Welcome* to CSC180!  

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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 Environment (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