Summarizer 0101

Introduction to Computer Programming

<Code Cadet> André Silva

Reminder about presentations

Talk loudly so everyone may “ear”

Present energetically

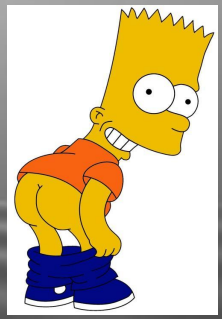
Don’t read big texts from slides

Keep text simple

Reminder about presentations

Practice the presentation

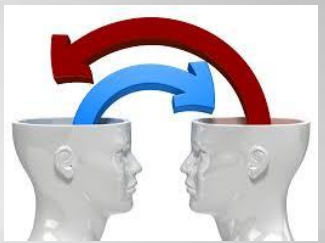
Use the available stage space



Keep facing the audience

Spread focus throughtout

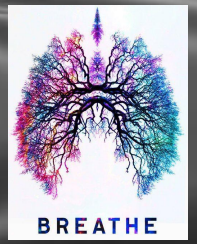
Reminder about presentations



Interacting is dope

Smile…

…



!

...and …

Programming Languages

What are they?

Programming Languages

What are they?

Systems to instruct the machine

Which was the first one?

Programming Languages

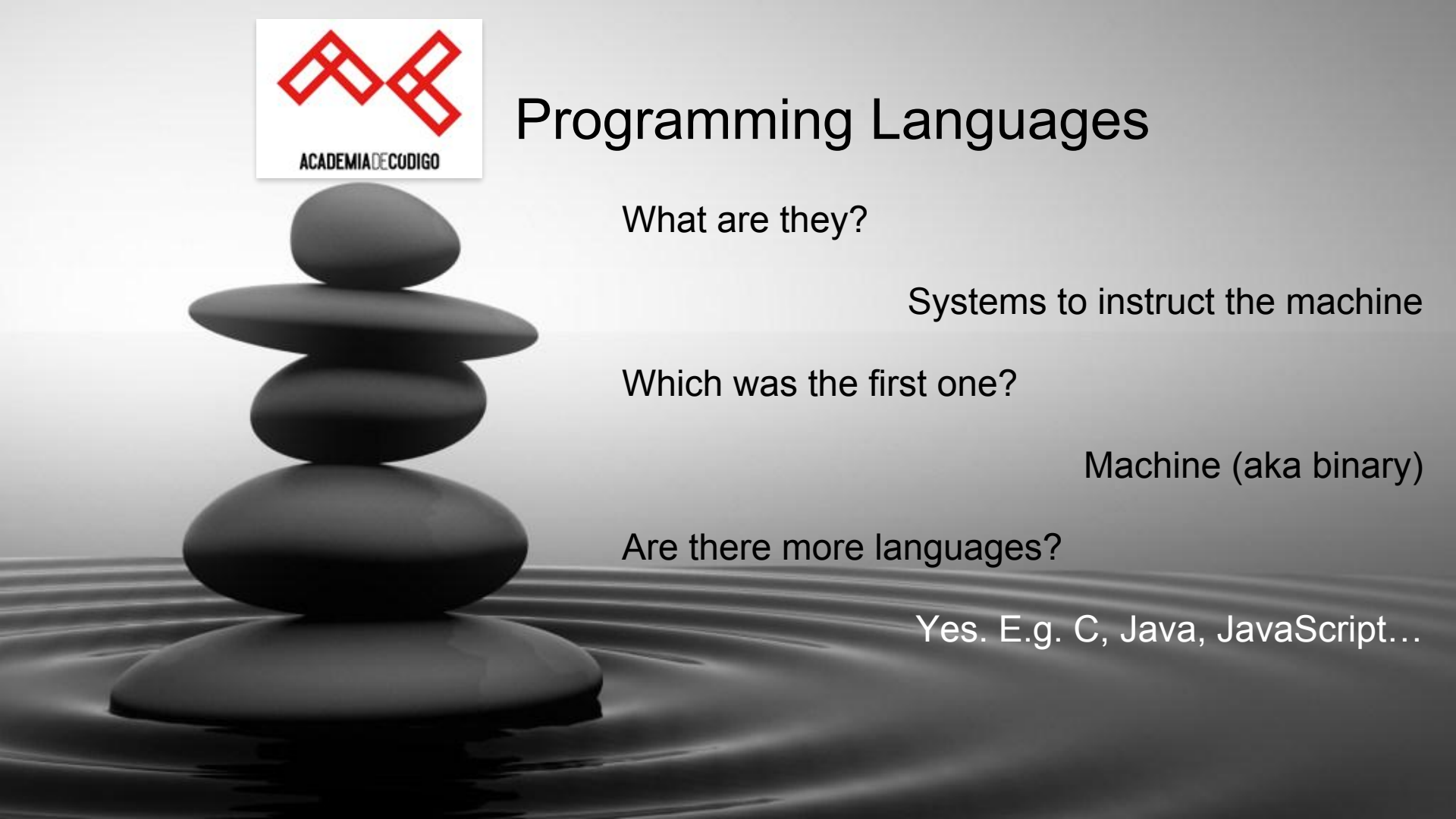
What are they?

Systems to instruct the machine

Which was the first one?

Machine (aka binary)

Are there more languages?



Programming Languages

What are they?

