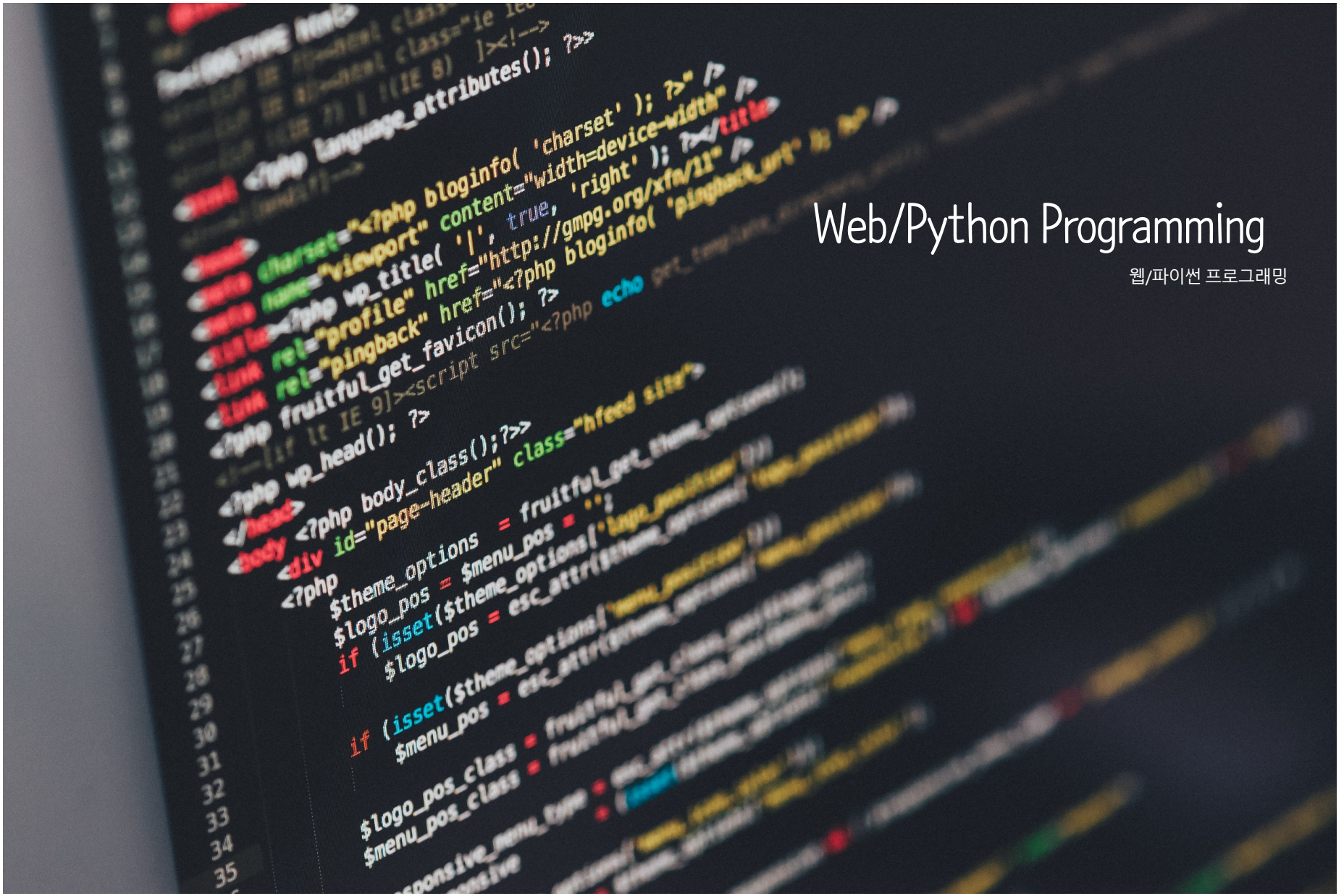


Web/Python Programming

웹/파이썬 프로그래밍

Welcome to SWCon104

- Course objective
  - Introduce basic concept of programming and computational thinking
  - Help students understand how to map problems into a computational framework
  - Prepare freshmen with no prior programming experience for entry into other programming based courses
  - Help students get familiar with web programming using Python
  - Web programming
  - Web server and client

