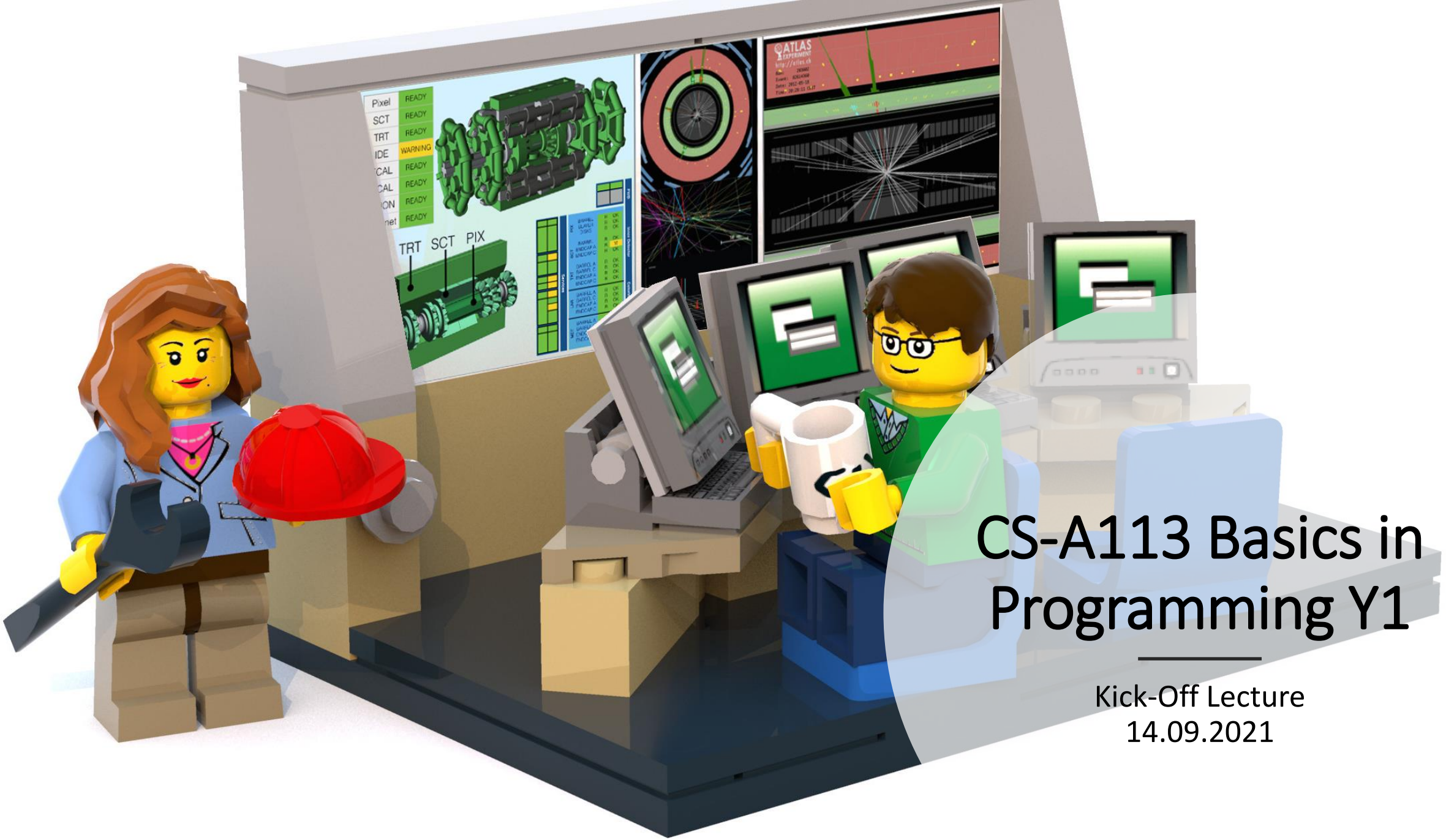


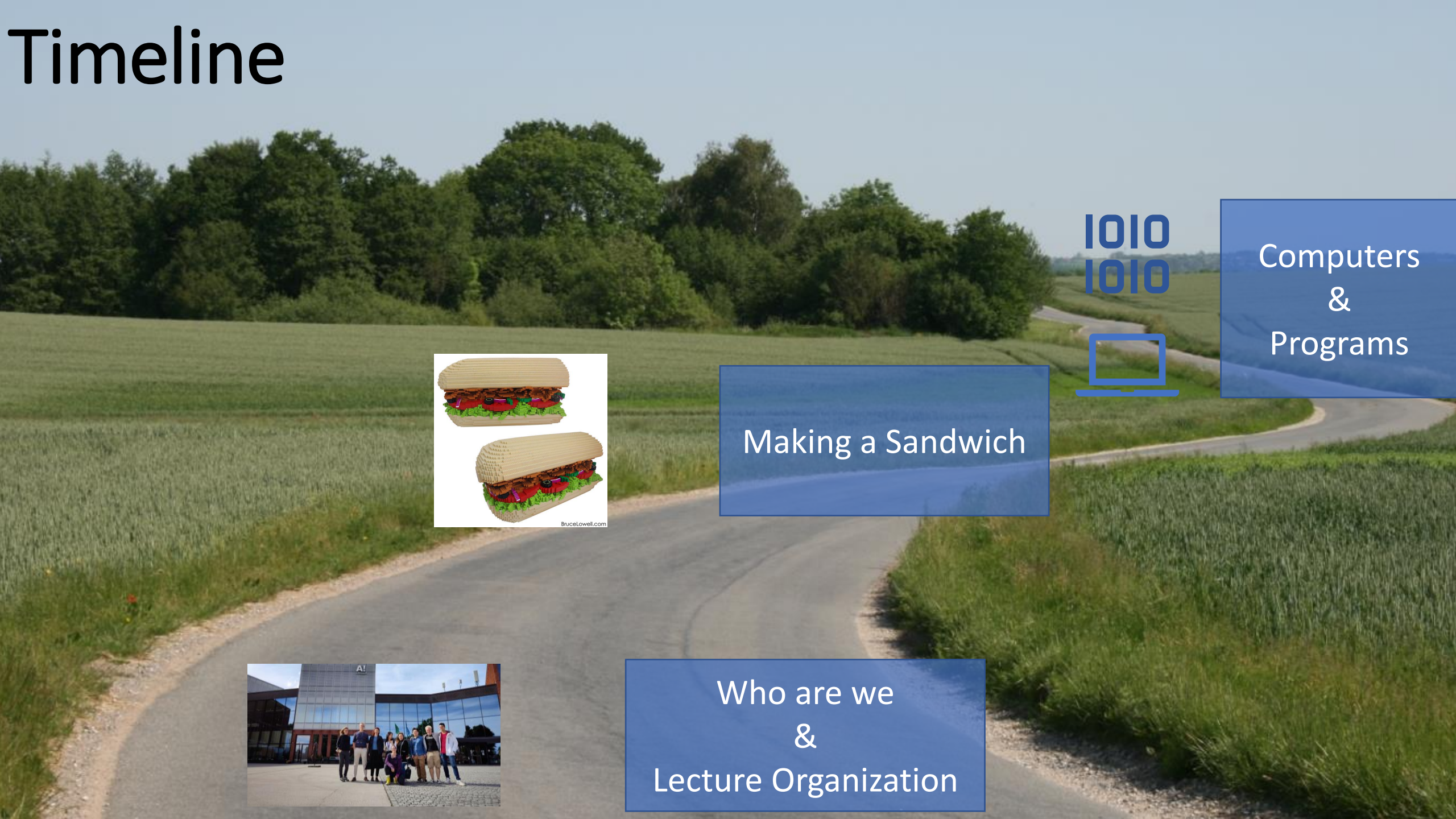
CS-A113 Basics in Programming Y1

Kick-Off Lecture
14.09.2021

The Lecture

- **Join with Video** – Makes my life nicer!
- Feel free to open your microphone and ask questions
- Feel free to write questions into the chat
- We will record the sessions and put it unlisted on youtube.

Timeline



Making a Sandwich

Computers
&
Programs

Who are we
&
