CS1302 Introduction to Computer Programming

Course overview

Prof. Weitao Xu

(weitaoxu@cityu.edu.hk)

About the course

This course aims to introduce key concepts, techniques, and good practices of programming using a high-level programming language Python.

Course Intended Learning Outcomes (CILOs):

1. Explain the structure of a computer program.
2. Analyze, test and debug computer programs.
3. Apply proper programming techniques to solve a task.
4. Construct well-structured programs.

About the course

- **Lecturers**

  Prof. Weitao, Xu weitaoxu@cityu.edu.hk
  Prof. Chung Chan, chung.chan@cityu.edu.hk (course leader, course registration/drop)
  Prof. Minjing Dong, minjdong@cityu.edu.hk

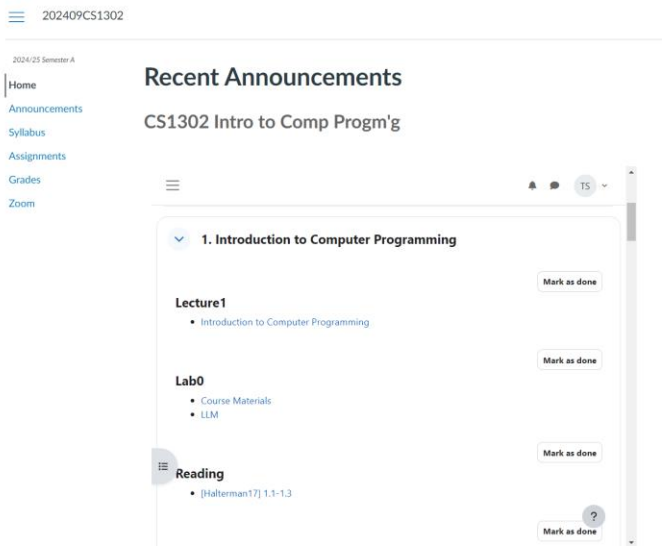
- **TAs**
  - We have around 20 TAs to offer assistance on teaching and marking.

- **Teaching mode**
  - Lecture : On-campus face-to-face
  - Labs: On-campus face-to-face

Lectures/labs may be recorded on Zoom, but the recording is used for review purpose. You're encouraged to attend the class physically. Attendance will not be marked

Course materials

- Course contents are delivered in the Jupyterhub platform
- In Lab0, you will learn how to set up your account



- Textbook

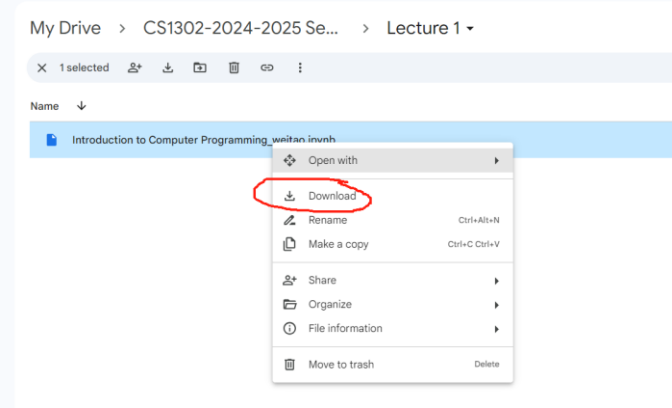
  Halterman, R. L. "Fundamentals of Python programming." (2017)

  – E-Book available from openlibrary.org (Links to an external site.)

