# Python Syntax ,Keywords and Operators

- **Tokens** : building blocks
- Python **Comments**
- **Print** Method
- **Input()**
- **Type()** and basic types in python
- **Conversion** Between Types
- **Importing** Modules
- **Random** Module

## Tokens : building blocks

- Smallest individual components that make up a program.
- 4 Types :
  - Keywords
  - Identifiers
  - Operators
  - Literals

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## Keywords

- Special reserved words predefined or reserved by the language.

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



## Identifiers

- **Identifiers** can be a combination of letters in lowercase (**a to z**) or uppercase (**A to Z**) or digits (**0 to 9**) or an underscore (_)
- Variable names, class names, function names and module names are all identifiers.
- Some special identifiers in Python :
  - __*__ : Special Reserved system defined names
  - __* : Used to define private class members

## Operators

- + ,- ,*, /, >, <, =, <=, >=, ==, !=, >>, <<, &, |, ~, ^
- +=, -=, *=, /=

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## Literals

- These are just constant values:

| | | |
|---|---|---|
| integer | : | 1,-1,0…. |
| Floating | : | -1.0, 0.0, 3.14 |
| string | : | '', ' ', 'a', 'abcd' |
| Boolean | : | True, False |

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## String Dilemma

- Single, Double or Triple Quotes??
- 'Quoted String' "Quoted String" """ Quoted String""" ''' Quoted String'''
- Single quote can be used in double quoted string and vice versa:
  ' single ' in single ' ; "double " in double" : Wrong
  ' double " in single' ; "single ' in double" : Right
- """ Multi Line
  string"""

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## Comments

- **Single line** comments start with #.

  *# This is a single line comment in python*

- **Multi line** comments can use the triple quote syntax.

  """

  This is a multi line

  comment in python.

  """

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## Print Method

- Print method prints to the standard output
- Syntax:

  *print(<var/const>, …, **sep**= '<separator>', **end** = '<delimiter>', **file** = <file object>)*

  ***sep, file** and **end**, arguments are optional and should appear in the end.*



## Input()

- The input method returns the value entered by user as a string
- Also allows to specify a string argument for a message to displayed

```
1  x = input('Enter one Number')
2  x = int(x)
3  y = x*x
4  print("Square of " + str(x) + " is %d" % y )
```

## Type Method

- Syntax:

  type(<object argument>)

- Returns the type of the argument
- Argument might be variables, objects ….
- Some basic types are:

  int, float, string, bool, complex

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## Conversion Between Types

- String to **Int** : int(<string variable/constant>)
- String to **float** : float(<string variable /constant >)
- Any Type to **String** : str(<variable /constant >)
- **bin()** method returns the binary representation of an **integer**

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## Importing Modules : Import statement

- import <module name> **# import the entire module**

  *import cmath*

  *cmath.sqrt(-1)*

- from <module name> import * **# import all components from module**

  *from cmath import **

  *sqrt(-1)*

- from cmath import sqrt **# import selected component from module**

  *from cmath import sqrt*

  *sqrt(-1)*



## Random Library

- import random module using:

  *import random*

- Integers :

  randrange(end) : *randrange(100)* **0 <= N <= end - 1**

  randint(start,end, [step]) : *randint(1,10)* **start <= N <= end**

  randrange(start,end, [step]) : *randrange(10,20,2)* **one from start, start+step, start + step*2..**

- Floating Numbers :

  random() : *random()* **Floating number [0.0, 1.0) or 0.0 <= N < 1.0**

  uniform(start, end) : *uniform(11.44.5)* **start <= N <= end**

## Dice Rolling Simulator

- Simulate the rolling of a 6 sided die:

**Create** simple simulation that prints the result of one roll on screen

**Create** option to enter Number of time the die should be rolled, and print the outcome of all the rolls.

**Give** an option to the user to roll multiple times, i.e. ask the user to "roll again or quit".

**Additionally** try to create a better looking interface (print dice like pattern on screen instead of printing numbers)

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## Some Questions

- WAP to print a random number between 100 and 200 (both values inclusive)
- WAP to input a number and convert it to integer and print in binary format.
- Write Program to input 2 numbers **x** and **y** and perform following operations:
    1. Find sum, product, modulus and $\mathbf{x^y}$ and print from single script
    2. Print Binary representation of **x | y**, **x & y, ~x, x ^ y**

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## Command Line Arguments

- Some values can be passed to the python script when starting the execution of the script.
- These values are called command line arguments and can be accessed from inside a python program.
- Usage:

  import the module **sys**

  **sys.argv** contains the values passed at the execution command prompt