Programming Thinking

Introduction

Pepe García

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About

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Ask me anything

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About

The Course

- 7 sessions

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About

The Course

- 7 sessions
- 1 final exam

About

Grading

This course is graded as NGS/NGU, and the note will depend on the final exam.
The final exam consists of multiple choice/multiple answer questions, and is open book.

Criteria	Score %
Final Exam	100 %

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About

Grading

The grading for this course will either be **Non Graded Satisfactory** or **Non Graded Unsatisfactory**.
If you get 50% or more in the overall score, you get **NGS**, and **NGU** otherwise.

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About

Participation

Please, raise your hand at any point in class if you want to ask something, make an useful comment, or answer a question. (if remote, use Zoom's raise hand feature, so that it's easier to track it)

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Learning Objectives

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In this course we will build the fundamentals for the rest of the courses in the masters that rely on programming. We will:

- Learn What's programming
- Understand how computers execute programs
- Learn the basics of Python

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Plan for this session

- Know each other a little bit!

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Plan for this session

- Know each other a little bit!
- Learn about software

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- Know each other a little bit!
- Learn about software
- Understand what are algorithms and data structures

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Plan for this session

- Know each other a little bit!
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- Install Anaconda

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Language

Throughout this course we will use Python as our programming language, but there are many more!

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What programming languages have you heard of?

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Language

There are several ways for categorizing programming languages.

Language classification

Language	Paradigm	Execution	Purpose
Python	imperative	interpreted	general
Java	object oriented	compiled	general
Javascript	imperative	interpreted	general
Haskell	functional	compiled	general
SQL	declarative	interpreted	specific
HTML	declarative	interpreted	specific

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Language

Python

Python is one of the most used languages right now. Its applications range from Data Science to Web servers

How do we write code?

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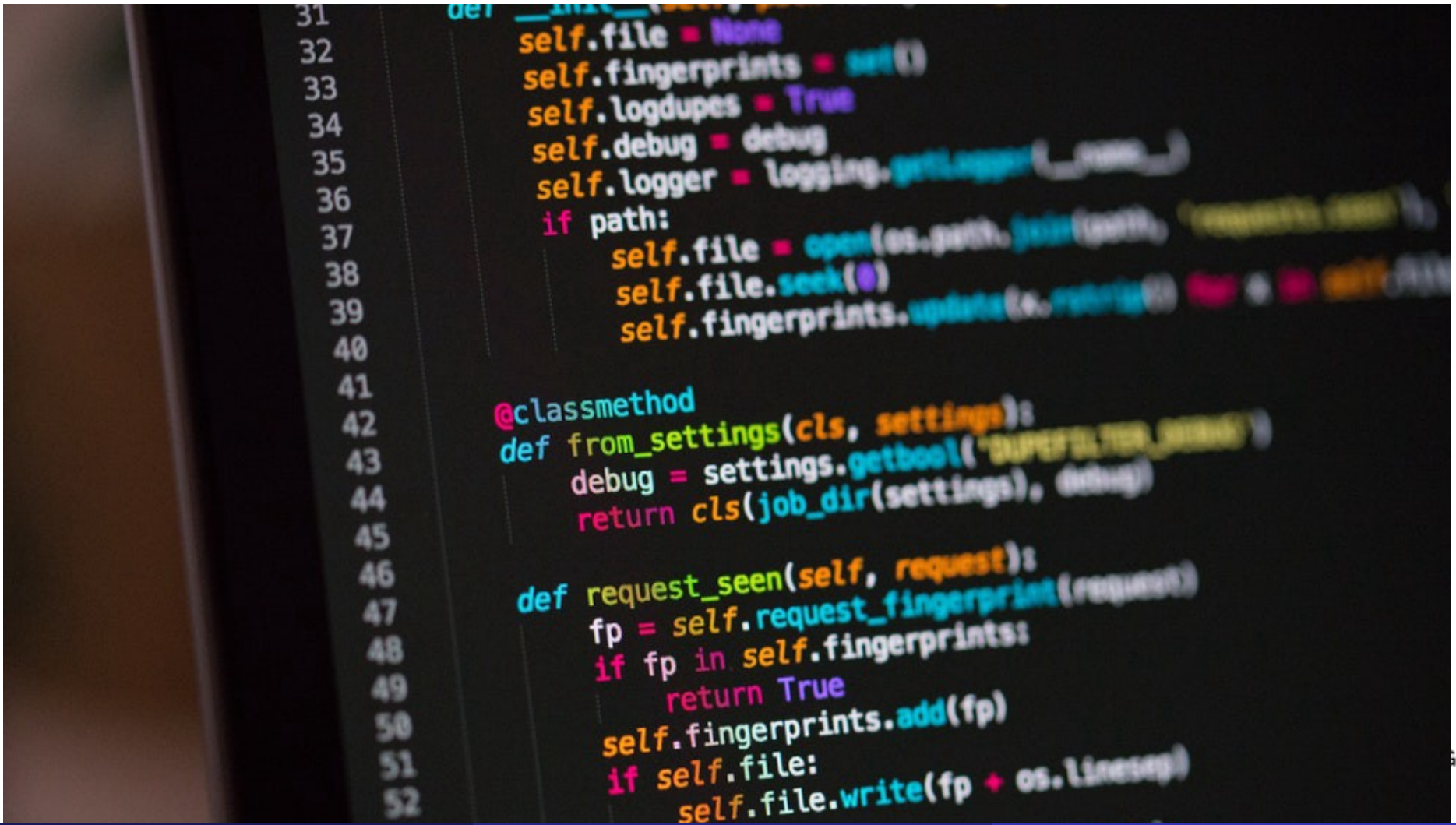
Coding is basically putting words together following a programming language specification.