  – Source code available from GitHub repository

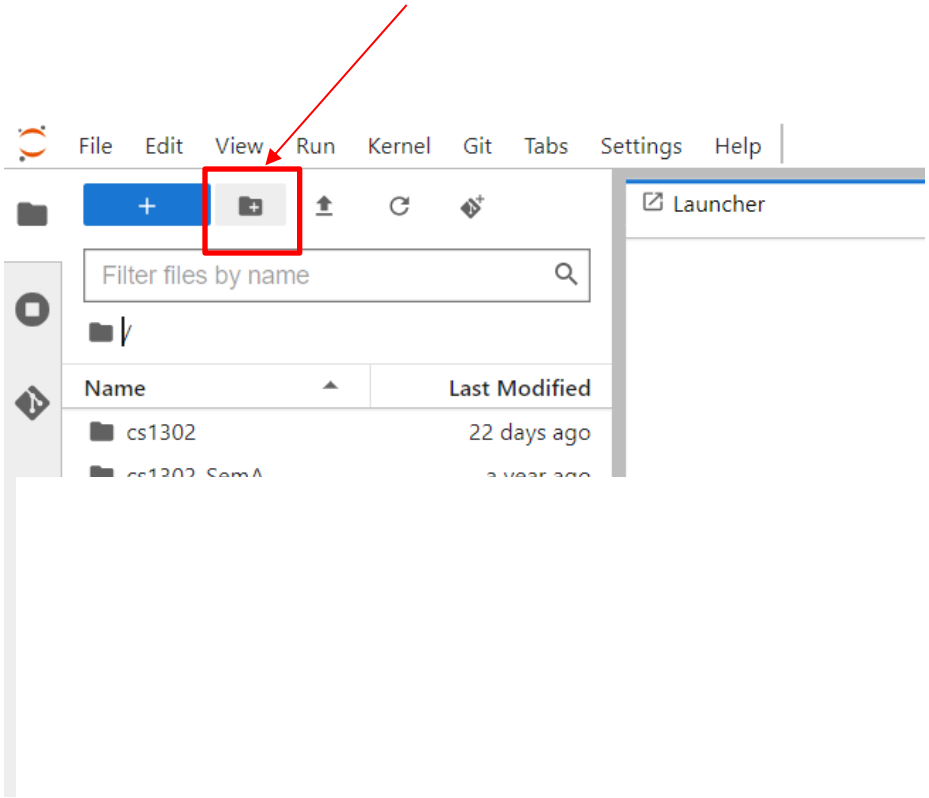
Course materials

- But the course materials I used in the class maybe slightly different from the notebook in the link. You may download my materials from
- https://drive.google.com/drive/folders/1wtHsQN-uTZt4yH-PrOWrrQaAC1a7b_fP?usp=sharing
- Download the file into your local computer/laptop, then upload it to the JupyterHub server.

