Data Science & Artificial Intelligence

Python For Data Science

Basics Of Python

Lecture No.- 02

By- Satya sir

Recap of Previous Lecture

- Types of Prg Languages
- Translators
- Python features
  - Platform Independant, Simple, Scalability
  - Open Source, Dynamic Typed
  - Case-Sensitive, Extensible, Interactive
  - Interpretted, Rich Library, GUI Support
- Python is Named after "Monty Python Circus" [Comic show Name]

Topics to be Covered

- input() function
- Print() function
- id(), type(), len() functions
- Fundamental data types of Python
- Examples

Topic : Most Common Functions in Python

input

- Static input ⇒ Values given within the code ⇒ a = 10
- Dynamic input ⇒ Values Entered/given at run time (while Execution) ⇒ input() function

Syntax: Variable = input( )

Example:

```
a = 10
Print(a)
```

	1st time Executed	2nd time	3rd	4th	---
o/p:	10	10	10	10	--- 10

```
a = input( )
Print(a)
```

	1st time				
i/p:	5	7	8	10	153 — —
o/p:	5	7	8	10	153 — —

Topic : Most Common Functions in Python

```
a = input( )    # 10↵ as "10" (String)
Print(a)        # 10 as String
b = a // 2      # Error, // operator cannot be used with String.
```

NOTE : By default, input( ) function accepts inputs as String type.

Type Casting to int

```
a = int(input( ))  # 10↵
Print(a)           # 10 as Integer
b = a // 2         # Valid operation
Print(b)           # 5
```

```
a, b, c = int(input().split())
          # "3 5 7"
Print(a,b,c)
# 3 5 7
```

Multiple inputs values

```
a = 3
b = 5
c = 7
```

(OR)

```
a, b, c = 3, 5, 7
```

~~a = 3, b = 5, c = 7~~

```
a, b, c = input(), input(), input()
```

Split( ) method :

```
Split(delimiter, MaxSplit)
```

default : Space : -1 → optional

```
a, b, c = input().Split()  # 3 5 7↵ "3 5 7"
```

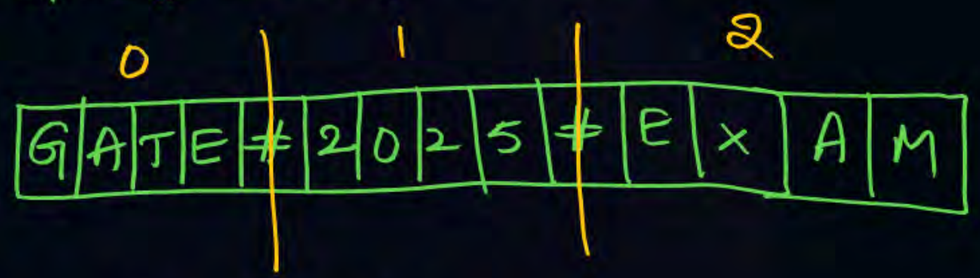
'3' '5' '7' — accepted as Strings only

Topic : Python Fundamental Data types

Example

```
X = input().split('#')
```

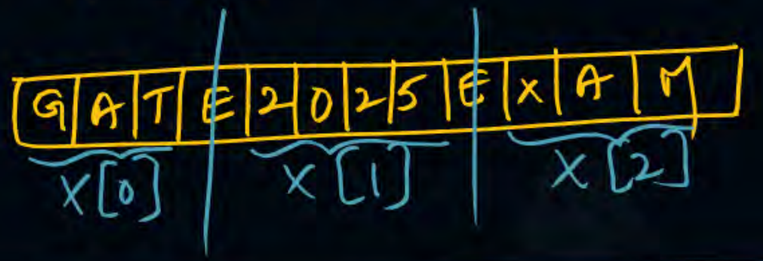
i/p : GATE# 2025# EXAM ↵




```
Print(X[0])  # GATE
Print(X[1])  # 2025
Print(X[2])  # EXAM
```

```
X = input().split('E')
```

i/p : GATE2025EXAM ↵




```
X = input().Split('7', 3)
```

i/p: 237+47+17+27457 3 ↵

X[0] | X[1] | X[2] | X[3]

