

Input & Output

In [26]: *# 1) write a program to input two no. and print their sum*

```
n1 =input("enter no 1 :")
n2 =input("enter no 2 :")
print(int(n1)+int(n2))
```

```
enter no 1 :54
enter no 2 :46
100
```

In [28]: *# 2) Print Average of Three no. average of three no.*

```
a1 =int(input("enter no 1 :"))
a2 =int(input("enter no 2 :"))
a3 = int(input("enter no 3:"))
print((a1+a2+a3)/3)
```

```
enter no 1 :45
enter no 2 :65
enter no 3:48
52.666666666666664
```

Type Casting

In [52]: *# 1) write a program to convert pi value as integer*

```
import math
print(math.pi)
x = math.pi
print(x)
i = int(math.pi)
print(i)
print(type(i))
```

```
3.141592653589793
3.141592653589793
3
<class 'int'>
```

In [53]: *# 2) write a program to convert boolean value as integer*

```
t = True
f = False
print("t =",t,"f =",f)
print(type(t))
```

```
t = True f = False
<class 'bool'>
```

In [70]: *# 3) write a program to calculate Area of circle. Data should be taken from user*

```
import math
# print(math.pi)
r=float(input("enter radius of a circle:"))
area = math.pi*r**2
print("area of circle is:",area)
```

```
3.141592653589793
enter radius of a circle:5
area of circle is: 78.53981633974483
```

In [3]: *# 4) write a program to calculate the area of triangle, length of side should be taken from user*
python itself

```
import math
print(math.sqrt(25))

a=float(input("enter length of side one:"))
b=float(input("enter length of side two:"))
c=float(input("enter length of side three:"))

s = (a+b+c)/2
area =(s*(s-a)*(s-b)*(s-c))
print("area of triangle is:",math.sqrt(area))
```

```
5.0
enter length of side one:10
enter length of side two:12
enter length of side three:9
area of triangle is: 44.039045175843675
```

In [2]: *# 5) write a program to calculate SI, data should be taken from the user*

```
p=float(input("Enter principle amount:"))
r=float(input("Enter rate of interest:"))
t=int(input("enter time:"))
si=(p*r*t)/100
print("your SI is:",si)
```

```
Enter principle amount:10000
Enter rate of interest:15
enter time:2
your SI is: 3000.0
```

Operators

In [69]: *# 1) write a program to remove last digit from a given number*

```
n = int(input("Enter a number:"))
k = n
k //=10
print("Your value is:",k)
```

Enter a number:254

Your value is: 25

In [70]: *# 2) write a program to get last digit from a given number*

```
n = int(input("Enter a number:"))
k = n
k %=10
print("Last digit is:",k)
```

Enter a number:25634

Last digit is: 4

In [73]: *# 3) write a program which takes a 3 digit number from user and display only its 1st digit*

```
n = int(input("Enter a number:"))
k = n
k //=10
k //=10
print("1st digit is:",k)
```

Enter a number:125

1st digit is: 1

In [72]: *# 4) write a program which takes a 3 digit number from user and display only its middle digit*

```
n = int(input("Enter a number:"))
k = n
k //=10
k %=10
print("Middle digit is:",k)
```

Enter a number:245

Middle digit is: 4

In [75]: *# 5) write a program to swap data of two variables*

```
a1 = input("Enter 1st value:")
b1 = input("Enter 2nd value:")
k = a1
a1 = b1
b1 = k
print("After Swapping\n1st value:",a1)
print("2nd value:",b1)
```

```
Enter 1st value:256
Enter 2nd value:nikhil
After Swapping
1st value: nikhil
2nd value: 256
```

In [2]: *# ^ swap values without using temporary variable*

```
a =10
b =20
print(a,b)
a=a+b
b=a-b
a=a-b
print(a,b)
```

```
10 20
20 10
```

In [33]: *# 6) write a program to print "True" if the string entered by user containing*

```
s = input("Enter a text:")
print("py" in s)
```

```
Enter a text:hgpyjhuykp
True
```

