Complex Number

```
a = 3 + 4j  # complex number
print(a)          # complex number   3+4j
print(a.real) # real number from the complex  3.0
print(a.imag) # imag. number from the complex  4.0

x = (3+9j) + (4+3j)
print(x)   # 7+12j
print(x.real)   # 7.0
print(x.imag)   # 12.0

# type() function, used to print the data
# type of given variable

a = 10
print(type(a))    # <class 'int'>
b = 25.6
print(type(b))    # <class 'float'>
c = "GIS"
print(type(c))    # <class 'str'>
d = [10, 20, 30]
print(type(d))    # <class 'list'>
e = (10, 20, 30)
print(type(e))    # <class 'tuple'>
y = {"Rno": 10, "Name": 'Raj'}
print(type(y))    # <class 'dict'>
```

Conditional Statement : if

types :
simple if, if...else, elif ladder, nested if

# Condition :	VarName	Rel_Operator	Value
	num	(>, >=, <, <=, ==, !=)	0
	num	>	0

1. Simple if

syntax :

```
if condition :
    statement
```

→ e.g. 1

```
n = 5
if n > 0 :
    print("number is positive")
```

→ Output :

number is positive

→ e.g. 2

```
n = -5
if n > 0 :
    print("number is positive")
```

→ Output :

Complex Number

```
a = 3 + 4j   # complex number
print(a)     # complex number   3+4j
print(a.real) # real number from the complex  3.0
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# type of given variable

a = 10
print(type(a))   # <class 'int'>
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print(type(b))   # <class 'float'>
c = "GIS"
print(type(c))   # <class 'str'>
d = [10, 20, 30]
print(type(d))   # <class 'list'>
e = {10, 20, 30}
print(type(e))   # <class 'type'>
f = {"Rno": 10, "Name": 'Raj'}
print(type(f))   # <class 'dict'>
```

Conditional Statement : if

types :
simple if, if...else, elif ladder, nested if

Condition : VarName Rel_Operator Value

VarName	Rel_Operator	Value
num	(> >= < <= == !=)	0
num	>	0

1. Simple if

syntax :

```
if condition :
    statement
```

→ e.g. 1

```
n=5
if n>0 :
    print ("number is positive")
```

→ Output :

number is positive

→ e.g. 2

```
n=-5
if n>0 :
    print ("number is positive")
```

→ Output :

2. if else..

Syntax:

```
if condition:
    True statement
else:
    False statement
```

→ Ex.1 : by taking input from user, check that, entered number is Positive or Negative.

```
n = float(input('Enter Number :'))
if n>0:
    print('Number is Pos')
else:
    print('Number is Neg')
```

Output:

```
Enter Number: 25
Number is Pos
```

→ Ex.2 : by taking input from user, check that any person is eligible for voting or not.

```
age = float(input('Enter Your Age :'))
if age>=18:
    print('You are eligible for voting')
else:
    print('You are not eligible for voting')
```

Output :-

Enter Your Age : 15

You are not eligible for voting

→ Example 3 : By taking input from user, check that any entered number is odd or even

```
num = float(input('Enter Number : '))

if num%2 == 0:
    print(num, 'is Even')
else:
    print(num, 'is odd')
```

Output :-

Enter Number : 5

5 is odd

3. elif ladder

```
if condition-1:
    statement-1
elif condition-2:
    statement-2
elif condition-3:
    statement-3
elif condition-4:
    statement-4
elif condition-5:
    statement-5
    :
else:
    default statement
```

→ Example 4: By taking input from user, check that any entered number is Positive, Negative or zero.

```
num = float(input('Enter Number :'))

if num >0 :
    print('Pos')
elif Num<0 :
    print('Neg')
else:
    print('Number is zero')
```

