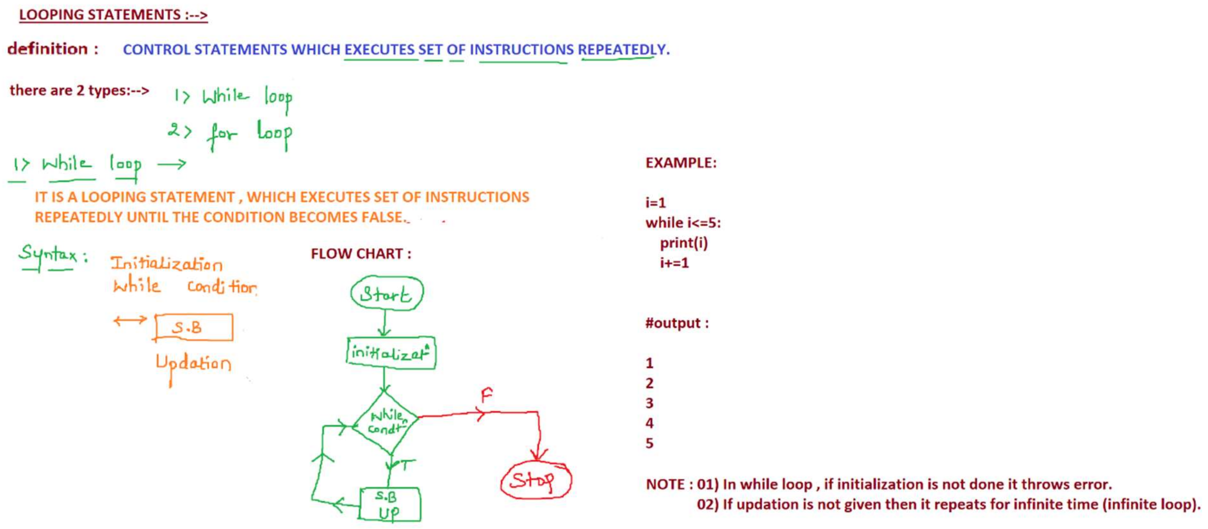


LOOPING STATEMENTS :-->

definition : CONTROL STATEMENTS WHICH EXECUTES SET OF INSTRUCTIONS REPEATEDLY.

there are 2 types:--> 1> While loop
2> for Loop

1> While loop →

IT IS A LOOPING STATEMENT , WHICH EXECUTES SET OF INSTRUCTIONS REPEATEDLY UNTIL THE CONDITION BECOMES FALSE.

Syntax : Initialization
while condition
↔ S.B
Updation

FLOW CHART :

EXAMPLE:

```
i=1
while i<=5:
   print(i)
   i+=1
```

#output :

```
1
2
3
4
5
```

NOTE : 01) In while loop , if initialization is not done it throws error.
02) If updation is not given then it repeats for infinite time (infinite loop).

```
#while loop (part -1)

#01) WAP to print integers from  1 to 10
'''
i=1
while i<=10:
    print(i)
    i+=1

#output:

1
2
3
4
5
6
7
8
9
10
'''
#02) WAP to prine n natural numbers
'''
n=int(input('Enter the integer :'))
```

```
i=1
while i<=n:
    print(i)
    i+=1

#output :

Enter the integer :8
1
2
3
4
5
6
7
8
'''

#03) WAP to print even numbers from 1 to 100
'''
i=1
while i<=100:
    if i%2==0:
        print(i)
    i+=1

#OR

i=2
while i<=100:
    print(i)
    i+=2
'''

#04) WAP to print odd numbers from 1 to 100
'''
i=1
while i<=100:
    print(i)
    i+=2
```

```
'''

#05) WAP to print multiplication table
'''
n=int(input())
i=1
while i<=10:
   print(f'{n} * {i} = {n*i}')
   i+=1
'''

#ASSUGNMENT QUESTIONS

#06) WAP to print sum of integers from 1 to 10  ( output : 55 )

#07) WAP to find the factorial of given integer ( i/p : 5 , o/p : 120 )
```

