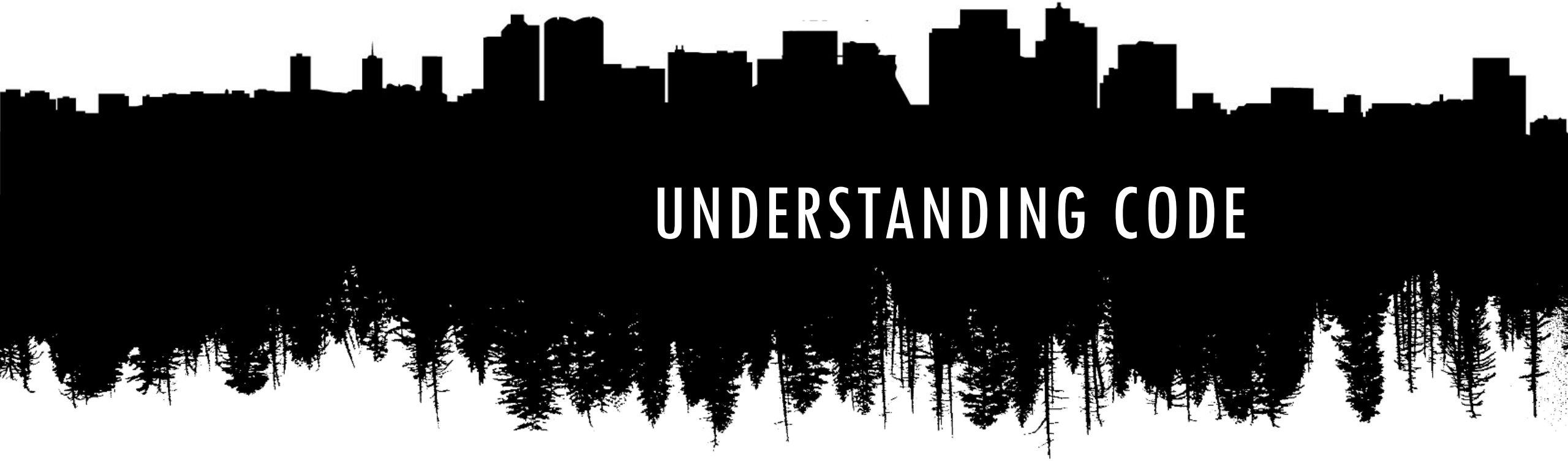
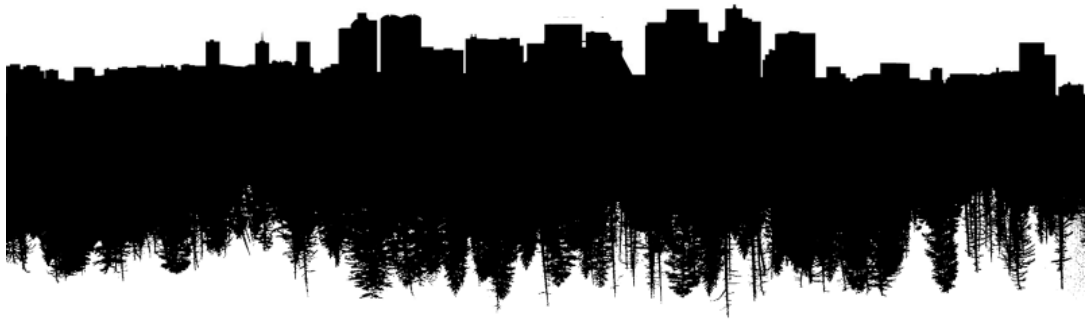


UNDERSTANDING CODE

URBAN STUDIES AND PLANNING
DIGITAL URBAN
MONDAY 31TH JANUARY 9:00-12:00

Anssi Joutsiniemi
D.Sc(Tech), Architect
Professor of Practice
Aalto University



RECAP OF PRINCIPLES

CODE ENTITIES

Comment

Human-readable instruction

Variables

- <Gen.> Able to vary.
- <Math.> A symbolic name associated with a entity whose associated value may be changed
- <Comp.> A **memory location** in which a program can store intermediate results and from which it can read them.