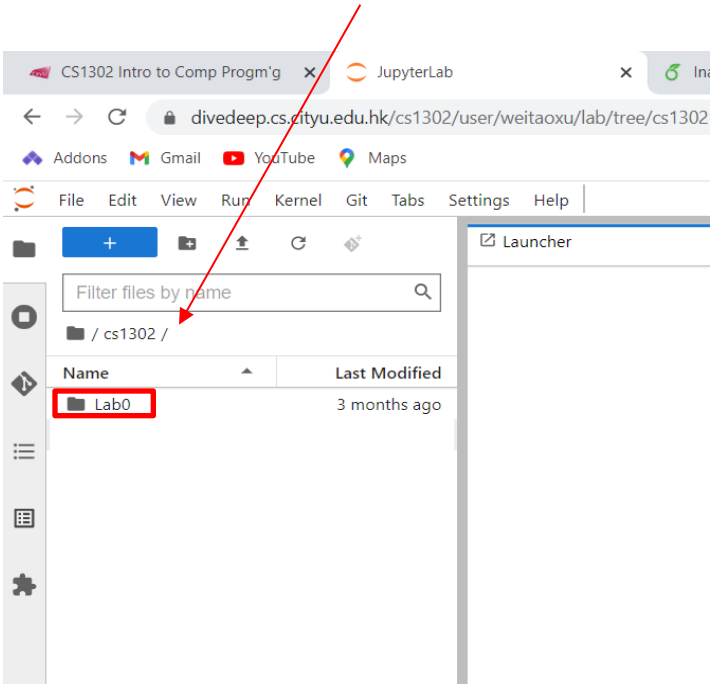


Course materials

Click this button to create a folder, e.g. name it cs1302



You may also create subfolders under the current folder

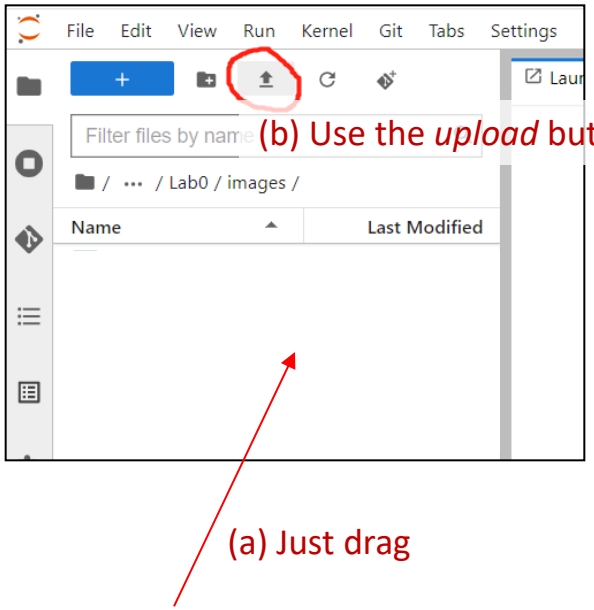


Course materials

To upload files:

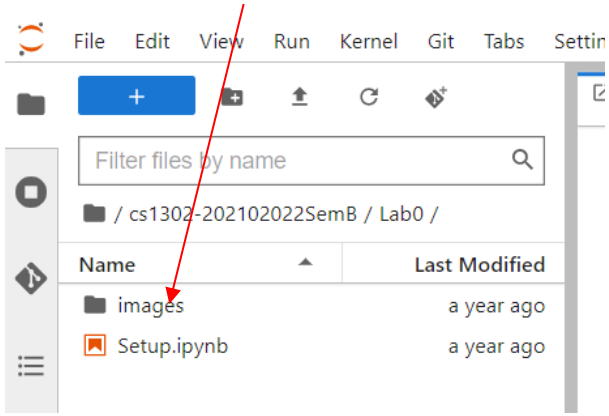
(a) Just drag the files from the local folder in your computer into the target folder , or

(b) Click the upload button

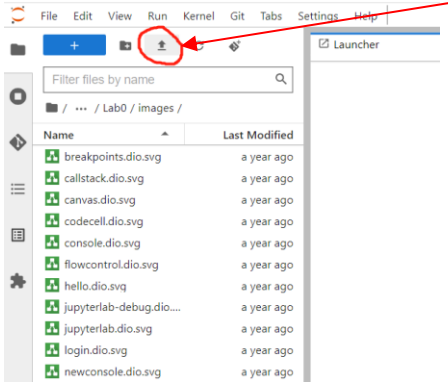


To upload a folder of files:

(1) Jupyterhub doesn't support folder upload. If you have a folder of files to upload, you first need to create the folder.