<u>While loop Part-2</u>

```
#06) WAP to print sum of integers from 1 to 10  ( output : 55 )
'''
sum=0
i=1
while i<=10:
   sum=sum+i
   i+=1
print(sum)
'''
#07) WAP to find the factorial of given integer ( i/p : 5 , o/p : 120 )
'''
fact=1
n=int(input('Enter the integer :'))
i=1
while i<=n:
   fact=fact*i
   i+=1
print(fact)
  '''
```

```
#OR
'''
fact=1
n=int(input('Enter the integer :'))
i=n
while i>=1:
    fact=fact*i
    i-=1
print(fact)
'''
#08) WAP to reverse a given number without using slicing and typecasting.

#LAST DIGIT METHOD
'''
n=int(input('Enter the integer :'))
rev=0
while n!=0:
    ld=n%10
    rev=rev*10+ld
    n//=10
print(rev)
'''
#09) WAP to print sum of all the individual digits present in given integer
'''
n=int(input('Enter the integer :'))
sum=0
while n!=0:
    ld=n%10
    sum+=ld
    n//=10
print(sum)
'''

#10) WAP to convert the letters from lowercase to uppercase
#  input  : 'BENGaluru@1234'
#  output : 'BENGALURU@1234'
'''
s=input('Enter the string :')
out=''
```

```
i=0
while i<len(s):
    if 'a'<=s[i]<='z':
        out=out+ chr(ord(s[i])-32)
    else:
        out=out+s[i]
    i+=1
print(out)
 '''
```

While loop part-3

```
#11) WAP to convert the letters from Uppercase to lowercase
'''
s=input()
out=''
i=0
while i<len(s):
    if 'A'<=s[i]<='Z':
        out=out+chr(ord(s[i])+32)
    else:
        out=out+s[i]
    i+=1
print(out)
#12) WAP to convert UC to LC and LC to UC and keep the digits, special
#    characters as it is ( TOGGLING )
                    #OR
#    WAP to toggle the given string
#input  :  'ABCDxyz@1234'
#output :  'abcdXYZ@1234'
'''
s=input()
out=''
i=0
while i<len(s):
    if 'A'<=s[i]<='Z':
        out=out+chr(ord(s[i])+32)
    elif 'a'<=s[i]<='z':
        out=out+chr(ord(s[i])-32)
    else:
        out=out+s[i]
    i+=1
```

```
print(out)
'''
#13) WAP to store UC characters seperately in a variable and LC characters seperately
#    in a variable after toggling from a given string

#input :  ABCD@1234xyz
#output : XYZ
#         abcd
'''
s=input()
UC=''
LC=''
i=0
while i<len(s):
    if 'A'<=s[i]<='Z':
        LC=LC+chr(ord(s[i])+32)
    elif 'a'<=s[i]<='z':
        UC=UC+chr(ord(s[i])-32)
    i+=1
print(UC)
print(LC)
'''

#14) WAP to extract only integers from given list

# input  :  [10,2.5,'ok',99,7.7]
# output :  [10,99]
'''
L=eval(input())
out=[]
i=0
while i<len(L):
    if type(L[i])==int:
        out.append(L[i])
    i+=1
print(out)
'''
```

```
#15) WAP to extract all the special characters present in given string
'''
s=input()
out=''
i=0
while i<len(s):
    if not(s[i].isupper() or s[i].islower() or s[i].isdigit()):
        out+=s[i]
    i+=1
print(out)
'''
```

```
#16) input  :  'abcd'
#    output :  { 'a':97 , 'b':98 , 'c':99 , 'd':100 }
'''
s=input()
out={}
i=0
while i<len(s):
    out[s[i]]=ord(s[i])
    i+=1
print(out)
'''
```

```
#17) input  :  'hello'
#    output :  { 0:'h' , 1:'e' , 2:'l' , 3:'l' , 4:'o' }
'''
s=input()
out={}
i=0
while i<len(s):
    out[i]=s[i]
    i+=1
print(out)
'''
```

```
#18) WAP to reverse the given string without using slicing and typecasting
#By using -ve indexing
'''
s=input()
rev=''
i=-1
while i>=-len(s):
    rev+=s[i]
    i-=1
print(rev)
'''
#OR
#By using +ve indexing
'''
s=input()
rev=''
i=0
while i<len(s):
    rev=s[i]+rev
    i+=1
print(rev)
'''
```

