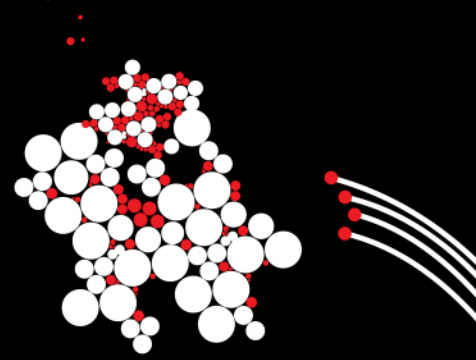


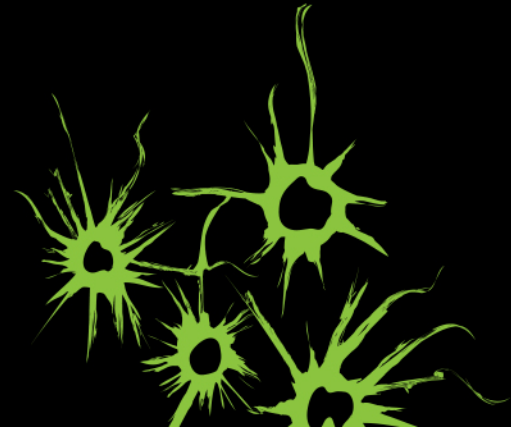
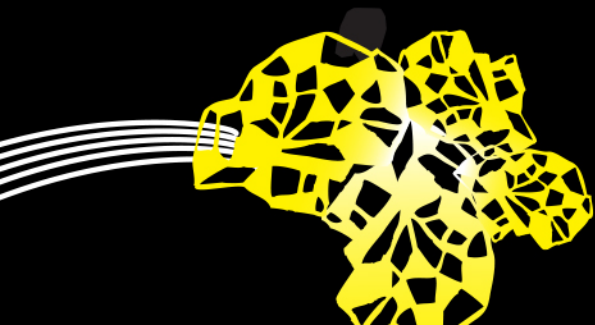
UNIVERSITY OF TWENTE.



From Python to Java

Topic of Software Systems (TCS module 2)

Lecturer: Marieke Huisman



MODULE 1 PREREQUISITES

- Week 2: Algorithms (Python)
 - Lists
 - Searching, sorting
- Week 4: Functional Programming (Haskell)
 - Types
 - Recursion



Haskell Curry
1900-1982

'HELLO WORLD' IN PYTHON

File: **hello.py**



A screenshot of a code editor window titled 'hello.py — source (git: master)'. The editor has a dark background with light-colored text. It shows three lines of code: line 1 is a comment '# Here comes the command', line 2 is the command 'print("Hello World")', and line 3 is empty. The status bar at the bottom indicates 'Line: 1', 'Pyt...', 'Soft Tabs: 4', and some icons.

```
1 # Here comes the command
2 print("Hello World")
3
```

Usage



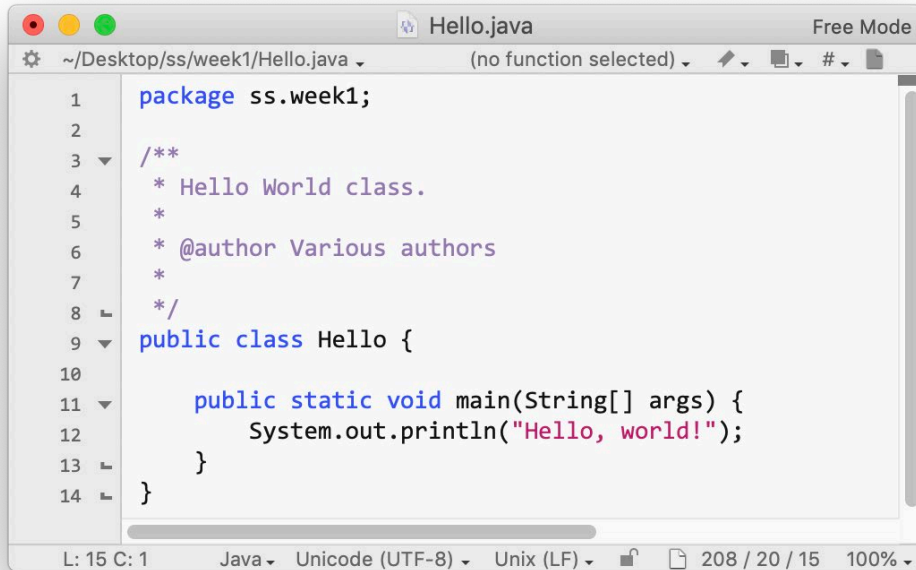
A screenshot of a terminal window titled 'source — zsh — 46x10'. The terminal shows the command '[software systems > python hello.py]' being executed, followed by the output 'Hello World'. The prompt 'software systems >' is shown again on the next line.

```
[software systems > python hello.py]
Hello World
software systems > 
```

'HELLO WORLD' IN JAVA

File: `ss\week1\Hello.java`

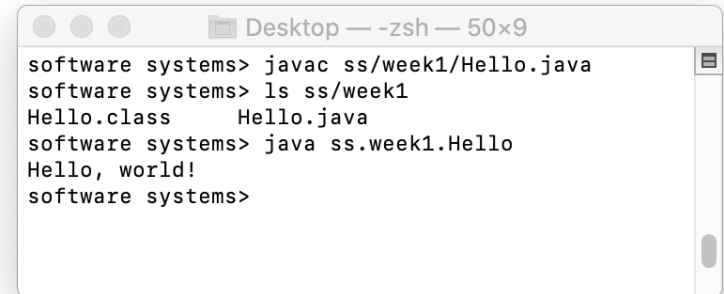
Usage



A screenshot of an IDE window titled 'Hello.java' in 'Free Mode'. The file path is '~/Desktop/ss/week1/Hello.java'. The code is as follows:

```
1 package ss.week1;
2
3 /**
4  * Hello World class.
5  *
6  * @author Various authors
7  *
8  */
9 public class Hello {
10
11     public static void main(String[] args) {
12         System.out.println("Hello, world!");
13     }
14 }
```

The status bar at the bottom shows 'L: 15 C: 1', 'Java', 'Unicode (UTF-8)', 'Unix (LF)', and '208 / 20 / 15 100%'.