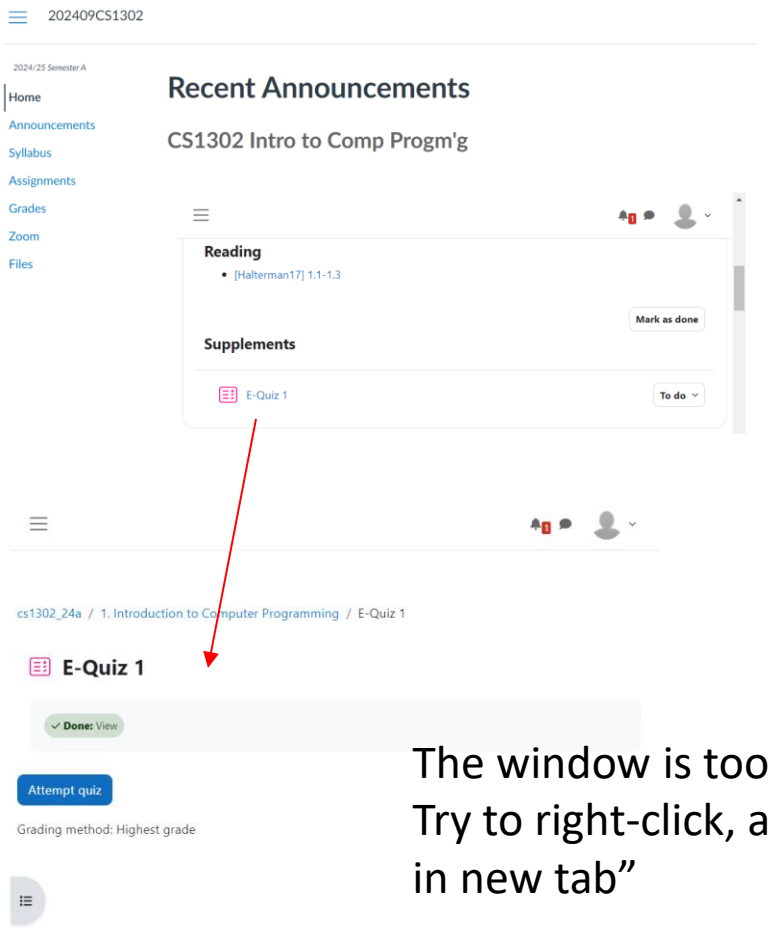


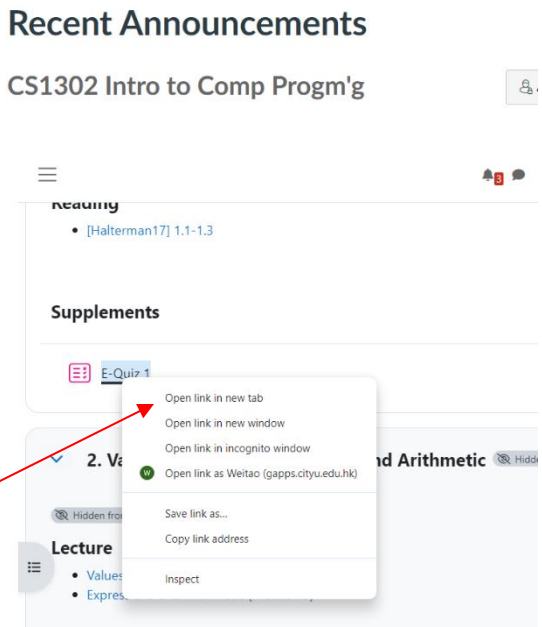
(2) Go into the folder, then click this button to upload all files



