In [ ]:

```
- functions

- packages vs
functions

- loop

 for while

any program


# loop : repaated task
# function: reuse
```

In [ ]:

```
I want to calculate
tax

def tax_pay():
 salary
 taxper
 tax_amount


tax_pay ===== 100


3 ---1 100 100line
```

In [ ]: In [ ]: In [ ]:

```
# step-1: tax pay
salary
taxper
tax_amount 3

100 x3 = 300

# 3 lines to one
line====== function
100 x1= 100

# 100 lines 1
========= loop
```

In [1]:

```
for i in range(5):
 print(i)
```

- Basic python

- Conditional statement if-else -

Try-exception

```
0
1
2
3
4
```

In [ ]: In [ ]:

in python index starts with zero
by default it is increment by 1
last= stop-1

range(5) start=0 incre =1 last=4 0
1 2 3 4

```
for i in range(10): #
start=0 last=9  print(i)
```

```
0
1
2
3
4
5
6
7
8
9
```

In [2]: In [7]:

```
print(1,end=' ')
print(2,end=' ')
print(3)
```

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

```
1 2 3
```

In [12]: In [13]:

If you want to run any loop

we required 3 things -

intial point: to start the

loop :1

- increment or decrement :
gap 2

- condition: to stop the
loop 10
i want to start with 1
i want to stop at 10
i want to go step by step by
2 unit

1 3 5 7 9

in for loop there 3 lines
represnt only one line

:

range(stop)

start value by defualt is 0

In [14]:

```
for i in range(10):
 print(i,end=' ')
 print(i*i)

print(i)
```

```
# 0 0
# 1 1
# 2 4
# 3 9
```

```
0 0
1 1
2 4
3 9
4 16
5 25
6 36
7 49
8 64
9 81
9
```

```
print(1)
print(2)
print(3,end=' ')
print(4)
print(5)
```

```
1
2
3 4
5
```

**** – 2

range(start,stop)

start value taken as start mention
inside the range increment by
default it will take one:1
last = stop-1

range(5,11) start=5 inc=1
last=11-1=10 5,6,7,8,9,10

```
for i in range(5,10):
 print(i,end=' ')
```

```
5 6 7 8 9
```

****
**** – 3

range(start,stop,step)

start= start
step : how much gap?

****

In [19]:

In [20]:

In [21]: In [ ]:

if step size is postive value consider as postive direction if step size is negative value consider as negative direction
last:

last = stop-1 if step size is postive value

last = stop+1 if step size is negative value

```
for i in range(3,15,2):
 print(i,end=' ')

# start=3
# step=2
# direction (+ve)
```

```
# last= 15-1=14
# 3 to 14 by give 2 units gap

3 5 7 9 11 13


for i in range(3,15,-2):
 print(i,end=' ')

# start=3, step=-2 dire= (-)ve
last=15+1=16 # 3 to 16 in
reverse direction

# it will not work so no error
and no answer


for i in range(3,-15,2):
 print(i,end=' ')

# start=3 step=2 (+ve)
last=-15-1 -16
# 3 to -16


range(5,15,3) # p
range(5,15,-3) # start=5 step=-3
np
range(5,-15,-3) # p
range(-5,-15,-3) # p
range(5,-15,3) # np
range(-5,-15,3) # np
range(-5,15,-3) # np
range(-5,15,3) # p
range(5,15) # p
range(-5,15) # p
range(-5,-15) # np
range(15,5) # np
range(-15,5) # p
range(15,-5) # np
In [26]: In [35]:
```

```
In [38]:
# WAP ask the user print square
of the numbers between 5 to 10 #
print(the square of 5 is 25)

for i in range(5,11):
 print(f"the square of {i} is
{i*i}")

the square of 5 is 25
the square of 6 is 36
the square of 7 is 49
the square of 8 is 64
the square of 9 is 81
the square of 10 is 100


# Implement the 9th table
# 9 x 1=9
# 9 x 2=18
# 9 x 3 =27


# 9 x 10 =90

num=eval(input("enter the
multiplication number you
want:")) for i in range(1,11):
 print(f"{num}x{i}={num*i}")

enter the multiplication number
you want:15
15x1=15
15x2=30
15x3=45
15x4=60
15x5=75
15x6=90
15x7=105
15x8=120
15x9=135
15x10=150


# WAP ask the user get 5 random
numbers between 5 to 50  # and
print the square of those number

# 5 random numbers means : loop
shoud run 5 times # to get
random number we need to use
```

```
random package # random.randint
we need to keep inside the for
loop

import random

for i in range(5):
 num=random.randint(5,50)
 print(f"the square of {num} is
{num*num}")

the square of 48 is 2304
the square of 49 is 2401
the square of 5 is 25
the square of 6 is 36
the square of 19 is 361
In [39]: In [ ]:




In [45]:


In [ ]: In [47]:


In [ ]:
num=random.randint(5,50) # num
for i in range(5):
 print(f"the square of {num} is
{num*num}")

the square of 40 is 1600
the square of 40 is 1600
```

```
the square of 40 is 1600
the square of 40 is 1600
the square of 40 is 1600

import random

for i in range(5):
 num=random.randint(5,50)
 print(f"the square of {num} is
{num*num}")

################################
######################
num=random.randint(5,50) # num
for i in range(5):
 print(f"the square of {num} is
{num*num}")


for i in range(5):
 num=random.randint(5,50)
 print(f"the square of {num} is
{num*num}")

the square of 16 is 256
the square of 36 is 1296
the square of 18 is 324
the square of 49 is 2401
the square of 23 is 529

for i in range(5,11):
 print(f"the square of {i} is
{i*i}")


# print("good morning")
# print("good morning")
# print("good morning")

for i in range(3):
 print("good morning")

good morning
good morning
good morning


# WAP ask the user print it is
even number or odd number #
between 5 to 10

# WAP ask ther user enter a
number and print it is even or
odd # ask the user to enter a
number 5 times

# WAP ask the user get a 5
random numbers between 5,50 #
print it is a even or odd
```

