

### Comment

|                              |   |
|------------------------------|---|
| comment - single line        | <code># this is a single line comment</code>      |
| comment - multiline comments | <code>""" this is multi lines comments """</code> |

### Variables Declaration

|                                 |   |
|---------------------------------|---|
| integer                         | <code>students_count = 1000</code>                                    |
| decimal                         | <code>rating = 4.99</code>  |
| boolean                         | <code>is_published = False</code>                                     |
| string - single line            | <code>course_name = "Python"</code>                                   |
| string - multiple lines         | <code>course_name = """ Multiple Lines """</code>                     |
| string concatenation            | <code>full_name = first_name + " " + last_name</code>                 |
| formatted string                | <code>full_name = f"{first_name} {last_name}"</code>                  |
| assign multiple variables       | <code>x, y, z = "John", "Alex", "May"</code>                          |
| one value to multiple variables | <code>x = y = z = "Value"</code>                                      |
| unpack                          | <code>animals = ["monkey", "cat", "dog"]<br/>x, y, z = animals</code> |

boolean - capitalise the first letter  
single line - can use either single or double quote  
multiple lines - use triple double quote to wrap the entire strings  
formatted string - use 'f' and curly braces with the double quotes  
wrap with the separated strings

### Output Variables

|                 |                                   |
|-----------------|-----------------------------------|
| text output     | <code>print("Hello World")</code> |
| variable output | <code>print(x + y + x)</code>     |

### Global Variable

```
def myfunc():  
    global x  
    x = " John"  
  
myfunc()  
print( " Hello " + x)
```

### Data Types

text Type: str  
numeric Types: int, float, complex  
sequence Types: list, tuple, range  
mapping Type: dict  
set Types: set, frozenset  
boolean Type: bool  
binary Types: bytes, bytearray, memoryview  
none Type: NoneType

### Collection Types

|                                 |  |
|---------------------------------|--|
| List - like an array            | <code>fruits = ['apple', 'orange', 'banana']</code>        |
| Dictionary - key value pair     | <code>fruit = {'name':'apple', 'colour':<br/>'red'}</code> |
| Tuples - order is unchangable   | <code>fruit = ('apple', 'orange', 'banana')</code>         |
| Set - set items are unchangable | <code>fruit = {'apple', 'orange', ;banana}</code>          |

### If - else

### while loop

### for loop

### function

### Built-in function

|                        |  |                             |                                    |
|------------------------|--|-----------------------------|------------------------------------|
| check type of variable | <code>x = 2.8</code>                                   | <code>print(type(x))</code> | <code>&lt;class 'float'&gt;</code> |
| casting                | <code>int(), float(), str()</code>                     | <code>x = int(3)</code>     | <code>x will be 3</code>           |
| input                  | <code>username = input("-<br/>Enter your name")</code> | <code>user type</code>      | <code>username = "John"</code>     |



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### Strings

|                           |                           |                 |             |
|---------------------------|---------------------------|-----------------|-------------|
| slicing strings           | a = "Hello World"         | print(a[2:7])   | 'llo W'     |
| from index to the end     |                           | print(a[2:])    | 'llo World' |
| from start to index       |                           | print(a[:8])    | 'Hello Wo'  |
| from negative to negative | -2 is not included<br>'d' | print(a[-7:-2]) | 'o Wor'     |

### String Methods

|                                       |  |                           |
|---------------------------------------|--|---------------------------|
| upper case                            | print("Hello World".upper())               | "HELLO WORLD"             |
| lower case                            | print("Hello World".lower())               | "hello world"             |
| trim white space (leading & trailing) | print(" No Space ".strip())                | "No Space"                |
| replace string                        | print("Hello John".replace("John","Alex")) | "Hello Alex"              |
| split string                          | print("Hello, World".split(","))           | return ["Hello", "World"] |

### String Concatenation

|                  |   |                     |
|------------------|---|---------------------|
| use '+' operator | " Hello " + " World "   | "Hello World"       |
| use join()       | " ".join( ["Hello ", " World"] )                                      | "Hello World"       |
| use format()     | age = 18<br>text = "I am {} years old"<br>print( text.format( age ) ) | "I am 18 years old" |

'+' operator cannot combine string and number  
 {} is a placeholder

### Formatted String

```
# formatted string
first = " Mos h"
last = " Ham eda ni"
full = f"{first} {last} "
print( full)
```

### Number

There are three types of number: integer, float & complex number

```
x = 1 # integer
x = 1.1 # float
x = 1 + 2j # a + bi # complex number
print(10 + 3) # addition
print(10 - 3) # subtraction
print(10 * 3) # multiplication
print(10 / 3) # division outcome with float
print(10 // 3) # division outcome with integer
print(10 % 3) # modulus, the remainder of a division
print(10 ** 3) # exponent, the power
```



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