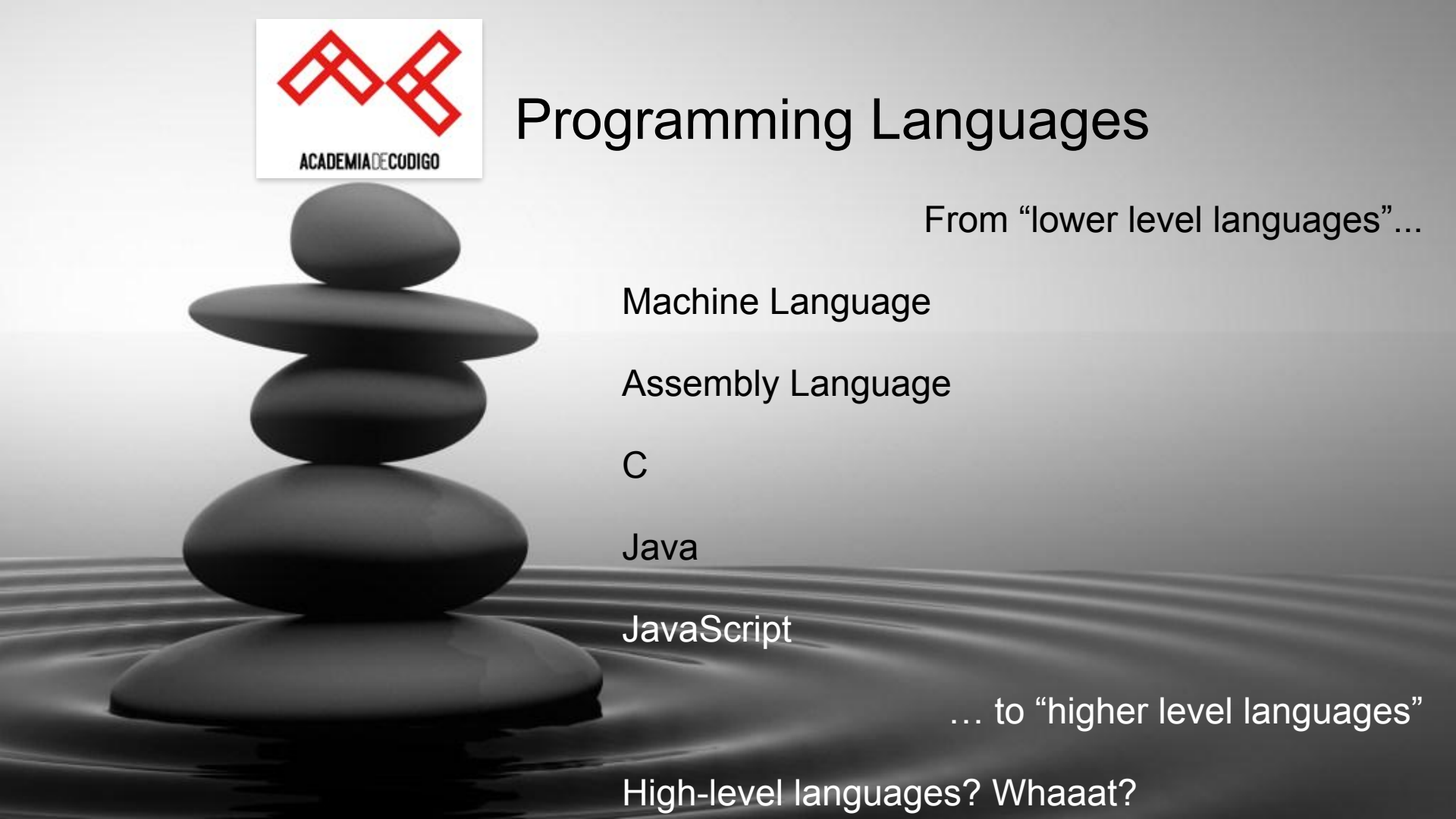
Systems to instruct the machine

Which was the first one?

Machine (aka binary)

Are there more languages?

Yes. E.g. C, Java, JavaScript…



Programming Languages

From “lower level languages”...

Machine Language

Assembly Language

C

Java

JavaScript

… to “higher level languages”

High-level languages? Whaaat?

Programming Languages

High-level languages? Whaaat?

Understandability

Resemblance (to human language)

Abstraction (from computer details)

Easiness (to use)

Programming Languages

High-level languages? URAE!

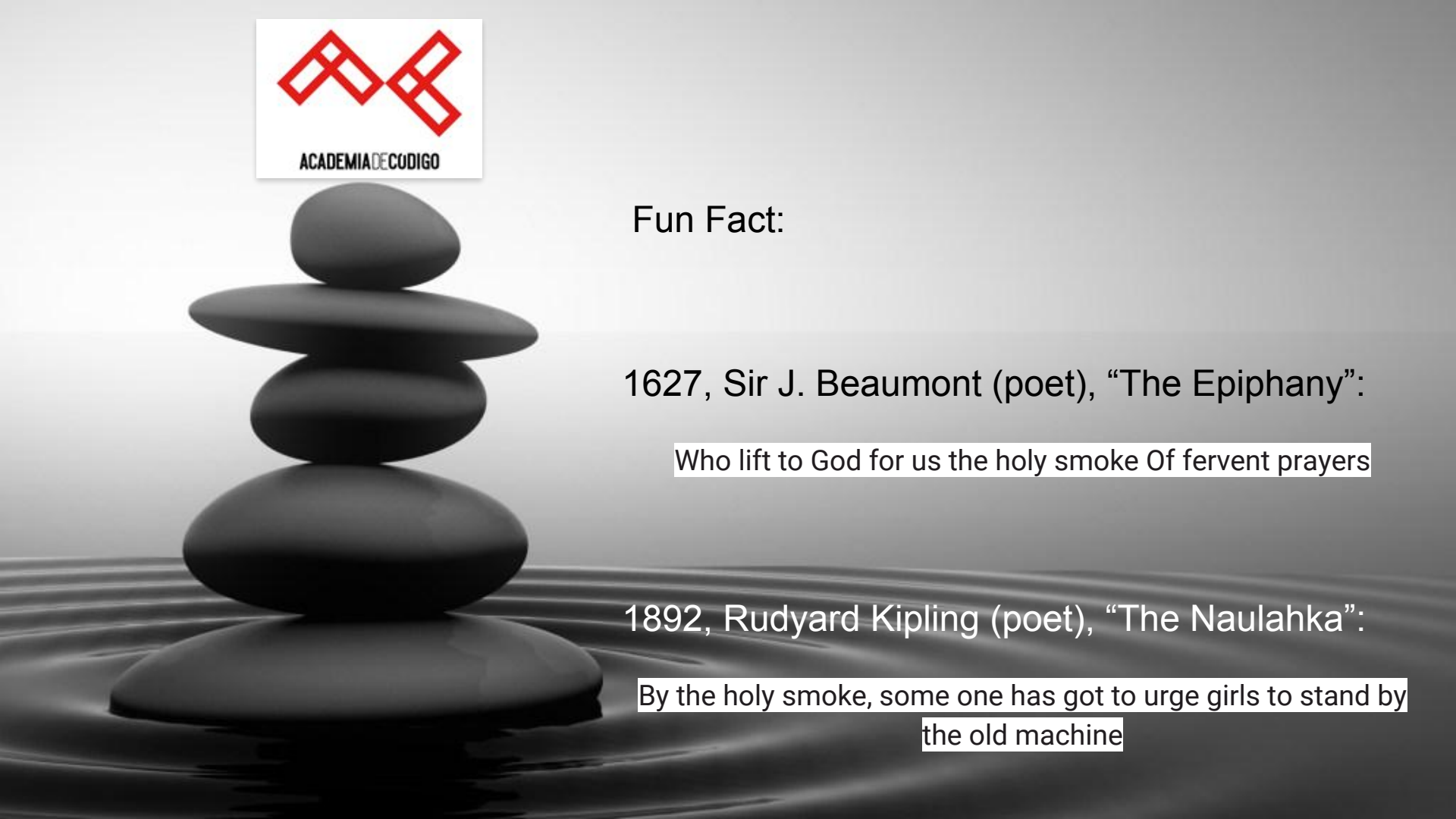
Programming Languages

What about the future?

