Class 02: Variable, Data type, type conversion, input & Output, Operators in Python

Instructor: Md Rasel Sarker

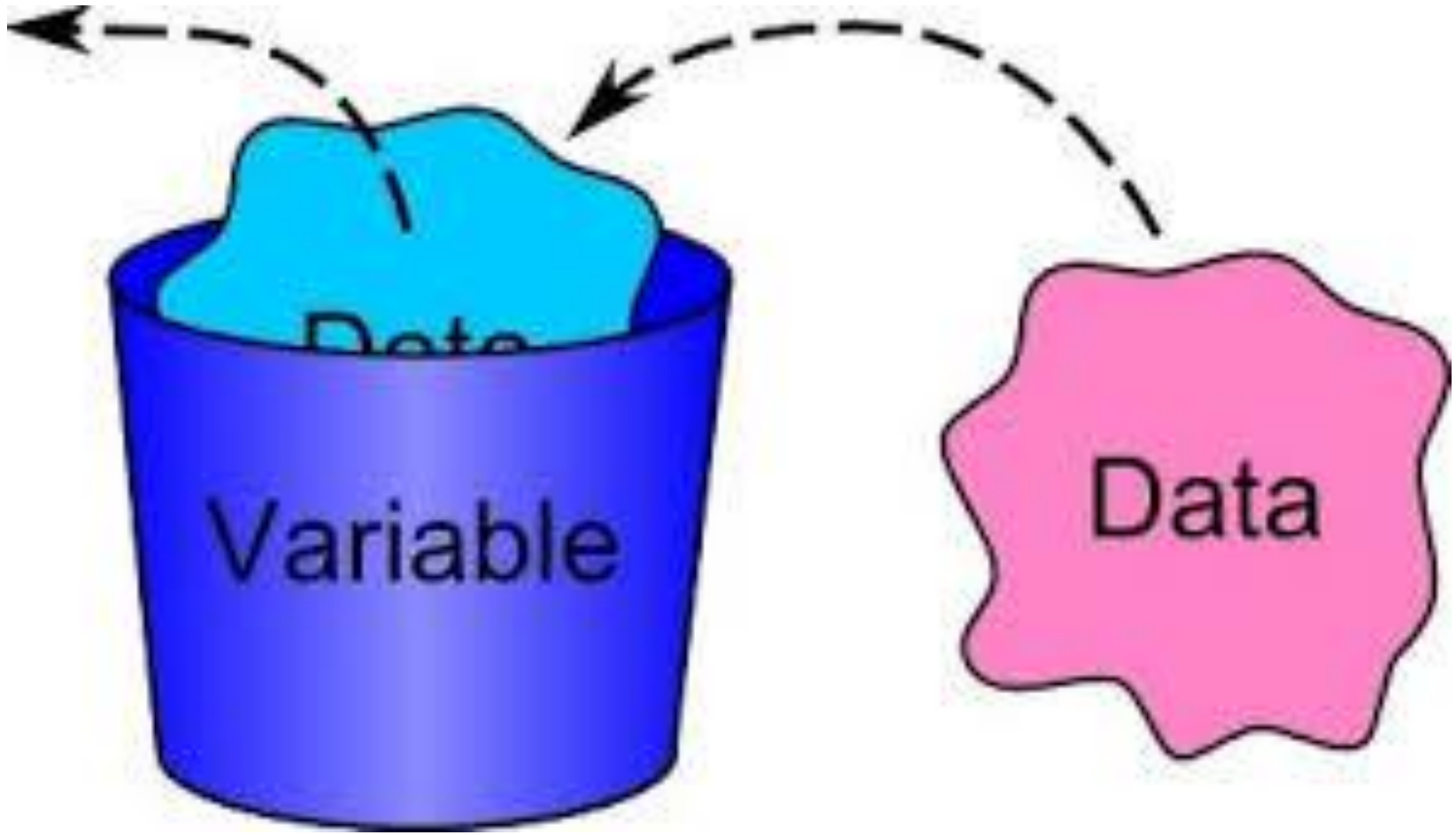
Variables

In Python, a variable is a reserved memory space used to store data.

Every value in Python has a specific data type, such as:

- Int
- Float
- String
- Boolean
- List
- Tuple
- Dictionary

- Think of it as a **box/ container** with a name, and you can put something inside that box and access it later using the name.
- You can name variables freely, as long as you follow Python’s naming rules.


Variable
Data

Variable Naming Convention?

important rules:

- Variable name must start with a letter or underscore (_)
- It cannot start with a number.
- You can use letters, numbers, and underscores (a_z, A_Z, 0_9, _)
- Python keywords (like if, for, while, etc.) cannot be variable names.
- Variable names are case-sensitive — meaning (**Name, name, and NAME**) are three different variables.