Topic : Python Fundamental Data types

```
a = int(input())
b = int(input())
c = input()
d = a+b+c # Error
```

7

GATE

12.7

```
a = int(input("Enter a value"))
b = int(input("Enter b value"))
c = int(input('Enter c value'))
d = a+b+c
print(d)
```

>>> Enter a value 7 ↵

>>> Enter b value 9 ↵

>>> Enter c value 12 ↵

>>> 28

Print( )

1) Print(Variable Name) # Variable Value

Ex:
```
a = 10
print(a)    #10
```

2) Print('message')

Ex: Print('Welcome') # Welcome

3) Print('Message', Variable)

Ex:
```
a = 10
b = 20
c = a+b
print('c value is', c)
  # c value is 30
```

Topic : Python Fundamental Data types

"C"

```
int a=10, b=20, c=30;
Printf("a=%d", a);
Printf("b=%d", b);
Printf("c=%d", c);
```

o/p: a=10 b=20 c=30

C++

```
Cout
```

o/p in single line

Java

```
System.out.Print()
```

o/p in single line

Python

```
a=10
b=20
c=30
Print('a=', a)
Print('b=', b)
Print('c=', c)
```

o/p: a=10
b=20
c=30

```
Print(output, end=' ')
```

delimiter

⇒ default = '\n'

```
Print('a=', a, end=',')
Print("b=", b, end=";")
Print("c=", c)
```

o/p: a=10, b=20, c=30

```
x='Radhika'
y='GATE'
z="Exam"
i='2025'
Print(x, end=' ')
Print(y, end='#')
Print(z, end='@')
Print(i)
```

o/p: Radhika GATE#Exam@2025

Topic : Python Fundamental Data types

DataType : It describes

1) Nature of data (means, what values are accepted (or) Valid)

2) Operations that can/cannot be Performed.

Python datatypes :

keywords

Primary/Basic/Fundamental types

1) int - Integers
2) bool - boolean
3) float - float type
4) complex - Complex type
5) None - None type
6) str - String type

Collection/Secondary/Derived datatypes

7) list - List Type
8) tuple - Tuple type
9) set - Set Type
10) dict - Dictionary type

Topic : Python Fundamental Data types

Integers : Data without fractional Part ⇒ whole Numbers

Ex: 4, 9, -3, 27, 143, 237, 1016, 2025, 437527 ....

- It is by default Signed integer ⇒ Both +ve and -ve values accepted.
- Range : Unlimited ($-\infty$ to ∞)
- All operations are Valid (Arithmetic, Logical, Bitwise, Comparison, assignment)
- 4 types of Integers
  - Decimal Integer (default) 10 — Value Ten in Decimal
  - Octal Integer 0o10 — Value 10 in octal ⇒ 8 in Decimal
  - Binary Integer 0b10 — Value 10 in Binary ⇒ 2 in Decimal
  - Hexa Decimal Integer 0x10 — Value 10 in Hexas ⇒ 16 in Decimal

Topic : Most Common Functions in Python

Ex: 1

```
a = 47
Print(a)            # 47
Print(oct(a))       # 57
Print(bin(a))       # 101111
Print(hex(a))       # 2f
```

Ex:

```
a = 0034
Print(a)            # 28
Print(oct(a))       # 34
Print(bin(a))       # 011100
Print(hex(a))       # 1C
```

$(34)_8 = (\ 28\ )_{10}$

$4 \times 8^1 + 3 \times 8^0 = 4 + 24 = 28$

$(34)_8 = (011100)$

011100

1 C

$(47)_{10} = (57)_8$

8 | 47

5 → 7

$(47)_{10} = (101111)_2$

2 | 47

2 | 23 → 1

2 | 11 → 1

2 | 5 → 1

2 | 2 → 1

1 → 0

LSB

MSB

$(47)_{10} = (2f)_H$

16 | 47

2 — 15(f)

Topic : Python Basics - 2

Keywords in Python : 36 keywords

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

2 mins Summary

- input ( )
- Print ( )
- DataTypes ?
  - Fundamental types
    - Integers

To be Contd...

THANK - YOU