Fundamentals of Computing

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TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

The goals of this course

Learning outcomes

The course aims to provide students with knowledge and skills for effectively using computer methodologies and tools in the engineering field, especially for developing algorithms.

The goals of this course

Knowledge and understanding

- Acquire knowledge of the computational method;
- Acquire knowledge of the basic algorithms, data structures and the computational complexity;
- Acquire knowledge of the principles of programming languages, including the object-oriented
- Principles of programming through the C and Python languages.

The goals of this course

Applying knowledge and understanding

- Acquire the ability to analyze simple computational problem;
- Acquire the ability to describe the problem by using suitable formalism;
- Acquire the aAbility to find efficient algorithmic solution...
- ... and code it by using the Python and C programming languages.

The goals of this course

Making judgments

- Being able to choose appropriate languages and tools for software development.
- Being able to evaluate the correctness and efficiency of a software implementation.

Communication skills

Be able to interact about a computational problem with non-experts.

Learning skills

Be ready to continue his training to keep up to date on technological evolution.

Assessment Method

Written part

T Multiple choice test

Tests the ability to analyze Python and C code (syntax, semantics, efficiency)
Success 6-10

C Coding part

Only for those that have passed the test
In the same day of the test
Test the ability in designing, coding and analyzing algorithmic solutions.
Success 12-20

Final grade = T+C

The score of the written part is the sum of the scores of the two tests: to pass the exam must be at least 18.

Assessment Method

Oral part

- Optional
- In the same session of the written part
- Only for those that have passed the written part (grade ≥ 18)
- The final grade can be modified both positively and negatively

Prerequisites

- **Basic knowledge of your operating system**: create, delete and move files; install software; run programs

- **Basic math**: set theory, calculus, elementary logic.

Our week

Monday	Tuesday	Wednesday	Thursday	Friday	Weekend
		4:00pm 6:15pam		4:00pm 6:15pm	

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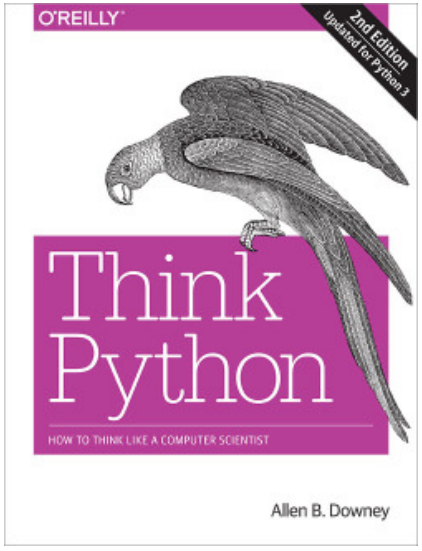
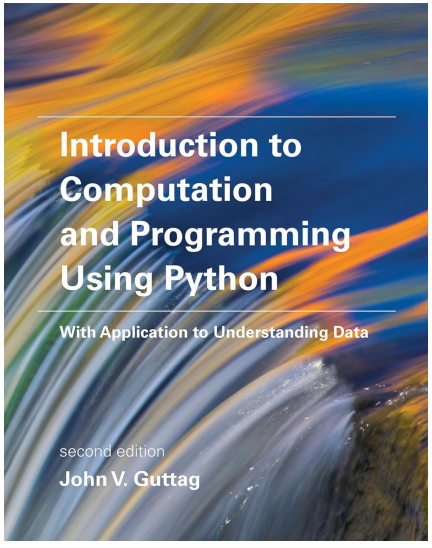
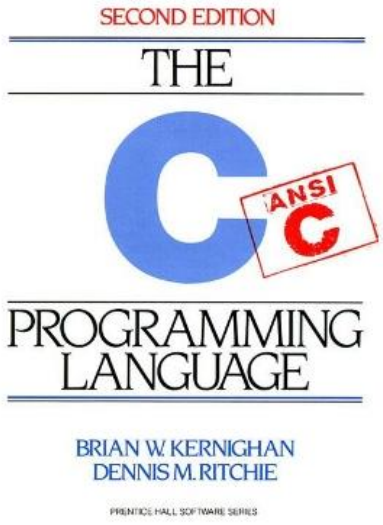
Office our

On Microsoft Teams, email me to arrange one.

Reference Book







- Think Python, second edition by Allen B. Downey
- Introduction to Computation and Programming Using Python: With Application to Understanding Data by John V. Guttag
- The C Programming Language (2nd ed.) by B.W. Kernighan and D.M. Ritchie.

Python resources

`www.python.org`

Windows and macOS users

- Download from `www.python.org` the package with interpreter and IDLE, a IDE software;
- Download Anaconda (`www.anaconda.com`): interpreter + the IDE Spyder + lot of libraries
- WinPython (winpython.github.io/) can be installed locally with no admin rights, it contains Python interpreter + IDLE

Linux users

Pre-installed, choose an IDE (IDLE, Spyder,...)

Web environment

`https://repl.it/languages/python3`