How do we write code?

We can put these words directly in a text file and then execute it as a program.



How do we write code?

Or we can feed these words directly into the programming language console.

Demo

Python console

Let's see how do code looks in the console!

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Install Anaconda platform

Now we will install the Anaconda platform in our computers.

1. go to https://www.anaconda.com/products/individual
2. Go to the bottom of the page, to the **Anaconda Installers** section, and download the graphical installer for the 3.7 version **for your operating system.**

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Checkpoint

Anybody is lost or has problems installing the software?

Programs

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Programs

What is a program?

A program is a piece of software with a specific task.

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This task can be something **big**, like handling a nuclear reactor, or something **small** like Ctrl-c/Ctrl-v.

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Programs

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A program is a piece of software with a specific task.
This task can be something **big**, like handling a nuclear reactor, or something **small** like Ctrl-c/Ctrl-v.
There are two main components of programs, **algorithms** & **data structures.**

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Algorithms

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Algorithms

What is an algorithm?

Algorithms

What is an algorithm?

An algorithm is a sequence of steps that guide the computer in how to solve a problem

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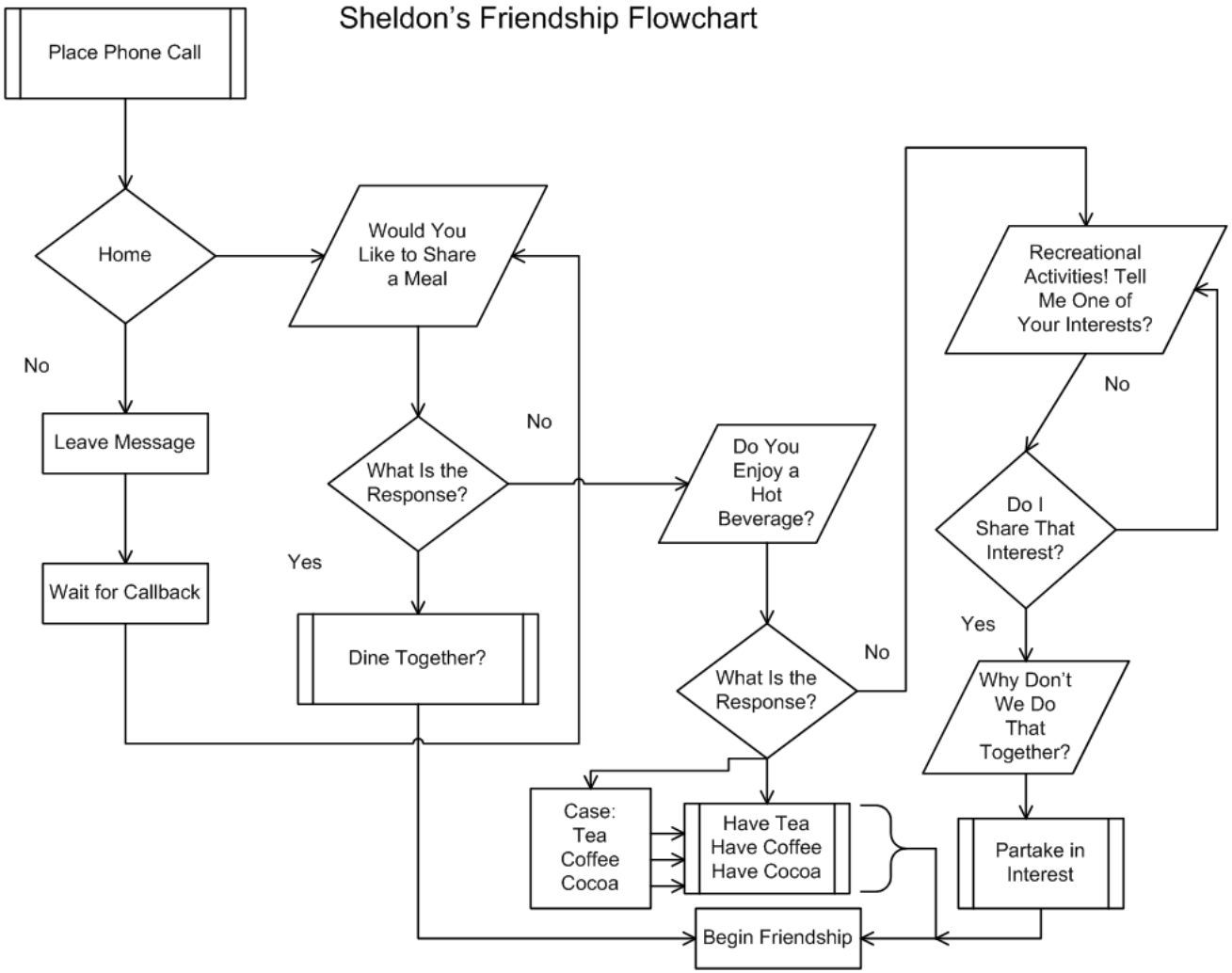
Algorithms

