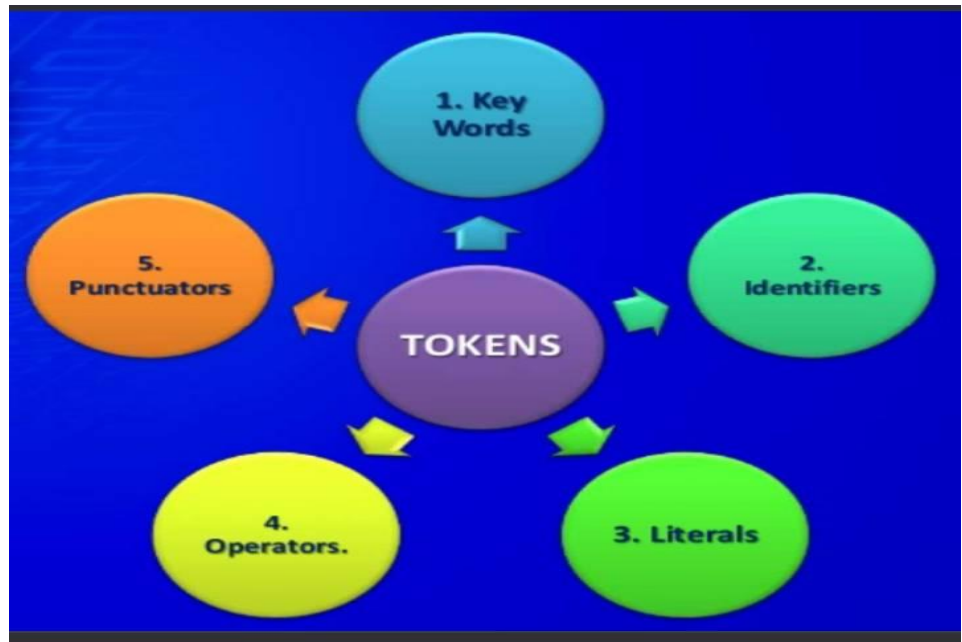


Chapter-07 Python Fundamentals

Introduction

- Python Character set
- Tokens
- Barebones of a Python programme
- Variable and assignment
- Simple Input and output

Program	❓ Set of instructions given to the computer to perform specific task.
IPO Cycle	❓ Input → process- → output ❓ Ex Make a cup of tea(tea leaves,sugar,milk,water--- → boil → cup of tea
Python Character set	● Letter (A-Z,a-z) ● Digits(0-9) ● Special symbol(*,/,.,%,<,>,{ },[],//) ● White spaces-blank space ● Other Character set-Represents all ASCII and Unicode Character set.
Tokens-	● The smallest individual unit in a programme is known as a token or a lexical unit.



-
-

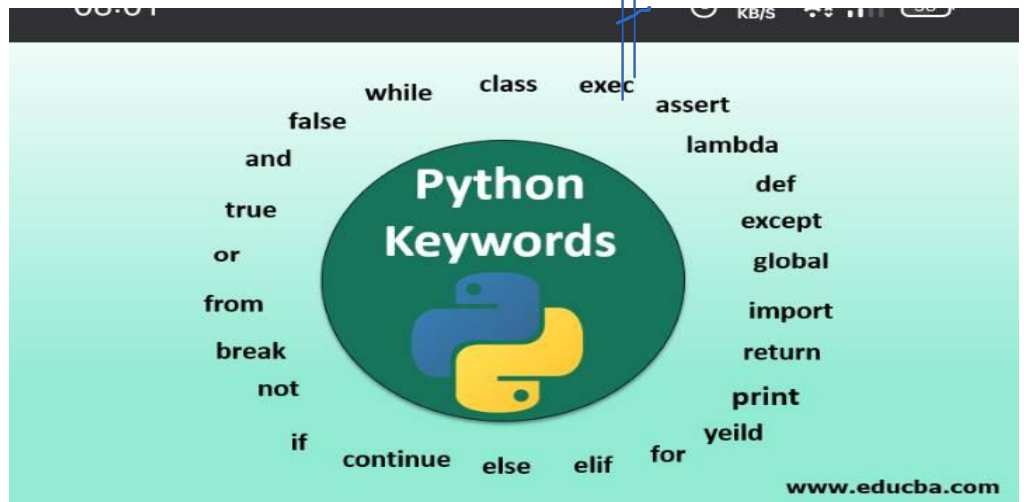
Types of token

1. Keyword
2. Identifier
3. Literals
 - String literals
 - Numeric Literals
 - Float literals
 - Boolean literals
 - Null literals
4. Operator
5. Punctuators

Keyword

Keywords are the words that convey a special meaning to the language compiler/ interpreter. These are reserved for special purposes and must not be used as normal identifier names .