In [42]: *# 7) write a program to input two strings from the user and display whether the*

```
s1 = input("Enter text1:")
s2 = input("Enter text1:")
print(id(s1))
print(id(s2))
print(s1 is s2)
```

```
Enter text1:nikhil
Enter text1:nikhil
1640702212912
1640702213552
False
```

```
In [41]: # 8) write a program to input five integers from the user and execute this exp
a = int(input("enter 1st no.:"))
b = int(input("enter 2nd no.:"))
c = int(input("enter 3rd no.:"))
d = int(input("enter 4th no.:"))
e = int(input("enter 5th no.:"))

print(a<b<c>d<e)
```

```
enter 1st no.:5
enter 2nd no.:6
enter 3rd no.:7
enter 4th no.:5
enter 5th no.:10
True
```

Decision Control if-else

```
In [14]: # 1) write a program to check whether the given number is +ve, -ve, or zero
```

```
z = int(input("Enter a no.:"))
if z>0:
    print("Given no. is Positive")
elif z<0:
    print("Given no. is Negative")
else:
    print("Given no. is Zero")
```

```
Enter a no.:0
Given no. is Zero
```

```
In [15]: # 2) write a program to check whether the given number is divisible by 5 or not
```

```
c=int(input("Eneter a no.:"))
if(c%5)==0:
    print("yes")
else:
    print("no")
```

```
Eneter a no.:564
no
```

```
In [16]: # 3) write a program to check whether a number is even or odd
```

```
x=int(input("Enter a no.:"))
if x%2==0:
    print("Number is Even")
else:
    print("Number is Odd")
```

```
Enter a no.:254
Number is Even
```

In [17]: *# 4) write a program to print the greater b/w two no. if both the numbers are equal*

```
a=int(input("Enter 1st no. :"))
b=int(input("Enter 2nd no. :"))
if a>b:
    print("-->",a)
else:
    print("-->",b)
```

```
Enter 1st no. :12
Enter 2nd no. :16
--> 16
```

In [20]: *# 5) write a program to print two given words from user in dictionary order*

```
s=input("Enter text 1 :")
t=input("Enter text 2 :")
if s>t:
    print(s)
    print(t)
else:
    print(t)
    print(s)
```

```
Enter text 1 :nikhil
Enter text 2 :nilikh
nilikh
nikhil
```

In [22]: *# 6) write a program to check whether the given no. is a 3 digit no. or not*

```
y=int(input("Enter a no. :"))
if y>=100 and y<=999:
    print("You entered 3 digit no.")
else:
    print("Wrong input")
```

```
Enter a no.:452
You entered 3 digit no.
```

In [25]: *# 7) write a program to check whether the quadratic eq. has two real & distinct roots*

```
a=int(input("Enter Multiplier of x^2 :"))
b=int(input("Enter Multiplier of x :"))
c=int(input("Enter Constant value :"))
root = b**2-(4*a*c)
if root<0:
    print("imaginary roots")
elif root>0:
    print("two real and distinct roots")
else:
    print("real and equal roots")
```

```
Enter Multiplier of x^2 :5
Enter Multiplier of x :6
Enter Constant value :9
imaginary roots
```

```
In [7]: # 8) write a program to check whether the given year is Leap year or not
y=int(input("Enter year"))
if(y%100)>0 and y%4==0:
    print("Year is Leap Year")
elif(y%100)==0 and y%400==0:
    print("Year is Leap Year")
else:
    print("Year is not a leap year")
```

```
Enter year2600
Year is not a leap year
```

```
In [12]: # 9) write a program to print greatest out of three no. if all the no. are same
x=int(input("Enter no. 1:"))
y=int(input("Enter no. 2:"))
z=int(input("Enter no. 3:"))
if x>=y and x>=z:
    print(x)
elif x<=y and y>=z:
    print(y)
else:
    print(z)
```

```
Enter no. 1:8
Enter no. 2:8
Enter no. 3:8
8
```

Program of loops

In [12]: *# 1) write a program to print first n even natural no.*

```
n=int(input("Enter a no.:"))
count=0
i=1
while count!=n:
    if i%2==0:
        print(i)
        count+=1
    if count==n:
        break
    i+=1
```

Enter a no.:12

2
4
6
8
10
12
14
16
18
20
22
24

In [14]: *# 2) write a program to print first n even natural no. in reverse order*

```
n=int(input("Enter a no.:"))
count=0
i=n*2
while i>1:
    if i%2==0:
        print(i)
        count+=1
    i-=1
```