Programming Languages

What about the future?

Natural Language (Human)



Fun Fact:

1627, Sir J. Beaumont (poet), “The Epiphany”:

Who lift to God for us the holy smoke Of fervent prayers

1892, Rudyard Kipling (poet), “The Naulahka”:

By the holy smoke, some one has got to urge girls to stand by the old machine

Programming Languages

What kinds of languages are there?

Programming Languages

What kinds of languages are there?

Compiled languages

```
main.c
compiler.output
main
```

Written, Compressed, Executed

(e.g. BASIC, C, Pascal)

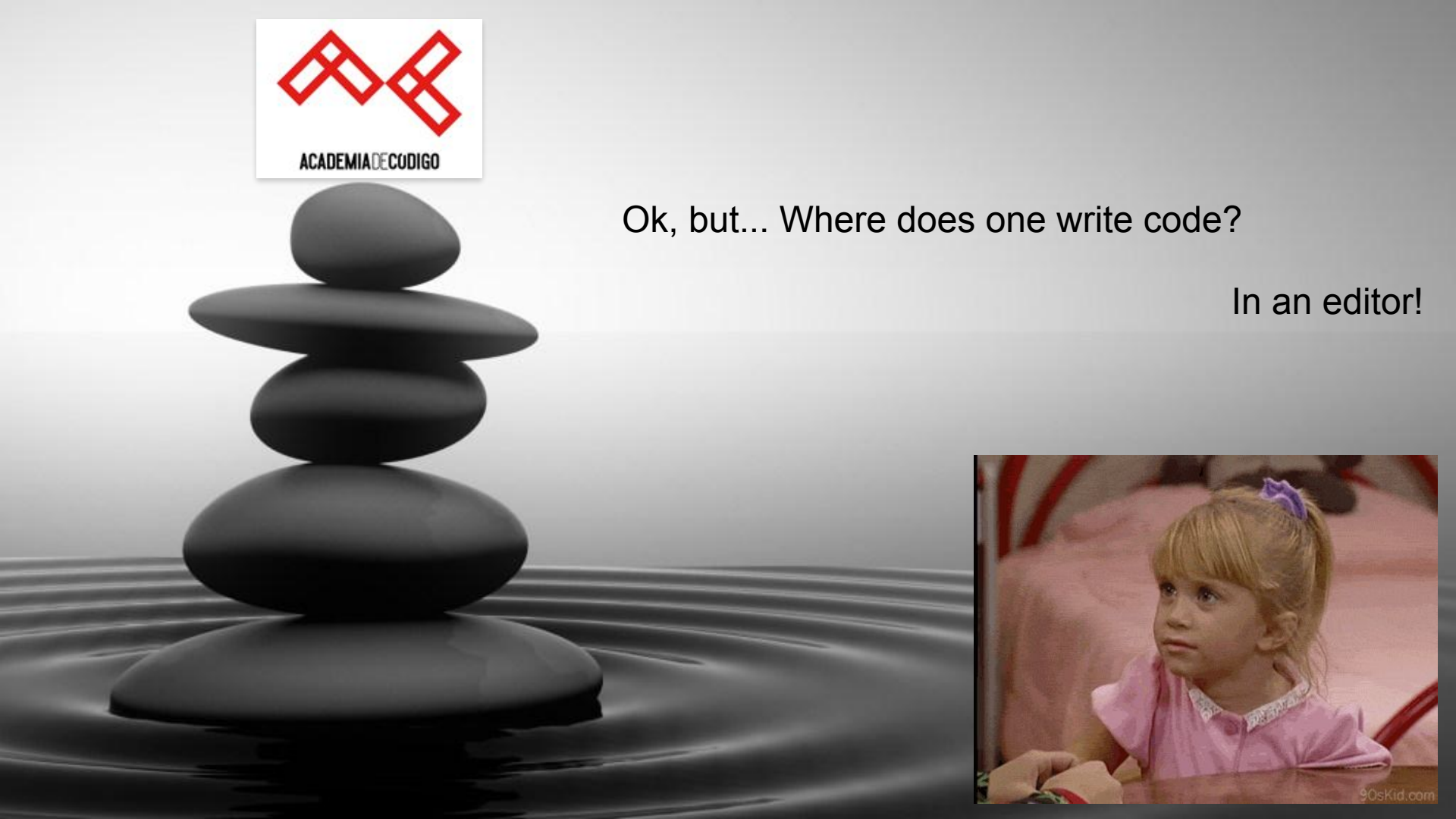
Interpreted Languages

```
index.js
node js
```

Written, Executed

(e.g. JavaScript, Python, Ruby)

Ok, but... Where does one write code?



Ok, but... Where does one write code?

In an editor!

