MIT OpenCourseware 6.0001 Introduction to Computer Science and Programming in Python
Lecture 1: What is computation?

What does a computer do?

1. Performs calculations
    a. Fast-paced
    b. Either built-in or defined by the programmer
2. Remembers results
    a. Storage
3. Computers only know/do what you tell them to do

Declarative knowledge is a statement of fact.
Imperative knowledge is the recipe or the how-to [algorithm]

1. Sequence of steps
2. Flow of control
3. A means to stop

Fixed Computer

- Ex. A calculator that can only add/subtract/mult/divide

Stored Program Computer

- Stores and executes instructions::

ARCHITECTURE
Memory (data and instructions)
Arithmetic Logic Unit (control unit w counter,, primitive ops are done**)**
Input and Output

You can compute anything with the 6 primitives → Anything computable in one programming language is also computable in any other

Combine primitive constructs to form phrases/expressions that are syntactically and static semantically correct

- Unlike english sentences, a program ONLY HAS ONE MEANING (does what you tell it)

OBJECTS

-In python, everything comes back to the object
Programs MANIPULATE objects of different types (which defines the operations that can be performed on it)
-Scalar (no subdivision,, ex. int, float, bool, NoneType) and non-scalar (internal structure can be accessed)
-can convert object types

Expression: <object> <operator> <object>

Operators: +, -, *, /, %, ** (PEMDAS)
→ save expression values to names to access it later
Ex. value = 2+4
pi = 3.14159
approx = 22/7