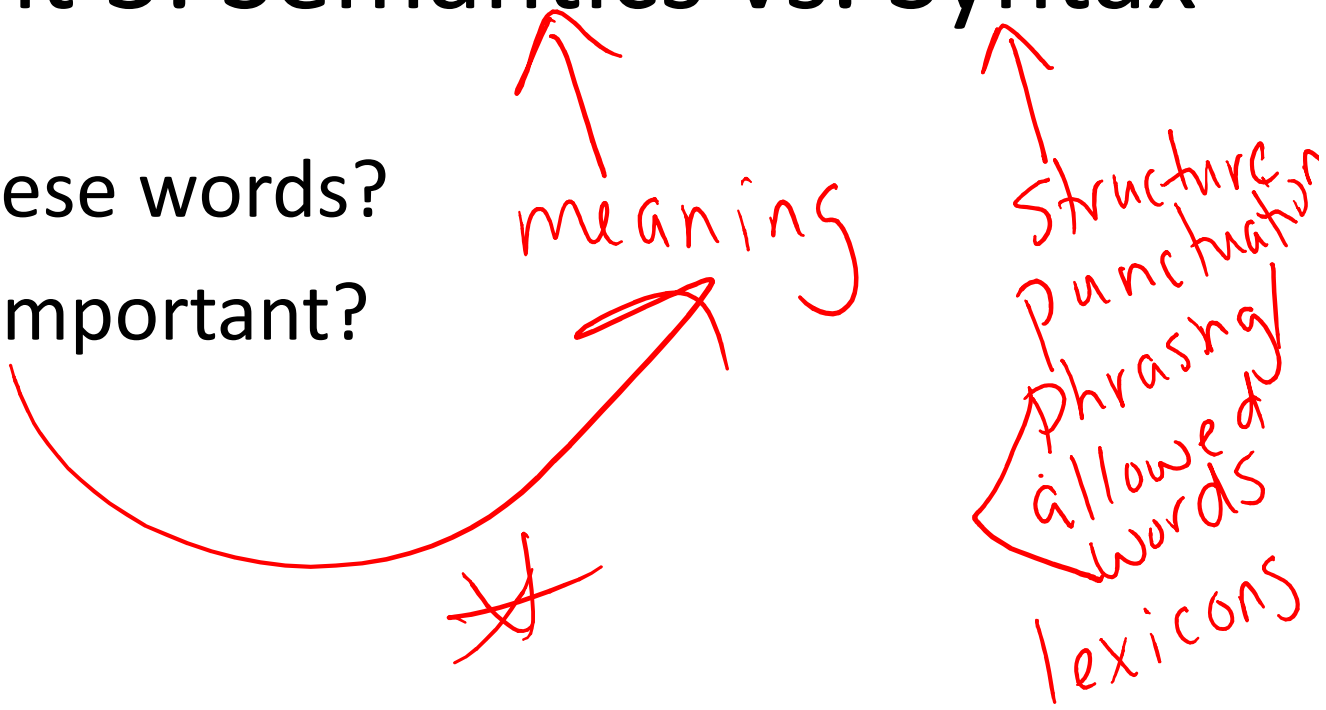
CS 160
CS Orientation

Expressions, Data Types, & Input/Output