In [48]:

```
enter a num:55
55 is an odd
```

In [49]:

```
for i in range(5):
 num=random.randint(5,50)
 if num%2==0:
 print(f"{num} is an
even")  else:
 print(f"{num} is an
odd")
```

```
16 is an even
9 is an odd
11 is an odd
11 is an odd
16 is an even
```

In [50]:

```
# Improvise the above
code
# Find out how many even
numbers are there # how
many odd numbers are
there
```

In [ ]:

```
# counter program
```

In [52]:

```
for i in range(5,11):
 if i%2==0:
 print(f"{i} is an even")
else:
 print(f"{i} is an odd")
```

```
5 is an odd
6 is an even
7 is an odd
8 is an even
9 is an odd
10 is an even
```

In [51]:

```
for i in range(5):
 num=eval(input("enter a
num:"))  if num%2==0:
 print(f"{num} is an
even")  else:
 print(f"{num} is an
odd")
```

```
enter a num:20
20 is an even
enter a num:25
25 is an odd
enter a num:35
35 is an odd
enter a num:40
40 is an even
```

```
even_count=0
odd_count=0
for i in range(5):
 num=random.randint(5,50)
 if num%2==0:
 print(f"{num} is an
even")
 even_count=even_count+1
 else:
 print(f"{num} is an
odd")
 odd_count=odd_count+1

print("the num of even
numbers are:",even_count)
```

```
print("the num of odd
numbers are:",odd_count)

17 is an odd
24 is an even
5 is an odd
14 is an even
6 is an even
the num of even numbers
are: 3
the num of odd numbers
are: 2


count=0

Out[51]: 3
         n2=n1//10
         d2=n2%10
In [57]: n2
n1=1234
d1=n1%10

Out[57]: 123
                    # last= stop+1

 In [1]:
 for i in           25+1=26 #<-----3
 range(3,25,-3):
 print(i)           ================ >

                    26

 # start-3
 # step=3 negative
 In [2]: In [4]:
                                  10


                                  summ=0
                                  for i in range(1,11):
                                   summ=summ+i

                                  print(summ)

                                  # Step-1: i=1 summ=0
                                  summ=summ+i=0+1=1 # step-2:
                                  i=2 summ=1 summ=1+2=3
                                  # step-3: i=3 summ=3
                                  summ=3+3=6
                                  # step-4: i=4 summ=6

                                  summ=6+4=10 # step-10: i=10

 In [6]:                          summ=45 summ=45+10=55 55
 # WAP ask the user sum of
 first 10 natural numbers #
 step-1: summ=0
 # step-2: iterate through
 loop range(1,11) # step-3:
 summ=summ+i                      summ=0
                                  for i in range(1,11):
 # same like counter programe      summ=summ+i
 count=0
 for i in range(1,11):            print(summ)
  count=count+1
                                  55
 print(count)                     In [14]:
```

```
stop=num+1
count=0
for i in range(start,stop):
 if num%i==0:
 print(f"{i} is the divisor
for {num}")  count=count+1

print("the number of divisors
are:",count)
```

```
which divisors you want:50
1 is the divisor for 50
2 is the divisor for 50
5 is the divisor for 50
10 is the divisor for 50
25 is the divisor for 50
50 is the divisor for 50
the number of divisors are: 6
```

```
Create a function for above
code
num as argument
count as return
```