Lecture Organization

Who are we?

Dr. Barbara Keller

Our Team

Seyed

Jun

Victoria

Visa

Abby

Ngoc

Angeline

Taige

Aron

Anthony

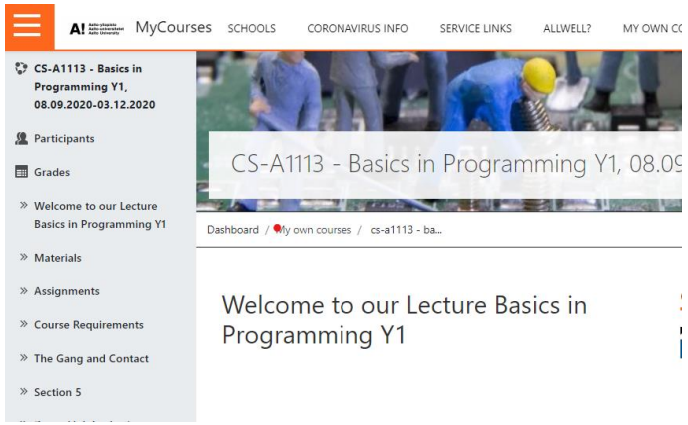
Barbara


Japanese
Portuguese
French
Ukrainian
Swissgerman
German
Swedish
English
Hindi
Farsi
Finnish
Chinese
Indonesian
Russian
Spanish
Korean


SQL
Perl
Assembler
CSS
Scala
HTML
Bash
VBA
Eiffel
Python
Haskell
Java
Shell
Kotlin
TS
Racket
Matlab
Script
JS

Who are you?