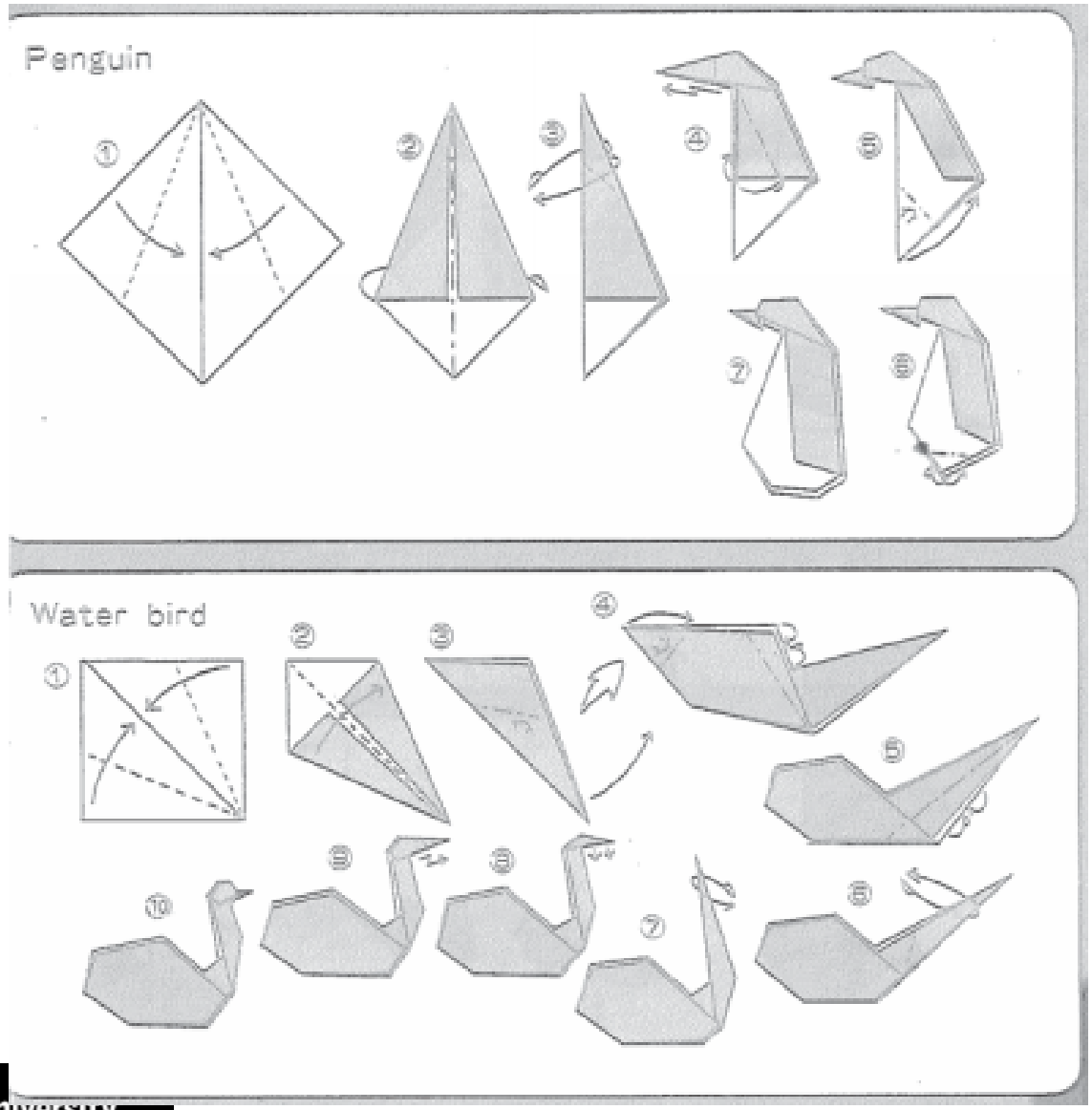
OSU Oregon State University

Assignment 3: Semantics vs. Syntax

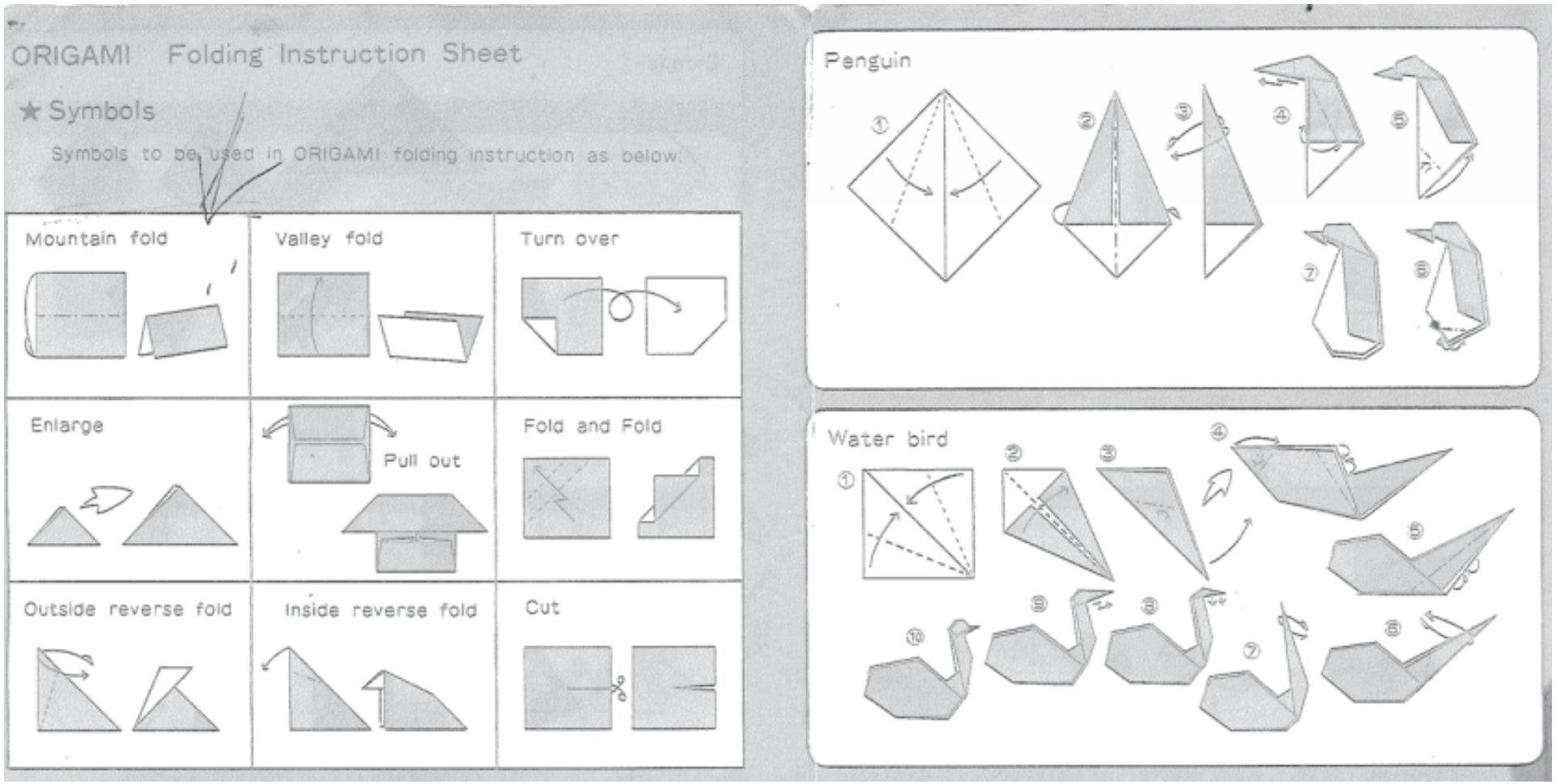
- What are these words?
- Why is this important?



Syntax



Syntax and Semantics…
Which is more important?

