


Python Language

- Python is a general-purpose interpreted, interactive, object-oriented, and high-level programming language.
- It was developed by Guido van Rossum during 1985- 1990.
- Like Perl, Python source code is also available under the GNU General Public License (GPL).
- Python is case sensitive computer language

Program 1 :

Display the string " Hello Python"

```
print ('hello Python')
```



```
Hello Python
```

Using Variables

Program 2 : Store numbers and display, total, difference, product, division, Exponent, Modulus and Integer division. (Practice with Variables and Arithmetic operators)

```
x=10
```

```
y=4
```

```
print ('x=',x); print ('y=',y)
```

```
print ('total=',x+y);
```

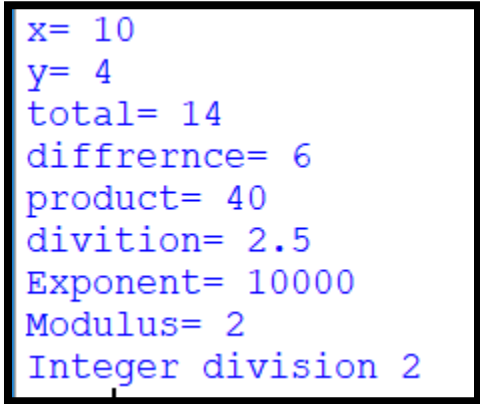
```
print ('difference=',x-y)
```

```
print ('product=',x*y); print ('division=',x/y)
```

```
print ('Exponent=',x**y)
```

```
print ('Modulus=',x%y)
```

```
print ('Integer division',x//y)
```



```
x= 10
y= 4
total= 14
difference= 6
product= 40
division= 2.5
Exponent= 10000
Modulus= 2
Integer division 2
```

Program 3

Store first name, last name and display the full name.

```
fname='Kumari'
lname='Perera'
print ('First Name:',fname)
print ('Last Name:',lname)
print ('Full Name:',fname+' '+lname)
```

```
First Name: Kumari
Last Name: Perera
Full Name: Kumari Perera
```

Program 4

Input two numbers and display the Total.

```
num1=int(input('enter a number:'))
num2=int(input('enter next number:'))
print('total:',num1+num2);
```

```
enter a number:45
enter next number:23
total: 68
```

Exercise 1

Write a python program to Input Marks of three subjects and display the total and average of them.

Operators

- Arithmetic operators
- Assignment operators
- Comparison operators
- Logical operators
- Bitwise operators

Python Arithmetic Operators

Operator	Name	Example
+	Addition	$x + y$
-	Subtraction	$x - y$
*	Multiplication	$x * y$
/	Division	x / y
%	Modulus	$x \% y$
**	Exponentiation	$x ** y$
//	Floor division	$x // y$

Python Assignment Operators

Operator	Example	Same As
=	$x = 5$	$x = 5$
+=	$x += 3$	$x = x + 3$
-=	$x -= 3$	$x = x - 3$
*=	$x *= 3$	$x = x * 3$
/=	$x /= 3$	$x = x / 3$
%=	$x \% = 3$	$x = x \% 3$
//=	$x //= 3$	$x = x // 3$
**=	$x ** = 3$	$x = x ** 3$
&=	$x \& = 3$	$x = x \& 3$
=	$x = 3$	$x = x 3$
^=	$x \wedge = 3$	$x = x \wedge 3$
>>=	$x >> = 3$	$x = x >> 3$
<<=	$x << = 3$	$x = x << 3$

Python Comparison Operators

Operator	Name	Example
==	Equal	x == y
!=	Not equal	x != y
>	Greater than	x > y
<	Less than	x < y
>=	Greater than or equal to	x >= y
<=	Less than or equal to	x <= y

Python Logical Operators

Operator	Description	Example
and	Returns True if both statements are true	x < 5 and x < 10
or	Returns True if one of the statements is true	x < 5 or x < 4
not	Reverse the result, returns False if the result is true	not(x < 5 and x < 10)

Python Bitwise Operators : Bitwise operators are used to compare (binary) numbers

Operator	Name	Description
&	AND	Sets each bit to 1 if both bits are 1
	OR	Sets each bit to 1 if one of two bits is 1
^	XOR	Sets each bit to 1 if only one of two bits is 1
~	NOT	Inverts all the bits
<<	Zero fill left shift	Shift left by pushing zeros in from the right and let the leftmost bits fall off

>>	Signed right shift	Shift right by pushing copies of the leftmost bit in from the left, and let the rightmost bits fall off
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Problems with "Selections" control structure.

If Statement

1. Input marks and if the marks greater than 90 display a message "Excellent".

```
m=int(input('Enter Marks:'))
if (m>90): print('Exelent')
```

```
Enter Marks:98
Exelent
```

If / Else Statement

2. Input marks and if the marks greater than or equal to 50 display a message "Pass" otherwise display "Fail".

```
m=int(input('Enter Marks:'))
if (m>=50):
    print('Pass')
else:
    print ('Fail')
```

```
Enter Marks:67
Pass
```

```
Enter Marks:45
Fail
```

Nested if statement

- Input science marks and if marks \geq to 75 display grade='A'
 marks \geq to 65 display grade='B'
 marks \geq to 55 display grade='C'
 marks \geq to 35 display grade='S'
 otherwise display grade='W'

```
m=int(input('Enter Science Marks:'))
if (m>=75): grade='A'
elif (m>=65): grade='B'
elif (m>=55): grade='C'
elif (m>=35): grade='S'
else : grade='W'
print ('Grade is: ',grade)
```

```
Enter Science Marks:56
Grade is: C
>>>
=== RESTART: C:/Users/nnb
on pract/p6 nested if.py
Enter Science Marks:80
Grade is: A
>>>
=== RESTART: C:/Users/nnb
on pract/p6 nested if.py
Enter Science Marks:34
Grade is: W
```

Exercise 2

- Input age of a person and if it is greater than or equal to 18 display "Adult" otherwise display "Child".
- Input Income and Expenses of a person of the September month and find the difference between them.
 If the difference greater then 5000 display "Very Good" ,
 If the difference greater then 1000 display "Good" ,
 Otherwise display "Bad" ,

Loops

While Loop

1. .Display 1 to 5 numbers

Method 1

```
x=1
```

```
while x<=5:
```

```
    print(x)
```

```
    x=x+1
```

```
1  
2  
3  
4  
5
```

Method 2

```
x=1
```

```
while x<=5:
```

```
    print(x, end=' ')
```

```
    x=x+1
```

```
1 2 3 4 5
```

2. Display even numbers from 1 to 10
3. Display odd numbers from 1 to 10
4. Display numbers from 10 to 1 in descending order

Working with Strings

```
word='Hello Python'
print(word)
print(word[0])
print(word[6:12])
print(word[10:])
print(word*2)
print(word+' '+'CRC')
```

```
Hello Python
H
Python
on
Hello PythonHello Python
Hello Python CRC
Sri      Lanka
Welcome
CRC
```

```
>>> print (word[2:]) → llo Python
>>> print (word[:2]) → He
>>> print (word[:2:]) → He
>>> print (word[::2]) → HloPto # one after the other
```

```
print('Sri\tLanka') #insert tab between words
print('Welcome\nCRC') #goto next line
```

String Methods

```
word.capitalize() → 'Hello python'
word.upper() → 'HELLO PYTHON'
word.lower() → 'hello python'
```