Ex-print,int,input,if,for,range,double,as,def,import,continue,break



Identifiers

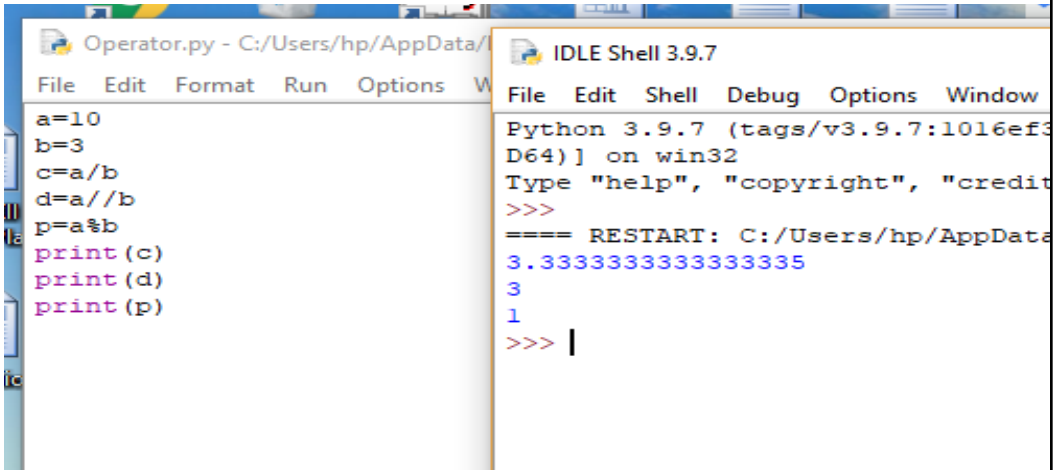
- Identifiers are fundamental building blocks of a program and are used as the journal terminology for the names given to different part of the program's variables, objects, classes, functions and list.

- `meter=int(input("Enter distance"))`
- `_km=int(input("Enter distance"))`
- `_a1=int(input("Enter value of a1"))`

Rules

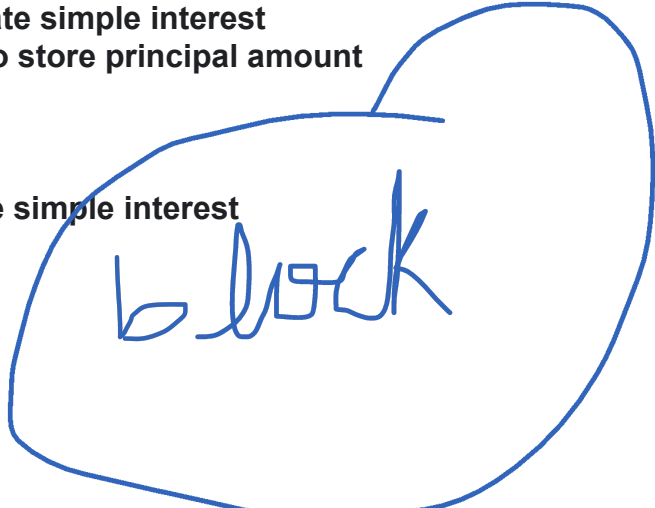
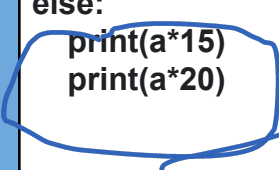
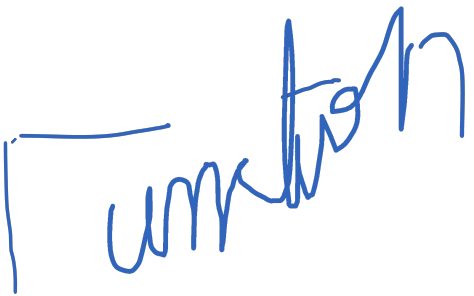
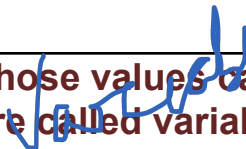
1. Must be start with alphabet .Ex m1-ok,
2. Can not start with digit ,Ex- 1m-invalid
3. Can not be a keyword .
Ex int-invalid, print-invalid
4. Uppar case and lower case variable are different
Ex-A1,a1 are different
- 5.Can also start with `_`(underscore)

	6.can be join with _ (underscore) Ex - area_of_circle -ok Area of circle-invalid s.i-invalid
Literals(Constants)	• String Literals • 'm'-Character Literals • '1'- Character Literals • "rahul", 'amit', "1234444"-String literals • Single line String • ' ' ' I am fine ' ' '
	• Numeric Literals 1.Integer constant- Decimal no constant(0-9) -23,56,5445,7887 Octal no Constant(0-7) Ex-O34, O14 Hexadecimal no constant (0-9 ,A-F) - OX12B ,OX25CF 2.float constant 1.fractional form- EX-12.65,4555.78,125.22 $6.7 = 0.67 * 10 = 6.7E01$ 2.Exponent form-152E05,175E01 Ex 5.8= $0.58 * 10^1 = 0.58E01$ 0.58-Mantissa E01-Exponent Ex -122E02 $15.76 = 0.1576 * 10^2 = 0.1576E02$ 3.Complex- >>> a=2+3j