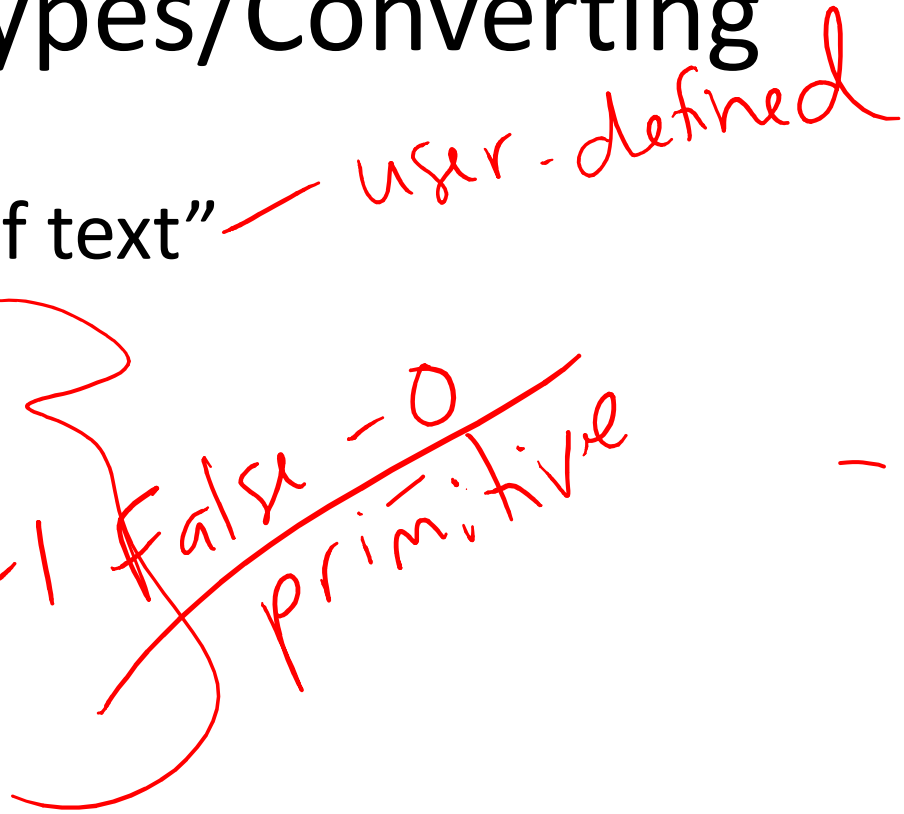


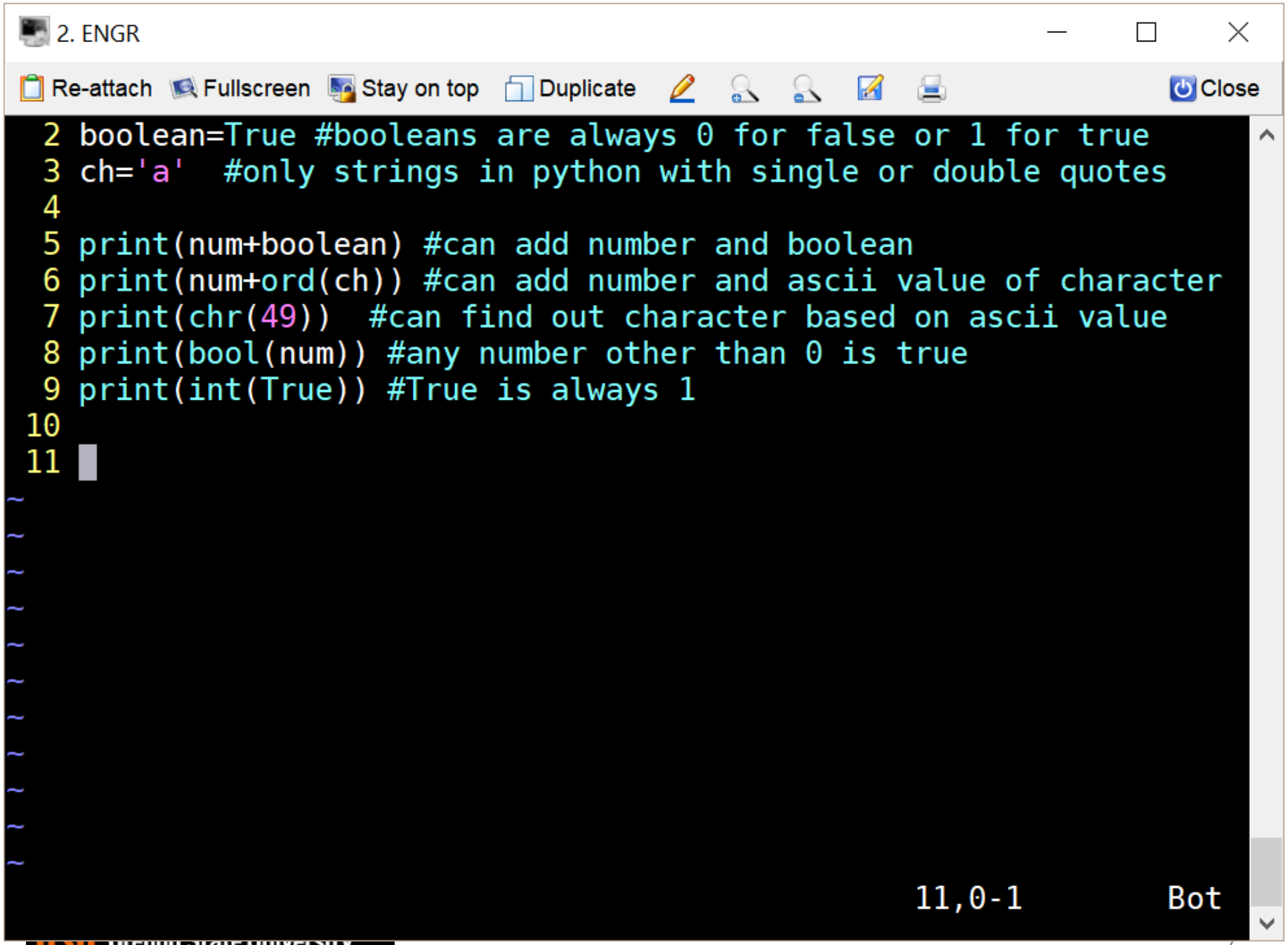
What does this have to do with CS?