Output :-

```
Enter Number : 5
Pos
```

→ Example 5 :- By taking input from user, print the name of day i.e., 1 for Sunday, 2 for Monday ... . Print the suitable answer, if input is not in range.

```
num = int(input('Enter Number Between 1 and 7:'))

if num==1 :
    print('Sunday')
elif num==2 :
    print('Monday')
elif num==3 :
    print('Tuesday')
elif num==4 :
    print('Wednesday')
```

```
elif num==5:
    print('Thursday')
elif num==6:
    print('Friday')
elif num==7:
    print('Saturday')
else:
    print('Enter Valid Input')
```

Output:

```
Enter Number Between 1 and 7: 5
Thursday
```

Example 6: By taking 2 float value in variable a & b from user perform the given operation.

```
a = float(input('Enter value of a:'))
b = float(input('Enter value of b:'))
n = int(input('Enter value of n:'))

if n==1:
    print('a+b:', a+b)
elif n==2:
    print('a-b:', a-b)
elif n==3:
    print('a*b:', a*b)
elif n==4:
    print('a/b:', a/b)
else:
    print('Enter Valid Input')
```

Output :-

```
Enter value of a : 13
Enter value of b : 14
Enter value of n : 2
a - b : -1
```

Example 7 :- By taking 2 float value in variable a & b from user peryorm the given operation.

```
a = float (input ('Enter value of a:'))
b = float (input('Enter value of b:'))
n = input ('Enter value of n:'))

if n=='+':
    print ('a+b:', a+b)
elif n=='-':
    print ('a-b:', a-b)
elif n=='*':
    print ('a*b:', a*b)
elif n=='/':
    print ('a/b:', a/b)
else:
    print ('Enter Valid Input')
```

Output :-

```
Enter value of a : 6
Enter value of b : 3
Enter value of n : /
a/b : 2.0
```

⇒ Example 8: Take 5 subject mark from user, make total and perc of it, and then print the grade as per the given table.

```
math = int(input('Enter Marks of Maths: '))
physics = int(input('Enter Marks of Physics: '))
chemistry = int(input('Enter Marks of Chemistry: '))
IP = int(input('Enter Marks of I.P.: '))
english = int(input('Enter Marks of English: '))

total = math + physics + chemistry + IP + english
perc = total/5

if perc >90 and perc <=100:
    print('Grade: A+')
elif perc >70 and perc <=90:
    print('Grade: A')
elif perc >34 and perc <=70:
    print('Grade: B')
elif perc >=0 and perc <35:
    print('Grade: C')
else:
    print('Enter Valid Input')
```

Output:-

```
Enter Marks of Maths: 68
Enter Marks of Physics: 43
Enter Marks of Chemistry: 57
Enter Marks of I.P.: 66
Enter Marks of English: 70
Grade: B
```

⇒ Example 9: W.A.P. to print the final amount after applying discount as per given table.

```
total_amount = float(input('Enter Total Amount :'))

if total_amount <10000:
    print('NO Discount Available')
    print('Final Amount Should Be :', total_amount)
elif total_amount >=10000 and total_amount <=20000:
    print('10% Discount Available')
    print('Final Amount Should Be :', total_amount-
    total_amount*0.1)
elif total_amount >20000 and total_amount <30000:
    print('15% Discount Available')
    print('Final Amount Should Be :', total_amount
    -total_amount*0.15)
else:
    print('20% Discount Available')
    print('Final Amount Should Be :', total_amount
    -total_amount*0.2)
```

Output:-

~~Enter total am~~
Enter Total Amount : 40000
20% Discount Available
Final Amount Should Be : 32000.00

⇒ Example 10: WAP to print the area and perimeter of circle as per users choice:

- if user press 1, area of circle should be printer as output.
- if user press 2, perimeter of circle should be printed as output.

```
n = int(input('Enter value:'))

r = float(input('Enter Radius:'))

if n==1:
    print('Area of circle is:', (22*(r**2))/7)
elif n==2:
    print('Perimeter of circle is:', ((2*22*r)/7))
else:
    print('Enter valid Input')
```

