

Python

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Page No.:	1					
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- Python is a general purpose high level programming language.
- developer - Guido Van Rossum (1989).
- official - feb 20th 1991.
- Simple code -

```
print ("Hello World")  
a = 10  
b = 20  
print ("The Sum", (a+b))
```

Output -
Hello World
The Sum 30
- python name suggestion -
Selected from TV Show
" monty python's circus"
broadcasted by BBC
(1969 to 1984)
- Python's features taken from -
 - ① functional programming → C
 - ② OOP → C++
 - ③ Scripting language → Perl, Shell Sc
 - ④ modular programming → module
 - ⑤ Syntax → C & AB lang

- Uses of python -

- ① Desktop application
- ② web "
- ③ database "
- ④ Network programming
- ⑤ developing games
- ⑥ machine learning
- ⑦ AI applications
- ⑧ IoT "

- features -

- ① simple and easy to learn
- ② freeware and open source
- ③ High level programming language
- ④ platform Independent
- ⑤ portability
- ⑥ Dynamically typed (declaration of datatype is not required)
- ⑦ Both procedure and object oriented
- ⑧ Interpreted

- Limitations -

- ① Not using for mobile application
- ② performance and speed is less
- ③ Database access
- ④ Runtime error
- ⑤ memory issue.

- Versions -

1.0 → Jan 1994

2.0 → Oct 2000

3.0 → Dec 2008

- Identifiers -

→ Class name, function name or module name or variable name.

→ Combination of character digits and an underscore.

→ they are case-sensitive (num, Num, NUM)

- Rules -
- ① Cannot be a keyword.
 - ② Should not contain white space.
 - ③ Combination of A-Z, a-z, 0-9 or underscore.
 - ④ Start with a alphabet character or an underscore (-).
 - ⑤ Not contain any special character.

ex - ① Var1

② -var1

③ _1_var

④ var-1

- Reserved keyword -

There are 33 reserved keywords

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

Program -

```
import keyword
keyword.kwlist
```

Data Types -

is which type of data present
inside a variable.

- | | |
|-------------|-------------|
| ① int | ⑧ range |
| ② float | ⑨ list |
| ③ complex | ⑩ tuple |
| ④ bool | ⑪ set |
| ⑤ str | ⑫ frozenset |
| ⑥ bytes | ⑬ dict |
| ⑦ bytearray | ⑭ None |

Code - $x = 10$

```
print(type(x))
```

Output - <class 'int'>

- Number representation -

①

- ① Decimal form \rightarrow 0 to 9
- ② Binary form \rightarrow 0 and 1
- ③ Octal form \rightarrow 0 to 7
- ④ Hexadecimal form \rightarrow a to f (10 to 15)

ex -

① bin(1) \rightarrow bin(15)	ans \rightarrow 0b1111
bin(0011)	ans \rightarrow 0b1001
bin(0x10)	ans \rightarrow 0b10000

② oct(1) \rightarrow oct(10)	ans \rightarrow 0o12
oct(0B1111)	ans \rightarrow 0o17
oct(0x123)	ans \rightarrow 0o443

③ Hex (7) \rightarrow

Hex(100)	ans \rightarrow 0x64
Hex(0B111111)	ans \rightarrow 0x3F
Hex(0o12345)	ans \rightarrow 0x4E5

- float datatype -

Code - $f = 1.234$	
Print(type(f))	
$f = 1.23$	\rightarrow exponential
Print(f)	form (scientific notation)
O/t - <class:'float'> 1200.0	(we can represent big values in less memory)

③ Complex data type -

$a + bj$
 ✓
 real part Imaginary Part
 $J = \sqrt{-1}$
 $J_2 = -1$

Code - $a = 10 + 1.5j$

$b = 20 + 2.5j$

$c = a + b$

print(c)

print(type(c))

O/P - $(30+4j)$
 <class 'complex'>

④ bool data type -

$1 = \text{True}$

$0 = \text{False}$

Code - $a = 10$

$a = \text{True}$

print(type(a))

O/P = <class 'bool'>

⑤ str type -

S1 = "ashish"

S2 = "sakshi"

- Type Casting -

is a converting of one type to another type.

Various inbuilt functions of type casting:

- ① int()
- ② float()
- ③ complex()
- ④ bool()
- ⑤ str()

① int() - we can convert from any type to int except complex type.

If we want to convert str type to int type, compulsory str should contain only integral value and should be specified in base-10

② float() - we can convert any type value to float type except complex type
 Whenever we are trying to convert str type to float type compulsory str should be either integral or floating point literal and should be specified only in base-10