Course info

- Lecture + Practice
- Full time exam
  - Mid-term
  - Final-term
- Scoring (= Syllabus)

- Textbook
  - ***Think Python 2nd Edition by Allen B. Downey***
    - Free under CCL license
    - http://greenteapress.com/wp/think-python-2e/
  - 박응용, “점프 투 파이썬”
    - https://wikidocs.net/book/1
  - 정인용, “자바스크립트+제이쿼리 입문”

Course homepage

- Web/Python BBS
  - http://mobilelab.khu.ac.kr/wordpress/webpythonbbs/
- On-line Lecture (2022-1 / 2018-2)
  - http://mobilelab.khu.ac.kr/wordpress/webpythonbbs/?vid=18

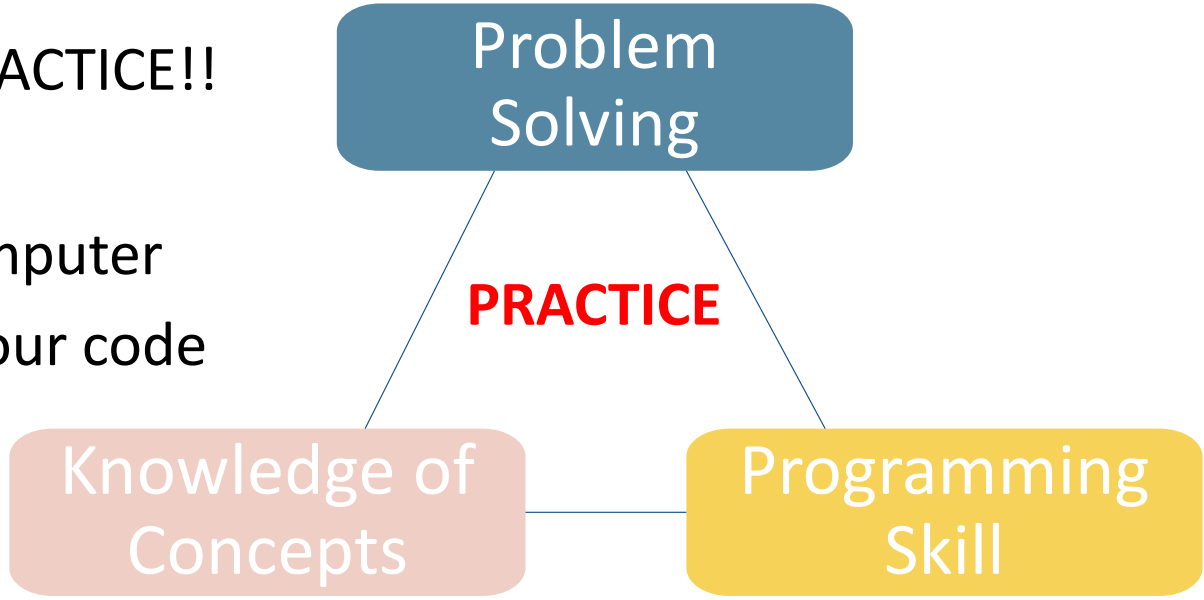
Today

- Course introduction
- What does a computer do?
- What is programming?
- Computational thinking
- Python installation
- Intro to Python (Author, Python.org, Others)