Editors

vi Editor

(aka visual editor)

Not that easy to learn

Fast

Powerful

Keystrokes

Editors

vi Editor

(aka visual editor)

Not that easy to learn

Fast

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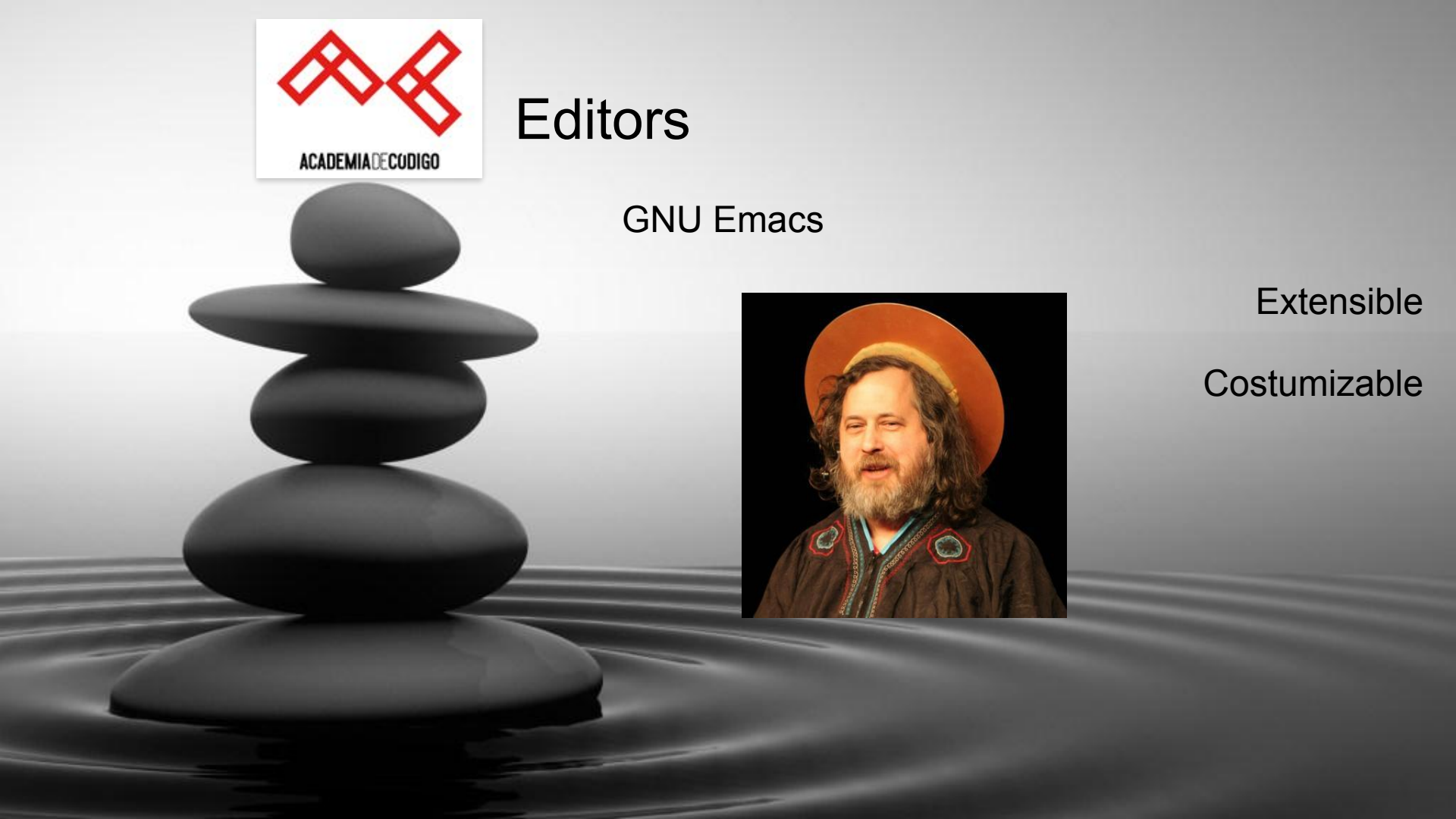

Editors

GNU Emacs

Extensible

Costumizable

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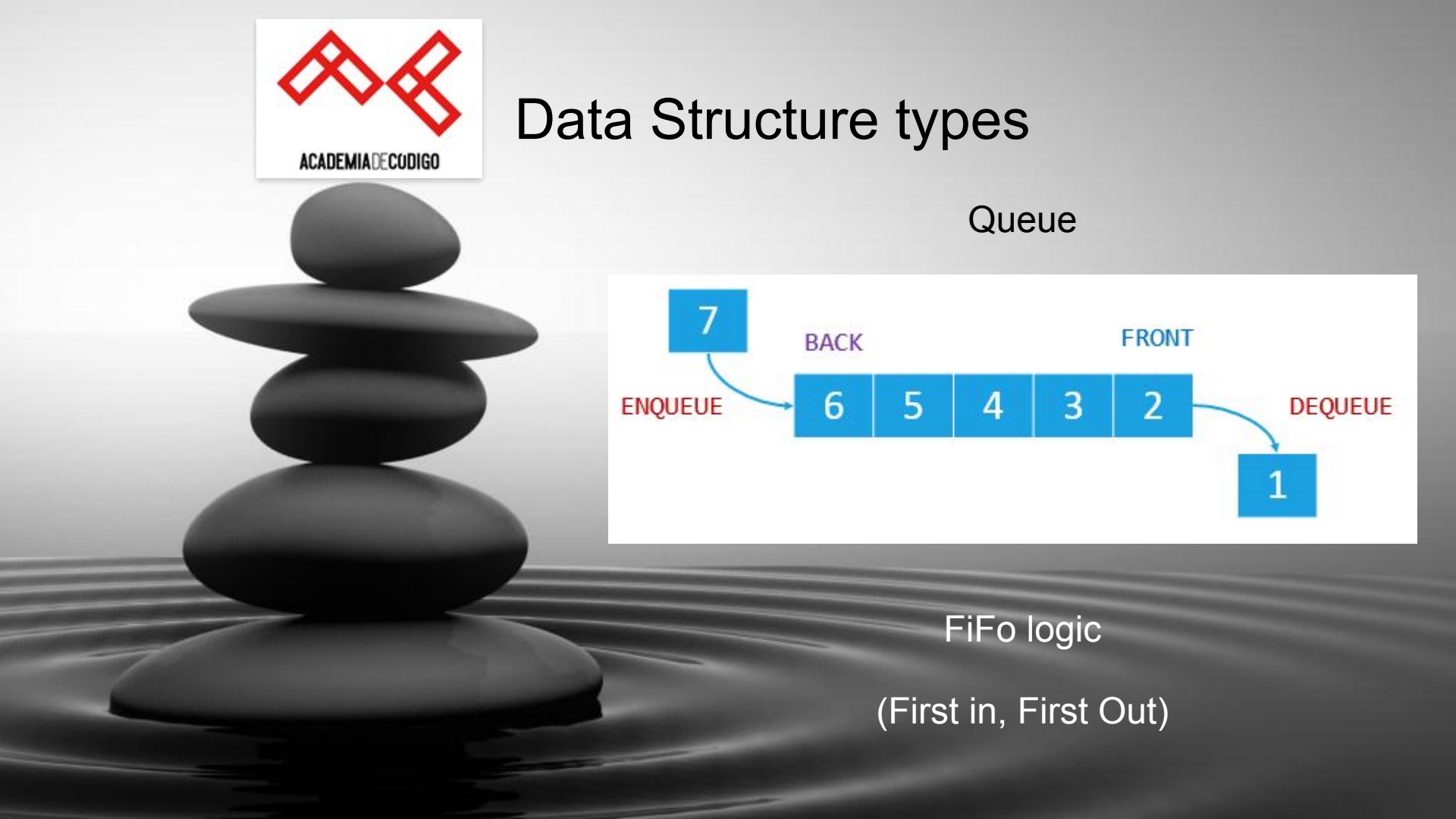
Data Structure