Output:

```
Enter value: 1
Enter Radius: 5
Area of circle is: 78.57142857142857
```

4. Nested if

Syntax :-

```
if condition :
    if condition :
        statement
    else :
        statement
else :
    statement
```

OR

```
if condition :
    statement
else :
    if condition :
        statement
    else :
        statement
```

→ Example 11 :- W.A.P. to check that entered number is pos / neg / zero

```
n = int (input(" Enter n : "))
if n>=0 :
    if n>0 :
        print ("Pos")
    else :
        print ("zero")
else :
    print ("Neg")
```

Output :-

Enter n : -5

Neg

OR

OR

```
n = int(input("Enter n : "))
if n<0:
    print("Neg")
else:
    if n>0:
        print("Pos")
    else:
        print("zero")
```

Output :-

Enter n : -5

Neg

⇒ Example 12 : WAP to check that which number is maximum out of entered 3 number.

```
a = int(input("Enter number : "))
b = int(input("Enter number : "))
c = int(input("Enter number : "))
if a>b and a>c:
    print("a, "is max")
elif b>a and b>c:
    print(b, "is max")
elif c>a and c>b:
    print(c, "is max")
```

Output :-

```
Enter number : 25
Enter number : 6
Enter number : 51
51 is max
```

→ Example 13 :- W.A.P. to check that which number is maximum out of entered 4 number.

```
a = int (input (" Enter number : "))
b = int (input (" Enter number : "))
c = int (input (" Enter number : "))
d = int (input (" Enter number : "))

if a>b and a>c and a>d:
    print ('a is max')
elif c>b and c>a and c>d :
    print ('c is max')
elif b>a and b>c and b>d :
    print ('b is max')
else:
    print ('d is max')
```

Output :-

```
Enter number : 20
Enter number : 4
Enter number : 2
Enter number : 1
a is max
```

⇒ Example 14:- WAP to arrange 3 number in ascending order.

```
a = int(input("Enter number: "))
b = int(input("Enter number: "))
c = int(input("Enter number: "))

if a<b and a<c:
    if b<c:
        print(a,b,c)
    else:
        print(a,c,b)
elif b<a and b<c:
    if a<c:
        print(b,a,c)
    else:
        print(b,c,a)
else:
elif c<a and c<b:
    if a<b:
        print c
```

⇒ Example 15: WAP to arrange 3 numbers in descending order.

```
a = int(input("Enter number: "))
b = int(input("Enter number: "))
c = int(input("Enter number: "))
```

```
if a>b and a>c:
    if b>c:
        print (a,b,c)
    else:
        print (a,c,b)
elif c>b and c>a:
    if b>a:
        print (c,b,a)
    else:
        print (c,a,b)
elif b>a and b>c:
    if c>a:
        print (b,c,a)
    else:
        print (b,a,c)
```

Output :-

```
Enter number: 2
Enter number: 4
Enter number: 20
20 4 2
```

* Example 16 WAP to check that entered number is
  - Even pos (i.e., 4, 50, 900)
  - Even neg (i.e., -4, -50, -900)
  - Odd Pos (i.e., 41, 51, 901)
  - Odd Neg (i.e., -41, -51, -901)

  (16.1) using nested if
  (16.2) using elif ladder

16.1

```
n = int(input("Enter number:"))

if n>=0:
    if n%2==0:
        print("Positive Even")
    else:
        print("Positive Odd")
else:
    if n%2==0:
        print("Negative Even")
    else:
        print("Negative Odd")
```

Output:-

```
Enter number: 25
Positive Odd
```

16.2

```
n = int(input("Enter number:"))

if n>=0 and n%2==0:
    print("Positive Even")
elif n>=0 and n%2!=0:
    print("Positive Odd")
elif n<0 and n%2==0:
    print("Negative Even")
elif n<0 and n%2!=0:
    print("Negative Odd")
```

Output:-

```
Enter number: 25
Positive Odd
```