Fill out the mandatory questionnaire until next Thursday!

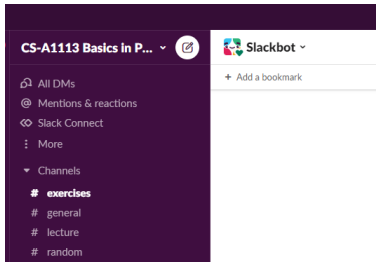


Main Entry Point!

-Information and Links

-On-site Exercise Booking

-Questionnaires



Main Discussions

-Give and get Help on Exerxcises

- All kinds of questions

- It is what you make it

Organisation & Tools

Main Material

-Course Material

-Exercises

Organisation

- Live lectures (Tuesdays 14:15 – recorded and linked on our myCourses page later on)
- 3 Exercise sessions every week (starting this evening)
  (On-site: Sign up in myCourses / On-line: Send your zoom meeting link to the Slack channel #exercises)
  - Tuesdays 16:15 -18:00 Y342 a
  - Wednesday 8:15-10:00 Y342 a
  - Wednesday 16:15-18:00 C106.1
- Lecture material online on A+
- Discussion and Questions on Slack
- Exercise deadlines Thursday 11:00 AM! Mandatory! Starting next week!
  This is not a compiler: 10 submissions possible per exercise

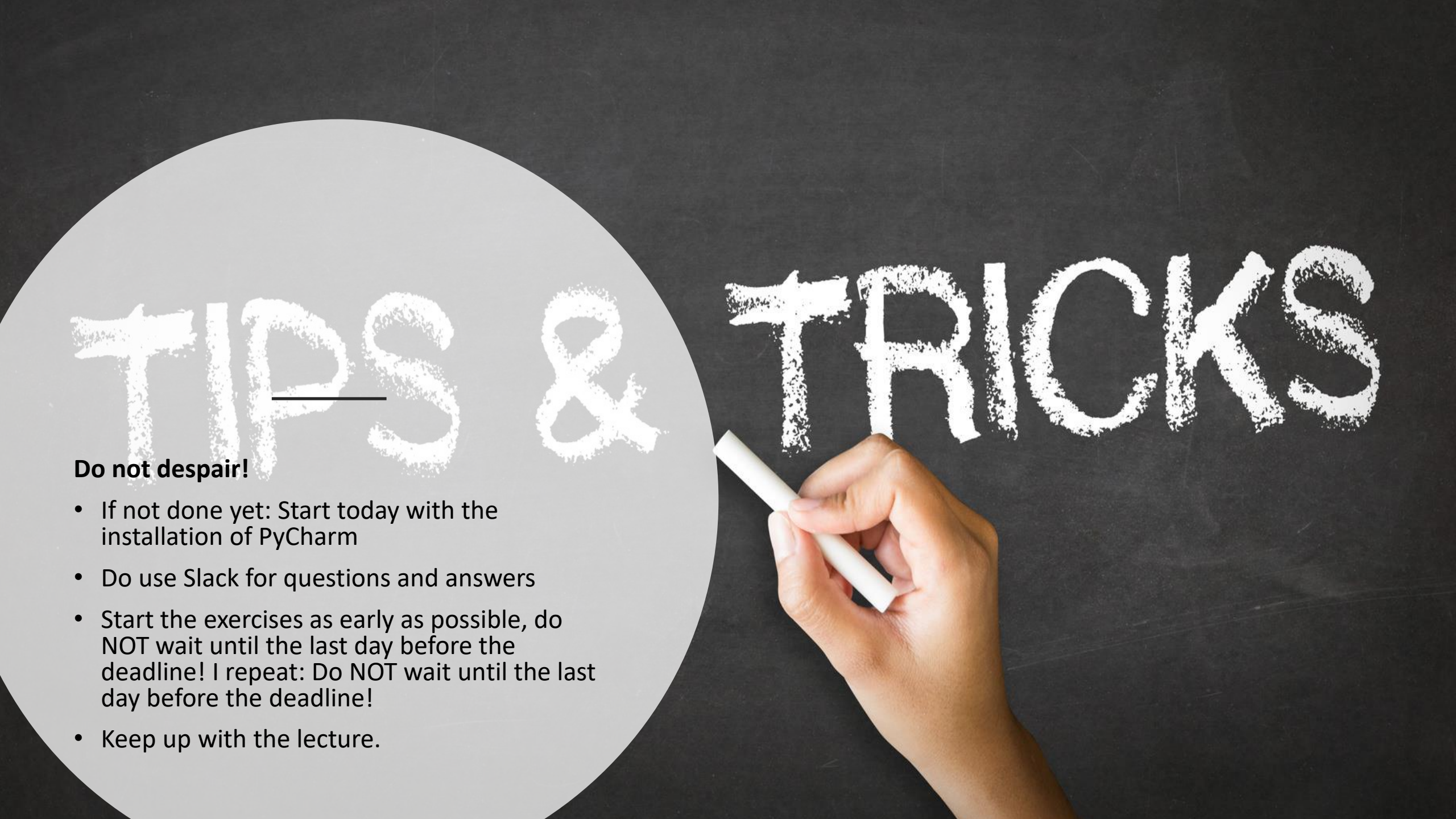
Exercises & Grade

Grade:

- 50 % of the exercise grade
- 50 % of the exam grade
- If either of the grades is 0 the course is failed

- Exercises:
  - 8 rounds mandatory, deadline each week Thursday at 11:00 (except week 43)
  - each round **must** be passed (minimal number of points for that week reached)
  - at most 3 exercises can be substituted -> amount to minimal numbers of points for said round (no gain in grade possible with substituted exercices)
  - Exercise 9 voluntary, if not done max grade from exercises is limited to 2
  - Exercise 9 can be substituted in a separate substitution exercise

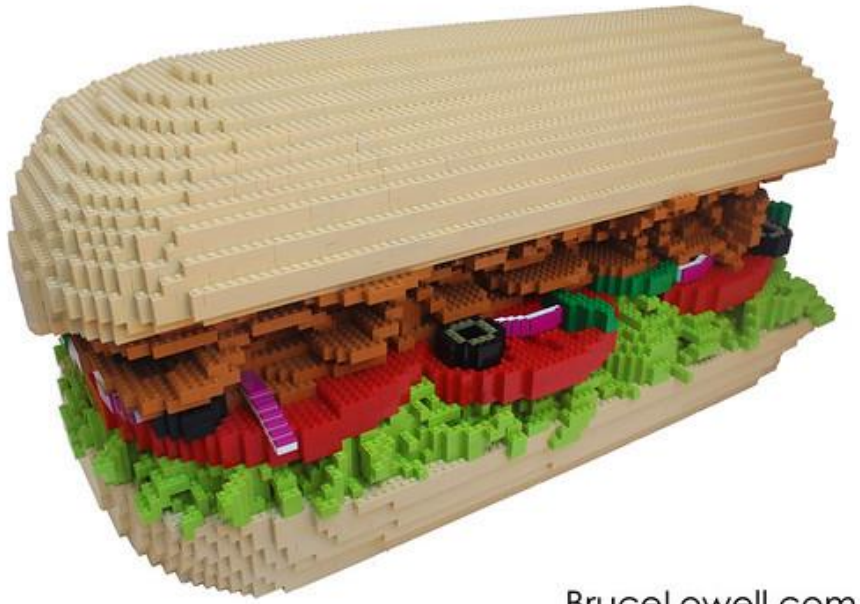
TIPS & TRICKS



Do not despair!

- If not done yet: Start today with the installation of PyCharm
- Do use Slack for questions and answers
- Start the exercises as early as possible, do NOT wait until the last day before the deadline! I repeat: Do NOT wait until the last day before the deadline!
- Keep up with the lecture.

Sandwich Time!



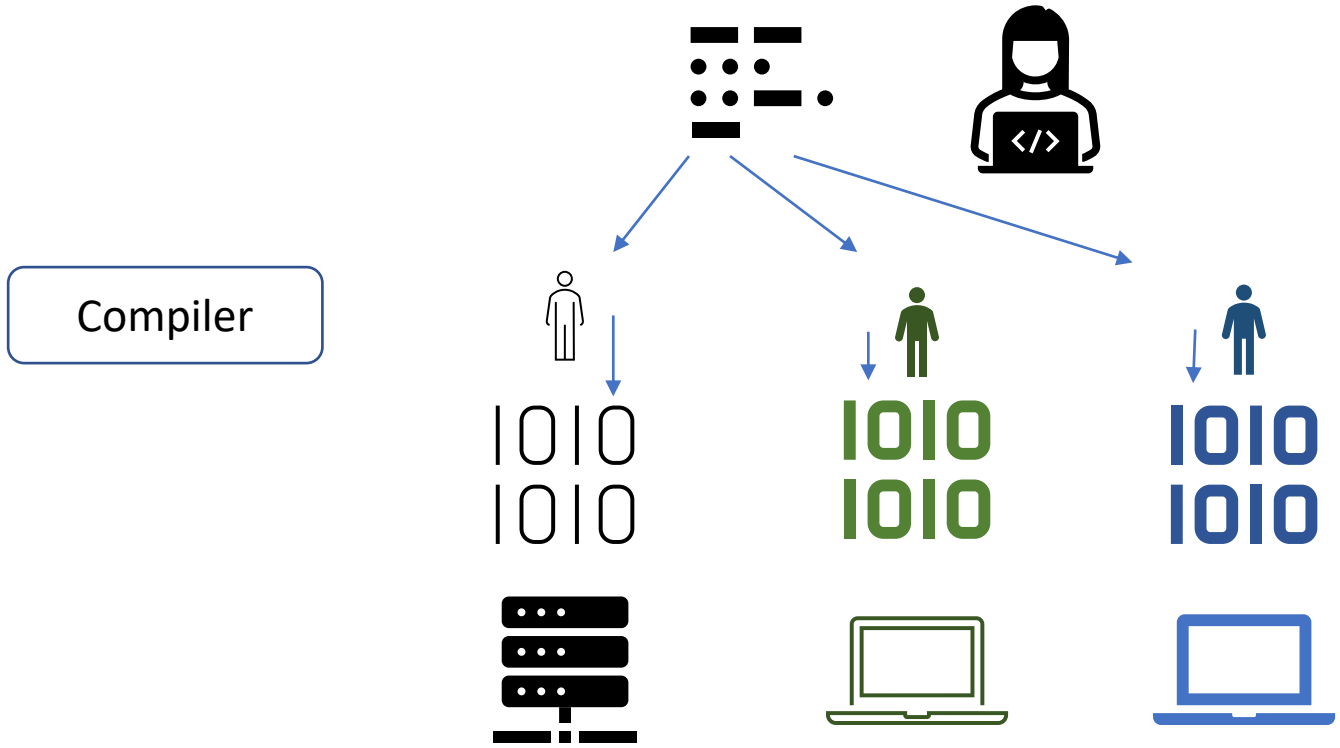
Volunteers needed!