Course materials

- E-quiz: just for practice, no marks

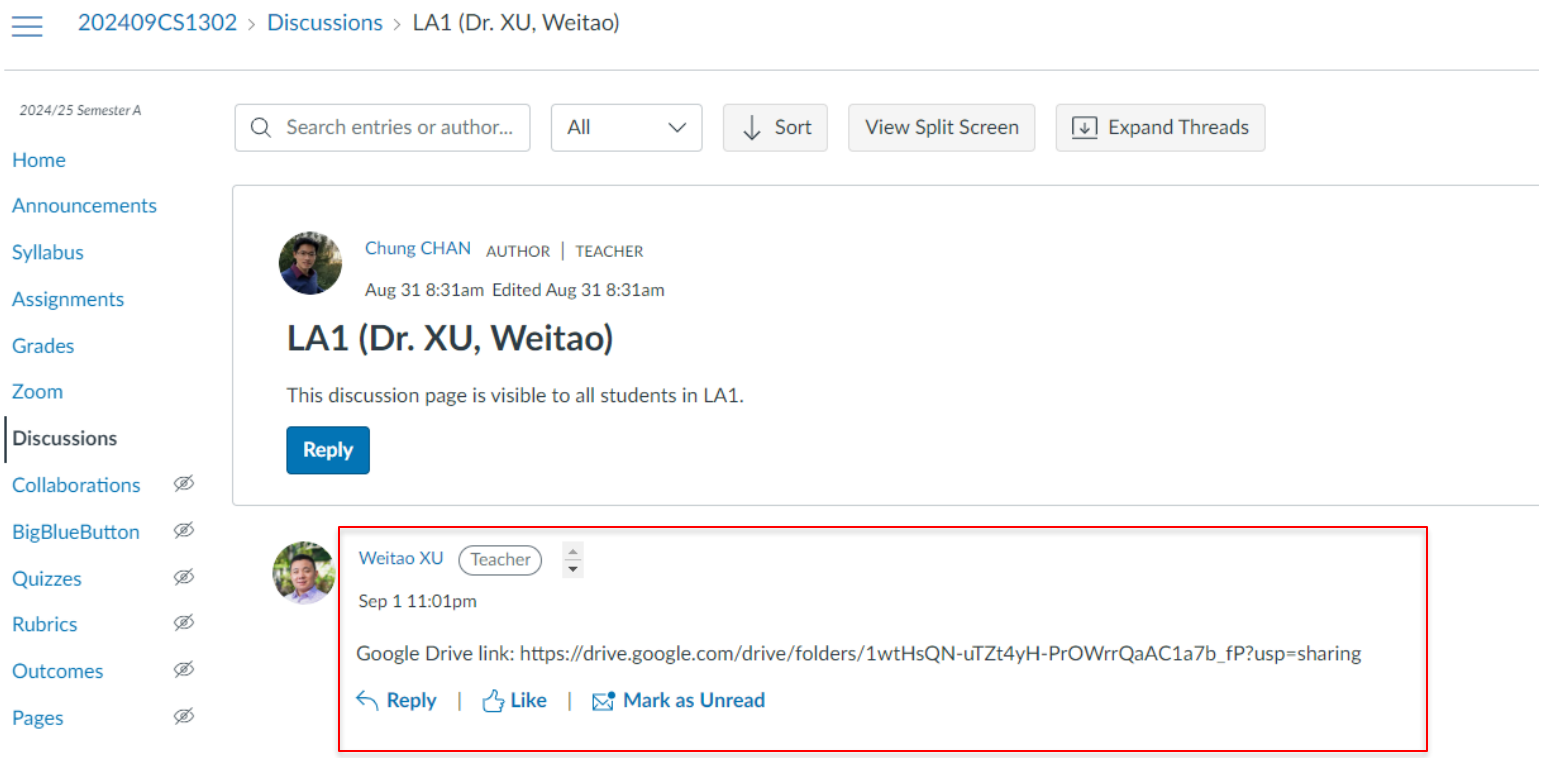




The window is too small?
Try to right-click, and “Open link in new tab”

Couse materials

- Where to find this PDF?



Assessment

- **Coursework (50%)** :

  1. Lab assignments: 30%

  2. Midterm Quiz: 20%
     - Date: 26-Oct-2023 (Saturday) 18:30-19:30, mark it on your calander
     - Computer-based: you will use Safe Exam Browser on the provided computers to access the exam

- **Final Exam (50%)**

  The final exam will be on computer and the duration is 2 hours.

Passing criteria:
At least 30% of the maximum mark for the **final exam** must be obtained; and
At least 35% of the maximum mark for the **overall final mark** must be obtained

-The distribution of scores is different every year, so it's hard to tell the boundaries of A+/A/A-/B+/B/B-.
-The final grade is determined by the relative position of your score (top 3%, 20%, 50%) but not the absolute value of your score (90, 85,70..)

Academic Honesty

is regarded as a serious academic offence in the University.

Do assignments and exercises on your own

"On your own" means

- ✓ discuss the problems with any other people.
- ✓ study materials available on the internet.
- ✓ refer to books.

But the details and write-up must be entirely your work.

The principle is: Students should gain through practicing and developing skills in doing your work.

Academic Honesty

is regarded as a serious academic offence in the University.

Do assignments and exercises on your own

Deserved mark?

Unfair situation 

You should not create any chance for other students to copy your work.

For any plagiarism case,

- The student who plagiarizes will be punished.
- Any student who allows his/her work to be copied will **also** be punished.

http://www.cityu.edu.hk/provost/academic_honesty/rules_on_academic_honesty.htm

Do students in the following cases demonstrate academic honesty?

Case 1

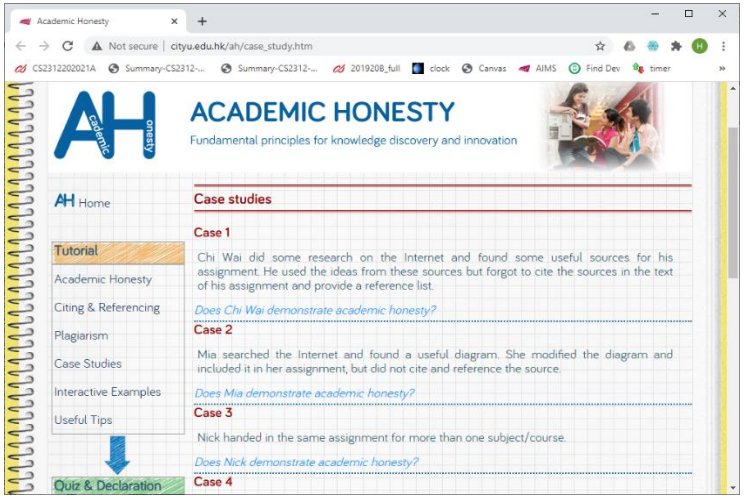
- Chi Wai did some research on the Internet and found some useful sources for his assignment. He used the ideas from these sources but forgot to cite the sources in the text of his assignment and provide a reference list.

