fromØtoC

1

## Course objectives

Understanding the dynamics of how a computer works in order to facilitate the way we interact with machines, be it programming or simply feeling more comfortable around them.

It focuses on methods and techniques of programming languages in general, using C because of its simplicity.

## Target

Not exclusively people who want to learn programming but also curious individuals who want to assimilate a different way of thinking about things.

## Pre-Requirements

Curiosity.

## Role of the trainer

Everything is publicly discussed within the group. The trainer makes sure that instructions are clear.
He/She guides and helps out with simplifying tasks if necessary. He may reveal some tricks, from time to time, in order to stimulate students to optimize.

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2

# →DAY ONE
# Understanding concepts by playing

## Preparation

We start answering general questions.

## Unlearning numbers

Given the idea that numbers are symbols, we learn how to detach the symbol from the quantity it represents.

## Discovering numbers

Via means of short stories and anecdotes, using pen, paper, and candy/buttons, we organize quantities of objects into our own numeric systems.

Particular attention is given to the concept of optimization of space in relation to quantity.

## Introducing different ways of counting

Using laser-cut wooden tablets we enter a process that leads us to a numeric system: the binary.

Byte boxes are introduced to physically display how we count using a paradigm that is not one we are accustomed to.
From here we have a convenient entry-point to the concept of hexadecimal.

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3

## Reference systems

We associate numbers (which we no
w see as quantities) to other things. E.g.: 1 is for A; 2 is for B... and so on.
By playing, we make our own number based alphabet.
We introduce symbols used for "writing" and we map them to numbers (this is how a computer does it, but we don't need to know it yet).
We are finally "encoding".

## Let's play "make believe"

We learn to break down an action in simpler smaller chunks.
We take part in collective games that involve common actions like, for instance, buying an ice-cream. We are divided in groups and each of them performs a part of the action.

## From ice-creams to texts

We start communicating by written statements.
We extent the "break-down" process to the text, dissecting it into characters, spaces, and punctuation.
We then learn how to "encode" our messages associating unique numbers to each character/symbol.

## More on how to communicate

We introduce more objects to explain communication: a laser-cut alphabet that we can connect via magnets and strings.
We can form sentences and communicate with others.
Here we also introduce the concept of communication speed, adding a few metronomes to the mix.

## Let's wrap up our day

We run a f.a.q. session, collect feedback, analyze the action, and cope eventual glitches.

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4

# →DAY TWO
# Translating concepts and methods into instructions

## So far so good?

We recap the concepts and methods learned in Day One (Numeric concepts and how to break down an activity).

## Comparison between daily life activities and computer programs

We translate actions and related "break-down" into instructions that can be processed by a computer, yet without using one.
Defining our activities as workflows and using paper and pen, individuals/ groups write them down as instructions.

## Making it natural

Repeating the operation with several examples, the concept of "program" is now understood as the outcome of all the single parts of activity.

We learn that the correct functioning of every single part is essential to a flawless execution of the program.

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5

# →DAY THREE
# Getting into the computer

## When the going gets tough...

We leave the game and get into the computer language using computers.
We work together and write down each activity/routine, then all the single parts are assembled into a complete program.
The trainer oversees the action and spots eventual typos and mistakes that are then discussed by the whole class.

## Does it work?

We launch the program.
Errors are examined and corrected.

## The end

We conclude with an open discussion to recap the process from 0 to C: questions are very welcome.

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# COURSE MATERIAL

6

### Pen, paper, crayons, scissors, eraser

Used as pleased.

### Byte boxes and ping-pong balls

Used to understand binary and learn how to execute operations.

### Colored candy/buttons and cups

Used to illustrate the concept of quantity and define numbering systems.

### Laser-cut alphabet and magnetic strings

Used to address the concept of lists, arrays and text. This system facilitates the understanding of how separate can communicate (one byte/character at a time).


### Laser-cut wooden tablets

They carry 3 numeric systems references and a symbol. Used to distance the student from numbers we all know and to understand and define alternative.

### Metronome

Used to understand how separate systems can communicate once a protocol is defined and speed is agreed upon.

from0toC

7

## Team

From 0 to C is an Education project invented by the creative technologist Ubi De Feo. The project team is formed by skilled individuals with different backgrounds: sociologist Francesca Galmacci, journalist Valentina Parasecolo, and creative collective Hello, Savants!

## Francesca Galmacci

is a sociologist (PhD) who has worked in different Universities and Countries: University of Perugia (Italy), New York University (USA), University of Manchester (UK), Wageningen University (NL). She is member of the editorial board of the journal 'Quaderni di Teoria Sociale' and of the series of sociological volumes 'Legami Sociali'. Her main fields of interest focus primarily on visual communication and lifestyles. She is currently collaborating with artists for the purpose of developing 'artscience' projects.

## Valentina Parasecolo

is a journalist and blogger. She received a BA and a MA degree in Political Science from the University of Perugia (Italy). She studied Media and Political Science at Grand Valley State University in Michigan (USA) and University of California, Berkeley (USA). She attended the Graduate School of Radio and TV Journalism in Perugia. Valentina co-founded the website ilbureau.com coordinating a group of journalists and designers who work on news, data visualization, and Educational videos.

## Hello, Savants!

is a collective of creative people based in Amsterdam (NL) that focuses on multidisciplinary projects. Its members belong to diverse fields, such as advertising, fine arts, programming, technology, music, crafting, and new-media.

from0toC

8

## Official website

http://from0.to/C/

## See also

http://hellosavants.com/from-0-to-C/