Let’s talk about abstract structure types

T

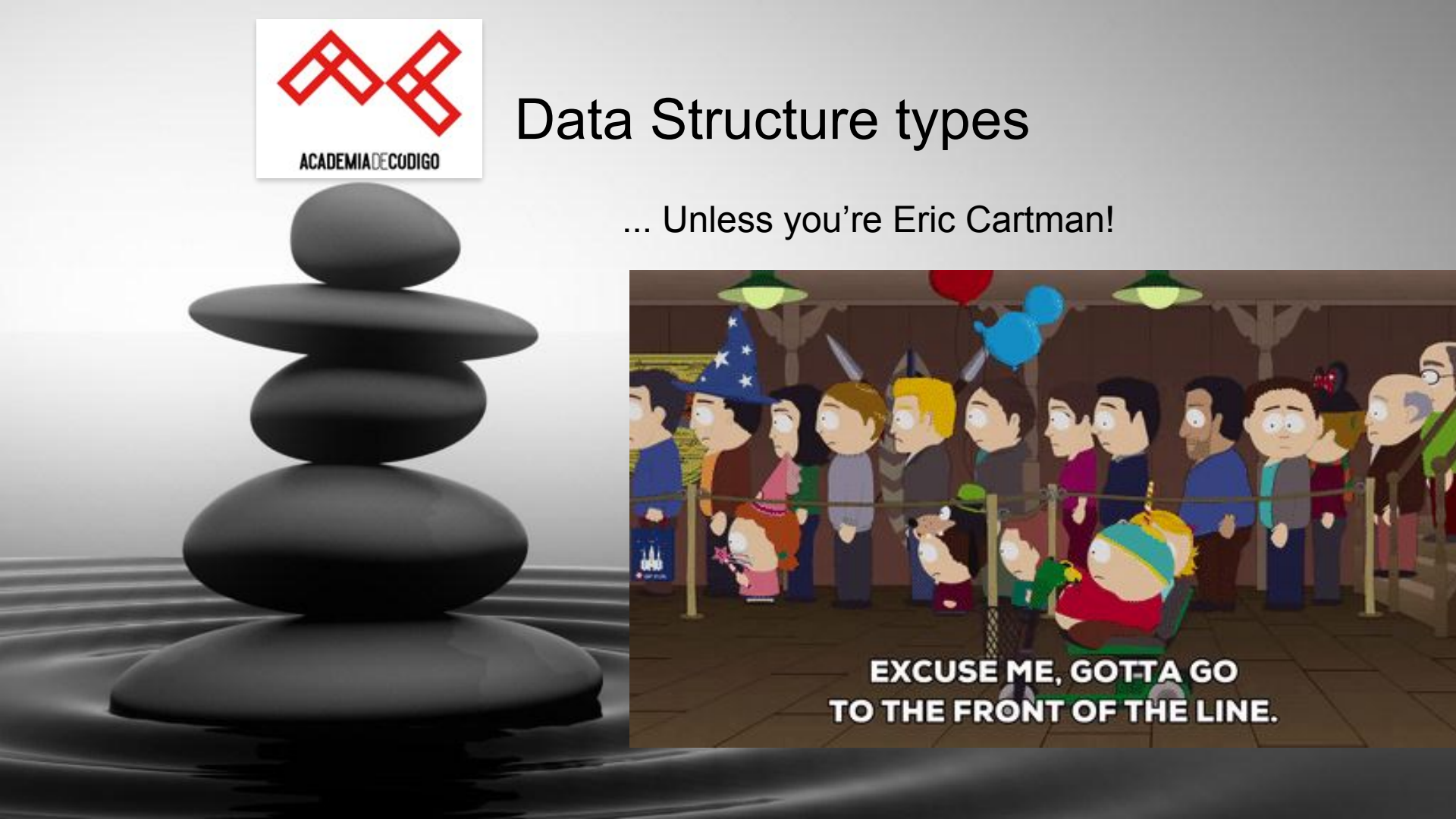


Data Structure types

Queue

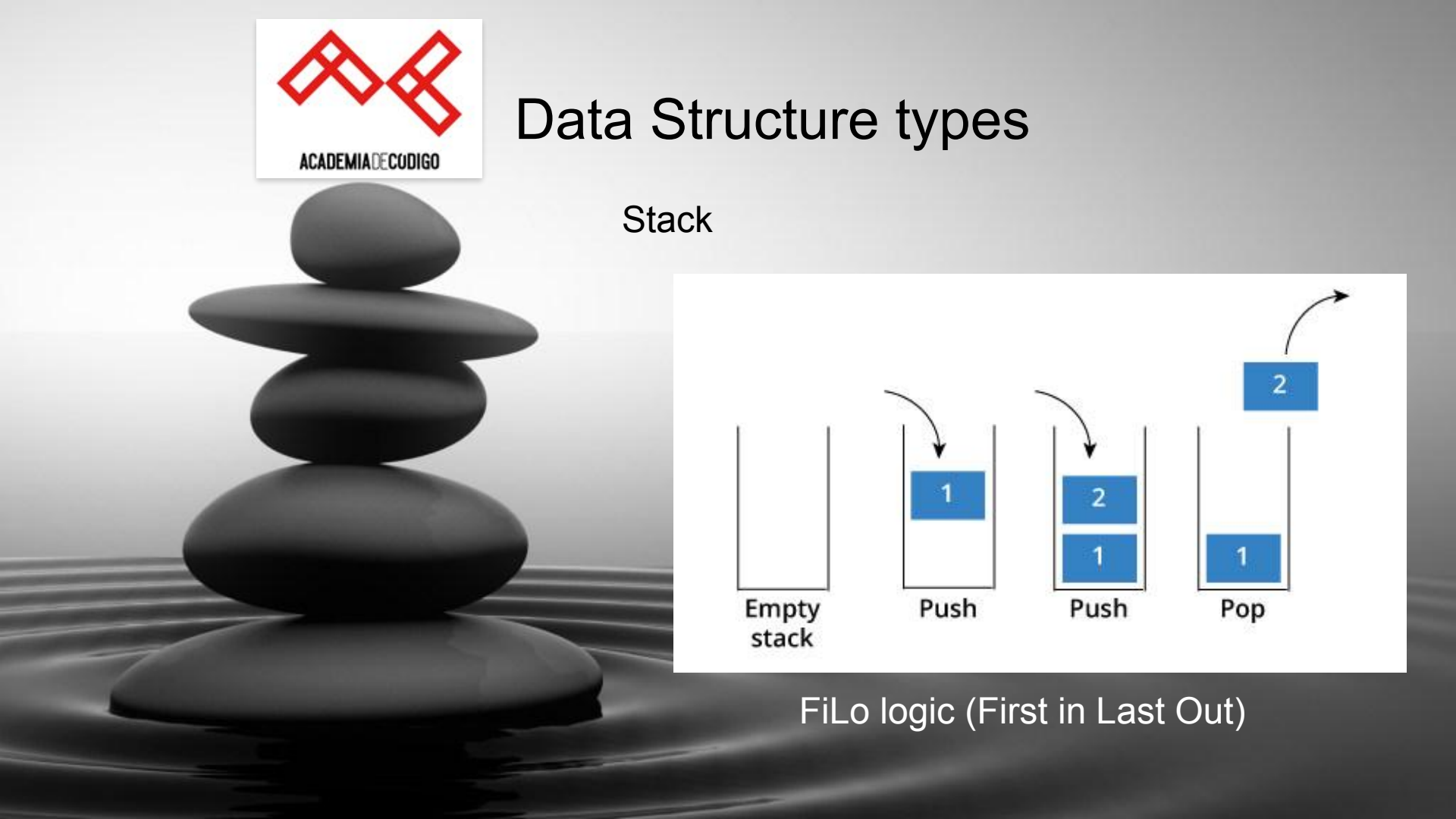
FiFo logic

(First in, First Out)



Data Structure types