Case 2

- Mia searched the Internet and found a useful diagram. She modified the diagram and included it in her assignment, but did not cite and reference the source.

Case 3

- Nick handed in the same assignment for more than one subject/course.



https://www.cityu.edu.hk/ah/Tutorial/casestudy

Case 4

- Xiaobo copied his assignment from a classmate's work, put his own name on it and submitted it to his teacher.

Case 5

- Kit gave Suki his assignment and Suki copied it, put her own name on it, and submitted it to her teacher.

Case 6

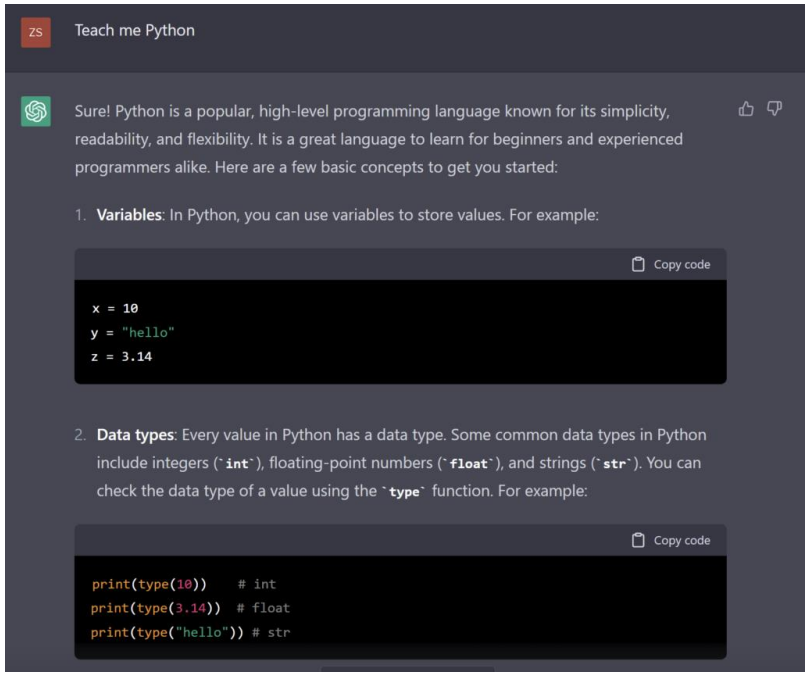
- Chloe and Eason worked on an individual assignment together. They each did a different part of the assignment. Then, they shared their work, put their own name on the assignment and individually submitted the work to their teacher.

Case 7

- Ming and Doris discussed some ideas about how to do an individual assignment. Then, they completed the assignment on their own, without looking at each other's work. They put only their own name on their assignment and individually submitted their work to their teacher.

Can I use ChatGPT

- You’re free to use any tools that can help your study, but you won’t have access to Internet during the midterm/final exams



About the course – Key to Success

Practice with understanding

The solution is not everything.
You need to learn **the approach** to build the solution step by step.

Learn from errors (**debugging strategies**)

Mistakes are often **good teachers** 💰

Digest well to learn the 100%

Memorizing and dictation,
if without understanding,
are worthless,
especially in a programming course!