Enter a no.:10

20
18
16
14
12
10
8
6
4
2

In [7]: *# 3) write a program to print cubes of first n natural no.*

```
n=int(input("Enter a no.:"))
for i in range(1,n+1):
    print("Cube of",i,"=",i**3)
```

```
Enter a no.:15
Cube of 1 = 1
Cube of 2 = 8
Cube of 3 = 27
Cube of 4 = 64
Cube of 5 = 125
Cube of 6 = 216
Cube of 7 = 343
Cube of 8 = 512
Cube of 9 = 729
Cube of 10 = 1000
Cube of 11 = 1331
Cube of 12 = 1728
Cube of 13 = 2197
Cube of 14 = 2744
Cube of 15 = 3375
```

In [23]: *# 4) write a program to print only vowels of a given string*

```
s=input("Enter a Text:")
v="aeiou"
for i in s:
    if i in v:
        print(i)
    elif i in v.upper():
        print(i)
```

```
Enter a Text:Nikhil Ik
i
i
I
```

In [5]: *# 5) write a program to print unique digits of a given integer*

```
n=input("Enter a No.:")
l=[]
l.append(n[0])
print(l[0])
for i in n:
    if i in l:
        continue
    else:
        l.append(i)
print(i)
```

Enter a No.:122465124123

1
2
4
6
5
3

In [21]: *# 6) write a program to print the count of spaces of a given string*

```
s=input("Enter a Text:")
print("' ' is :",s.count(" "))
```

Enter a Text:nikhil jhjf dshdie hvuidh
' ' is : 5

Programs of String

In [2]: *# 1) write a program to check given string has only alphabets*

```
s=input("Enter a text:")
if s.isalpha():
    print("Alphabetical String")
else:
    print("Not a Alphabetical String")
```

Enter a text:nikhilVishwakarma
Alphabetical String

In [4]: *# 2) write a program to check if a given character is present in given string*

```
s=input("Enter a text:")
c=input("Enter a Character:")
if c in s:
    print("Character is Present")
else:
    print("Character is Not Present")
```

Enter a text:nikhil
Enter a Character:i
Character is Present

```
In [6]: # 3) write a program to count vowels present in a given string
s=input("Enter a text:")
v="aeiou"
c=0
for i in s:
    if i in v:
        c+=1
    elif i in v.upper():
        c+=1
print(c,"vowels present")
```

Enter a text:nikhil VISHWAKARMA Aids
8 vowels present

```
In [10]: # 4) write a program to count words in a given string
s=input("Enter a text:")
v=input("Enter a word:")
print("Count of \"",v,"\" is",s.count(v))
```

Enter a text:hello hello Hello HE is she he
Enter a word:he
Count of " he " is 4

```
In [1]: # 5) write a program to reverse a string
s = input("Enter a text:")
print(s[-1:-len(s)+1:-1])
```

Enter a text:nikhil vishwakarma
amrakawhsiv lihkin

```
In [8]: # 6) write a program to reverse a string word wise
s = input("Enter a text:")
l=s.split()
for i in l:
    r=i
    print(r[-1:-len(r)+1:-1],end=" ")
```

Enter a text:sandeep nikhil ankit rahul
peednas lihkin tikna luhar

```
In [9]: # 7) write a program to extract no. from a given string and store all the no.
s = input("Enter a text:")
n="0123456789"
l=[]
for i in s:
    if i in n:
        l.append(i)
        print(i)
```

Enter a text:nikhil 67 jrd 2 tata ok 4
6
7
2
4

```
In [13]: # 8) write a program to check whether a string is pallindrom or not
s = input("Enter a text:")
if s[-1:-len(s)+1:-1] == s[0:len(s)+1]:
    print("String is Pallindrom")
else:
    print("Not a Pallindrom")
```

Enter a text:nitin
String is Pallindrom

```
In [14]: # 8) write a program to transform a string in uppercase
s = input("Enter a text:")
print(s.upper())
```

