

## Variables

Variables are containers for storing data values by taking memory space based on the type of value assigned to them. The value stored in a variable can be changed during program execution. A variable is only a name given to a memory location, all the operations done on the variable affects that memory location.

### Variables

```
1. Age = 21
2. Name = "Angela"
3. Age = 20
4. Salary = 2000.53
5. Num1 = 50
6. Num2 = 30
```

- A variable is created the moment a value is assigned to it, so you do not need to manually declare the variable or its type before using it
- A variable name can only start with a letter or the underscore character, and must not include symbols
- Variable names are case-sensitive
- The reserved words (keywords in python) cannot be used naming the variable
- A constant is a type of variable whose value cannot be changed throughout the code.

## DATA TYPES

Data types are the classification of data items. It represents the type of value that tells what operations can be performed on a particular data. As presented in the figure below there are 5 main types of data in python: Numeric, Boolean, Set, Dictionary and Sequence.



## Conditional Statements (If, Elif, Else)

If statement is a decision-making statement in Python. It is used to decide whether a statement or block of statements will be executed or not if a certain condition is true then statement is executed otherwise not.

Python supports the usual logical conditions from mathematics:

- Equals: a == b
- Not Equals: a != b
- Less than: a < b
- Less than or equal to: a <= b
- Greater than: a > b
- Greater than or equal to: a >= b

```
1. n = 10
2. if (n > 15):
3.     print("10 is greater than")
4. print("Hello World")
```

# Python relies on indentation (whitespace at the beginning of a line) to define scope in the code.

## LOOPS (For & While)

The for and while loops in Python are used to iterate over a sequence. The statements in loop would repeat until the loop condition is no longer satisfied. Python relies on indentation (whitespace at the beginning of a line) to define scope in the code.

### For Loop

```
1. for count in range(0,3):
2.     count = count + 1
3.     print("Robots Got Talents")
4. #Robots Got Talents prints 3 times
```

### While Loop

```
1. count = 0
2. while (count < 3):
3.     count = count + 1
4.     print("Robots Got Talents")
5. #Robots Got Talents prints 3 times
```

# Python Fundamentals

## LESSON ONE

- Introduction to Algorithms
- Introduction to Programming
- What is Python
- Python data types
- Built-in functions
- Exercises 1 – 3
- Comments

## LESSON TWO

- Variables in Python
- Casting functions
- Mathematical Operators
- Useful Math & String functions
- Exercises 4 - 5
- Conditional statements (if)
- Exercises 6 - 8

## LESSON THREE

- Conditional statements (if-elif-else)
- Nested conditional statements
- Exercises 9 - 14
- Combined conditional statements

## LESSON FOUR

- Loops
- Augment Assignment Operators
- Break statement
- Exercises 15 - 18

## LESSON FIVE

- Lists in Python
- Lists functions
- Nested lists
- Exercises 19 - 22
- Arrays in Python

## LESSON SIX

- Creating functions
- Exercises 23 - 24
- Libraries and Modules
- Installing Libraries
- Understanding Libraries

## LESSON SEVEN: • Using Python turtle library