- How is this like CS programs?

Data Types/Converting

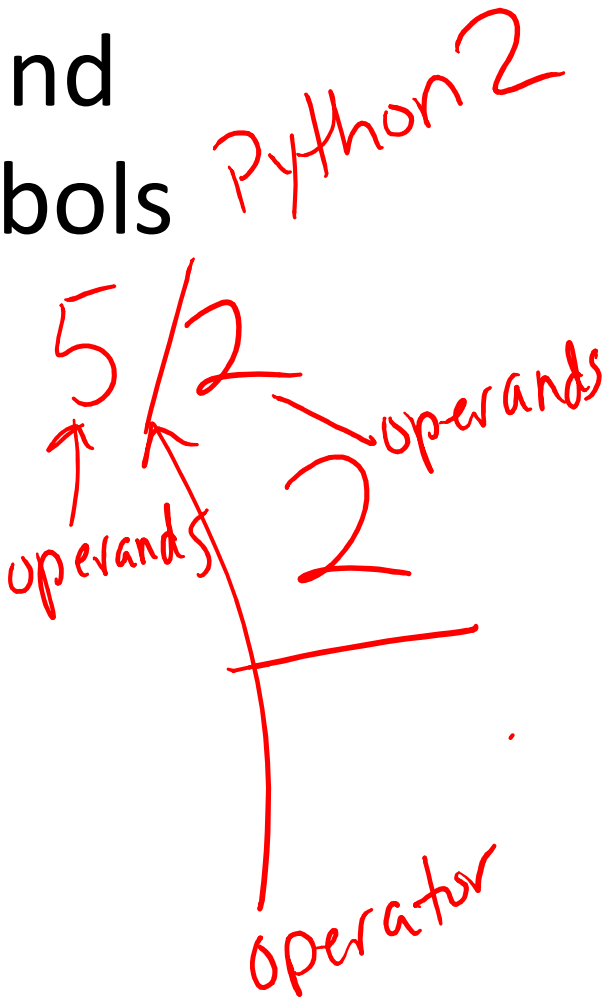
- string - “string of text”
- character – ‘a’
- integer – 79
- boolean – True
- float – 79.0




2. ENGR
Re-attach
Fullscreen
Stay on top
Duplicate
Close
2 boolean=True #booleans are always 0 for false or 1 for true
3 ch='a' #only strings in python with single or double quotes
4
5 print(num+boolean) #can add number and boolean
6 print(num+ord(ch)) #can add number and ascii value of character
7 print(chr(49)) #can find out character based on ascii value
8 print(bool(num)) #any number other than 0 is true
9 print(int(True)) #True is always 1
10
11
11,0-1 Bot

Python Operators and Their Computer Symbols

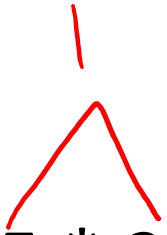
- +
- -
- *
- /
- // – integer division
- %
- **



Hierarchy of Operations

- Functions, i.e. math.sqrt()
- Power
- Mod
- Mult, Div
- Add, Sub
- Relational
- Logical