... Unless you're Eric Cartman!



Data Structure types

Stack

FiLo logic (First in Last Out)

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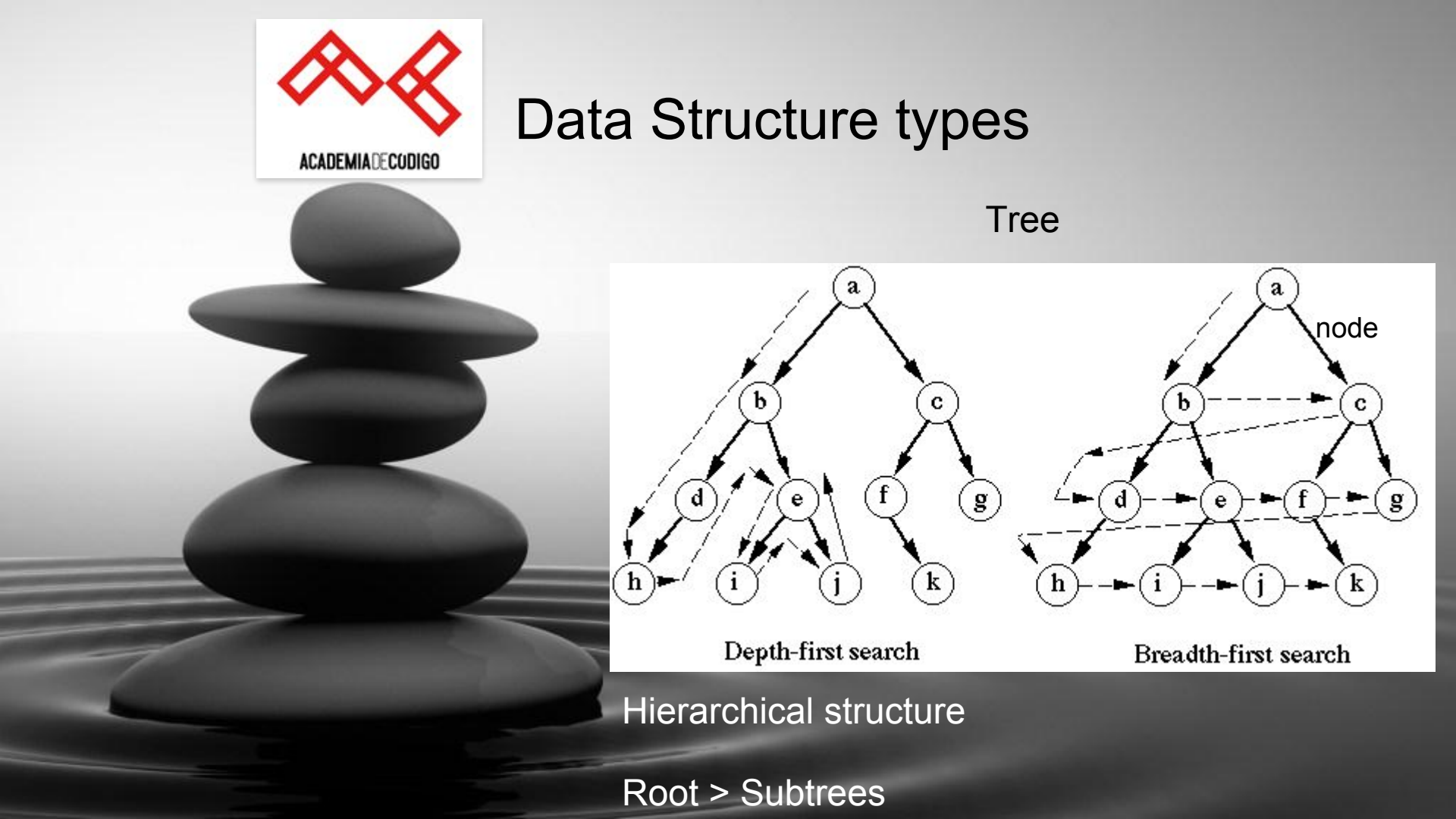
Data Structure types