Raise your hand to instruct the making of a sandwich!

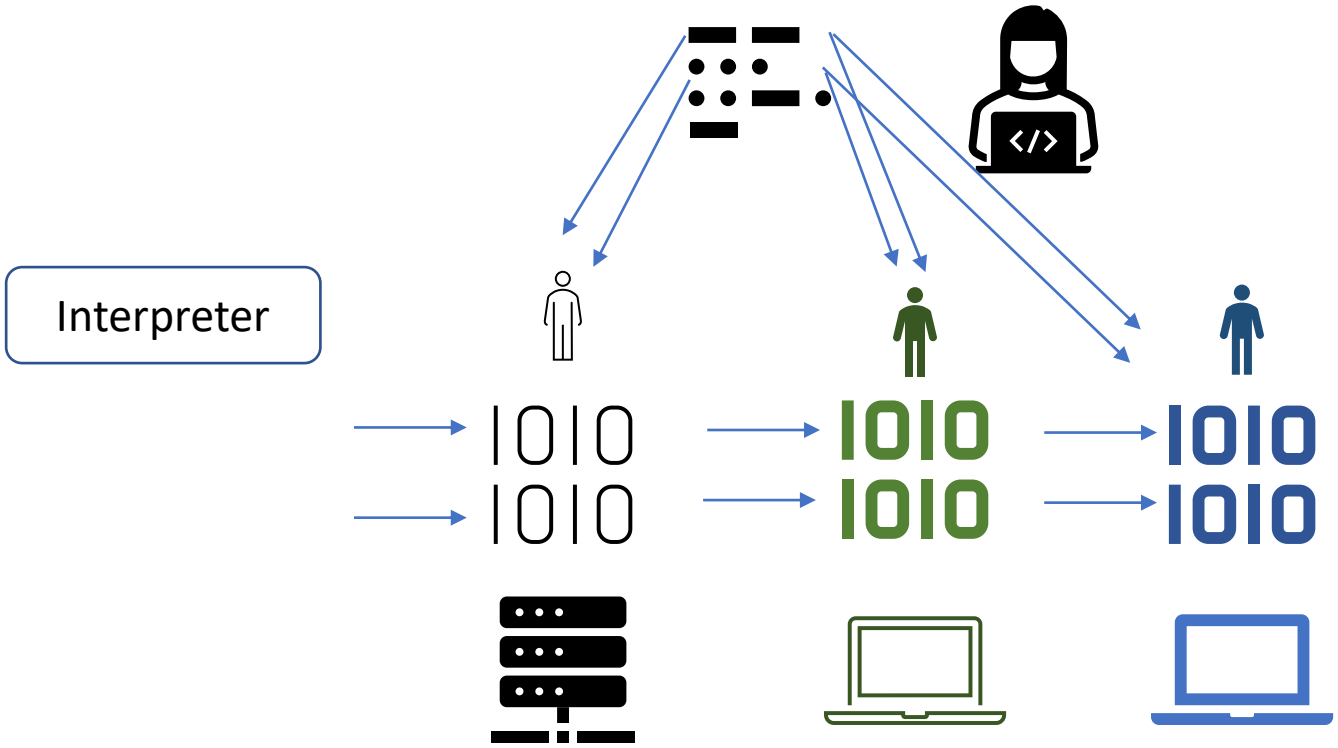
The good news is: The computer does exactly what you tell it!
The bad news is: The computer does exactly what you tell it!