Python Examples



- 5 * 2 + 3 - 10
- 5 * (2 + 3) – 10
- 5/2
- 5//2

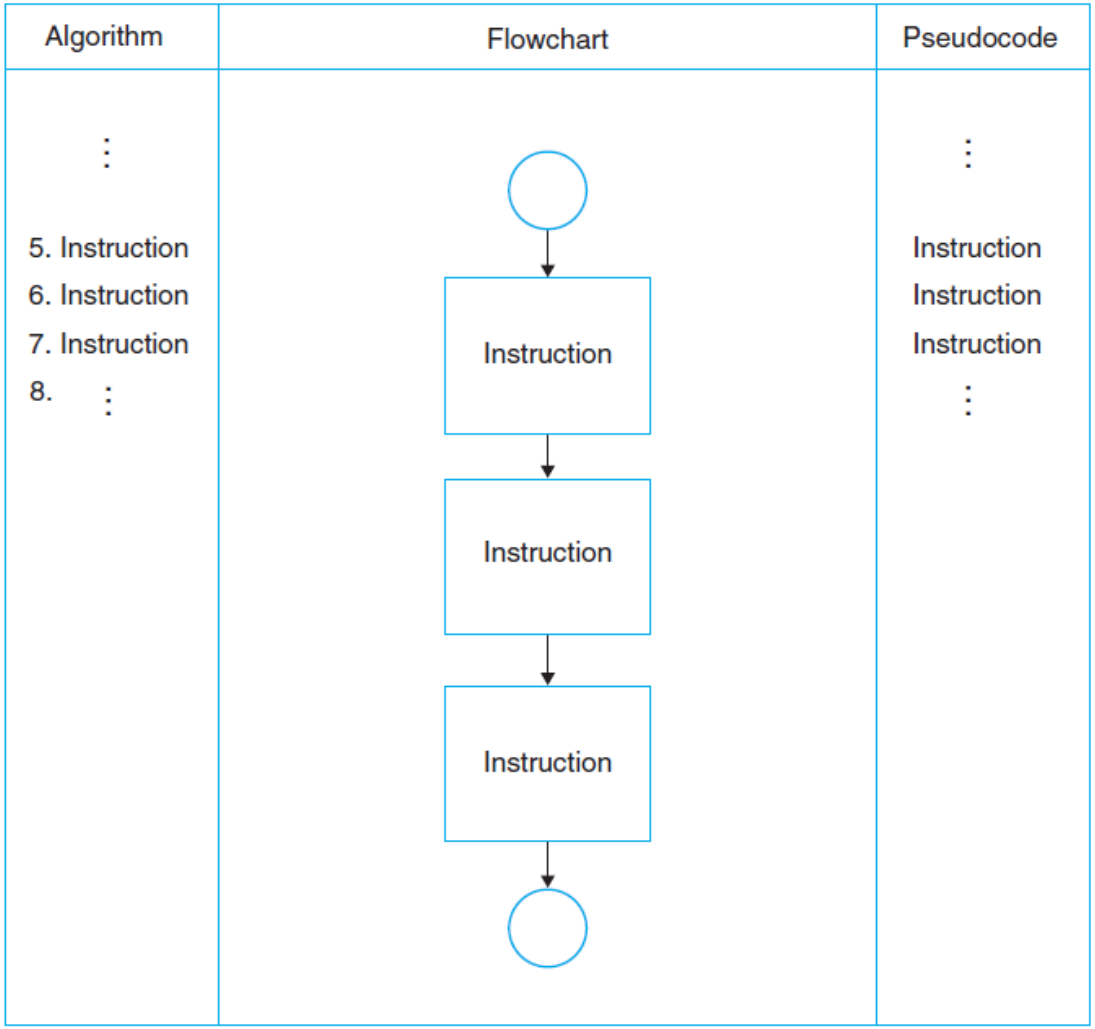
How about storing values?

- ch = ‘a’
- num = 79
- cont = True
- num = num + 1
- Can we mix types?
  - num = num + cont
  - num = num + ch
  - ch = ch + num

Expressions and Equations

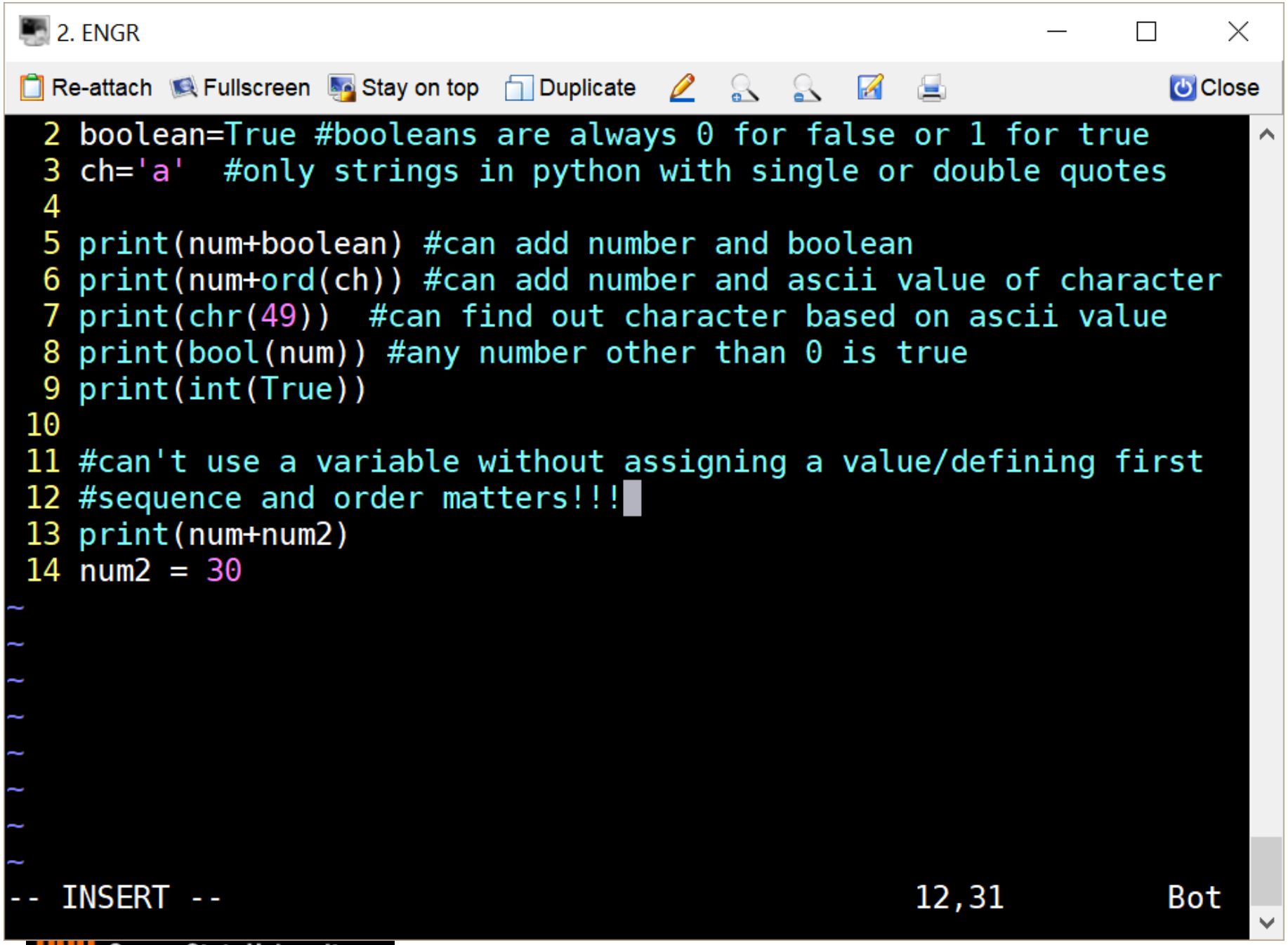
Expressions	Equations
$A + B$ *A* and *B* are numeric. The resultant is numeric and is not stored.	$C = A + B$ *C*, *A*, and *B* are numeric. The resultant is stored in *C*.
$A < B$ *A* and *B* are numeric, character, or string. The resultant is logical and is not stored.	$C = A < B$ *A* and *B* are numeric, character, or string. The resultant is stored in *C*; *C* is logical.
A OR *B* *A* and *B* are logical. The resultant is logical and is not stored.	$C = A$ *OR* B *C*, *A*, and *B* are logical. The resultant is stored in *C*.