Fast paced course

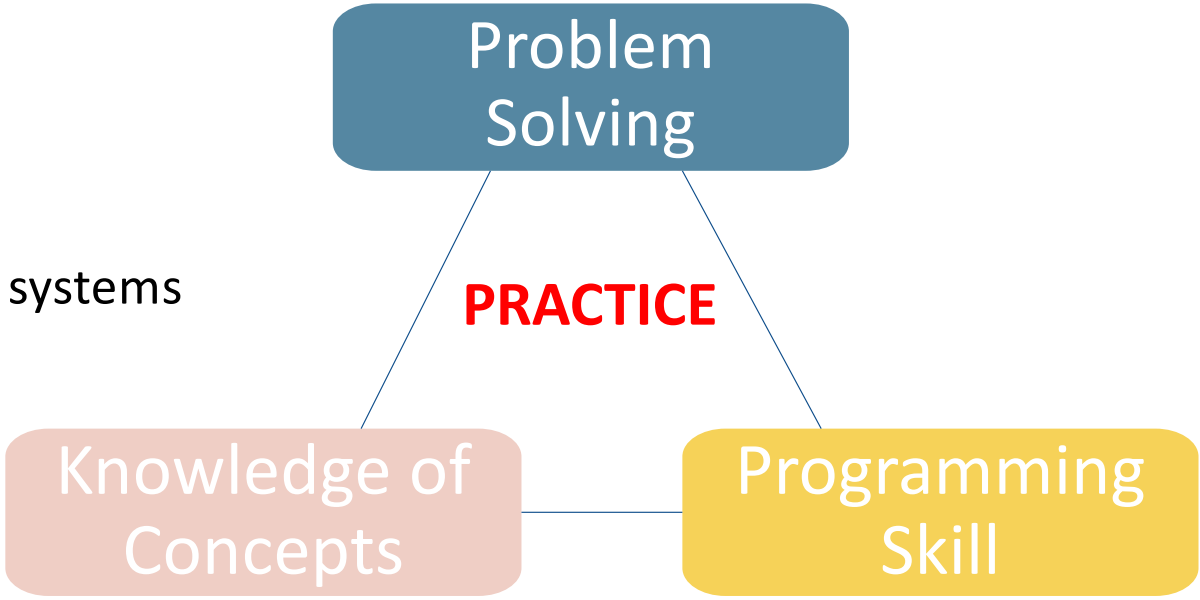
- New to programming?
- PRACTICE PRACTICE PRACTICE!!

- You can’t break your computer
- Don’t be afraid to test your code
- Worst case: reboot



Topics

- How to program
  - Data structures
  - Iteration and recursion
- How to write good code
  - Organize and modularize systems
  - Classes and methods
- How to evaluate
  - Different algorithms
  - Complexity



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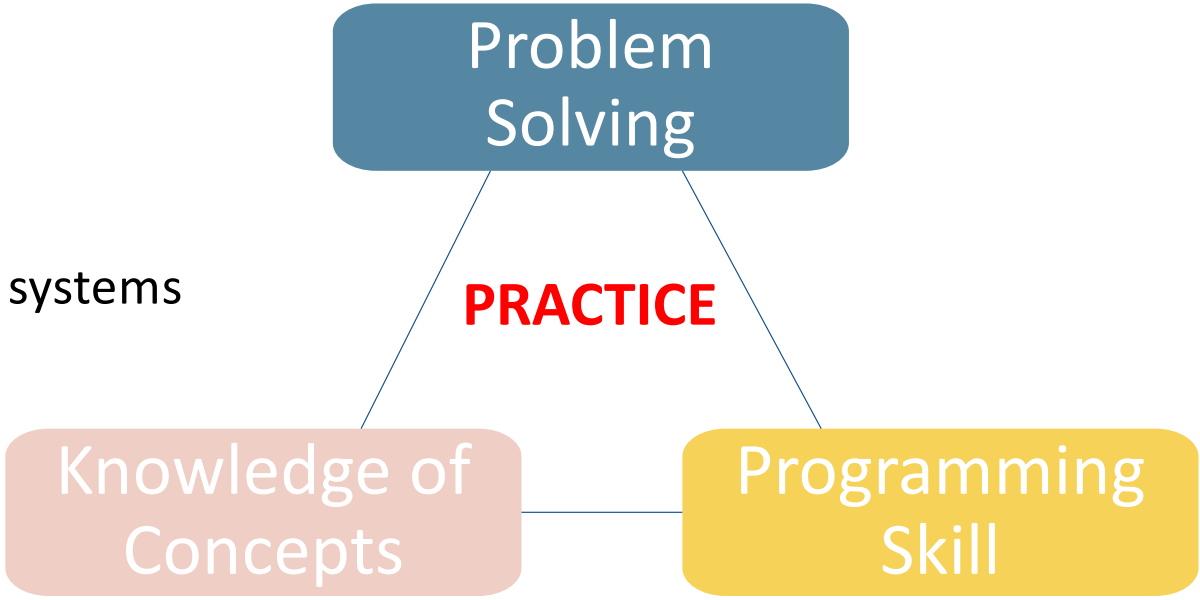