link to the video



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Algorithms

What's wrong with this algorithm? why did Wolowitz need to fix it?

Algorithms

What's wrong with this algorithm? why did Wolowitz need to fix it?

There was a **bug**, an infinite loop

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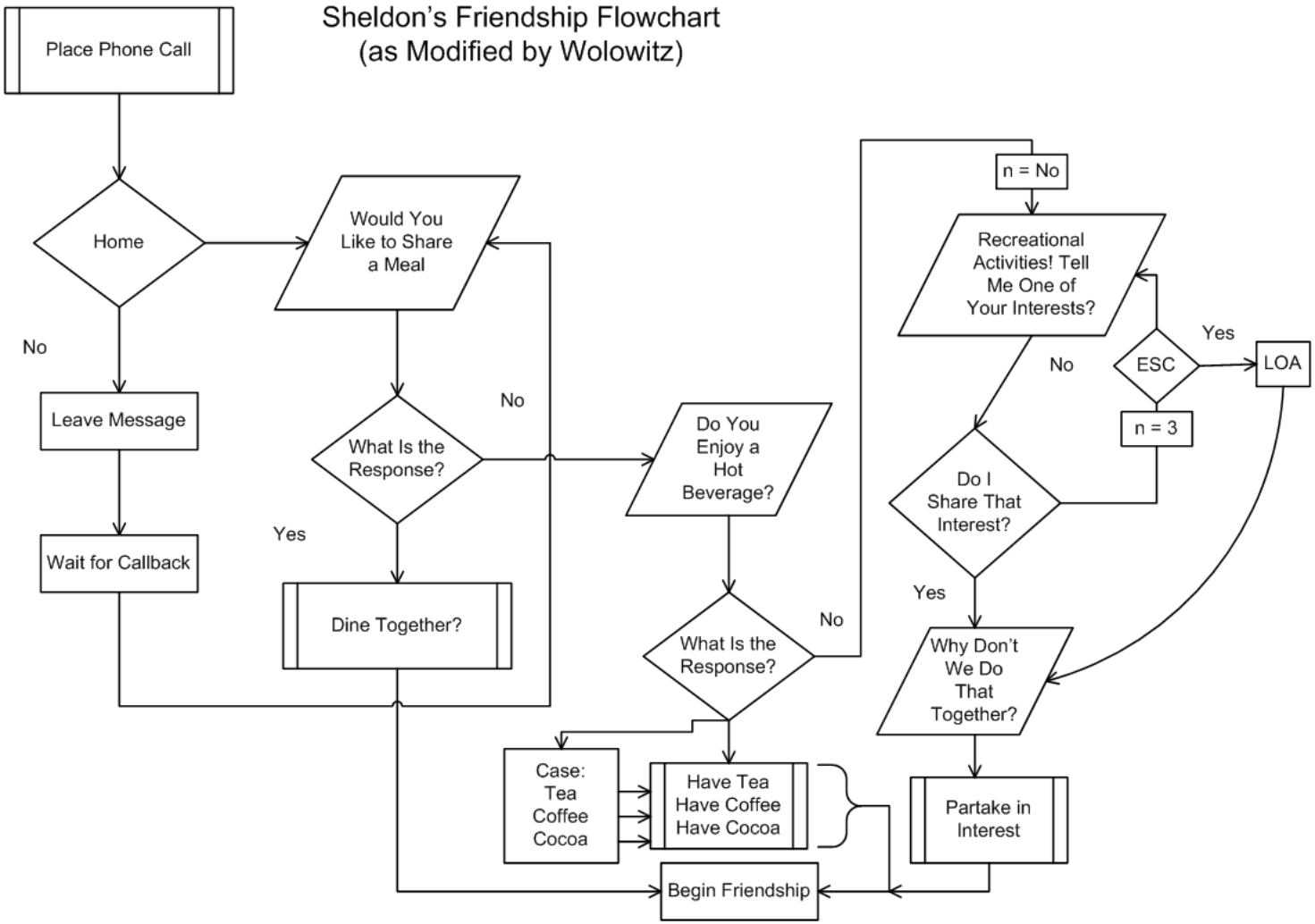
Algorithms



