



Welcome* to CSC180!

*back

The Big Picture: Programming Languages

- A computer program is a sequence of instructions to the computer
 - Some computer programs are written in *machine language*
 - Machine language instructions are extremely simple
 - For example, “Change memory cell 20040 to contain 1”
 - Memory cell 20040 can indicate, for example, whether one of the pixels on the screen is on or off. It might be acting like an on/off switch
 - Programs in machine language are directly* executed by the electronics: if a program in machine language is in the right place in memory, the CPU (central processing unit) will run it*
 - Most computer programs are *not* written in machine language
 - For example, using `print()` in Python, we printed whole letters instead of issuing instructions pixel-by-pixel
 - And we could probably change the font too!

*not always, and sometimes things are more complicated

Python: a scripting programming language

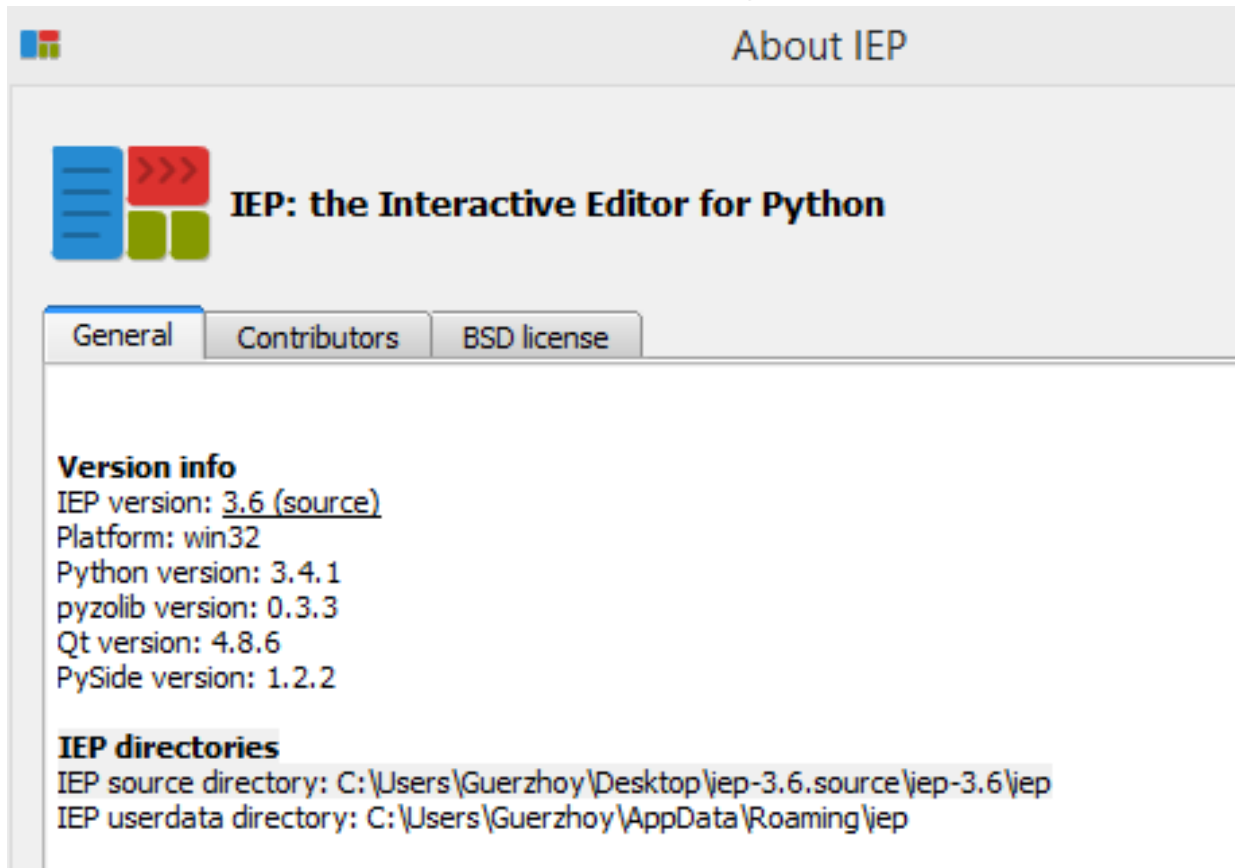
- Python is a more “human”-like language, where we can issue instructions at a much higher level of abstraction than in machine language
 - Print letters to a window on the screen
 - Open a window
 - Store complicated data in variables
 - Use if-else statements
- Another program, called a *Python interpreter*, takes either Python files or individual Python commands, and executes them

Pyzo/IEP: an Integrated Development Enviroment (IDE) for Python

- We will be almost exclusively using Pyzo/IEP in this course, because it is convenient
 - Allows us to write Python programs and then execute them using the Python interpreter easily
 - Allows us to have the Python interpreter run the Python program line-by-line instead of all at once so that we can more easily find mistakes in the Python code (“debug the program”)

Pyzo/IEP itself is written in Python

- You can check out the code yourself



How to succeed in CSC180

- CSC180 is about solving problems using programming in Python
- You will be evaluated on how well you can solve problems using programming and how well you understand how Python works
- Practice!
 - The labs and projects are where you will get most of your experience with solving problems using programming this semester
 - In lecture, we will be writing Python code to solve a lot of problems. You should understand the approach that was used. Try to come up with similar problems, and applying the same approach
 - Or even try doing the same problems from scratch
 - *Warning:* studying the textbook/lecture notes the night before the test is unlikely to work. Learning programming is much more like learning a language or learning how to ride a bike than it is like high school math