Code

- A sequence of instructions

Modularity

"Creating reusable and/or hierarchical packages of instructions"

- *Function* is reusable set of instructions.

  doMyThing(attribute)

- *Methods* are just functions encapsulated within classes

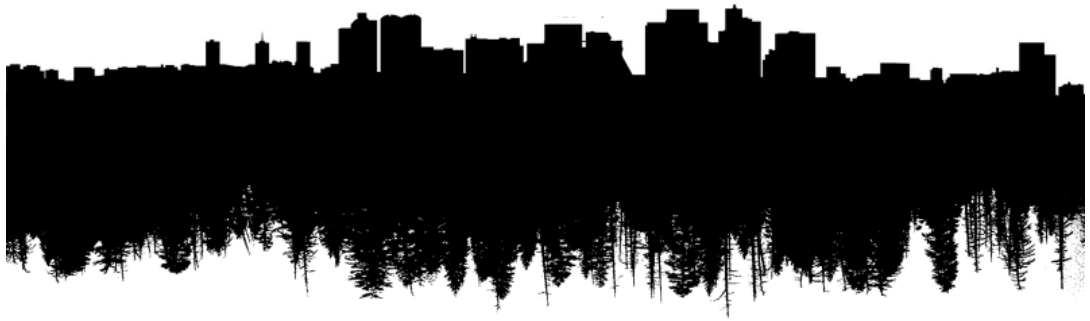
  class.doMyThing(attribute)

Attributes

- *Have type and structure*

Return value

- *Have type and structure*



ART OF DEBUGGING

WHAT IS DEBUGGING

"Debugging occurs as a consequence of successful testing. That is, when a test case uncovers an error, debugging is the process that results in the removal of the error. Although debugging can and should be an orderly process, it is still very much an art."

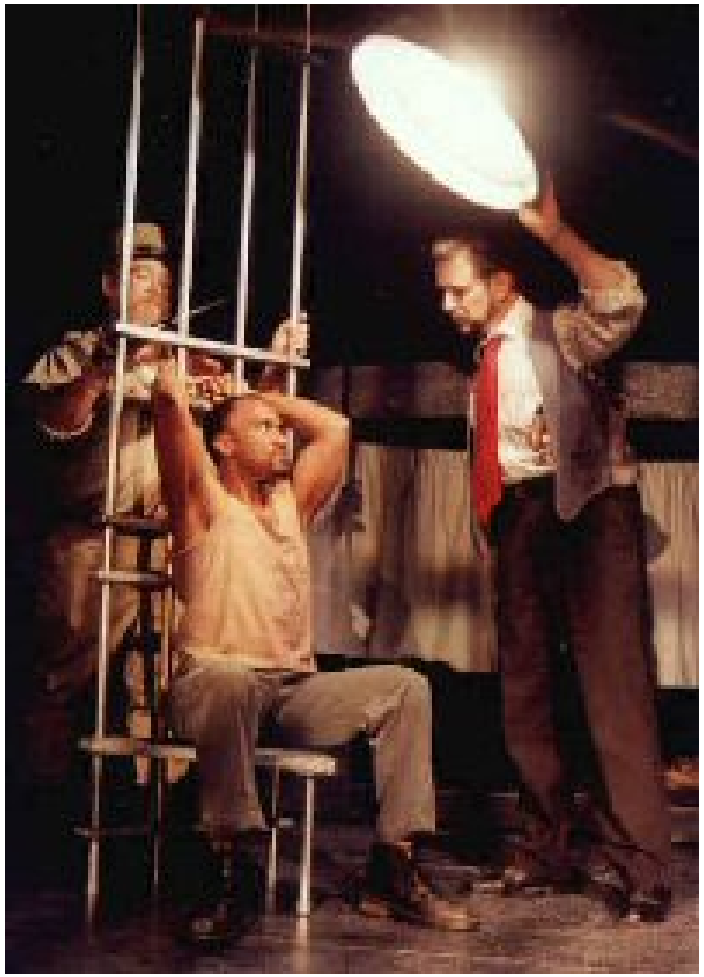
https://www.1000sourcecodes.com/2012/05/software-engineering-art-of-debugging.html

"Fixing a buggy program is a process of confirming, one by one, that the many things you *believe* to be true about the code actually are true. When you find that one of your assumptions is not true, you have found a clue to the location (if not the exact nature) of a bug."

Matloff, Norman & Salzman, Peter Jay (2008). *The Art of Debugging*. No Starch Press.

1. Start small
2. Use a top-down approach (modularity, hierarchy)
3. Pay attention to variable names and use plenty of comments
4. Spot exceptions arbitrary breaks (ex. Infinite loops)
5. Issue an interrupts to check the data validity

QUESTIONS ?



Thank you!