	<pre>>>> b=4+5j >>> c=a+b >>> print(c) (6+8j)</pre>
	Boolean Literals-True,False • t=True • p=False • print(t) • print(p) • print(type(t))
	• None Literals
	• Literal Collection-Lists ,Tuple ,Dictionary
Operator	• Unary operator- Ex +m,-m,a,b,~m • Binary operator-Ex- +,-, *, /,/, %,Remainder A+b, a-b, a*b, a/b, a%b  The screenshot shows a Python IDE with two windows. The left window, titled 'Operator.py', contains the following code: <pre>a=10 b=3 c=a/b d=a//b p=a%b print(c) print(d) print(p)</pre> The right window, titled 'IDLE Shell 3.9.7', shows the output of the code: <pre>Python 3.9.7 (tags/v3.9.7:1016ef3 D64)] on win32 Type "help", "copyright", "credit >>> ==== RESTART: C:/Users/hp/AppData 3.3333333333333335 3 1 >>> </pre> • Arithmetic operator- Ex- +,-,*, /, % • Bitwise operator-It working with bit value 01011

	● Shift operator - >>, >>>, << ● Relational operator Ex >,<, >=, <=, ==, <> a>b, a>=b, a==b,a<>b ● Assignment operator- = Ex- a=5 Augmented Assignment operator a=a+5 or a+=5 b=b*5 or b*=5 a=a-5 , or a-=5 , a=a/5 or a/=5 ● Logical operator Ex and(&&) , or(II) , Not (~) a>b and a>c a>b OR a>c ~a ● Membership operator Ex in , not in
5.Punctuator or separator	● () , { } , [] , ; , : A=5,b=24,c=40
	Q1.Give the example of IPO cycle. Ans-Cooking, washing of clothes Q2. What is token and Write the name of tokens ? Ans-Tokens are the smallest individual unit in the program is called tokens Tokens are: keyword,identifier,literals,operators,punctuators, Q3.Identify valid and invalid identifiers.

	1.circle,area of circle, @ab, _df, s.i Ans- - Valid: circle,_df - Invalid: s.i,@ab, area of circle	
	<pre> S1="" I am\ indian" S2="python" print(S1) print(len(S2)) print(len("java")) n2=123 print(type(n2)) n3=123.78 print(type(n3)) b=True print(b) print(type(b)) KL=None print(KL) print(type(KL)) </pre>	Output <pre> I am indian 6 4 <class 'int'> <class 'float'> True <class 'bool'> None <class 'NoneType'> >>> </pre>
Output	Write the output of the following code <pre> a=12 b=5 k=a//b p=a/b m=a%b print(k,p,m) output- K=2 P=2.4 M=2 </pre>	
Barebones of a Python programme	# This programme will calculate the simple interest <pre> pr=5000 r=5 t=2 si=(pr*r*t)/100 print("Simple Interest=si",si) if pr=5000: print(pr) </pre>	

Comments, Multiline	# This programme will calculate the simple interest
Expression	A=5 A=A+5 (2+4)/2 (pr*r*t)/100 Area=7*8
Statements	print("Simple Interest=si") print("Simple Interest=si")
Comments	Single Line Comments # This programme calculate simple interest pr=5000 # pr is used to store principal amount Multiline comments ''' This programme calculate simple interest pr=5000 ''' 
Block and indentation	If a==5 : print(a*5) print(a*10) else: print(a*15) print(a*20)  
Function or methods	print() Int() Input() float()
Variable and Assignment	Named label whose values can be used and processed during program run are called variables. 
	M=10 

M=10
A=1000
K=6000+p
Str="computer"

10	20	30	40	50	60
1024	1025	1026	1027	1028	1029

n=10
n=20
print(M)
M1=60

Note -In python values holds the address not variables

A=50
B=78

Q.Predict the output of the following code

N=10
N=20
N=30
print(N)

Output-30

Multiple Assignment

a=b=c=12
a1,b1,c1=40,50,60
x=10,y=20
x,y=y,x

p,q=20,30
q,r =p-2,p+2
print(q,r)