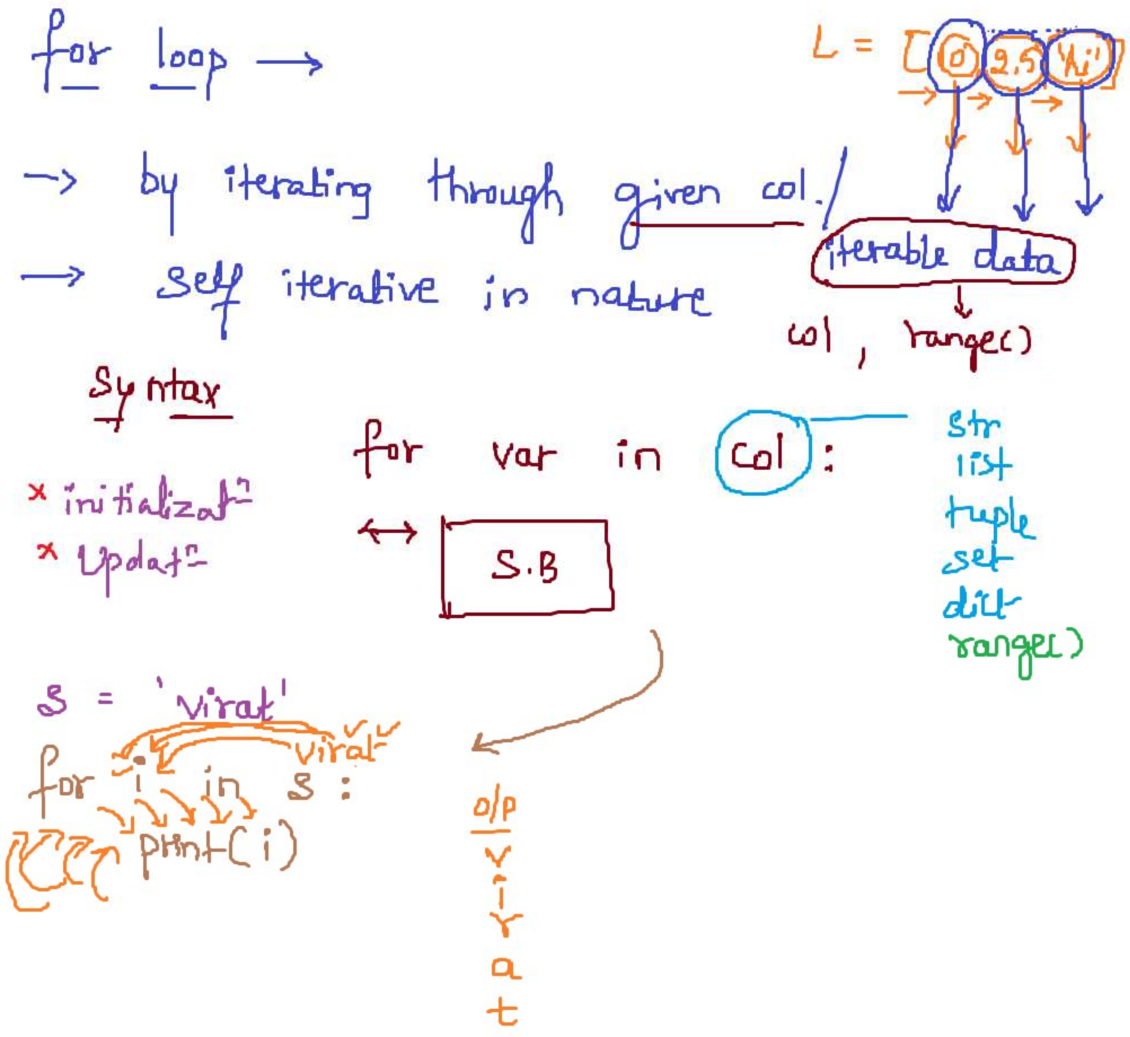
While loop part 4

```
#19) input  :  [ 'hai' , 89 , 3.4 , 'hello' , 90 , 'py' ]
#    output :  { 'hai':'hi' , 'hello':'ho' , 'py':'py' }
'''
L=eval(input())
out={}
i=0
while i<len(L):
    if type(L[i])==str:
        out[L[i]]=L[i][0]+L[i][-1]
    i+=1
print(out)
'''
```

```
#20) WAP to check whether the given number is Armstrong number or not
'''
n=int(input())
copy=n
sum=0
while n!=0:
   ld=n%10
   sum+=ld**len(str(copy))
   n//=10
if sum==copy:
   print(f'{copy} is an Armstrong number')
else:
   print(f'{copy} is not an  Armstrong number')

#output :

153
153 is an Armstrong number
'''




#21) WAP to remove duplicate values from given list without converting into set

#input   : [10,2.5,10,'hi',10,2.5,10]
#output  : [10, 2.5, 'hi']
'''
L=eval(input())
out=[]
i=0
while i<len(L):
   if L[i] not in out:
      out.append(L[i])
   i+=1
print(out)
'''
```

```
#22) WAP to replace space by * in given string

#input  :  'we love india'
#output :  'we*love*india'
'''
s=input()
out=''
i=0
while i<len(s):
    if s[i]==' ':
        out+='*'
    else:
        out+=s[i]
    i+=1
print(out)
'''
#OR
'''
print(input().replace(' ','*'))
'''

#23) WAP to count the number of occurance of specified character present in string
'''
s=input('Enter the string :')
ch=input('Enter the character :')
print(s.count(ch))

#OR

print(input('Enter the string :').count(input('Enter the character :')))

#output:

Enter the string :kerala
Enter the character :a
2
'''
```

```
#24) WAP to find the sum of individual digits of a string

#input  :  'virat@18'
#output :   9
'''
s=input()
sum=0
i=0
while i<len(s):
    if s[i].isdigit():
        sum+=int(s[i])
    i+=1
print(sum)
'''

#25) WAP to find the greatest number in a given list of integers

#input  :  [10,77,53,46,8]
#output :  77

L=eval(input('Enter the list of integers :'))
Large=L[0]
i=0
while i<len(L):
    if L[i]>Large:
        Large=L[i]
    i+=1
print(Large)
```