Enter a text:nikhil vishwakarma
NIKHIL VISHWAKARMA

```
In [15]: # 9) write a program to find max length words in a given string
s = input("Enter a text:")
l=s.split()
r = "a"
for i in l:
    if len(r)<=len(i):
        r=i
    else:
        continue
print(r)
```

Enter a text:nikhil third sem aids department sistec gandhi nagar
department

Programs of List

```
In [89]: # 1) write a program to calculate sum of elements of the list
n=input("Enter no. for sum by giving space:")
n=n.split()
l=[int(i) for i in n]
print(sum(l))
```

Enter no. for sum by giving space:1 2 3 5 4 6 9 8 7
45

```
In [15]: # 2) write a program to create a list of squares of no. of a given list
n=int(input("Enter a no.:"))
l=[i*i for i in range(1,n+1)]
print(l)
```

Enter a no.:25
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441, 484, 529, 576, 625]

```
In [12]: # 3) write a program to sort list in decending order
n=input("Enter no. by giving space:")
n=n.split()
l=[int(i) for i in n]
l.sort(reverse=True)
print(l)
```

Enter no. by giving space:10 36 54 875 12 45 12 102 45 12 41 2 36 9 6
[875, 102, 54, 45, 45, 41, 36, 36, 12, 12, 12, 10, 9, 6, 2]

```
In [21]: # 4) write a program to create a list of 1st n prime no.
n=int(input("Enter a no.:"))
l=[]
i=2
while len(l)<n:
    c=0
    for j in range(1,i+1):
        if i%j==0:
            c+=1
    if c==2:
        l.append(i)
    i+=1
print(l)
```

Enter a no.:100
[2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 191, 193, 197, 199, 211, 223, 227, 229, 233, 239, 241, 251, 257, 263, 269, 271, 277, 281, 283, 293, 307, 311, 313, 317, 331, 337, 347, 349, 353, 359, 367, 373, 379, 383, 389, 397, 401, 409, 419, 421, 431, 433, 439, 443, 449, 457, 461, 463, 467, 479, 487, 491, 499, 503, 509, 521, 523, 541]

In [13]: *# 5) write a program to create two list from a given list of no. in such a way
list can have non +ve no.*

```
n=input("Enter Integers by giving space:")
n=n.split()
ln=[int(i) for i in n if int(i)<=0]
lp=[int(i) for i in n if int(i)>0]
print("Positive integers:",lp)
print("Negative integers:",ln)
```

Enter Integers by giving space:25 -5 0 36 -6 45 -9 5 69 -12 9 26 -25
Positive integers: [25, 36, 45, 5, 69, 9, 26]
Negative integers: [-5, 0, -6, -9, -12, -25]

Programs of Tuple, Set & Dictionary

In [2]: *# 1) write a program to create a tuple from a given list & reverse it*

```
l=[5,4,7,8,7]
t=tuple(l)
print(l," -->",t)
print("In reverse order:",t[::-1])
```

[5, 4, 7, 8, 7] --> (5, 4, 7, 8, 7)
In reverse order: (7, 8, 7, 4, 5)

In [11]: *# 2) write a program to create List of tuples where each tuple is a pair of element
second element is its unicode*

```
l=[]
a=ord("A")
z=ord("Z")
for i in range(a,z+1):
    t=(chr(i), i)
    l.append(t)
print(l)
```