Sequential Logic Structure



Python Sequential Logic

```
print("   *   ")
print("  ***  ")
print(" ***** ")
print("*******")
```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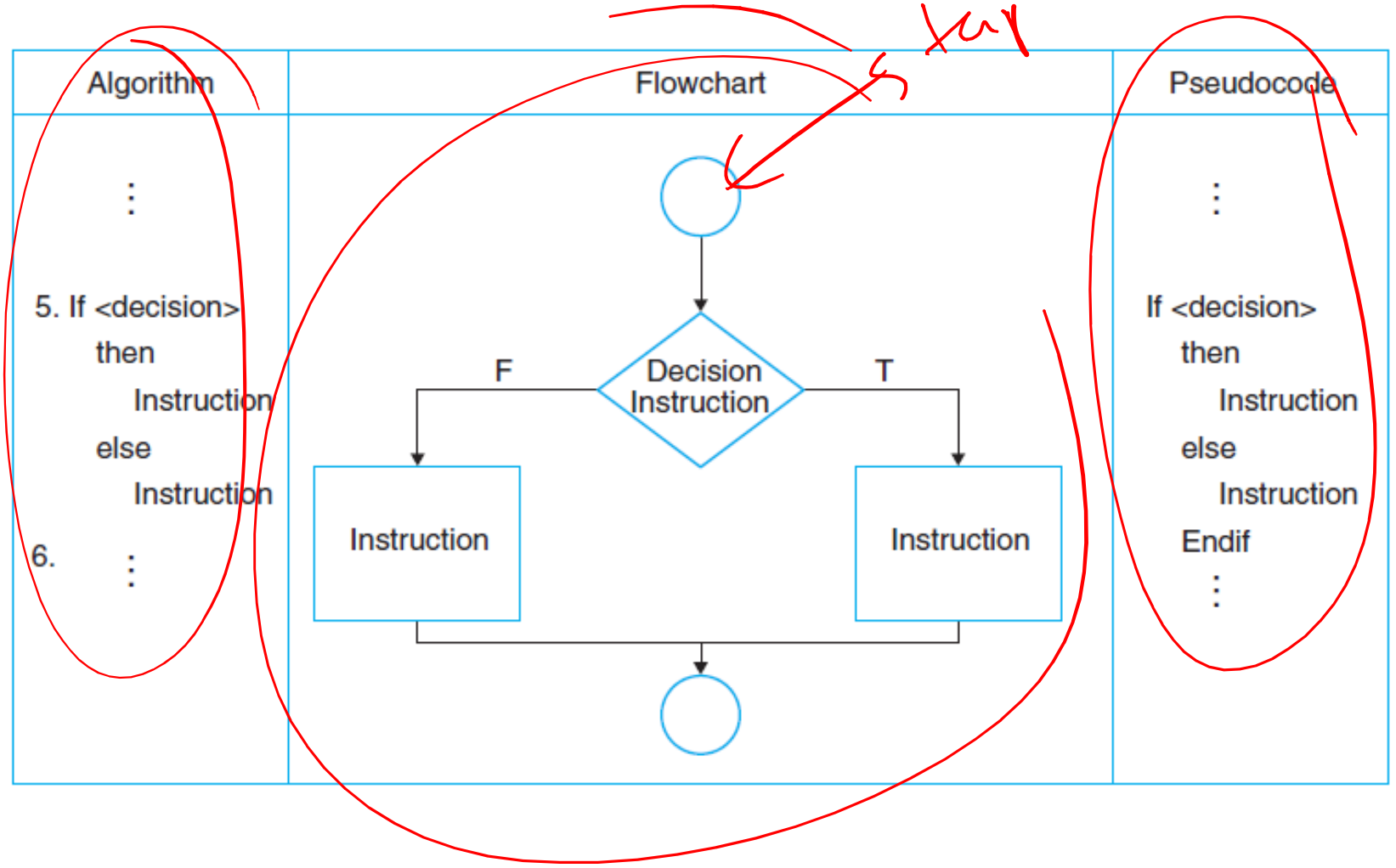
6 print(num+ord(ch)) #can add number and ascii value of character
7 print(chr(49)) #can find out character based on ascii value
8 print(bool(num)) #any number other than 0 is true
9 print(int(True))
10
11 #can't use a variable without assigning a value/defining first
12 #sequence and order matters!!!
13 print(num+num2)
14 num2 = 30
-- INSERT --
12,31
Bot

Decision Logic Structure



Relational Operators and Symbols

- >
- >=
- <
- <=
- ==
- !=