Break

Computers and Computer Programs



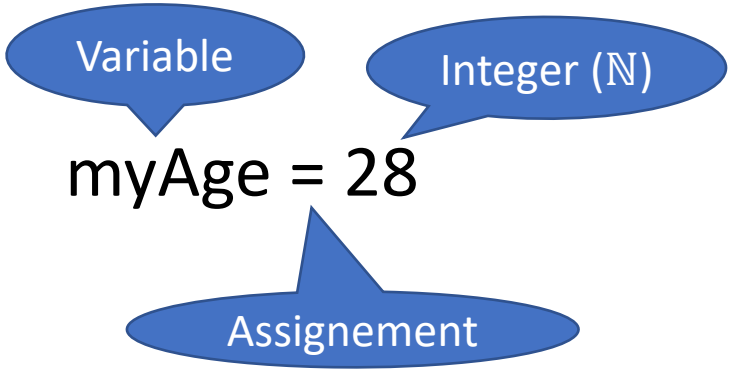
Computers and Computer Programs (Interpreted)

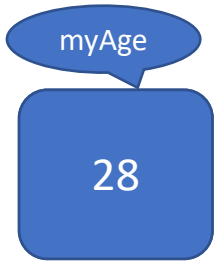



31
HTML
C++
CSS
JAVA

What is with this ”=” sign

It is not the mathematical equality sign, but it means assignement





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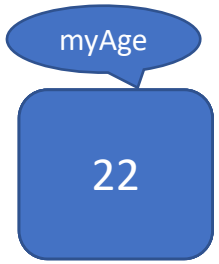