for loop →

→ by iterating through given col./

→ self iterative in nature

L = [0, 2.5, 'Hi']

iterable data

col , range()

Syntax

for var in col :

↔ S.B

str
list
tuple
set
dict
range()

× initializat^n
× updat^n

s = 'virat'

for i in s :
    print(i)

virat

o/p
v
i
r
a
t

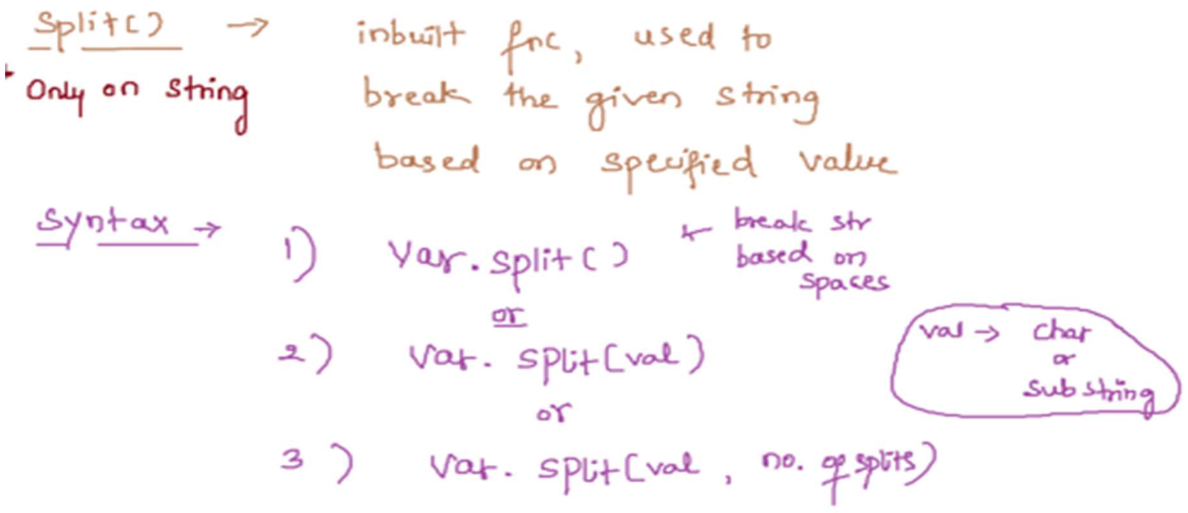
#for loop part-1

```
#EX:01)
'''
s='virat'
for i in s:
    print(i)

#output :

v
i
r
a
t
```

```
#EX:02)
'''
L=[10,2.5,'ok']

for i in L:
   print(i)

#output :

10
2.5
ok
'''


#EX:03)
'''
d={ 10:2.5 , 'hi':'bye' , 77:'good' }

for i in d:
   print(i)

#output :

10
hi
77
'''


#PROGRAMS

#01) WAP to print all the integers present in list collection

#input  :  [10,2.5,'hi',77,8.8]
#output :  10
#          77

#using for loop
'''
L=eval(input())
for i in L:
    if type(i)==int:
        print(i)
'''
#using while loop
'''
L=eval(input())
i=0
while i<len(L):
    if type(L[i])==int:
        print(L[i])
    i+=1
'''

#02) WAP to find the length of given tuple without using len()
'''
t=eval(input())
count=0
for i in t:
    count+=1
print(count)
'''

#03) WAP to check whether the given list collection is homogenous or not
'''
L=eval(input())
for i in L:
    if type(L[0])!=type(i):
        print('Heterogenous')
    else:
        print('homogenous')
'''

#04) WAP to extract all the even numbers present in given list

#input  :  [10,2.5,88,99,'ok']
#output :  [10, 88]
'''
L=eval(input())
out=[]
for i in L:
    if type(i)==int:
        if i%2==0:
            out.append(i)
print(out)
'''

#05) WAP to remove duplicate values in given list

#input  :  [10,2.5,3.5,10,'ok',10,10,10,2.5]
#output :  [10, 2.5, 3.5, 'ok']
'''
L=eval(input())
out=[]
for i in L:
    if i not in out:
        out.append(i)
print(out)
'''

#06) WAP to reverse a string without using slicing
'''
s=input()
rev=''
for i in s:
    rev=i+rev
print(rev)
'''

#07) WAP to extract all the lowercase characters present in a string ,
#    only if the ASCII value of that character is even
#input  :  Good Life
#output :  df

s=input()
out=''
for i in s:
    if i.islower():
        if ord(i)%2==0:
            out+=i
print(out)
```

```
#08) WAP to check whether the last digit of an integer is even or not
'''
num=int(input())
if int(str(num)[-1])%2==0:
    print('Even')
else:
    print('Odd')
'''


#09) WAP to extract all the key value pairs from dictionary , only if
#    both keys and values are exactly same

#  input  :  { 10:20 , 'hi':'hi' , 2.5:2.5 , 7:9 }
#  output :  { 'hi':'hi' , 2.5:2.5 }
'''
d=eval(input())
out={}
for i in d:
    if i==d[i]:
        out[i]=d[i]
print(out)
'''
```