Python is a tool to solve questions

In some courses, what you learn in the class

$x^2+2=18$

$x^2=18-2$

$x=4$

similar

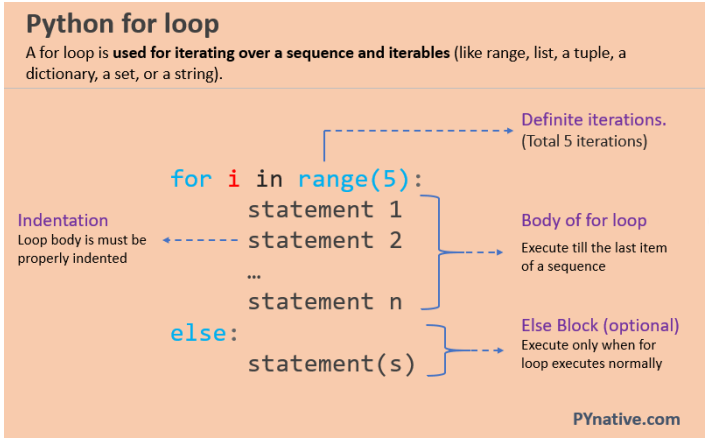
What you see in the exam

$x^2+9=90$

$x^2=90-9$

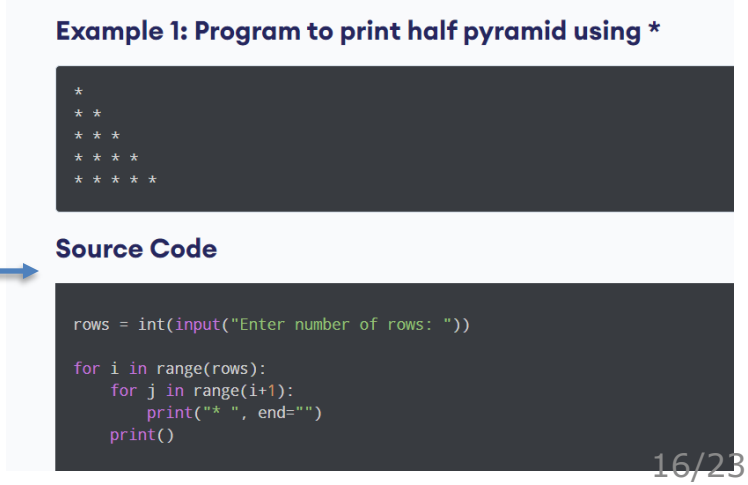
$x=9$

In this course, what you learn in the class



unseen

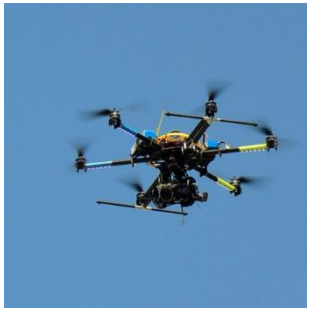
What you see in the exam



After this course

Become a Programmer

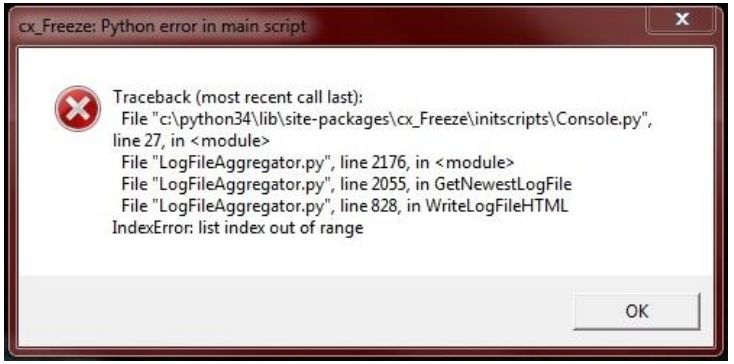
Cool and fun

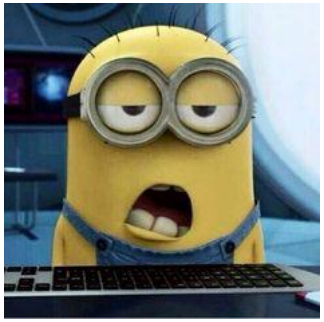


But being a programmer (程序猿)…

What to expect

- Programming is fun
- *Learning programming may not!*
- You'll see lots of syntax (rules for programming languages), yes they may look boring…
- You'll see lots of errors, that'll take you lots of time to fix…





What to expect

- To have fun, usually we need to go through lots of detail stuff first -> learning curve

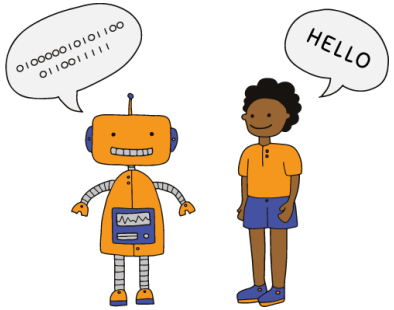
Positive thinking

- You learn a language .. What are the stories behind the details? You *communicate* with the language.
- You create solutions and solve mistakes
  - You are winning the games!