Data Structure types

Tree

Hierarchical structure

Root > Subtrees

Data Structure types

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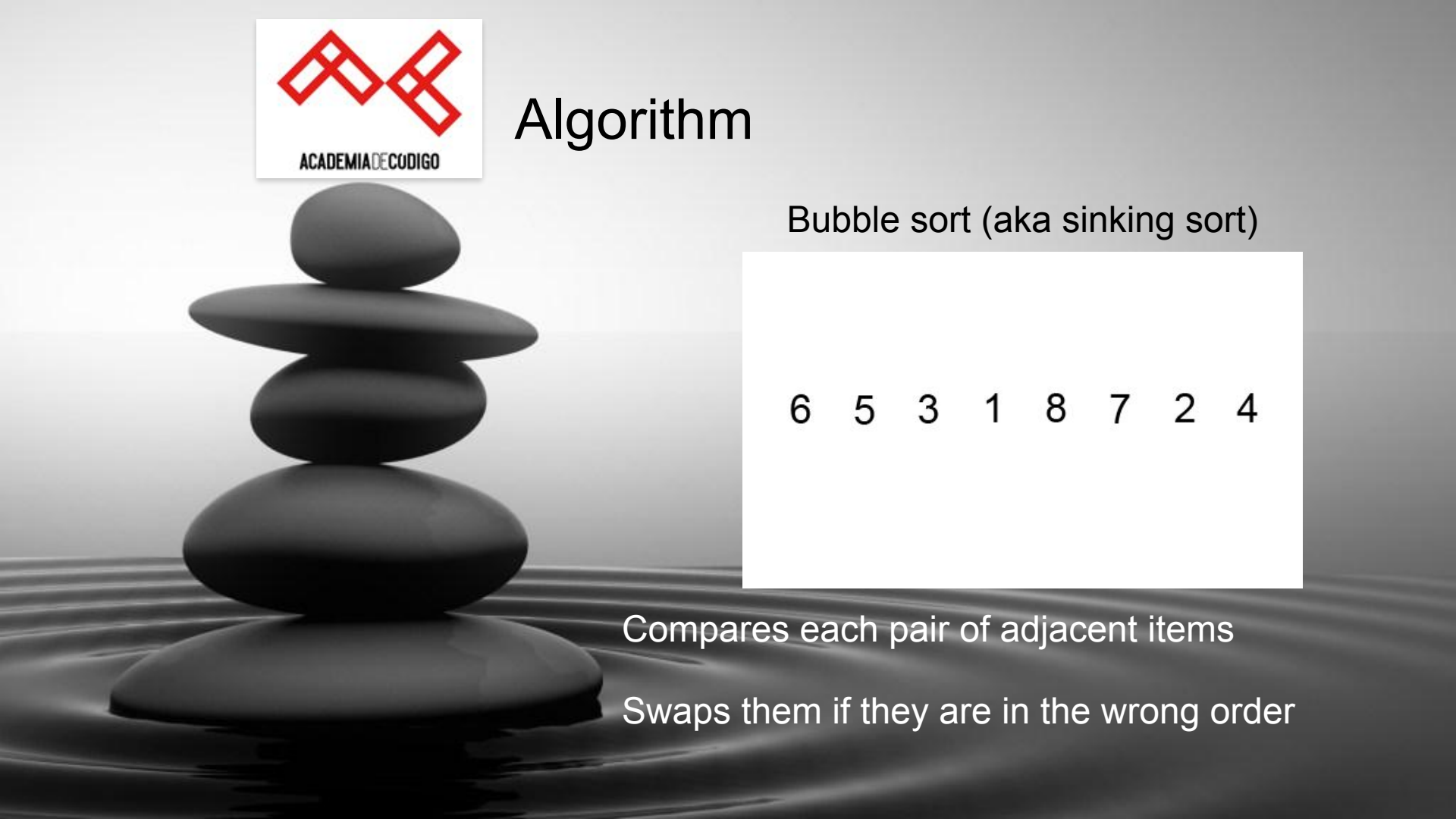
Algorithm