myAge = 28

myAge = myAge - 2

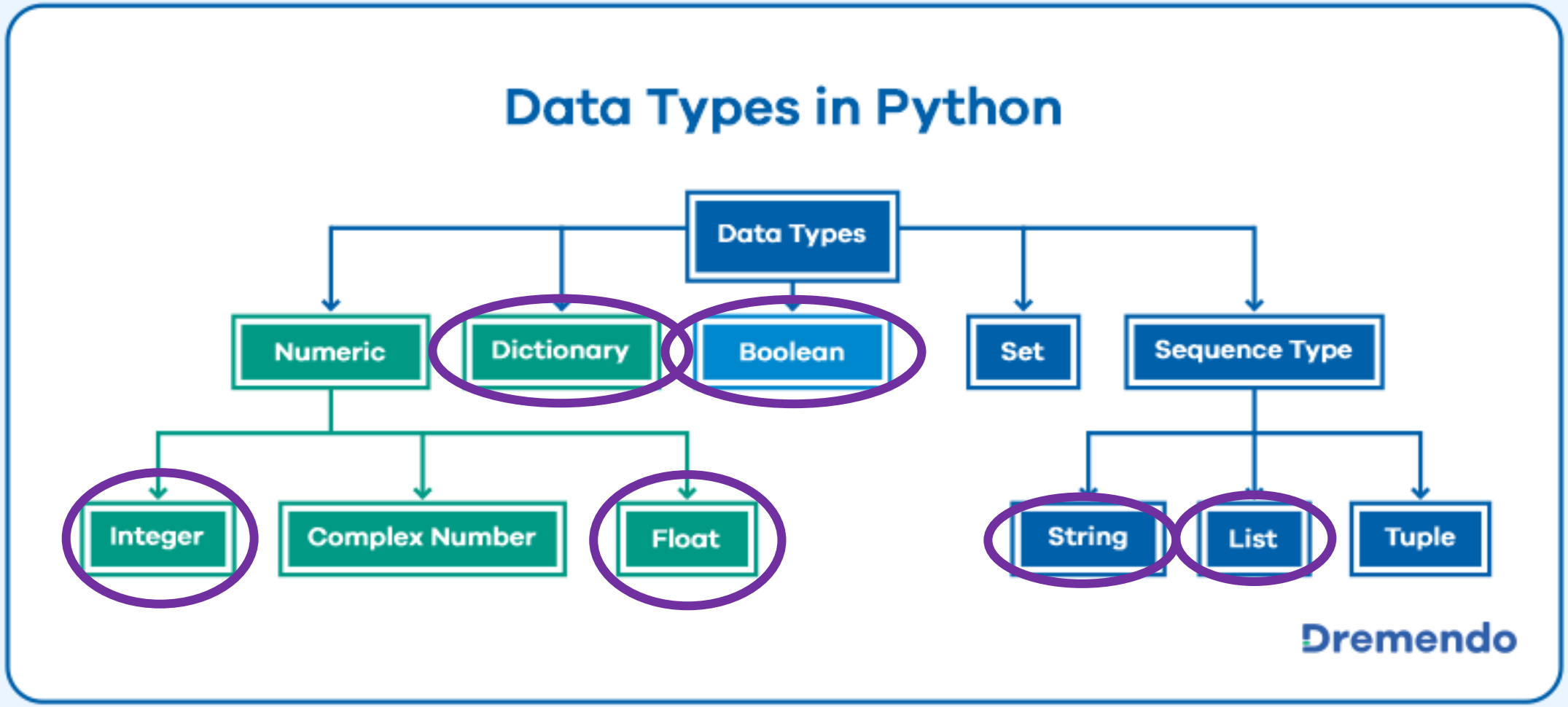
myAge = myAge - 4

https://presemo.aalto.fi/csa1113

Types

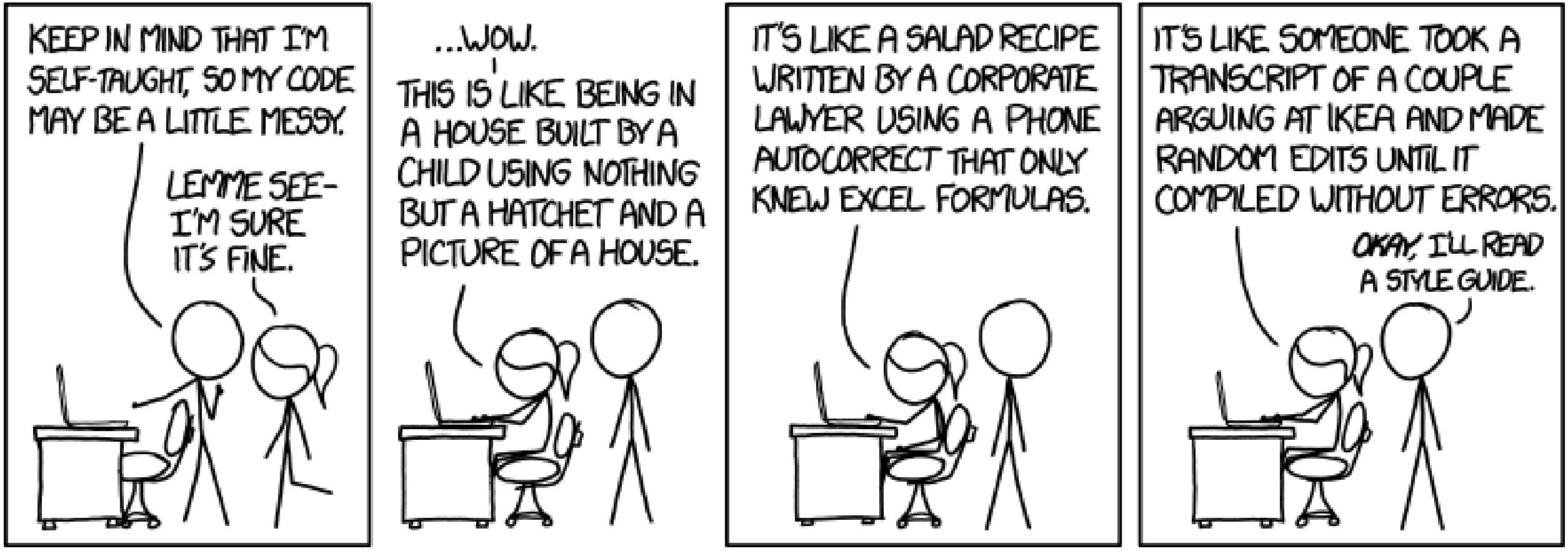
What kind of types do you know?

