CME 211 Lecture 2: Conditionals, Lists, Loops, and File IO

Reading

Relevant chapters in *Learning Python* by Mark Lutz are:

- Chapter 4 (Introducing Python Object Types) has a summary of the object types
- Chapter 5: Numeric Types
- Chapter 7: String Fundamentals
- Chapter 8: Lists and Dictionaries (you can ignore Dictionaries for now)
- Chapter 9: Tuples, Files, and Everything Else
- Chapter 11: Assignments, Expressions, and Prints
- Chapter 12: `if` Tests and Syntax Rules
- Chapter 13: `while` and `for` Loops

Outline

We have a lot to cover in this lecture:

- Python data types
- Logical Operations
- `if` statements
- Python lists
- Looping
- File input output

Big picture

To complete a task in any programming language, the software developer must consider the following:

- Data and it's representation
- Operations: modifying or computing things from data
- Flow of control: selecting which operations to run

With the combination of these things, we can write programs that tell a computer what to do. A computer program is a form of imperative or procedural knowledge. Most programming today is done in this style. This is different from declarative knowledge. An example of this difference from mathematics is a system of equations vs. an algorithm to find a solution to the system of equations. The algorithm tells a specific procedure so that we can find the quantity we are interested in.