Introduction to Programming in Python

Module 1: Course Introduction

Course Responsible

- Course responsible: Andrea Vandin
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  - ★ Tenure-track Assistant Professor in Computer Science at Institute of Economics & EMbeDS @ SSSA
  - ★ Formerly:
    - ▶ Associate Professor in Computer Science at DTU Technical University of Denmark
      - Most related teaching activity: responsible for 3 years of course 'Programming in C++ for non-computer scientists', 250 students
- Co-lecturer: Daniele Licari
  - ★ d.licari@santannapisa.it
  - ★ EMbeDS Data Engineer
  - ★ Great expert of Python

Course References & Material

- Webpages of the course:
  - ★ bit.ly/Intro2Python1920SSSA
    - ▶ Slides and examples from the lectures, further materials and links
  - ★ https://repl.it/student/classrooms/180817
    - ▶ Weekly coding assignments
- Suggested book: M. Lutz, Learning Python.
- Software
  - ★ Python: https://www.python.org/
  - ★ Suggested Python editor: JupyterLab https://jupyter.org/
  - ★ Setup your machine: bit.ly/Intro2Python1920SSSA-setup

Tentative Course Description

This course will

introduce the students to the fundamental principles of structured programming with basic applications to data processing. Using Python as reference language, the course will start from basic notions of programming (variables, data types, control statements, functions, modules, examples of data structures), up to basic data processing functionalities (loading, manipulation, and visualization of CSV data).

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A student who has met the objectives of the course will

acquire a high-level understanding of the issues involved in computer programming, so to be able to make informed decisions. The student will be able to write simple Python programs of various nature, including those for reading, manipulating and visualizing CSV data.

Tentative Learning Objectives

A student who has met the objectives of the course will be able to:

- select and use the correct data types for the problem at hand
- use variables, operations
- use and describe control structures
- use and describe repetition structures (lists, tuples, dictionaries)
- create and use functions, including recursive ones
- create and use classes with encapsulation and inheritance
- use libraries for File I/O, data manipulation, and data visualization
- use principles of structured program design and methods
- explain and apply the principles of abstract data types
- discuss Python-related issues in a clear and concise way, possibly using on-line platforms

Evaluation

- Weekly assignments
  - ★ To be handed in via *Repl.it* at https://repl.it/student/classrooms/180817
    - Automatically tests your code and gives hints to fix bugs
    - Deadlines: before the following class
    - Feel free to contact us for support
  - ★ A fundamental learning tool of this course
- Oarl Exam - TBC
  - ★ You will solve a sort of bigger final assignment at home
  - ★ We will do an oral examination starting from your solutions
    - to the final assignment
    - to the weekly assignments
  - ★ Date: TBD

Tentative Lecture Plan

#	Date	Time	Topic
1	16/04	17:30-19:30	Course introduction & I/O Console & Variables
2	20/04	15:00-18:00	Data types & operations
3	27/04	15:00-18:00	Repetition structures
-	04/05	–	*Break*
4	11/05	15:00-18:00	Control structures
-	18/05	–	*Break*
5	25/05	15:00-18:00	Functions
6	01/06	15:00-18:00	Exceptions and OOP
7	08/06	15:00-18:00	Basic CSV manipulation & visualization
-	TBD	TBD	Exam

Further info

- No previous experience on computer programming required
- Previous experience in writing small programs is advantageous
- We might adjust the course level according to your expertise and feedback
- You will never learn programming if you don't practice it!
  - ★ Therefore you have to regularly do all the assignments

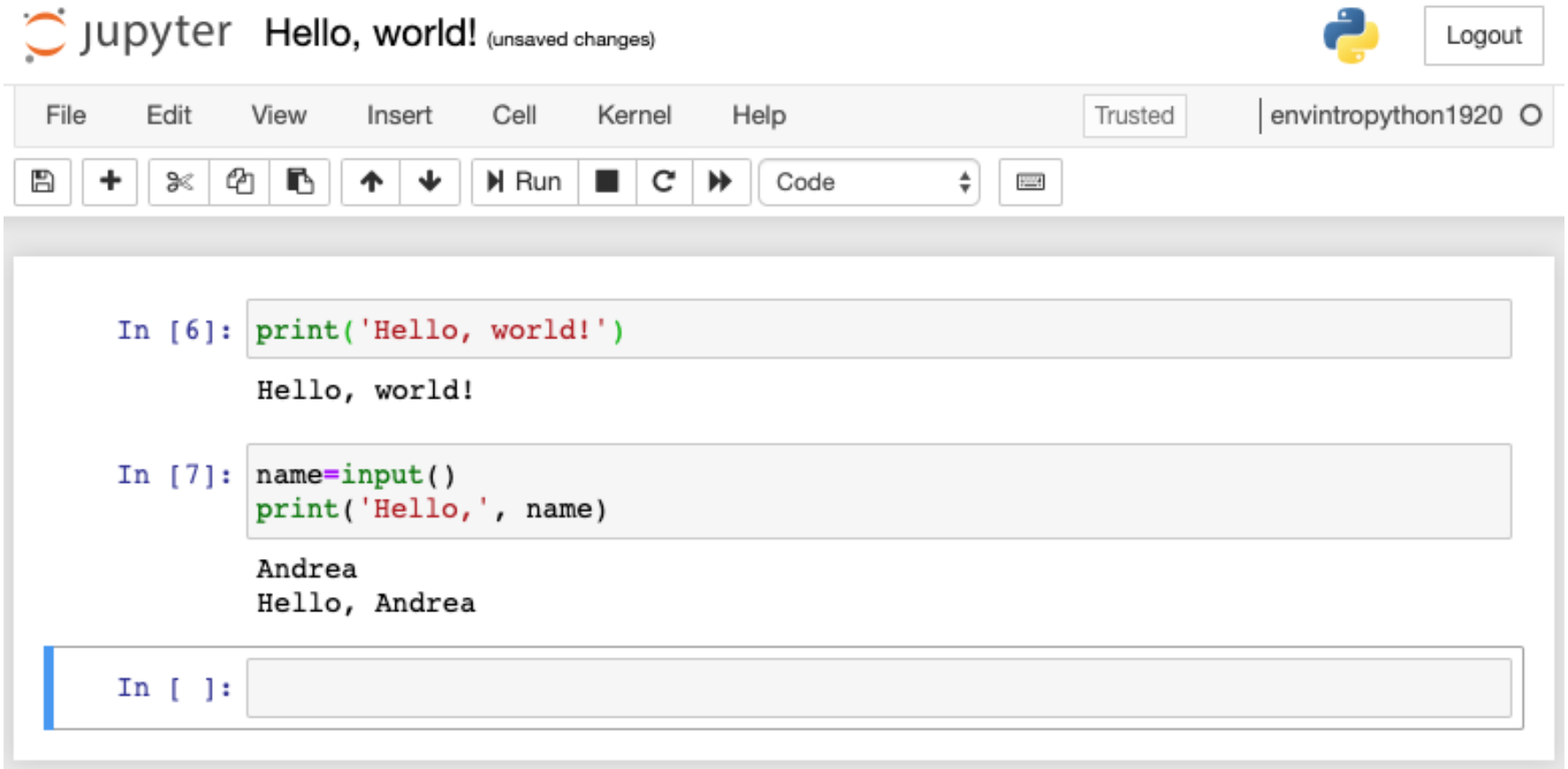
Ideas for an Effective Course

Live Programming & Assignments

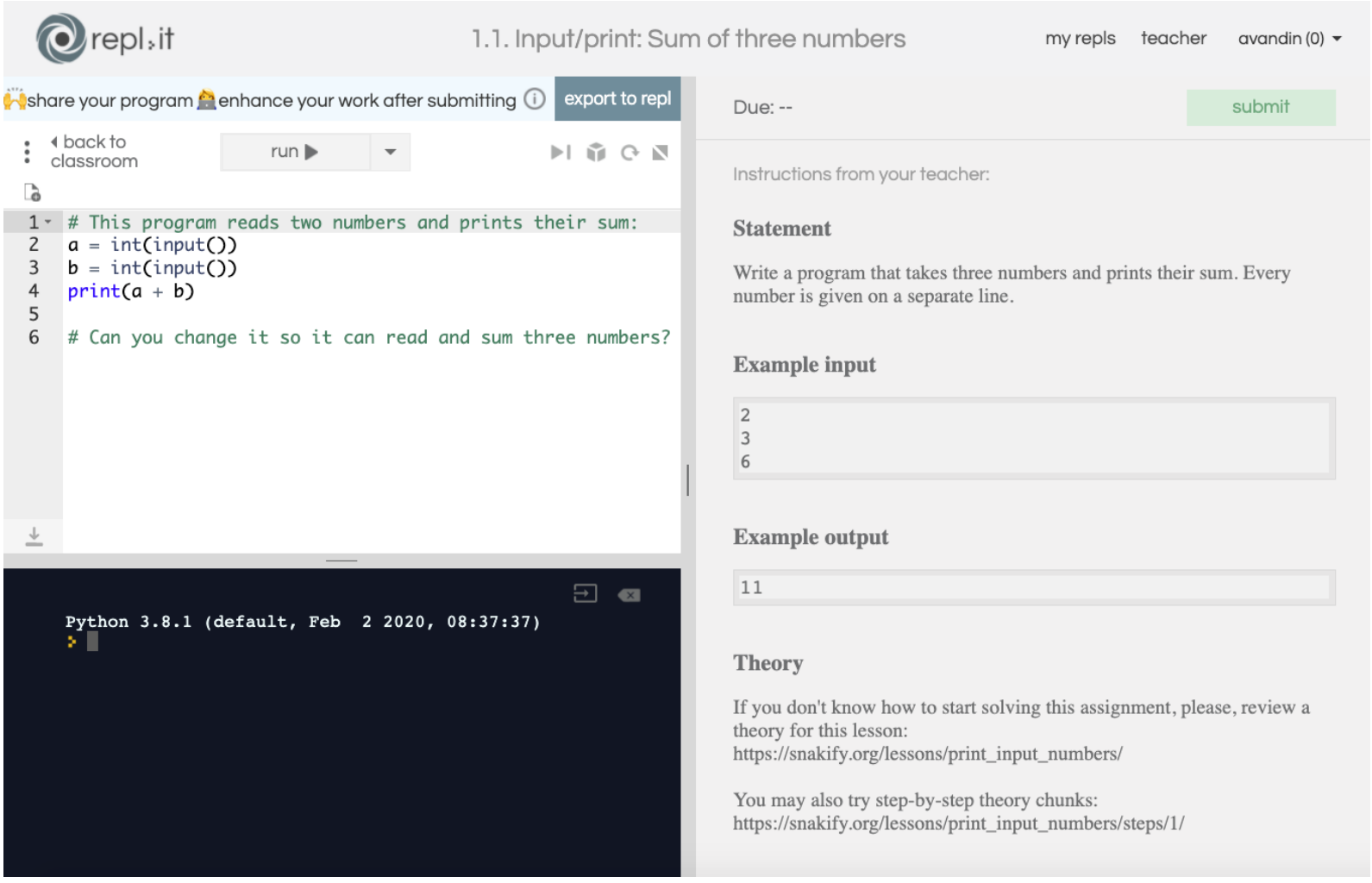
We have blocks of 3 hours.

- First part:
  Intro to week's topics & Live programming
  - ★ Not many slides
  - ★ Instead: we develop a few example programs
    - ▶ Please have your laptop ready!
    - ▶ bit.ly/Intro2Python1920SSSA-setup
- Second part:
  You consolidate your understanding working on the assignments
  - ★ Begin working on the assignments with our live support if needed
  - ★ Complete them offline before next class. Contact us if needed

Live Programming



Repl.it



- First time visit: https://repl.it/classroom/invite/nS13rdN
- After that: https://repl.it/student/classrooms/180817

Configure your machine

Follow the instructions in
bit.ly/Intro2Python1920SSSA-setup