#split() --->



split() → inbuilt fnc, used to break the given string based on specified value

Only on string

Syntax →

1) var.split() ← break str based on spaces

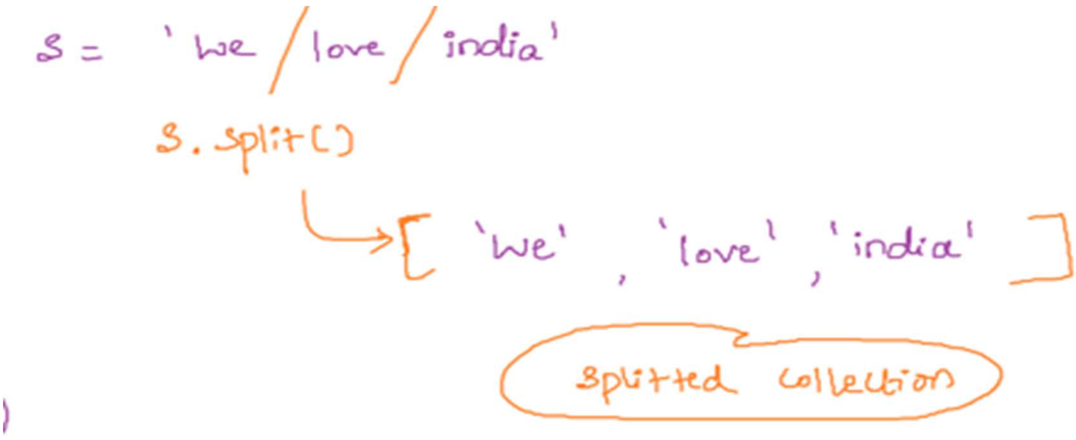
or

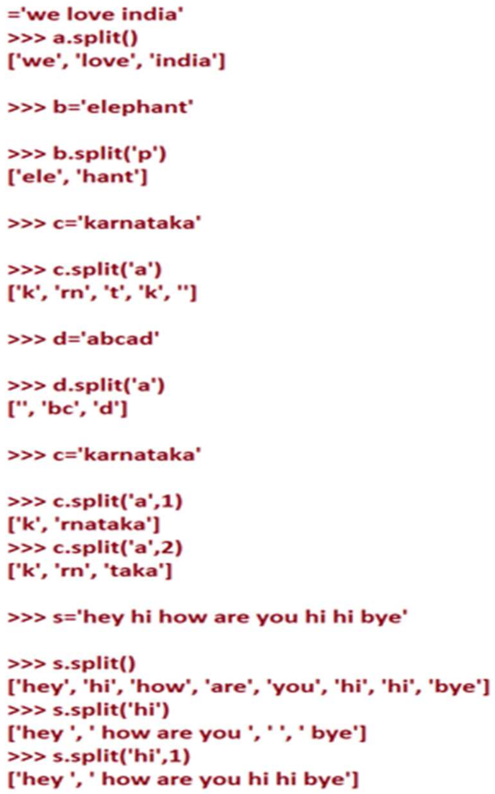
2) var.split(val)

or

3) var.split(val , no. of splits)