In [ ]: In [21]:

```
def divisors(num):
 start=1
 stop=num+1
 count=0
 for i in range(start,stop):
 if num%i==0:
 print(f"{i} is the divisor
for {num}")  count=count+1
 return("the number of
divisors are:",count)
count=divisors(10)
```

```
1 is the divisor for 10
2 is the divisor for 10
5 is the divisor for 10
10 is the divisor for 10
```

```
print(count)
```

```
('the number of divisors
are:', 4)
```

In [ ]: In [28]:

In [22]:

```
# WAP ask the user to find
the divisors of a given
number # I want to know
divisors of 10

# how many times you need to
run the loop
# step-1: choose your start
and stop
# step-2: iterate through
loop
# step-3: if num%i==0:
# step-5: print(i)

num=eval(input("which
divisors you want:")) start=1
```

```
# WAP ask the user get a
random number 1,10
# ask the user enter a number
# if both are matching print
```

```
you won
# else print you lost
# give 3 chances

# step-1: import <>
# step-2:
random_num=random.randint()
# step-3: user_num=eval()
# step-4: if <>: print(won)
# step-5: else: print(lost)


import random
for i in range(3):

random_number=random.randint(
1,10)
 print(random_number)

user_number=eval(input("guess
the number:"))  if
random_number==user_number:
 print("in")
```

In [30]:

```
import random
for i in range(3):
 random_number=random.randint(1,10)
 print(random_number)
 user_number=eval(input("guess the
number:"))
 if random_number==user_number:
 print("in")
 break
 else:
 print("out")

# Improvise the above code , to
communicate the user
```

```
 else:
 print("out")

# The problem: if yoy guess
correct or wrong, it is
asking again # we need to
avoid that
# improvise above code
# when you guess correct
number code should stop # the
guess the number prompt shoud
come whenver you out

1
guess the number:1
in
4
guess the number:4
in
5
guess the number:5
in
```

In [38]:

```
# about number of chances left
# whenever he failed to guess a number,
which means he already lost one chan # you
need to display, number of chances left is

6
guess the number:5
out
10
guess the number:7
out
9
guess the number:9
in


import random
chances=eval(input("how many chances you
want:"))
for i in range(chances):
 random_number=random.randint(1,10)
 print(random_number)
 user_number=eval(input("guess the
number:"))
 if random_number==user_number:
 print("in")
 break

 else:
 print("out")
 print("the number of chances left
is:",chances-i-1)  if chances-i-1==0:
 print("you lost all the chances")
 print('pls try after some time')


#improvise above code
#when user lost all the chances ,
# your all chances are over, pls try after
30 mins
```

```
guess the number:9
in
how many chances you want:3
9
```

In [ ]: In [34]:

```
 #count=3
 for i in range(1,tri):
 num1=random.randint(1,10)
 num2=eval(input("enter the
guess:"))  #count=count-1
 if num1==num2:
 print("you won",num1)
 break
 else:
 print("you lose", num1)
#print("chances left:",3-i)
print("chances
left:",tri-i)
if(i==(tri+1)):
 #print("try again after 30
mins")

won_out(eval(input("no of
tries:"))
range(1,3) # 1,2


i=0
3-i-1
```

```
import random
def won_out(tri):
```

Out[34]: 2

In [27]:

```
import random
random_number=random.randint
(1,10)
print(random_number)

for i in range(3):

user_number=eval(input("gues
s the number:"))  if
random_number==user_number:
   print("in")
   else:
   print("out")
```

```
1
guess the number:4
out
guess the number:1
in
guess the number:1
in
```

In [ ]:

```
import random
for i in range(3):
 random_number=random.randint(1,10)
 print(random_number)
 user_number=eval(input("guess the number:"))
 if random_number==user_number:
 print("in")
 else:
 print("out")

##########################################################################
import random
for i in range(3):
 random_number=random.randint(1,10)
 print(random_number)
 user_number=eval(input("guess the number:"))
 if random_number==user_number:
 print("in")
 break
 else:
 print("out")
```

```
#########################################################################
import random
chances=eval(input("how many chances you want:"))
for i in range(chances):
 random_number=random.randint(1,10)
 print(random_number)
 user_number=eval(input("guess the number:"))
 if random_number==user_number:
 print("in")
 break

 else:
 print("out")
        print("the number of chances left is:",chances-i-1)
```

```
#########################################################################
import random
chances=eval(input("how many chances you want:"))
for i in range(chances):
 random_number=random.randint(1,10)
 print(random_number)
 user_number=eval(input("guess the number:"))
 if random_number==user_number:
 print("in")
 break

 else:
 print("out")
        print("the number of chances left is:",chances-i-1)
 if chances-i-1==0:
 print("you lost all the chances")
 print('pls try after some time')
```