Keywords in Python

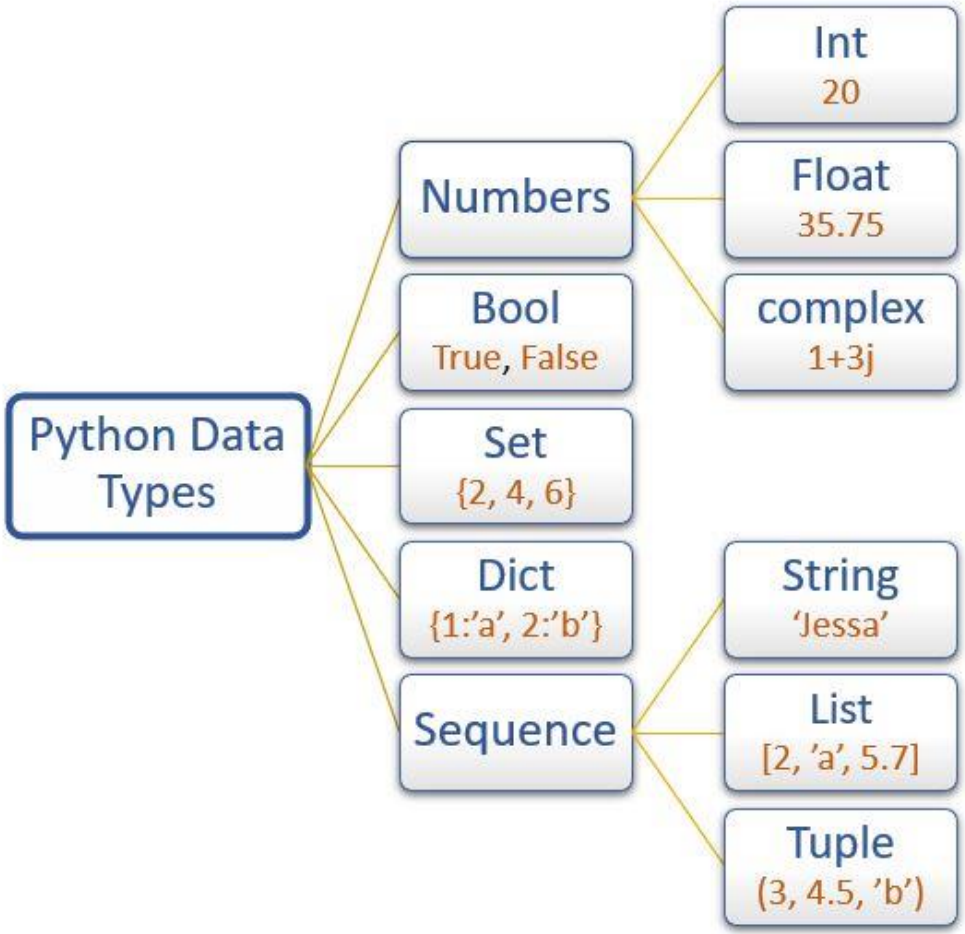
- Python has certain **reserved words** that are part of the language's syntax and **cannot** be used as variable names.

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

Valid vs Invalid Variable Names

Valid	Invalid
my_name = "Rasel"	1st_name = "Rasel"
roll1 = 12	for = 5
_name = "oops"	name$ = "oops"
price_2025 = 49.99	class = "A"
My_variable = 10	my variable = 10
user_name = “python”	user@name = “python”
totalAmount = 100	total-amount = 100
val = 5	import = "data"

Data Types


Python Data Types
Numbers
Int
20
Float
35.75
complex
1+3j
Bool
True, False
Set
{2, 4, 6}
Dict
{1:'a', 2:'b'}
Sequence
String
'Jessa'
List
[2, 'a', 5.7]
Tuple
(3, 4.5, 'b')

Data types

1. Integer – Whole numbers Example: age = 25
2. Float – Numbers with decimals Example: price = 99.99
3. Complex – Real + Imaginary Example: z = 3 + 4j
4. String – Text data Example: name = "Hello Python"
5. List – Ordered, changeable Example: fruits = ["apple", "banana", "mango"]
6. Tuple – Ordered, unchangeable Example: colors = ("red", "green", "blue")

Boolean – Represents logical values

is_raining = True

is_sunny = False

Used in:

- Decision-making
- Loops
- Conditions

Dictionary Type

- Dictionary – Key : Value pairs

Unordered, Changeable, No duplicate keys

```
student = {
    "name": "Ayesha",
    "id": 1024,
    "department": "CSE",
    "passed": True
}
```

Data Types in Python Details

Data Type	Example	Description
int	age = 25	Whole numbers, positive or negative
float	price = 99.99	Decimal numbers
str	name = “sakib"	Text or characters inside quotes
bool	is_ready = True	Boolean values: True or False
list	fruits = ["apple", "banana"]	Ordered, changeable, allows duplicates
tuple	coords = (10, 20)	Ordered, unchangeable (immutable)
set	colors = {"red", "blue"}	Unordered, unique items only
dict	person = {"name": "Rasel", "age": 25}	Key-value pairs
NoneType	value = None	Represents no value or empty state

Thanks for watching