One more tip

- If the computer says you're wrong, you are wrong!

  Don't doubt the computers, ever. They are always right (unlike CNN or Trump…)



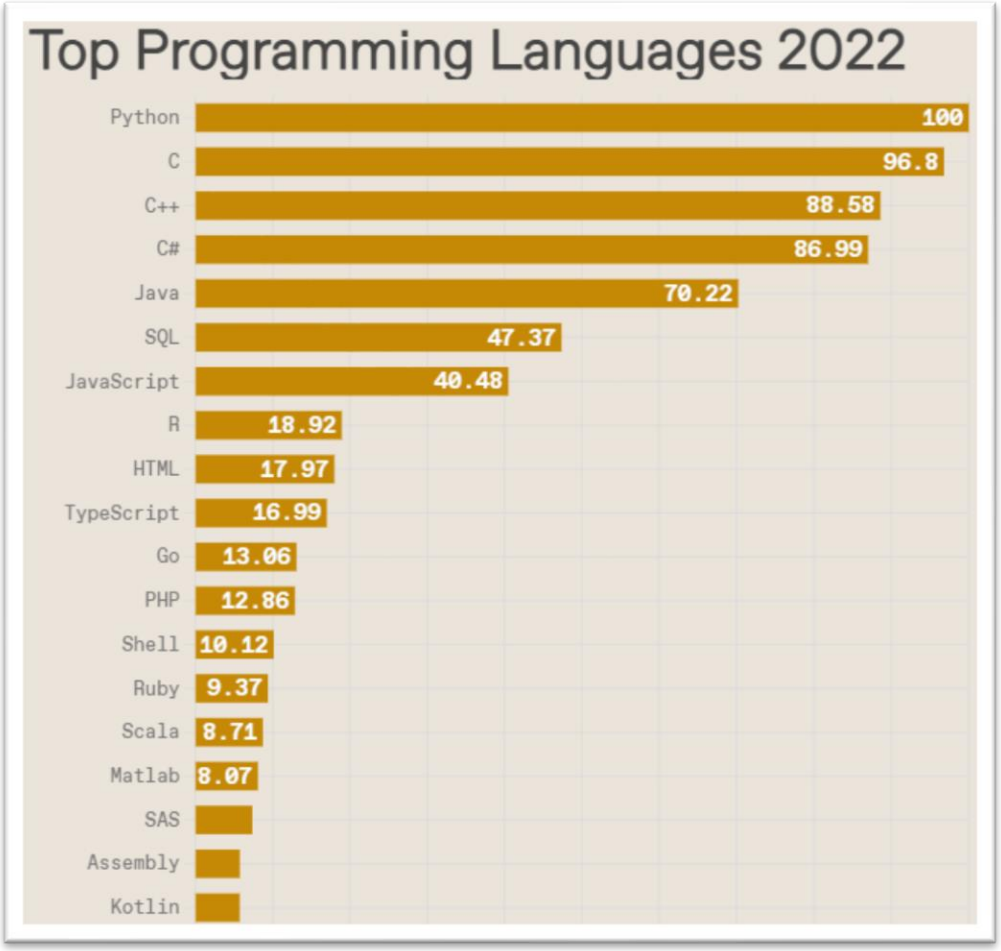
- Focus on finding out what make the computer think you're wrong
  - Debug

There are many Programming Languages in the world

Ada Assembly Basic C C++ C# Cobol
Cobra CODE ColdFusion Delphi Eiffel
Fortran FoxPro GPSS J# J++ Java
JavaScript LISP Logo LUA MEL Modula-2
Miranda Objective-C Perl PHP Prolog
Python Go Visual Basic Swift

Programming Language

Python:
The most popular programming language
https://spectrum.ieee.org/top-programming-languages-2022



Average Python Developer Salaries

Switzerland	$133,000
The USA	$127,000
Denmark	$81,800
Israel	$71,000
Norway	$62,000
Czech	$34,122
Poland	$21,552
Hungary	$16,771
Ukraine	$15,906