OUTPUT	<pre> M=10 print(M) M=20 print(M) a=b=c=12 print(a,b,c) a1,b1,c1=40,50,60 print(a1,b1,c1) x=10 y=20 x,y=y,x print(x,y) p,q=20,30 q,r=p-2,p+2 print(q,r) </pre>	Output -- <pre> 10 20 12 12 12 40 50 60 20 10 18 22 </pre>  
Variable Definition	<pre> print(M) M=10 print(M) </pre>	Python variables are created by assigning values of desired type to them to create a numeric variable assignment numeric variable . \n , \t, \a, \r-Escape sequence character or non graphics character
Dynamic Typing	<pre> M=10 M="Python" M=12.78 </pre>	A variable pointing to a value of a certain type can be made to point to a value/ object of different type this is called dynamic typing

Simple input and output	Input() –for input the value print()-for printing something on screen	<pre> Age=int(input("Enter your age")) Population= int(input("Enter population")) Temp=float((input("Enter temperature"))) Name=input("Enter your name") </pre>
Write a code to input height and weight and calculate BMI		<pre> weight=float(input("Enter your weight")) height=float(input("Enter your height")) BMI=weight/(height**2) print("Body Mass Index=",BMI) </pre>
Write a code to input two numbers and print their sum		<pre> a=int(input("Enter first number")) b=int(input("Enter second number")) c=a+b print("Sum=",c) </pre>
Write a code to input your age and print it		<pre> age=int(input("Enter your age")) print(age) </pre>
Write a code to input distance in KM and convert it into meter.		<pre> Distance=int(input("Enter distance in km")) m=Distance*1000 print("Distance in meter=",m) </pre>
Write a code to input side of square and calculate the area of square.		<pre> a=int(input("Enter side of square")) Area=a*a perimeter=4*a print("Area of square=",Area) print("Perimeter of square=",perimeter) </pre>
Write a code to input a values in tonnes and convert it into quintals and kilograms (1 tonne=10 quintals, 1 tonne=1000kgs)		<pre> tonnes=int(input("enter weight in tonnes")) quintals=tonnes*10 print("-----") print("Weight in quintals = ",quintals) print("-----") kg=tommes*1000 print("Weight in kilograms = ",kg) </pre>
Write a code to input two numbers and swap them.		<pre> x=int(input ("Enter your first number")) y=int(input('Enter the second number')) print ('-----') x,y=y,x print ("X=",x,"Y=",y) </pre>
Write a code to input a number and print its cube.		

Possible Error When Reading Numeric Values	
Output Through print Function	<pre>print("Hello") print("Hello","How are you")</pre>
Write a program to input messages and print.	<pre>message=input("Enter welcome message : ") print("Hello, ",message)</pre>
	Write the output of the following code <pre>a=10 b=10 c=a+5 10 10 15</pre> Write the output of the following code <pre>a=10,b=20 c,d=10,a+5 print(c,d)</pre> Output 10 15 What is token in python> Khúshĩ Sãhũ 12:22 PM Tokens are smallest individual unit Used in python Write any two example of token. Amritpal Singh 12:22 PM Tokens python breaks each logical line into a sequence of elementary lexical components known as tokens You 12:23 PM ok Ansh Dwivedi 12:23 PM A tokens are smallest individual unit Two example of tokens are: Keywords, identifier Literals, operators You 12:24 PM Write a python code to input value of salary?

	a=int(input("Enter your salary")) print(a) You Write a code in python to input two numbers and print their average. Khúshĩ Sāhũ 12:34 PM a=int(input ("Enter a number")) b=int(input("Enter a number")) Av=a+b/2 print("Average=",av) You 12:35 PM Q.Write the syntax error in Question Given as ? a=int(input ("Enter a number")) b=int(input("Enter a number")) Av=a+b/2 print("Average=",Av)
	Write the output of the following code a=1 b=40 c=120 if a>b and a<c : print(a) Ans
	Q3.How many types of token are available in python write their names Ans-Five Keywords, literals, operators,identifiers,puncuators
	You 12:09 PM What is RAM.Write any 02 points Amritpal Singh 12:11 PM RAM (Random Access Memory) is the internal memory of the CPU for storing data, program, and program result. Khúshĩ Sāhũ 12:11 PM Ram stands for Random Access Memory. It temporarily stores data It is of two types: 1. Dynamic RAM 2. Static RAM You 12:12 PM Write the Full form of IPO Ansh Dwivedi 12:12 PM Input processing output Khúshĩ Sāhũ 12:12 PM Input processing output unit Amritpal Singh 12:13 PM Input process output You

	12:13 PM 1KB is equal to bytes Khúshĩ Sāhũ 12:13 PM 1024 bytes Ansh Dwivedi 12:14 PM 1024 bytes Amritpal Singh 12:14 PM 1000 bytes You 12:15 PM correct 1024 bytes What is python IDLE ? Ansh Dwivedi 12:17 PM It is a type of software which helps us to make various types of programs You 12:17 PM