val → char or sub string





```
='we love india'
>>> a.split()
['we', 'love', 'india']

>>> b='elephant'

>>> b.split('p')
['ele', 'hant']

>>> c='karnataka'

>>> c.split('a')
['k', 'rn', 't', 'k', '']

>>> d='abcad'

>>> d.split('a')
['', 'bc', 'd']

>>> c='karnataka'

>>> c.split('a',1)
['k', 'rnataka']
>>> c.split('a',2)
['k', 'rn', 'taka']

>>> s='hey hi how are you hi hi bye'

>>> s.split()
['hey', 'hi', 'how', 'are', 'you', 'hi', 'hi', 'bye']
>>> s.split('hi')
['hey ', ' how are you ', ' ', ' bye']
>>> s.split('hi',1)
['hey ', ' how are you hi hi bye']
```

```
#10) input  :  'power star'
#    output :  { 'power':5 , 'star':4 }
'''
s=input()
out={}
x=s.split()
for i in x:
    out[i]=len(i)
print(out)
  '''
#ASSIGNMENT QUESTION
#11) input  :  'power star'
#    output :  { 'power':'rewop' , 'star':'rats' }
```

range() : It is an inbuilt function which is used to generate sequence of number between start and end

Syntax :

exclusive ↓

range (SV , EV , UP)

To make range() to generate sequence of numbers

1) typecast manually to list / tuple | set

(OR)

2) Use it in for loop

→ if SV → 0 then we can ignore it
UP → +1

(OR)

Default value of SV → 0 , UP → +1

Syntax of for loop :

```
for var in col :
    S.B
```

str
list
set
tuple
dict
range()

01) Typecasting

```
list(range(1,11))
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
tuple(range(1,11))
(1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
set(range(1,11))
{1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
```

02) Using in for loop

```
for i in range(1,11):
    print(i)


#output :

1
2
3
4
5
6
7
8
9
10
```

NOTE : while Using for loop if the program is about Numbers or collection with index positions then we will use range()

#range()

#Programs

```
#12) WAP to find the factorial of given number
'''
n=int(input())
fact=1
for i in range(1,n+1):
    fact*=i
print(f'The factorial of {n} is {fact}')

#output :

4
The factorial of 4 is 24
'''

#13) WAP to find the sum of n natural number
#  input  :  7
#  output :  28
'''
n=int(input())
sum=0
for i in range(1,n+1):
    sum+=i
print(sum)
'''
```

```
#14) WAP to print all the even numbers between range 30 to 60

'''
for i in range(30,61):
    if i%2==0:
        print(i)
'''
#OR
'''
for i in range(30,61,2):
    print(i)
'''

#15) WAP to extract Uppercase characters present in string only if it is
#    present in even index
'''
s=input()
out=''
for i in range(0,len(s),2):
    if s[i].isupper():
        out+=s[i]
print(out)
'''

#16) WAP to extract all even numbers present at odd index of given tuple ,
#    only if integer is palindrome.

#  input  :  (1.5,22,99,8,'ok',2.5)
#  output  : [22, 8]
'''
t=eval(input())
out=[]
for i in range(1,len(t),2):
    if type(t[i])==int:
        if t[i]%2==0:
            if str(t[i])==str(t[i])[::-1]:
                out.append(t[i])
print(out)

'''
```

ASSIGNMENT QUESTIONS ON for loop -

01)WAP to print all the characters of a string present at even index without using slicing.
02)WAP to find sum of all the numbers between the range 20 to 60.
03)Consider a list input , extract all the string inside it and print the reversed string.
04)WAP to extract all the digits present in a string.
05)WAP to replace space by # of s string.
06)WAP to count the number of vowels present in a string.
07)WAP to extract all the integers present in a list only if it is present in odd index.
08)WAP to print cube of number between the range of 15-30.
09)WAP to find product of all the floating numbers present in a tuple collection.
10)WAP to find sum of individual digits of a string.
11)WAP to find greatest number in a list of integers.
12)Consider a homogeneous tuple and divide the input in 2 outputs of even number and odd.
13)WAP to find number of occurance of a specified character.
14)WAP to find sum of cube of numbers in a given string.
15)WAP to store the factors of a integer number in a tuple.
16)WAP to extract all the list data items present in a list if there are having middle value.

17)WAP to get the following output-

```
  input  -  [180,'outing','ml','new year',22,'saku','beku']
  output -  [180,'OuTiNg','ml','NeW YeAr',22,'SaKu','beku']
```