Async Presentation Notes Unit 2

George's Content (2.1.1 - 2.10.2):

Basic Vocabulary - Language Orientation
- Algorithm vs Program
- High-Level vs Low-Level Languages
- Interpreted vs Compiled Languages

Why Python
- High-Level Language
- User-Friendly
- Great variety of Packages and Applications
- Relatively fast
- Elegant Style

Tools
- Command line
- Jupyter Notebook

Objects in Python
- Description of Objects (Everything is an Object)

Strongly-Typed
- Restricted operation among data types
- Exceptions

Constructors
- Special Functions for creating Objects

Numbers
- Integer (Whole Numbers)
- Float (Decimal-part - approximation of Real Numbers, rounding error)

Alec's Content (2.11.1 - 2.15.2):

- **Variables**
  - ***Definition*:** In python, variables are simply the name for values(which are objects as discussed before) in a computer's memory that you want to use in a program. *The variable is a reference to an object but not the object itself*
  - ***Usage:*** to assign a value to a variable, one must use a single equals sign(=) to denote what a variable's value will be
  - ***Important Characteristics:*** variables must begin with a letter or an underscore, not a digit. They are case sensitive and cannot be on of Python's *reserved words*(keywords such as 'else')
- **Strings**
  - ***Definition*:** In python, strings are a sequence of characters
  - ***Usage:*** to create a string, one must enclose the characters of the desired string in single or double quotes or use the string function (str)to convert from other data types
  - ***Important Characteristics:*** escapes, different types of quotes, functions ('+', '*','[start:end:step]','split','join', 'replace', 'strip', 'capitalize', 'title', 'upper', 'lower', 'swapcase',etc.)
- **Control/Loops**
  - *Control:*
    - ***Definition*:** the location in the program that is actively being executed, applicable for non-linear code
    - ***Usage:*** to tell python what area to focus on there are a variety of functions that can be used(conditionals)
    - ***Important Characteristics:*** python will interpret which function(s) are in use based up on the indentation of each block of code
  - Loops:
    - ***Definition*:** specific control structure that allows a set of statements to be executed multiple times
    - ***Usage:*** to tell python what criteria to iterate on, one can use specific functions like while and for. These functions ensure a command is executed until the while/for statement is true
    - ***Important Characteristics:*** decrement/increment variables in the program
- **Jupyter Notebooks**
  - ***Definition*:** web application that can be used to write and execute code in real-time
  - ***Usage:***
    - *Two Modes:*
      - *Command Mode: higher level navigation*
      - *Edit Mode: environment that allows for editing cells*
  - ***Important Characteristics:*** there are a variety of shortcuts to execute/make new cells, change between code/markup options, commenting out, magic commands