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Algorithms

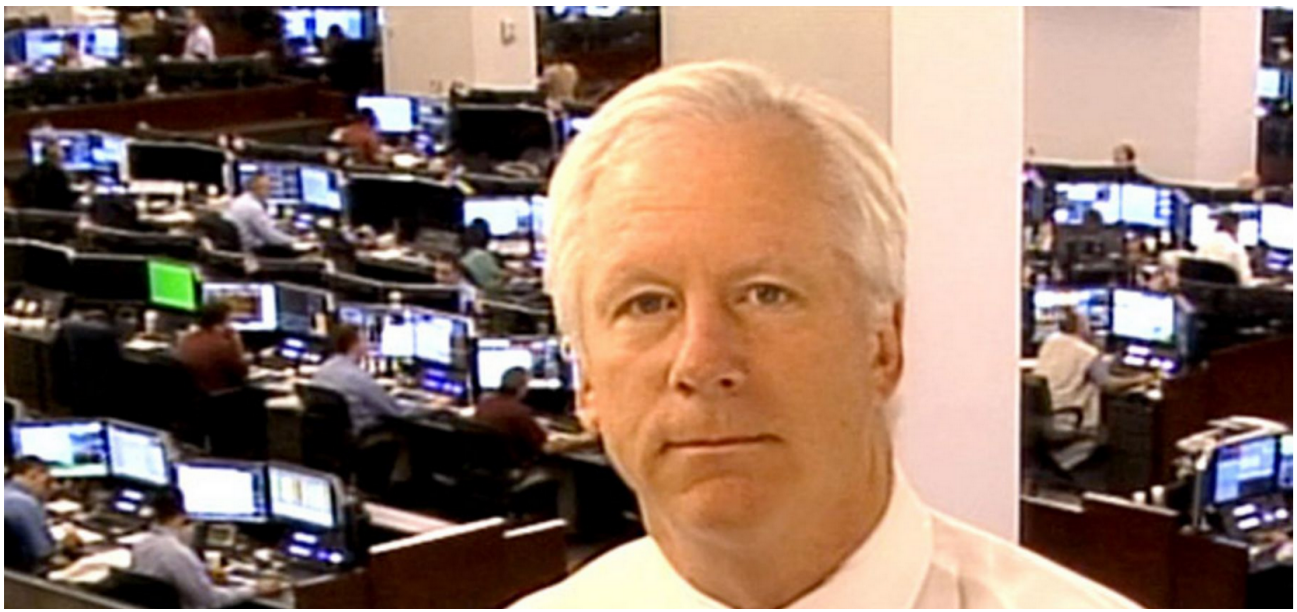
What other cases of bugs do we know?

Algorithms

Business

Knight Shows How to Lose $440 Million in 30 Minutes

By Matthew Philips
August 2, 2012, 11:10 PM GMT+1



https://www.bloomberg.com/news/articles/2012-08-02/knight-shows-how-to-lose-440-million-in-30-minutes

Recap

Recap

- We'll use Python for learning programming in this course.

Recap

- We'll use Python for learning programming in this course.
- Algorithms, like cooking recipes, will guide our program to perform what we want.

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Recommended reading

What Is Code is a great essay by Paul Ford. (it's a bit long, you don't need to read it for tomorrow)

https://www.bloomberg.com/graphics/2015-paul-ford-what-is-code/

Netflix' explained (Coding episode)

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