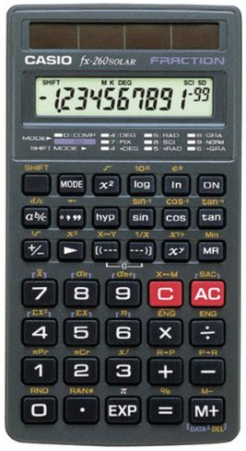
What does a computer do?

- Fundamentally:
  - Performs calculations
  - Remembers results
- What kinds of calculations?
  - Built-in to the language
  - Ones that you define as the programmer

- Computers only do what you tell them to do

What is programming?

- A program is a set of instructions



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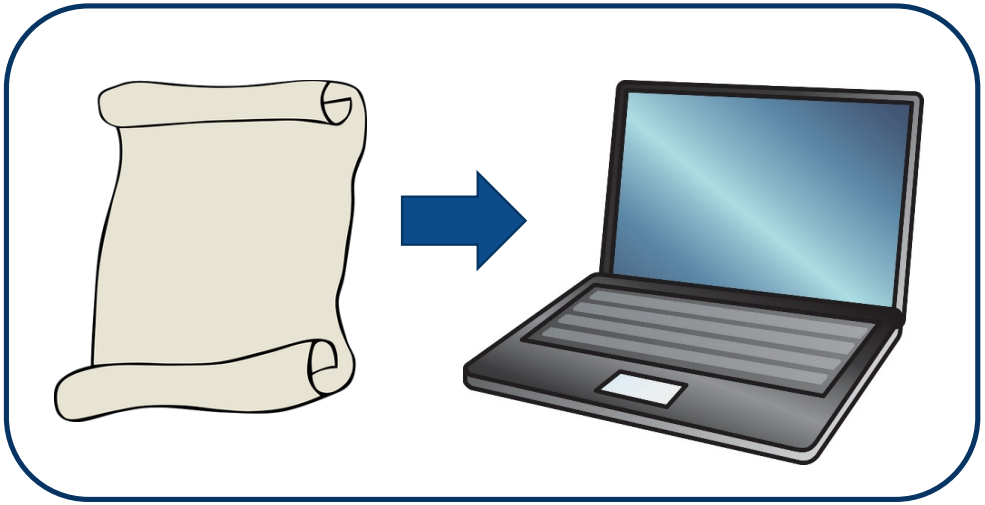


- You can “teach” a computer new operations

Computational thinking

- Computer science is the study of computation
  - What can be computed and how to compute it
- Characteristics of computational thinking
  - Conceptualizing, not programming
  - A fundamental skill
  - A way that humans think
  - Complements and combines mathematical and engineering thinking
  - Ideas
  - For everyone, everywhere
- One can major in computer science/software convergence and do anything!