https://presemo.aalto.fi/csa1113

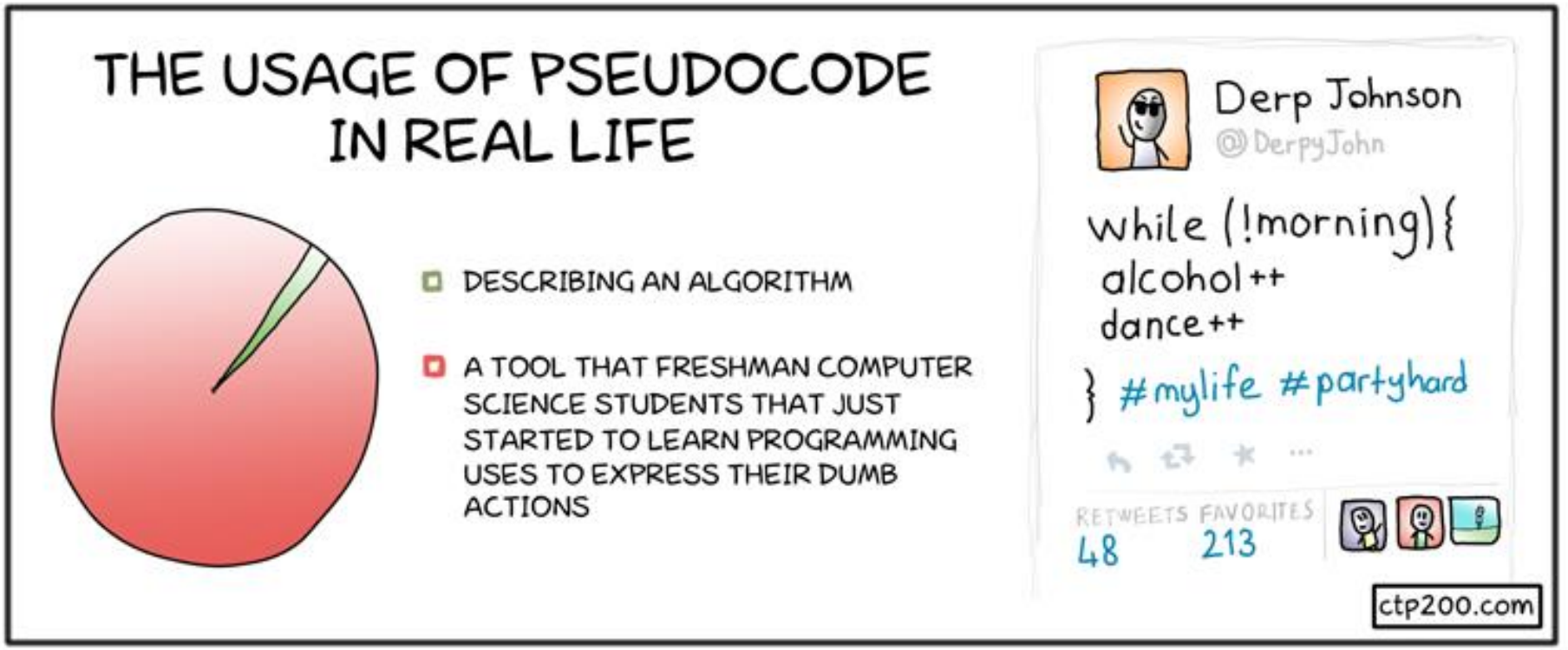

Data Types in Python
Data Types
Numeric
Dictionary
Boolean
Set
Sequence Type
Integer
Complex Number
Float
String
List
Tuple
Dremendo

Help Research!

Coding Style (XKCD)



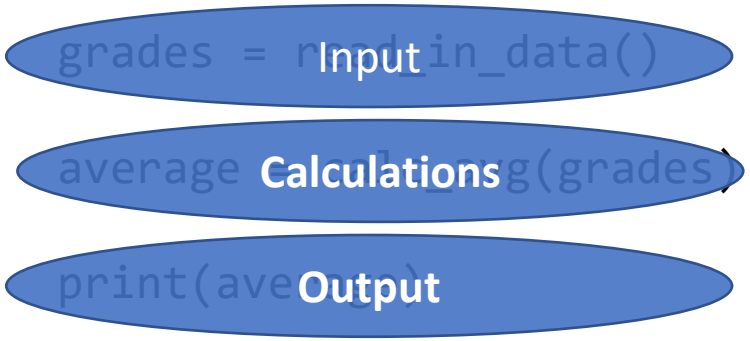
Think before you Act: Pseudocode



Pseudo-Code

Calculate Average Grade

```
Calc_avg:
```



Pseudo-Code

Calculate Average Grade

```
Calc_avg:

    grades = read_in_data()

    average = calc_avg(grades)

    print(average)
```

Pseudo-Code

Calculate Average Grade

```
Calc_avg:
    # read input
    file = open(”gradesPython.csv”,”r”)
    grades = file.readline().split(”,”)

    average = calc_avg(grades)

    print(average)
```

Pseudo-Code

Calculate Average Grade

```
Calc_avg:
    # read input
    file = open(”gradesPython.csv”,”r”)
    grades = file.readline().split(”,”)

    average = total/nofStudents

    print(average)
```

Pseudo-Code

Calculate Average Grade

```
Calc_avg:
    # read input
    file = open(”gradesPython.csv”,”r”)
    grades = file.readline().split(”,”)

    #calculate average
    total = 0
    nofStudents = 0
    for grade in grades:
        total += grade
        nofStudents += 1
    average = sum/nofStudents

    print(average)
```

Pseudo-Code

Calculate Average Grade

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Pseudo-Code

Calculate Average Grade

```
Calc_avg:
    # read input
    file = open(”gradesPython.csv”,”r”)
    grades = file.readline().split(”,”)

    #calculate average
    total = 0
    nofStudents = 0
    for grade in grades:
        total += grade
        nofStudents += 1
    average = sum/nofStudents

    #print average
    print(”Our {} students had an average grade of {}.”.format(nofStudents,average )
```

tips & TRICKS

Naming, Naming, Naming

- variables: use reasonable and self-describing names, not too long
- index variables: i,j,k
- x,y are usually used for axes in a plot

Comment your code
What does your code do?
What does it expect as input, which format?
Write your code for someone else
(you will be someone else in a few months ;))

Try not to swear or be inappropriate ;)

Always code as if the person who ends up maintaining your code is a violent psychopath who knows where you live.