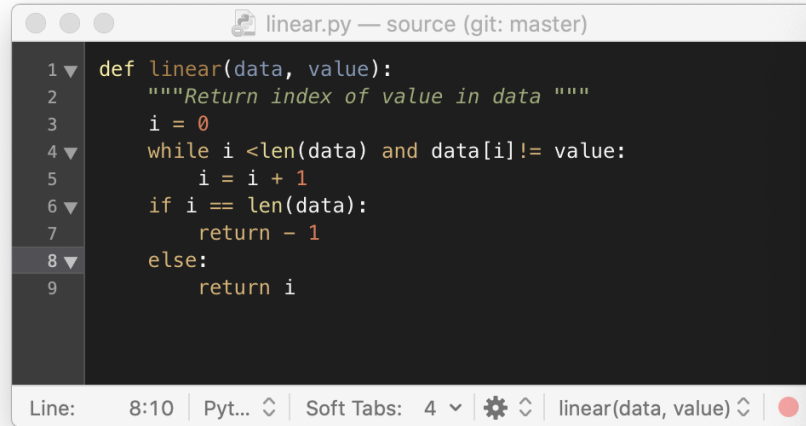
A screenshot of a terminal window titled 'Desktop — -zsh — 50x9'. The terminal shows the following commands and output:

```
software systems> javac ss/week1/Hello.java
software systems> ls ss/week1
Hello.class      Hello.java
software systems> java ss.week1.Hello
Hello, world!
software systems>
```

LINEAR SEARCH IN PYTHON VS. JAVA

SPOT THE DIFFERENCES!

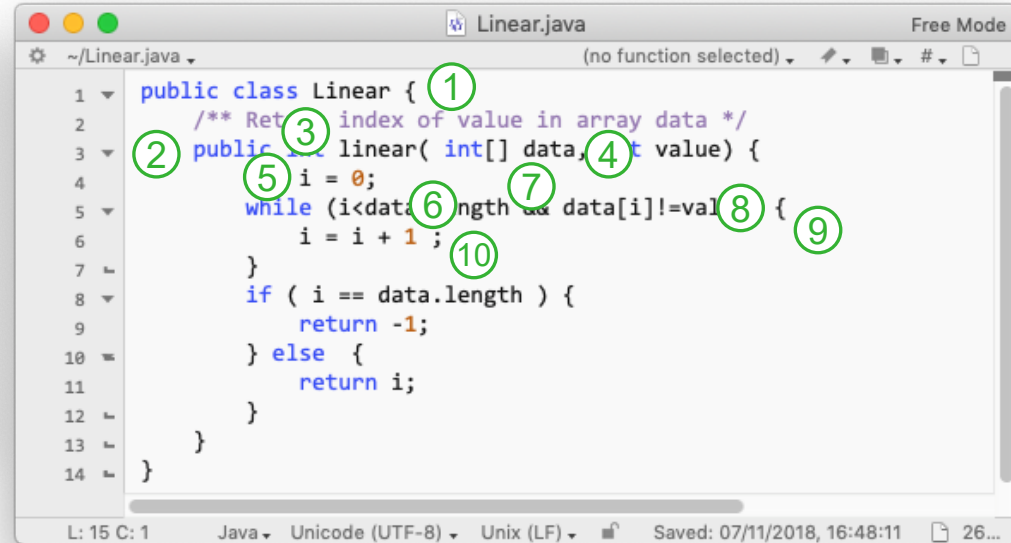
Python



```
1 def linear(data, value):
2     """Return index of value in data """
3     i = 0
4     while i < len(data) and data[i] != value:
5         i = i + 1
6     if i == len(data):
7         return -1
8     else:
9         return i
```

Line: 8:10 | Pyt... | Soft Tabs: 4 | linear(data, value)

Java



```
1 public class Linear {
2     /** Return index of value in array data */
3     public int linear( int[] data, int value) {
4         i = 0;
5         while (i < data.length && data[i] != value) {
6             i = i + 1;
7         }
8         if ( i == data.length ) {
9             return -1;
10        } else {
11            return i;
12        }
13    }
14 }
```

Annotations: 1 (class name), 2 (comment), 3 (method name), 4 (parameter type), 5 (variable declaration), 6 (while loop condition), 7 (loop body), 8 (if statement), 9 (return statement), 10 (else block), 11 (return statement), 12 (closing brace), 13 (closing brace), 14 (closing brace).

Line: 15 C: 1 | Java | Unicode (UTF-8) | Unix (LF) | Saved: 07/11/2018, 16:48:11 | 26...

Conceptually the same!

DIFFERENCES

1. Surrounding **class declaration**
2. **Visibility** modifiers (public, private)
- 3-5. **Explicit data types** (return, method arguments and local variables)
6. length as an **attribute** instead of a method
7. && instead of and
8. () **condition delimitation** instead of :
9. {} **block delimitation** instead of indentation
10. ; **statement separators** instead of newline