Algorithm

… an unambiguous specification of how to solve (...) problems

… a series of sequential instructions to achieve a goal



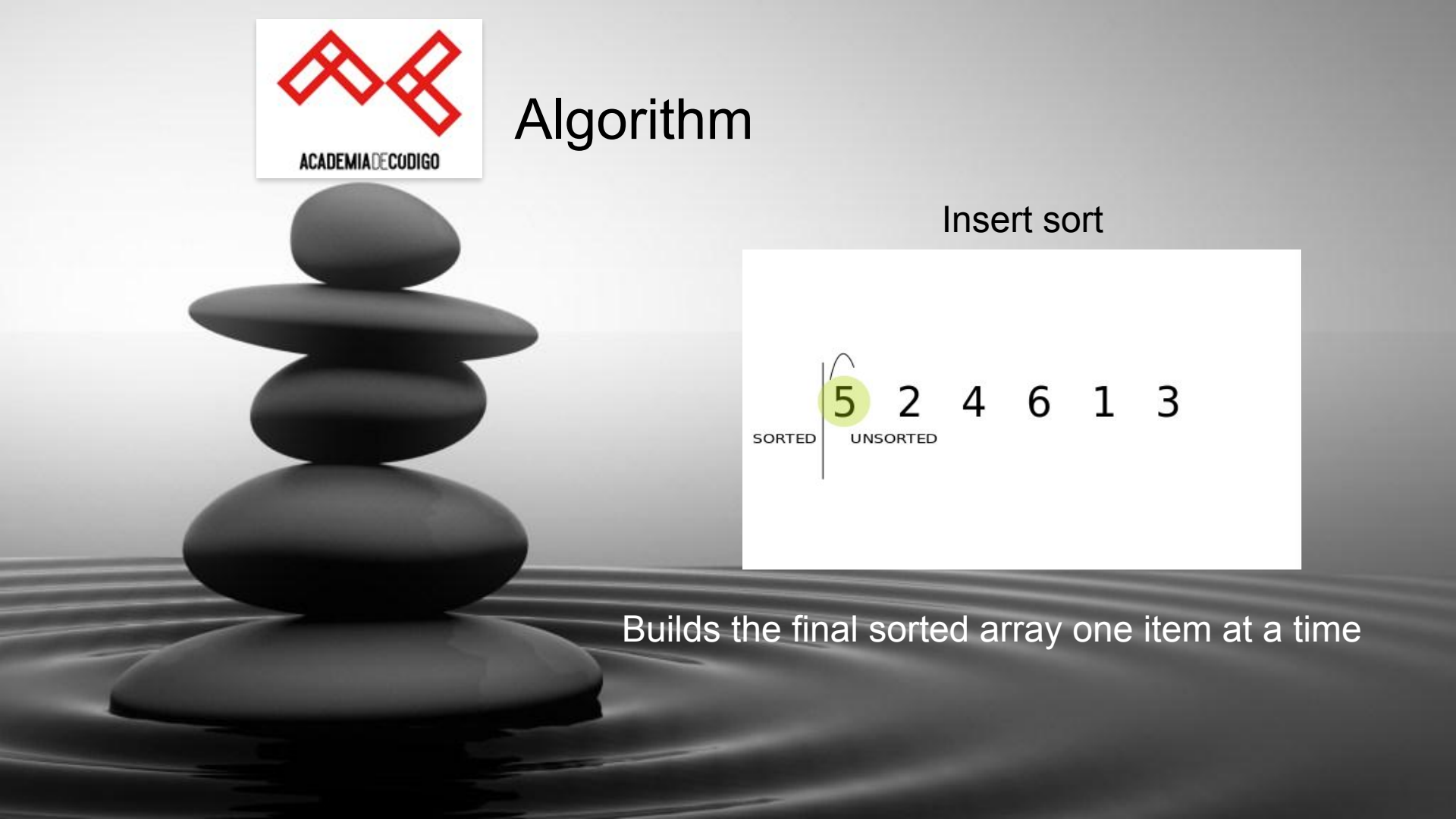
Algorithm

Bubble sort (aka sinking sort)

6 5 3 1 8 7 2 4

Compares each pair of adjacent items

Swaps them if they are in the wrong order



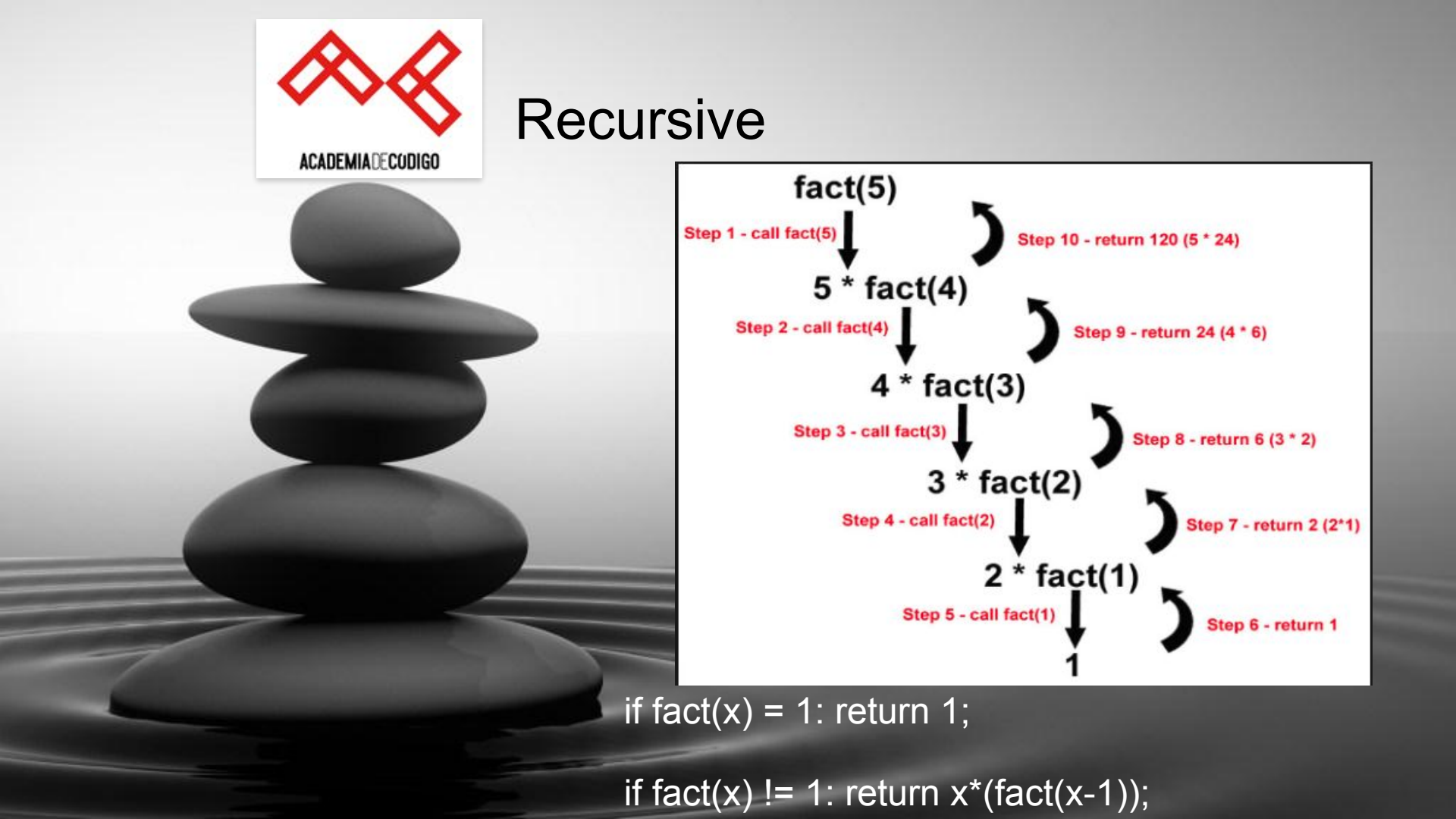
Algorithm

Insert sort

Builds the final sorted array one item at a time

Recursive

Solving a problem … recurring to itself.



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Recursive

if fact(x) = 1: return 1;

if fact(x) != 1: return x*(fact(x-1));

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