Programming language

- There are many programming languages

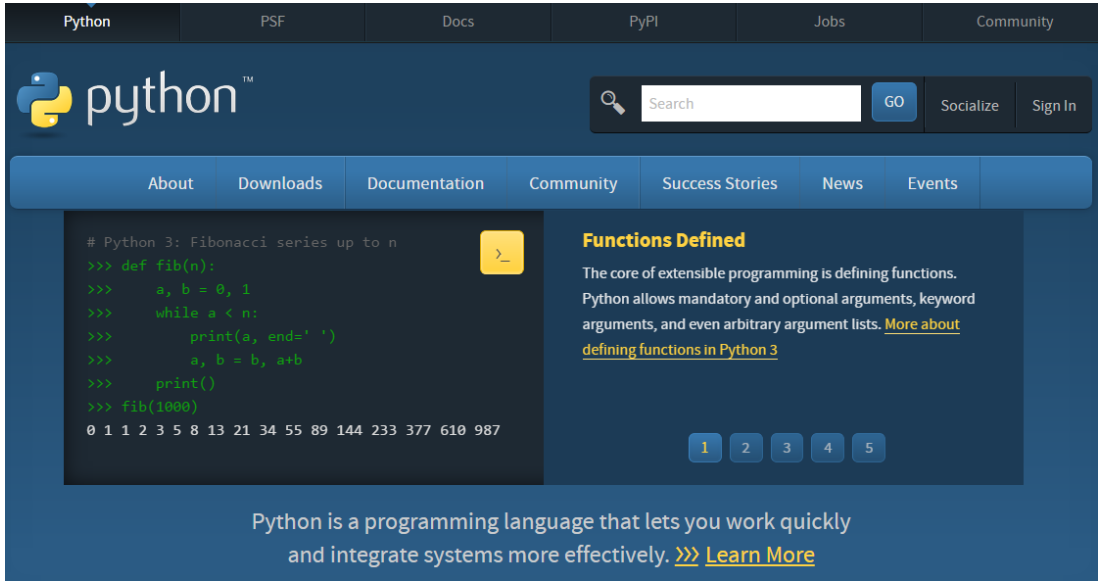
English	Python	Scheme
Add 3 and 4	3 + 4	(+ 3 4)

- Mathematical expressions (add, subtract, multiply, divide…)
- Repeat a list of instructions a number of times (loop operations)
- Choose which of two instructions to do based on the current information you have (conditional operations)

Why Python?

- It is free and well documented
- It runs everywhere
  - supports multiple platforms
- It has a clean syntax
- It is relevant
  - many companies use it every day
- It is well supported by tools
  - IDLE, PyCharm, etc.
  - Jupyter Notebook

- `www.python.org`



Intro to Python

- Author: https://en.wikipedia.org/wiki/Guido_van_Rossum
- Author: https://gvanrossum.github.io//
- Author: https://www.youtube.com/results?search_query=Guido+van+Rossum
- Overview: https://en.wikipedia.org/wiki/Python_(programming_language)
- Python.org: https://en.wikipedia.org/wiki/Python_Software_Foundation
- Source code: https://github.com/python/cpython
- Open course: https://www.coursera.org/courses?query=python&
- Open course: https://edu.goorm.io/lecture/44/%EB%B0%94%EB%A1%9C%EC%8B%A4%EC%8A%B5-%EC%83%9D%ED%99%9C%EC%BD%94%EB%94%A9-%ED%8C%8C%EC%9D%B4%EC%8D%AC-python
- Open course: https://programmers.co.kr/learn/courses/2

Positioning of Python

- Tiobe index: https://www.tiobe.com/tiobe-index/
- GitHub user rank: https://www.benfrederickson.com/ranking-programming-languages-by-github-users/
- GitHub repository statistics: https://githut.info/
- Source codes: https://github.com/collections/programming-languages

Open Sources?

- FYI: http://mobilelab.khu.ac.kr/wordpress/opensourcereference/