Python Basics

(Operators, Order of Precedence, Data Types, Variables)

Chapter 01a

Lesson Objectives

- Operators
- Order of Precedence
- Data Types
- Variables

Operators Precedence

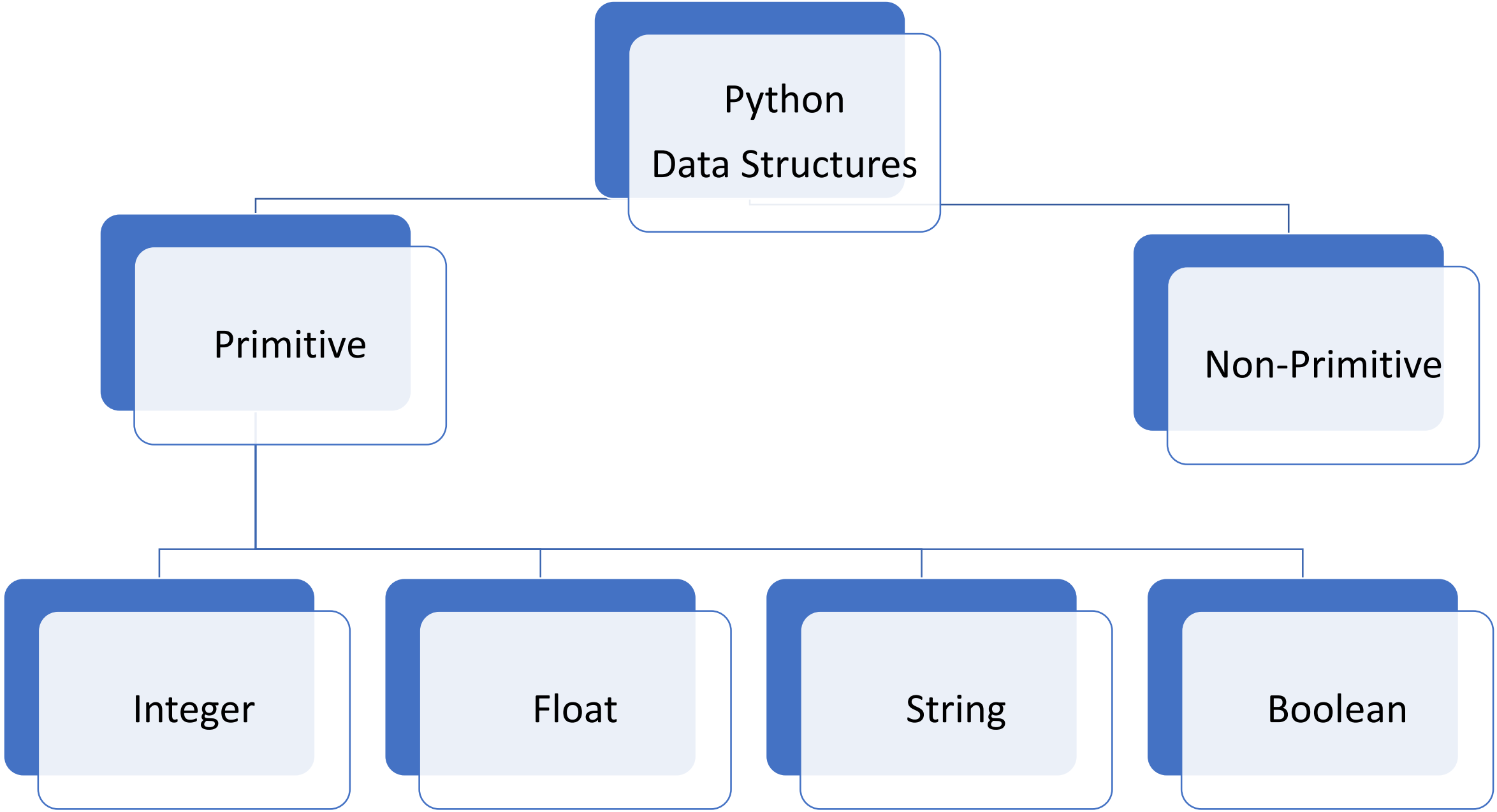
	Operator	Operation	Example
1.	**	Exponent	>>>8 ** 2 64
			a divided by b a / b Dividend / Divisor = Quotient
2.	%	Modulus (Remainder)	>>>8 % 12 8
	//	Integer (Quotient)	>>>8 // 12 0
	/	Division *Always produces a float	>>>8 / 12 0.666666
	*	Multiplication	
3.	+	Addition	
	-	Subtraction	

Python Assignment Operators

	Operator	Operation	Example
	Variable a holds 10, variable b holds 20		
	=	c = a + b	c = a + b
	+=	c += a	c = c + a
	-=	c -= a	c = c – a
	* =	c *= a	c = c * a
	/=	c /= a	c = c / a
	% =	c % = a	c = c % a
	** =	c ** = a	c = c ** a
	//=	c // = a	c = c // a

Common Data Types

	Data Type	Examples
int	Integers	-2, -1, 0, 1, 2, 3, 4, 5
float	Floating Point Numbers	-1.25, -1.0, -0.5, 0.0, 0.5, 1.0, 1.25
str	Strings	’25’, ‘a’, ‘cat’, ‘Hello!’, ‘11 cats’, ‘’ (blank string)
bool	Boolean	True or False


Python
Data Structures
Primitive
Non-Primitive
Integer
Float
String
Boolean

Data Structures

- A way of organizing and storing data so they can be accessed and worked with efficiently.

Storing Values in VARIABLES

- A **VARIABLE** is a location in the **computer's memory** where you can **store** a single value.
- A variable can be created on the fly.
- A variable is initialized (or created) the first time a value is stored in it.
- When a variable stores a new value, the old value is forgotten. This is called overwriting the variable.

Variable Assignment Statement

variable = value to be stored

schoolName = ‘GCC’

age = 41

firstNum = 10

secondNum = 20

total = firstNum + secondNum

Variable Names and Naming Conventions

- Cannot begin with a number.
- Use only Letters, Numbers, or Underscore.
- It can be only one word.
- DO NOT use Python Reserve Words.

Python Reserved Words

- To view your current version of reserved words, at the IDLE prompt

```
>>> import keyword
>>> print(keyword.kwlist)
```

['False', 'None', 'True', 'and', 'as', 'assert', 'break', 'class', 'continue', 'def', 'del', 'elif', 'else', 'except', 'finally', 'for', 'from', 'global', 'if', 'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise', 'return', 'try', 'while', 'with', 'yield']

Variable Naming Conventions

- **READABILITY** is IMPORTANT
  - Use Underscore or Camel Case. Which of the following is easiest to read?

python_puppet

pythonPuppet

pythonpuppet

- Use **DESCRIPTIVE** Variable Names

Variable Naming Conventions

- **Avoid**
  - lowercase letter ‘l’
  - uppercase ‘O’
  - and uppercase ‘I’
  - Why? Because the l and the I look a lot like each other and the number 1. And O looks a lot like 0.

- **Case Sensitive** (The following 3 variables are not the same).
  - weight
  - Weight
  - WEIGHT

TIPS: Variables (Naming Convention)

- TIP: Good habit to initialize Boolean variables. (True or False)
- TIP: CAPITALIZE variables whose values are CONSTANT
  - Means that the values do not change.

- userInput = False
- WRITE = ‘w’
- APPEND = ‘a’

Variable Name Examples

VALID Variable Name	**INVALID** Variable Name
balance	current-balance
currentBalance	current balance
current_balance	4account
_spam	42
SPAM	total_$um
Account4	‘hello’