[('A', 65), ('B', 66), ('C', 67), ('D', 68), ('E', 69), ('F', 70), ('G', 71), ('H', 72), ('I', 73), ('J', 74), ('K', 75), ('L', 76), ('M', 77), ('N', 78), ('O', 79), ('P', 80), ('Q', 81), ('R', 82), ('S', 83), ('T', 84), ('U', 85), ('V', 86), ('W', 87), ('X', 88), ('Y', 89), ('Z', 90)]

```
In [16]: # 3) create two sets from a given set of no. to separate even and odd no.
s=input("Enter Elements of set by giving space:")
s=s.split()
s_base={int(i) for i in s}
s_even={int(i) for i in s if int(i)%2==0}
s_odd={int(i) for i in s if int(i)%2>0}
print("given Set Elements:",s_base)
print("Set of Even Elements:",s_even)
print("Set of odd Elements:",s_odd)
```

```
Enter Elements of set by giving space:1 25 4 6 2 1 2 3 6 4 5 7 8 9 6 5 4 2 6
5 5 5 5 6
given Set Elements: {1, 2, 3, 4, 5, 6, 7, 8, 9, 25}
Set of Even Elements: {8, 2, 4, 6}
Set of odd Elements: {1, 3, 5, 7, 9, 25}
```

```
In [32]: # 4) sort a dictionary by its keys in decending order
d={1:"Aakash",2:"Aliya",10:"Ankush",3:"Ashutosh",5:"Abhishek",7:"Aman",9:"Ankit"}
print(d)
# print(d.keys())
d=d.items()
d=list(d)
d.sort(reverse=True)
# print(d)
d=dict(d)
print(d)
```

```
{1: 'Aakash', 2: 'Aliya', 10: 'Ankush', 3: 'Ashutosh', 5: 'Abhishek', 7: 'Aman', 9: 'Ankit', 4: 'Abhay', 11: 'Arslaan', 6: 'Afiya', 8: 'Animesh'}
{11: 'Arslaan', 10: 'Ankush', 9: 'Ankit', 8: 'Animesh', 7: 'Aman', 6: 'Afiya', 5: 'Abhishek', 4: 'Abhay', 3: 'Ashutosh', 2: 'Aliya', 1: 'Aakash'}
```

```
In [54]: # 5) write a program to find maximum size batch code from a dictionary where keys are batch codes
# and data values are size of the batch
```

```
s= input("Enter Batch codes for Dictionary by giving space: ")
s=s.split()
l=[i for i in s]
d=[(i,len(i)) for i in l]
d=dict(d)
print(d)
m=d.values()
mx=max(list(m))
i=list(m).index(mx)
print(mx,i)
m=list(d.keys())
mx=m[i]
print("Max size Batch code: '",mx,"'\t\tSize:",d.get(mx))
```

```
Enter Batch codes for Dictionary by giving space: nikhil_32 ankush_10 sandeep_52 pankaj_36 nikhlesh_34 suhani_35
{'nikhil_32': 9, 'ankush_10': 9, 'sandeep_52': 10, 'pankaj_36': 9, 'nikhlesh_34': 11, 'suhani_35': 9}
11 4
Max size Batch code: ' nikhlesh_34 ' Size: 11
```

Programs of Input, Output and Functions

```
In [2]: # 1) write a program to take two input from the user calculate their product and
x,y=[int(i) for i in input("Enter two no. by giving space: ").split()]
p=x*y
print(f"Product of {x} and {y} : {p}")
```

Enter two no. by giving space: 5 6
Product of 5 and 6 : 30

```
In [4]: # 2) write a program to take input from the user. The input will be a string character
# print the unicode corresponding to the character
s=input("enter your string: ")
for i in s:
    print(f"{ord(i)}",end=" ")
```

enter your string: nikhil vishwakarma
110 105 107 104 105 108 32 118 105 115 104 119 97 107 97 114 109 97

```
In [7]: # 3) write a python f() to calculate area of circle
def area_Circle(r):
    return 3.14*(r**2)
r=int(input("Enter radius of Circle: "))
print(f"Area of circle: {area_Circle(r)}")
```

Enter radius of Circle: 7
Area of circle: 153.86

```
In [4]: # 4) write a python f() to calculate Compound Interest
def ci(p,r,t):
    s=p*((1+(r/100))**n)
    return s-p
p=float(input("Enter Principal Amount: "))
r=float(input("Enter Rate of Interest: "))
n=int(input("Enter Time Period: "))
print(f"Area of circle: {ci(p,r,n)}")
```

Enter Principal Amount: 150000
Enter Rate of Interest: 12
Enter Time Period: 3
Area of circle: 60739.20000000007

```
In [14]: # 5) write a python f() to calculate average of n no.
def average_N(n):
    k=0
    for i in range(n+1):
        k+=i
    return k/n
n=int(input("Enter a no.: "))
print(f"Average of {n} no.: {average_N(n)}")
```

