

# Lecture Note on Python

WZ

(Dated: April 1, 2019)

This note includes everything covered in the class. It will be updated every week.

## I. SYLLABUS

**Objectives:** In this class, you will learn the basics of Python. You will be able to write executable codes on your own and read most python codes. Most importantly, you will learn how to treat and solve problem in the sense of computer science.

**Instructor:** WZ

**Class Meetings:**

regular meeting on Sunday 2:30-4:30pm;

to be scheduled for Monday 4:30-6:30pm.

Mar 31-Jun 10

20 lessons in 10 weeks, 2 hours for each lesson. In each lesson, the first half will focus on the lecture, and the second half for practice and tutoring.

This is an exercise-based class. The amount of knowledge you learned will be proportional to the amount of lines you wrote in Python. There will be assignment everyweek. We will have time to discuss or even do it in class. There will also be a project, to be started on week 5, finished on week 8, and revised in the last two weeks.

**Textbooks:**

For the lectures, we will follow these Slides.

For reference, this is a wikibook of python: Python for you and me.

Sample codes, assignments, and other material will be updated on GitHub.

The most powerful tool I have ever used is Google.

**Prerequisite**

We can start learning programming at any level, as long as you have stable access to a laptop for practicing.

**Tentative content:**

The following topics covers the basics in Python. As everyone has different needs when learning programming language. We will discuss how much of them will be covered and what to be added. Especially we can come up with some projects as preparation for the summer camp.

1. Introduction
2. gitHub, Functions, Booleans and Modules
3. Sequences, Iteration and String Formatting
4. Dictionaries, Sets, and Files
5. Exceptions, Testing, Comprehensions
6. Advanced Argument Passing, Lambda – functions as objects
7. Object Oriented Programming
8. More OO – Properties, Special methods
9. Iterators, Iterables, and Generators
10. Decorators, Context Managers, Regular Expressions, and Wrap Up

More topics to be determined

1. Graphics user interface(GUI).
2. Image/data processing
3. Internet communication, (TCP/IP)
4. Editors (emacs), window manager (tmux), typesetting format (latex, markdown)
5. Game engine (Unity)

## II. LECTURE NOTES

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#### A. Lecture 1, Session 1, Mar 31, Introduction

Introduction to python  
 Course outline  
 Sample codes and projects  
 Environment setup (Installation, Editor, GitHub)  
 HelloWorld!

#### B. Lecture 2, Session 1

start at assignment

## III. EXERCISE

For each exercise, please create a single `.py` file, e.g. `session1_1.py`. Please put all your files in one or several folders.

#### A. session 1

1. create folder `firstFolder`, create file `first_file.txt`, write your name and date into that file; Copy this file to `second_file.txt`, and write “helloworld” into the second file.
2. create `helloworld.py`; run it in python and shell respectively
3. assign some value to  $a$  and  $b$ , calculate  $c = a + b$  and print the result in the form “ $c=[\text{value of } c]$ ”
4. create a file to check the priority of `+-*/=`

5. assign value of a,b,print them; switch value of them, and print the result
6. prepare a conversation between Jack and Rose, 5 sentence each

## **B. session 2**

1. warmup exercise

## **IV. BENCHMARK PROBLEM SET(TO BE UPDATED)**

These problem ensure you to understand various concepts in Python. These are the source of assignment.

1. hello world!
2. summation of integers from 1 to 100
3. Fibonacci sequence
4. contact book
5. simple calculator
6. Tower of Hanoi
7. Tetris