDK ... Java Development Kit $\rightarrow$ for developing JAVA applications.
- JRE ... Java Runtime Environment $\rightarrow$ for running JAVA applications.
- JDK Versions > 8.

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This is Java

Hello World

```
System.out.println("Hello World");
```

Installation

Download openJDK

- AdoptOpenJDK Download

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Installation

Figure: openJDK Installation

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Installation

Verify Installation

- Open CMD and run **javac**
- The c by java**c** stands for compile.
- To see more details about it type **javac –help**.
- You can also check out the official docs (here).

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Installation

- You should have an output similar to this picture:

Figure: Output javac

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Installation

The Editor

For the beginning we are using geany. Later on we are switching towards to Intellij.

Download it from one of the following links:

- geany.org
- geany.sexy

Some handy plugins can be found here:

- plugins.geany.org

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Installation

Now it's your turn

- Print out Hello World to the command line.
- Afterwards print out your name.

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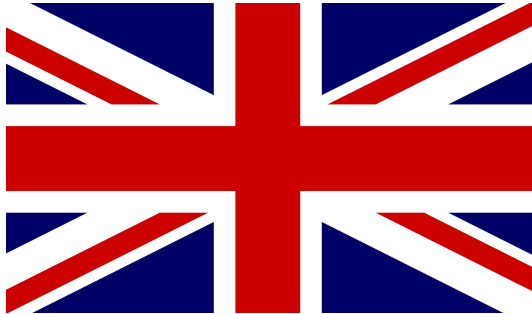
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Coding Standards

Martin Fowler said:

„Any fool can write code that a computer can understand.
Good programmers write code that humans can understand."

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English

- variables, comments and classes MUST be named in English

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Coding Style

```java
private int calc (int x, int y) {
    return x + y;
}
```

Egyptian Brackets

```java
private int minus (int a, int b)
{
    return a - b;
}
```

Do NOT do this

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Comments and Style

```java
public class Example{
    // rectangle
    private double height =  3.4;
    private double width = 2.5;

    // PascalCasing & lowerCamelCase
    private String workshopName= "Roboterbau";

    // constant
    private static final int WEEKDAYS = 7;
}
```

- Use tabs not whitespaces.
- Camel Casing.
- Classes and types Pascal Casing.
- Constants upper case.
- Do not use underscores
  temp_kelvin → old style

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Remember

Java is platform **independent**. Compile once run everywhere.

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Save Code Snippets

How to save Code Snippets

Check out the provided links. Saving useful snippets can become really handy in the future.

- Github Gist

Those are some clients for it:

- Lepton
- A list of clients

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References

📄 Wikipedia contributors, "Programming language — Wikipedia, the free encyclopedia." https://en.wikipedia.org/w/index.php?title=Programming_language&oldid=962885882, 2020.
[Online; accessed 18-June-2020].

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