Enter a no.: 15
Average of 15 no.: 8.0


```
In [5]: # 6) write a python f() to calculate volume of cuboid
def vol_Cube(a,b,c):
    return a*b*c

l,b,h=[int(i) for i in input("Enter side of Cuboid by giving space: ").split()]
print(f"volume of cube: {vol_Cube(l,b,h)}")
```

Enter side of Cuboid by giving space: 10 12 12
volume of cube: 1440

Programs of Function

```
In [10]: # 1) write a python f() to calculate LCM of two no.
def lcm(a,b):
    i=2
    lcm=max(a,b)
    while (lcm%a==0 and lcm%b==0)<1:
        x=a
        if x>b:
            x=b
        if x%a==0 and x%b==0:
            lcm=x
        elif (x*i)%a==0 and (x*i)%b==0:
            lcm=x*i
        else:
            i+=1
    return lcm
a,b=[int(i) for i in input("Enter two no. by giving space: ").split()]
lcm=lcm(a,b)
print(lcm)
```

Enter two no. by giving space: 10 12
60

```
In [23]: # 2) write a python f() to count words in a string
def word_Count(s):
    s=s.split()
    c=len(s)
    return c

x=input("Enter text for counting of words: ")
print(f"Words in your text: {word_Count(x)}")
```

Enter text for counting of words: nikhil bittu pankaj lucky hai
Words in your text: 5

```
In [13]: # 3) write a python f() to find no. in a given text, store no. in a list & return
def no_in_Text(s):
    n="0123456789"
    l=[]
    for i in s:
        if i in n:
            l.append(i)
    return l
s=input("Enter a text containing no.: ")
print(f"Your text contains {no_in_Text(s)}")
```

Enter a text containing no.: nikhil 1032 vishwakarm0 ank0s4 oksb1
Your text contains ['1', '0', '3', '2', '0', '0', '4', '1']

```
In [31]: # 4) write a python f() which recieves variable length arguments to find greatest element
def greatest_Element(*t):
    g=max(t[0])
    return g

s=[int(i) for i in input("Enter no. by giving space:").split()]
x=greatest_Element(s)
print(f"Greatest no. : {x}")
```

Enter no. by giving space:4 5 2 6 9 78 45 123 698 5 4 4 12 36 45
Greatest no. : 698

```
In [1]: # 5) write a python f() which takes variable length arguments to recieve string
# string or strings if multiple strings have the same length
def max_len_Str(*s):
    k = [len(i) for i in s[0]]
    m=max(k)
    k.clear()
    l=[]
    for i in s[0]:
        if len(i)==m:
            l.append(i)
    return l

s=input("Enter your text: ").split()
x=max_len_Str(s)
print(f"Maximum Length String is : {x}")
```

Enter your text: Nikhil Ankit Ankush Krish Balram Pankaj Shyam Tanish Rahul Vishal
Maximum Length String is : ['Nikhil', 'Ankush', 'Balram', 'Pankaj', 'Tanish', 'Vishal']

Programs of Lambda Function

```
In [2]: # 1) Write a Lambda f() to print even no. in a given list
even=(lambda *t:print([i for i in t if i%2==0]))
l=[1,2,4,5,15,7,8,9,6,54,46,1,2,3,6,5,4]
even(*l)
```

[2, 4, 8, 6, 54, 46, 2, 6, 4]

```
In [36]: # 2) write a Lambda expression to calculate area of a circle
r=float(input("Enter Radius of Circle: "))
(lambda r,p=3.14:print(f"Area of Circle: {p*r*r}"))(r)
```

Enter Radius of Circle: 7

Area of Circle: 153.86

```
In [7]: # 3) write a Lambda f() to find HCF of two no.
l=[int(i) for i in input("Enter 2 no. to find HCF by giving space: ").split()]
hcf=(lambda *t:[i for i in range(min(t),0,-1) if t[0]%i==0 and t[1]%i==0])(*l)
print(hcf[0])
```

Enter 2 no. to find HCF by giving space: 36 27

9

```
In [33]: # 4) write a Lambda f() to count words in a given text
cw=(lambda s:print(f"Your text has {len(s.split())} words"))
txt=input("Enter your text to count words: ")
cw(txt)
```

Enter your text to count words: nikhil vishwakarma cse ai&ds third sem sistec
gandhi nagar

Your text has 9 words

In []: