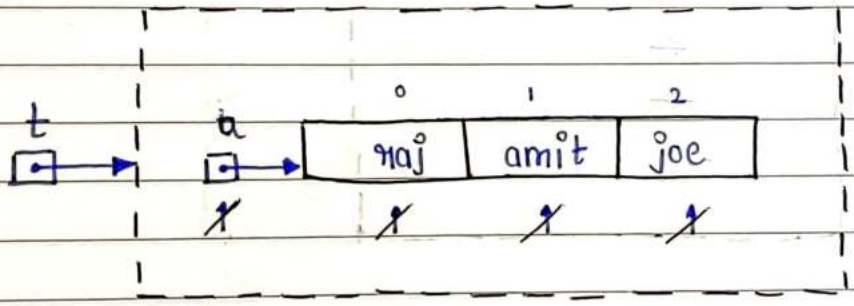
DATE

P332.py

```
def main():
    try:
        a = ['raj', 'amit', 'joe']
        t = iter(a) # iteration
        print(next(t))
        print(next(t))
        print(next(t))
        print(next(t))
    except StopIteration:
        pass
    # end: TE
# end: main
```

main()



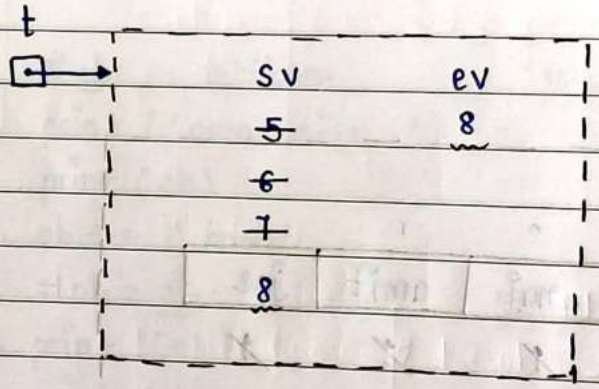

```
%p
raj
amit
joe
```

DATE

p333.py

```
def main():
    try:
        t = iter(range(5,8))
        while True:
            print(next(t))
        #end: while
    except StopIteration:
        pass
    #end: TE
#end: main
```

main()



%p
5
6
7

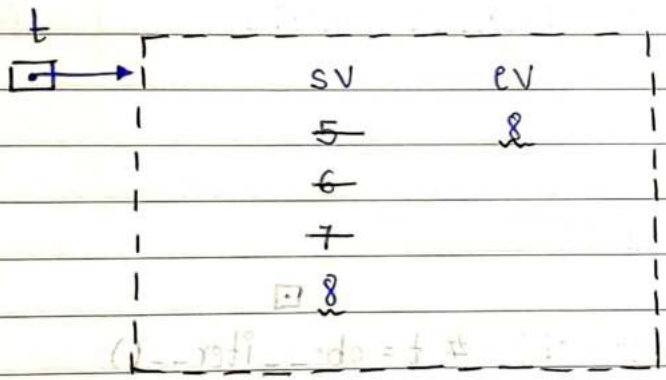
classmate

DATE

P334.py

```
def main():
    for i in range(5,8):
        print(i)
    #end: for
    print('---')
    t = iter(range(5,8))
    for i in t: # i = next(t)
        print(i)
    # end: for
# end: main
```

main()




```
o/p
5
6
7
---
```

DATE

p335.py

```
class Friends:
    def __init__(me):
        me.__f = ['amit', 'raj', 'joe']
    # end: init
    def __iter__(me):
        me.i = -1
        return me
    #end: iter
    def __next__(me):
        me.i += 1
        if me.i == len(me.__f)
            raise stopIteration
        #end: if
        return me.__f[me.i]
    #end: next
# end: Friends
def main():
    ob = Friends()
    try:
        t = iter(ob)  # t = ob.__iter__()
        while True:
            print(next(t)) # t.__next__()
        #end: while
    except stopIteration:
        pass
    # end: TE
    print('---')
    for x in ob:
        print(x)
    #end: for
    print('---')
```

Shot on OnePlus
By javed kadgaokar

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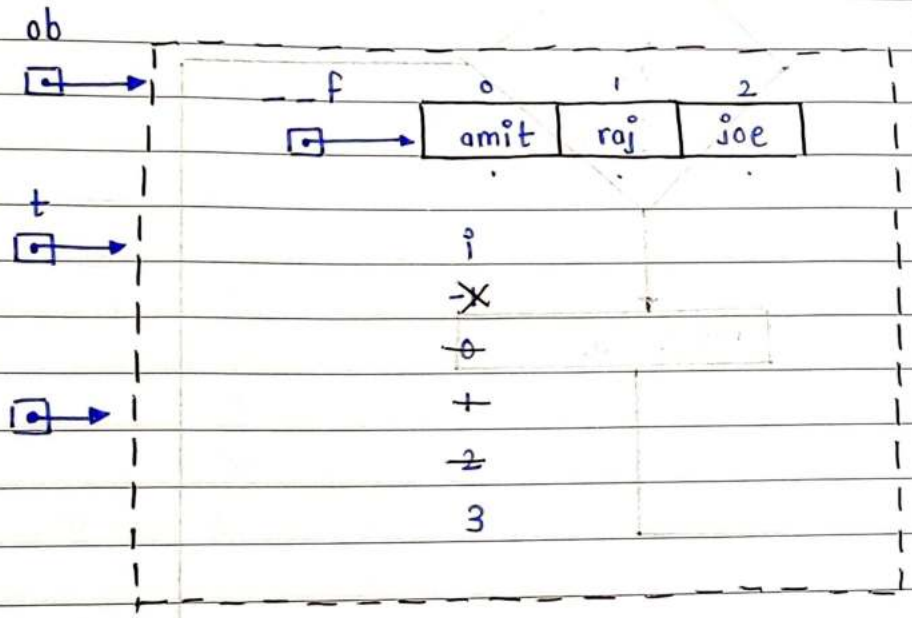
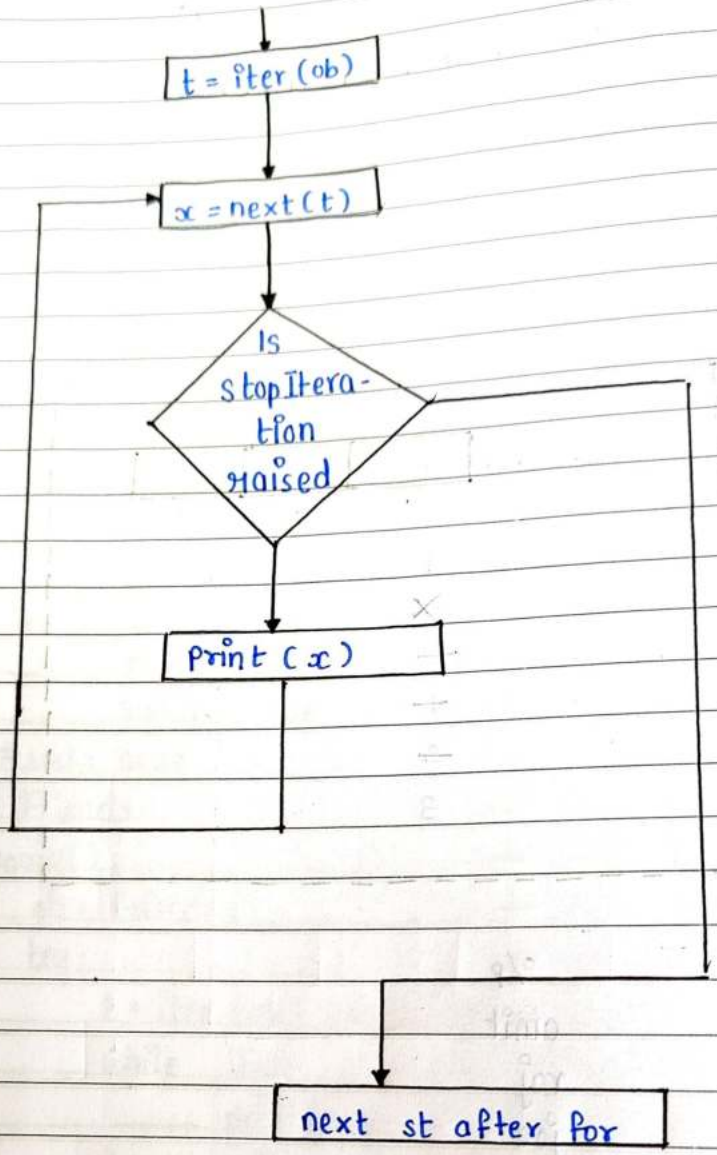
```
    t = iter(ob)
    for x in t: # x = next(t)
        print(x)
    # end: for
# end: main
```

main()




```
o/p
amit
raj
joe
---
amit
raj
joe
---
```



DATE

P336.py

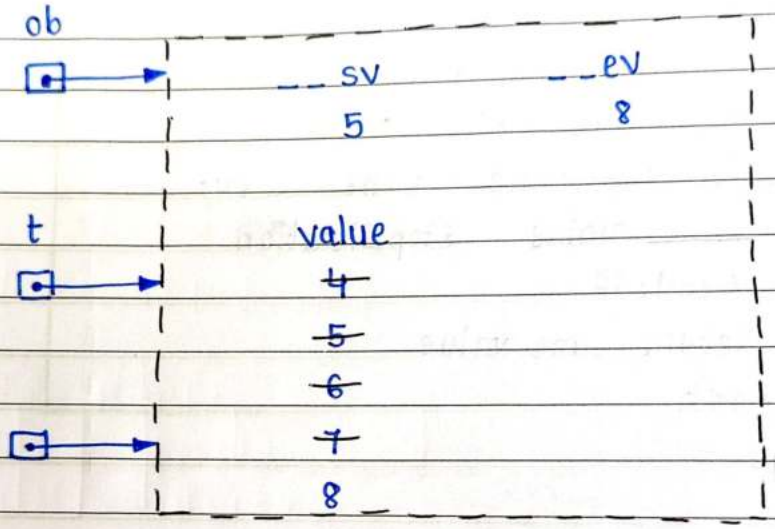
```
class MyRange:
    def __init__(me, sv, ev):
        me.__sv = sv
        me.__ev = ev
    #end: init
    def __iter__(me):
        me.value = me.__sv - 1
        return me
    #end: iter
    def __next__(me):
        me.value += 1
        if me.value == me.__ev:
            raise StopIteration
        #end: if
        return me.value
    # end: next
#end: MyRange
def main():
    ob = MyRange(5, 8)
    try:
        t = iter(ob)  # t = ob.__iter__()
        while True:
            print(next(t)) # t.__next__()
        # end: while
    except StopIteration:
        pass
    #end: TE
    print('---')
    for i in MyRange(5, 8):
        print(i)
    # end: for
```

sv 5 ev 8

PAGE

```
    print('---')
    t=iter(MyRange(5,8))
    for i in t:  # i=next(t)
        print(i)
    #end:for
#end:main

main()
```




```
o/p
5
6
7
---
5
6
7
```

DATE

infopark.py

```
def greet():
    print('Hello')
# end: greet
def cube(x):
    print(f'cube: {x**3}')
# end: cube
```

⊙ Modules: It is python file (.py) when can contains variables, functions / methods, classes.

P337.py

```
import infopark

def main():
    infopark.greet()
    infopark.cube(5)
# end: main

main()
```

o/p
Hello
cube: 125

P338.py

```
import infopark as ip

def main():
    # infopark.greet()
    ip.greet()
    ip.cube(5)
# end: main

main()
```

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P339.py

```
from infopark import greet
from infopark import cube

def main():
    greet()
    cube(5)
# end: main

main()
```

P340.py

```
from infopark import greet, cube

def main():
    greet()
    cube(5)
# end: main

main()
```

P341.py

```
from infopark import *

def main():
    greet()
    cube(5)
# end: main

main()
```

classmate

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england.py

```
def capital():
    print("capital of England: London")
# end: capital
```

japan.py

```
def capital():
    print("capital of Japan: Tokyo")
# end: capital
```

P342.py

```
# importing multiple modules.

import england

import japan

def main():
    england.capital()
    japan.capital()
# end: main

main()
```

o/p

capital of England: London
capital of Japan: Tokyo.

PAGE

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my - mod . py

```
class  Square:
    def __init__(me):
        me.__side = 0
        me.__area = 0
    # end: init
    def  input (me):
        me.__side = int( input ('enter side : '))
        me.__area = me.__side * * 2
    # end: input
    def __str__(me):
        return (f 'side : {me.__side} \n'
                f 'area : {me.__area}')
    # end: str
# end: square
```

p343 . py

```
import  my_mod

def  main():
    s1 = my_mod . Square()
    s1 . input ()
    print (s1)
    # print (s1.__str__())
# end: main
```

main ()

DATE

P344.py

```
import my_mod as mm

def main():
    s1 = mm.Square()
    s1.input()
    print(s1)
# end: main

main()
```

P345.py

```
from my_mod import Square

def main():
    s1 = Square()
    s1.input()
    print(s1)
# end: main

main()
```

⊙ Packages:

It is a folder (directory) that contains modules and package.

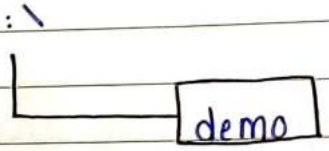
cmd : commad window

cd : change directory / folder

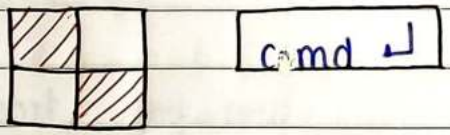
md : make directory / folder

↓

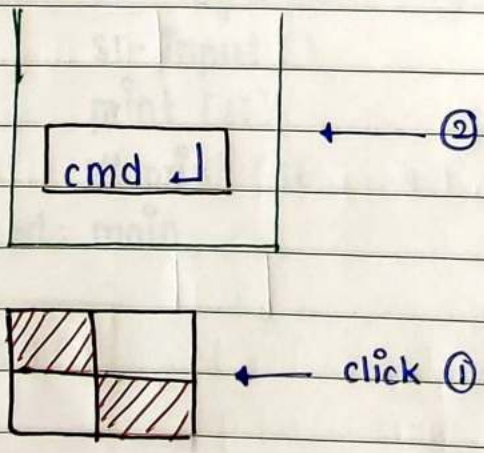
create



win 10



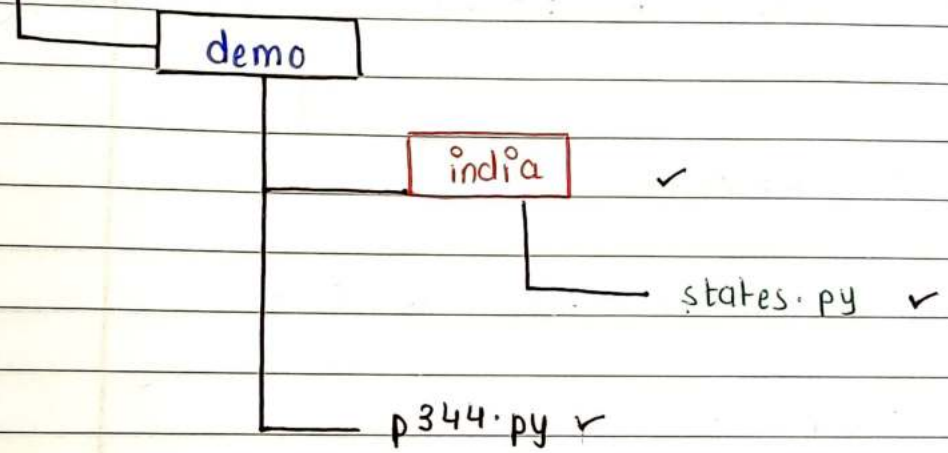
win 7



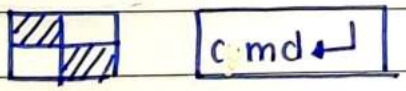
DATE

```
C:\Users\ ____ > cd \ ↵
C:\> md demo ↵
C:\> exit ↵
```

* C:\



(I) Win 10



(II)

```
C:\Users\ ____ > cd \ ↵
C:\> cd demo ↵
C:\demo > md india ↵
C:\demo > exit ↵
```

DATE

(III) Thonny

File → New

```
def UP():
    print ('UP : Lucknow')
#end: up
def mp():
    print ('MP : Bhopal')
#end: mp
```

File → Save → C:\demo\india\states.py ↵

(IV)

File → New

```
import india.states as i_s

def main():
    i_s.up()
    i_s.mp()
#end: main

main()
```

File → Save → C:\demo\p344.py ↵

F5

%e

UP : Lucknow

MP : Bhopal

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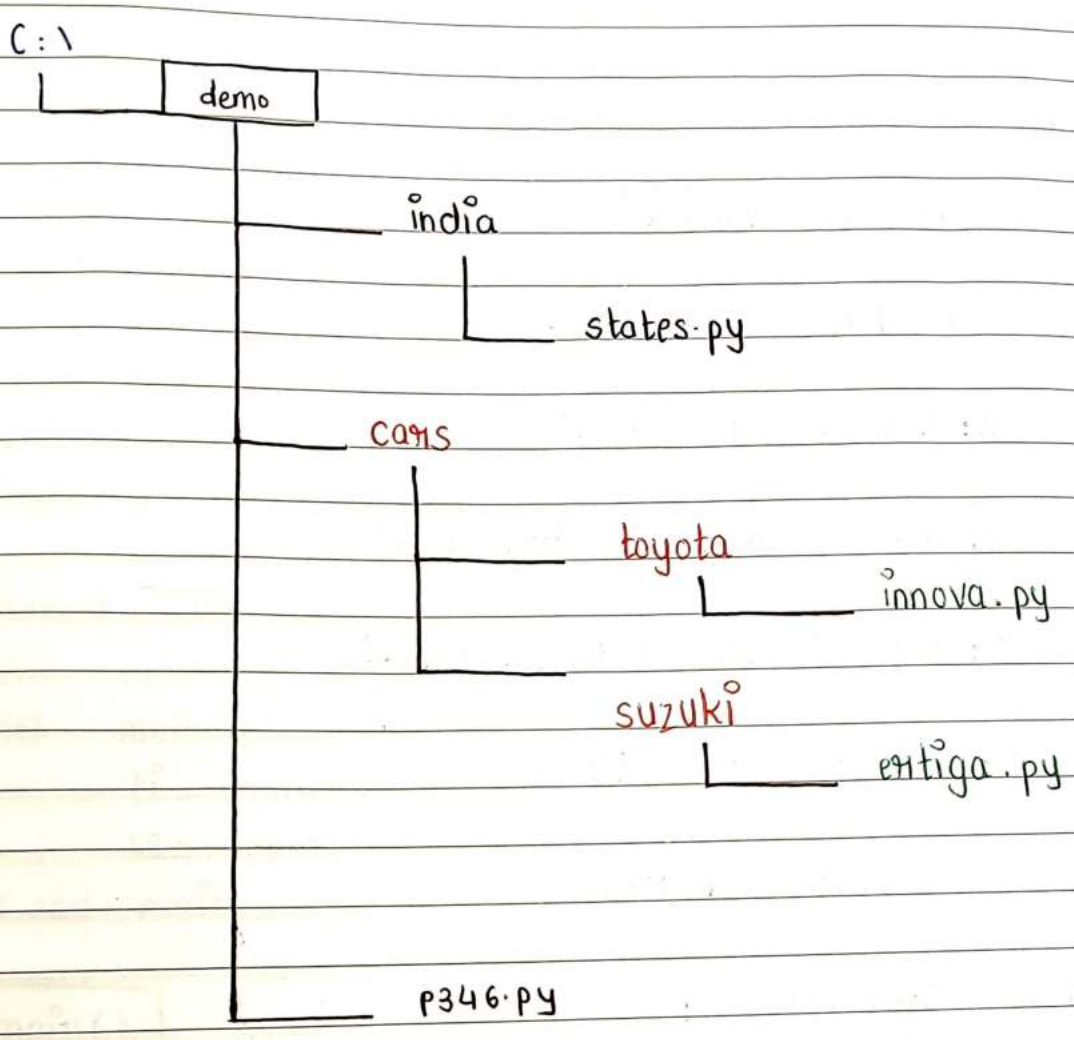
* Nested package



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Ⓘ  cmd ↵

Ⓘ C:\users\ ____ > cd \ ↵

C:\> cd demo ↵

C:\demo > md cases ↵

C:\demo > cd cars ↵

C:\demo\cars > md toyota ↵

C:\demo\cars > md suzuki ↵

C:\demo\cars\exit ↵

Ⓘ Thonny File → New

```
def topmodel():
    print('Toyota : Innova 20+L')
# end: topmodel
```

File → save → C:\demo\cars\toyota\innova.py ↵

DATE

Thonny File → New

```
def topmodel():
    print('Suzuki : Ertiga 15 + L')
# end: topmodel
```

File → save → C:\demo\cars\suzuki\ertiga.py

Thonny File → New

```
import cars.toyota.innova as ti

import cars.suzuki.ertiga as se

def main():
    ti.topmodel()
    se.topmodel()
# end: main

main()
```

File → Save → C:\demo\p346.py ↵

F5

o/p

Toyota : Innova 20 + L
Suzuki: Ertiga 15 + L

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series.py

```
def fseries (sv, ev, sep = '')
    while sv <= ev:
        print (sv, end = sep)
        sv += 1
    #end : while
#end : fseries
def bseries (sv, ev, sep = '')
    while sv >= ev:
        print (sv, end = sep)
        sv -= 1
    #end: while
# end: bseries.
```

~~sv~~	~~ev~~
~~5~~	8
~~6~~	
~~7~~	
~~8~~	
9	

sv	ev
13	11
12	
11	
10	

p347.py

```
from series import fseries, bseries

def main():
    fseries (5,8)
    print()
    fseries (20, 25, '')
    print()
    fseries (1,1)
    print()
    bseries (13, 11, '\t')
    print()
    bseries (9, 5)
# end: main
```

main()

DATE

%p

5678

20 21 22 23 24 25

1

13 12 11

9 8765

* incr : <= +=

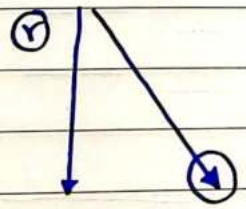
decr : >= -=

1

1 2

1 2 3

1 2 3 4



1 : 4

<= +=

C ⟶ incr : fseries

fseries (1, r)

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P348.py

```
from series import fseries

def main():
    r=1
    while r<=4:
        fseries(1,r,"")
        print()
        r+=1
    #end:while
#end:main
```

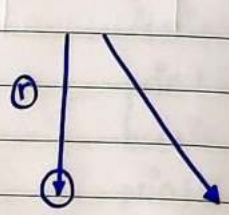
r
+
~~2~~
~~3~~
~~4~~
5

main()

%p

1
1 2 3
1 2 3 4

Ass:
1
2 1
3 2 1
4 3 2 1



decr : bseries
bseries (r, 1)

CLASSMATE

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P349.py

```
from series import bseries
def main():
    r = 4
    while r >= 1:
        bseries ( 4, r, ' ')
        print ()
        r -= 1
    # end: while
# end: main
```

r: 4, 3, 2, 1, 0

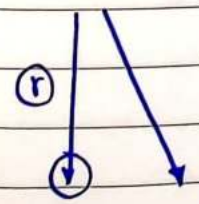
main ()

o/p

```
4
4 3
4 3 2
4 3 2 1
```

Ass:

```
4
3 4
2 3 4
1 2 3 4
```



4:1
>= -=

c → incr : fseries

fseries (r, 4)

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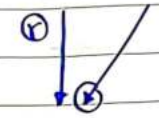
4 3 2 1
4 3 2
4 3
4

1 : 4
<= +=



[c] → dcr : bseries

bseries (4, r)

P350.py

```
from series import bseries

def main():                          r
    r=1                              1
    while r<=4:                      2
        bseries(4,r,' ')             3
        print()                      4
        r+=1                         5
    # end: while
# end: main

main()
```

o/p

4 3 2 1
4 3 2
4 3
4

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Ass: 1] 4 3 2 1
3 2 1
2 1
1

2] 1 2 3 4
1 2 3
1 2
1

3] 1 2 3 4
2 3 4
3 4
4

4] 1
1 2
1 2 3
1 2 3 4
1 2 3
1 2
1

5] 4 3 2 1
3 2 1
2 1
1
2 1
3 2 1
4 3 2 1

P351.py

(r-1)
spaces
3
2
1
0
- =

. . . *
. . * * *
. * * * * *
* * * * * * *

stars
1
3
5
7
+ = 2

```
def main():
    r = int(input('enter rows: '))
    spaces = r-1
    stars = p = 1
    while p <= r:
        print(' ' * spaces + '*' * stars)
        spaces -= 1
        stars += 2
        p += 1
    #end: while
```


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end: main

main ()

r	spaces	stars	i
4	3	1	1
	2	3	2
	1	5	3
	0	7	4
	-1	9	5

o/p

enter rows : 4 ↵

```
. . . *
. . * * *
. * * * * *
* * * * * * *
```

Ass: 1]

```
$ $ $ $ $ $ $
  $ $ $ $ $
    $ $ $
      $
```

2]

```
      $
    $ $ $
  $ $ $ $ $
$ $ $ $ $ $ $
  $ $ $ $ $
    $ $ $
      $
```

r → i/p
7 odd

```
*          r
. . .      4
. . 4      3   4
. 4 3      2   3   4
4 3 2      1   2   3   4
           ↑
```


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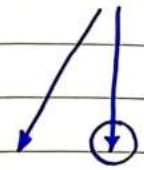
1]
. . .
. .
.

2]
```
      4
    4 3
  4 3 2
4 3 2 1
```

r



4:1

>=--=

c → dcr : bseries

bseries (4, r)

3]
```
4
3 4
2 3 4
```

c → incr : fseries

fseries (r+1, 4)

classmate

DATE

P352.py

```
from series import fseries, bseries

def main():
    spaces = 3
    r = 4
    while r >= 1:
        print(' ' * spaces, end='')
        bseries(4, r)
        fseries(r+1, 4)
        spaces -= 1
        r -= 1
    # end: while
# end: main
```

main()

spaces	r
~~3~~	~~4~~
~~2~~	~~3~~
~~1~~	~~2~~
~~0~~	~~1~~
-1	0

```
   4
  4 3 4
 4 3 2 3 4
4 3 2 1 2 3 4
```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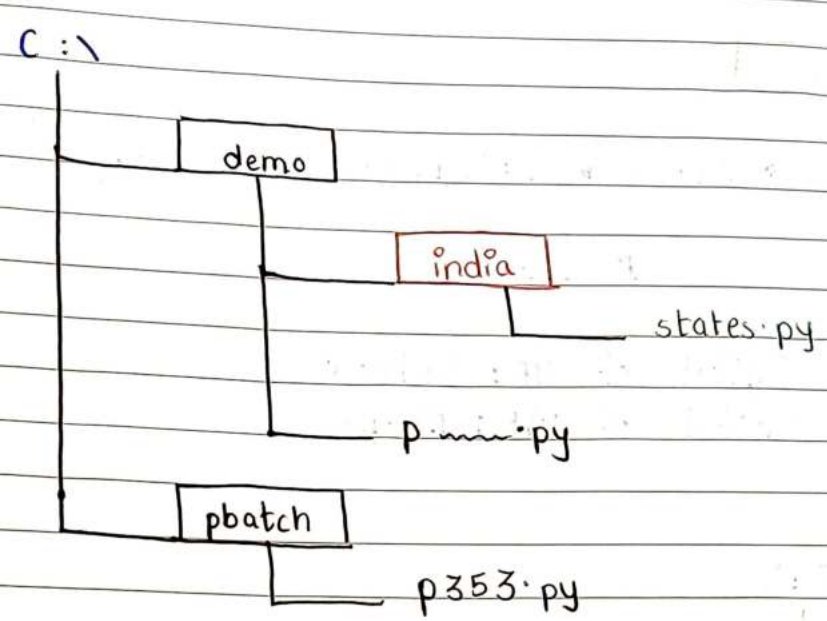

'C:\\demo'

(I) cmd ↵

C:\users\...> cd\↵
C:\> md pbatch
C:\> exit ↵

(II) Thonny File → New

```
import sys

sys.path.append('C:/demo')

import india.states as i_s

def main():
    i_s.up()
    i_s.mp()
#end main
```


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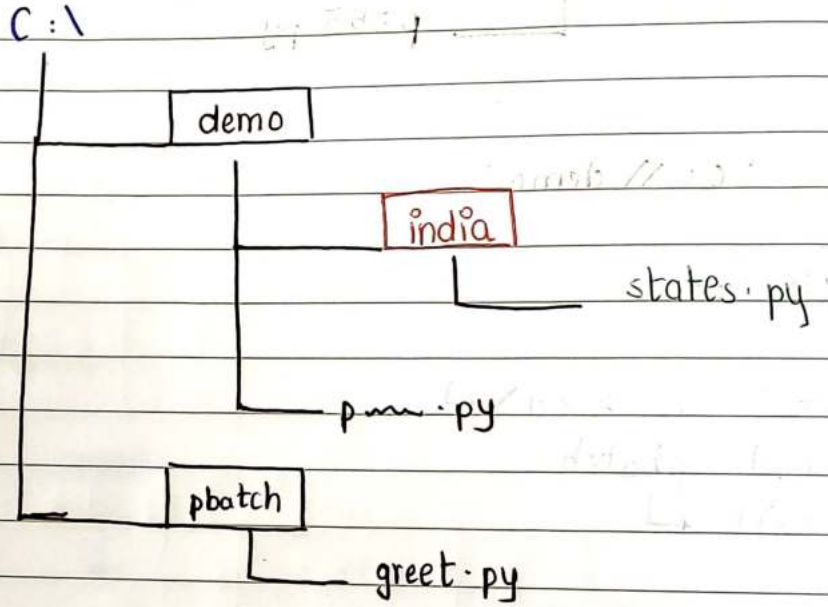
main()

File → Save → C:\pbatch\p353.py ↵

F5

Capital of UP: Lucknow
Capital of MP: Bhopal



⊙ if thonny is installed in C:\ drive

(I)

File → New

print ('Hello')

File → Save → C:\pbatch\greet.py ↵

DATE

(II) [win] cmd ↵

C:\Users\xxx> cd \ ↵

C:\> cd pbatch ↵

C:\pbatch> greet.py ↵ ---- does not exe

Hello

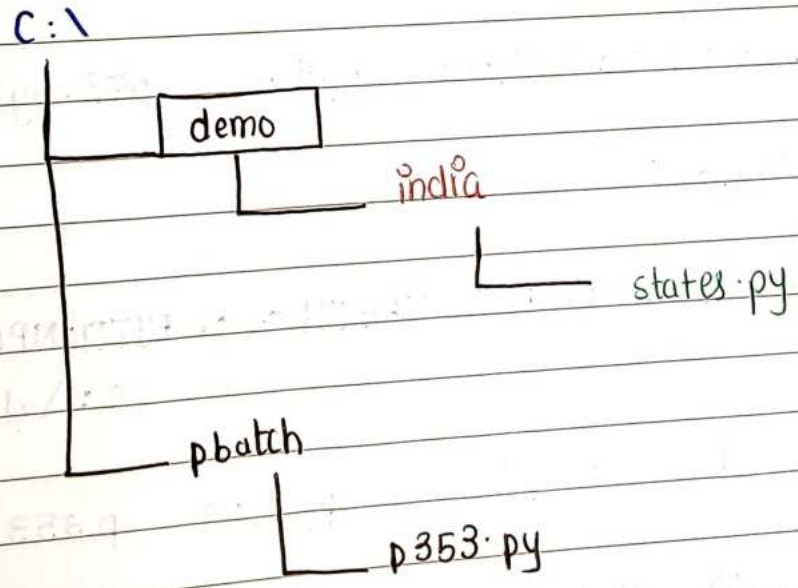
C:\pbatch > python greet.py ↵ ---- does not exe

Hello

C:\pbatch > C:\thonny\python greet.py ↵

Hello

C:\pbatch>



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Thonny :

(I) File → New

```
import india.states as i_s

def main():
    i_s.up()
    i_s.mp()
# end: main

main()
```

File → Save → C:\pbatch\p353.py ↵

(II) [Win] cmd ↵

C:\Users\~~~> cd\ ↵

C:\> cd pbatch ↵

C:\pbatch> C:\Thonny\python p353.py ↵

error: import

C:\pbatch> set PYTHONPATH = %PYTHONPATH%;C:\demo ↵

C:\pbatch> C:\Thonny\python p353.py ↵

Capital of UP: Lucknow
Capital of MP: Bhopal

C:\pbatch> exit ↵

DATE

* ASCII code:

American std code for information interchange

ASCII char	ASCII value	ASCII char	ASCII value
'a'	97	'A'	65
'b'	98	'B'	66
'c'	99	'C'	67
'd'	100	'D'	68
'e'	101	'E'	69
⋮	⋮	⋮	⋮
'z'	122	'Z'	90

' ' 32

'↵' 10

'0': 48

'1': 49

'2': 50

⋮

'9': 57

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P354.py

```
ch1 = 'a'
V1 = ord (ch1)
print (ch1, v1)
v2 = v1 + 1
ch2 = chr (v2)
print (ch2, v2)

'''
char  ord()  int

int  chr()  char

'''
```

ch1	V1
'a'	97

ch2	V2
'b'	98

o/p

a 97

b 98

* print ('{ " Hello \n world " }')

o/p

error

o/p

Hello

World .

p355.py

```
print ('Ascii   Ascii')
print ('char  value')
v = ord ('a')
while v<= ord ('z'):
    print ( chr (v) , v, sep = '\t')
    v += 1
# end. while
```

v
~~97~~
~~98~~
~~99~~
~~100~~
:
123

Ascii char	Ascii value.
a	97
b	98
c	99
:	:
z	122

p356.py

```
a = 10
b = 20
c = a + b
print (f'add is {c}')
print (f'add is .....')
```

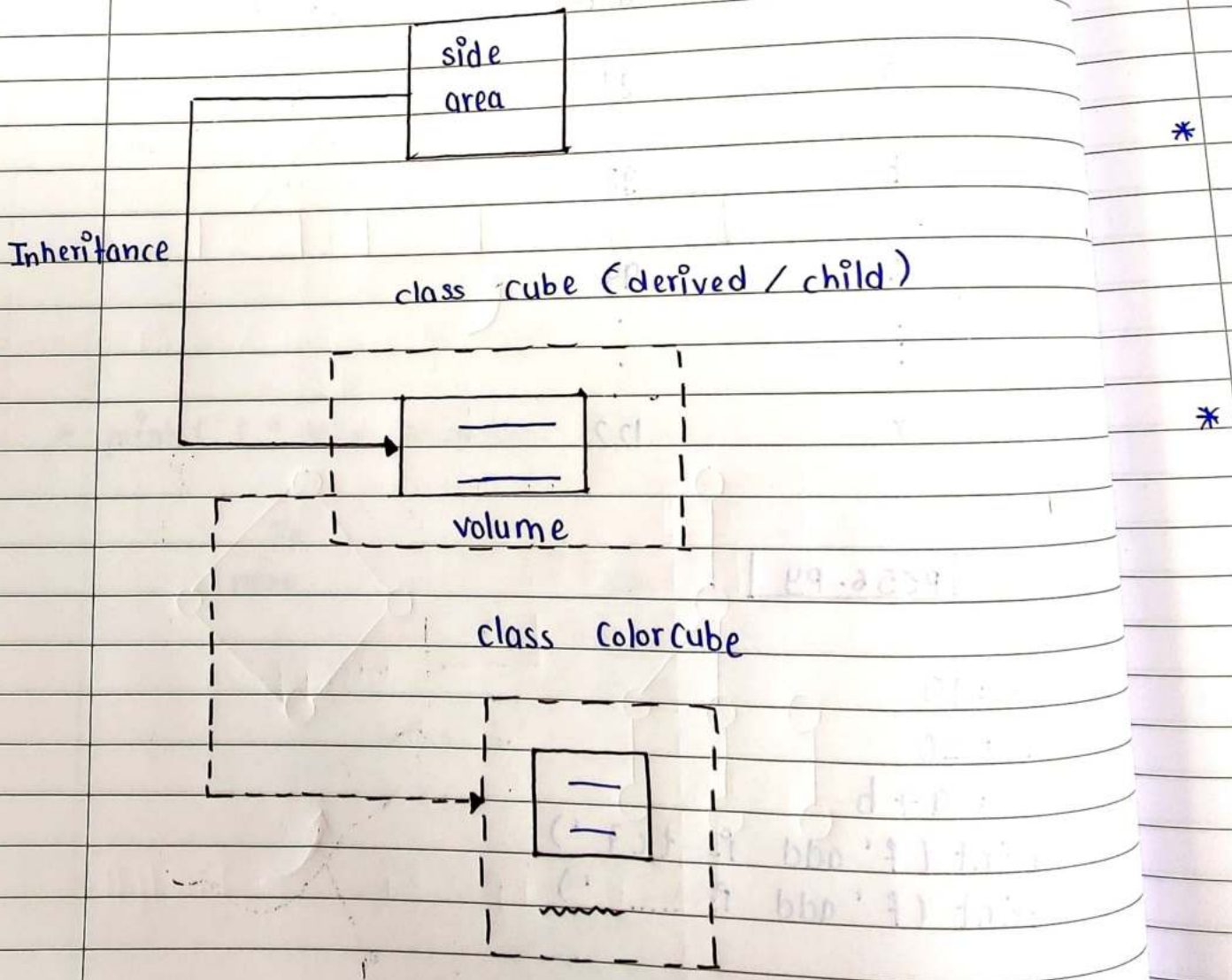
DATE

%p

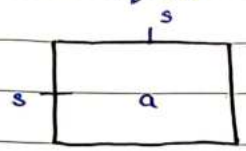
add is 30
add is {30}

* **Inheritance:**

It is an object oriented feature in which a existing class is used to create a new class with addition properties and feature.

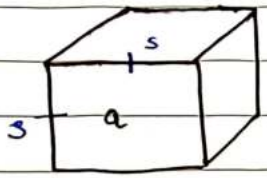


* square



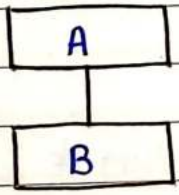
2-D

cube

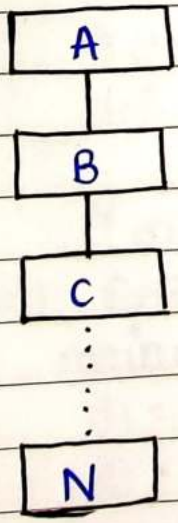
* 

3-D : volume

* single level



* Multi level



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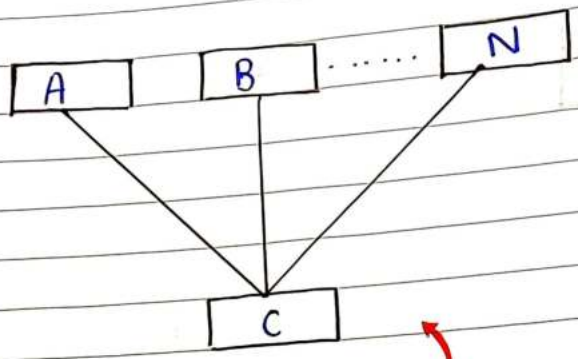
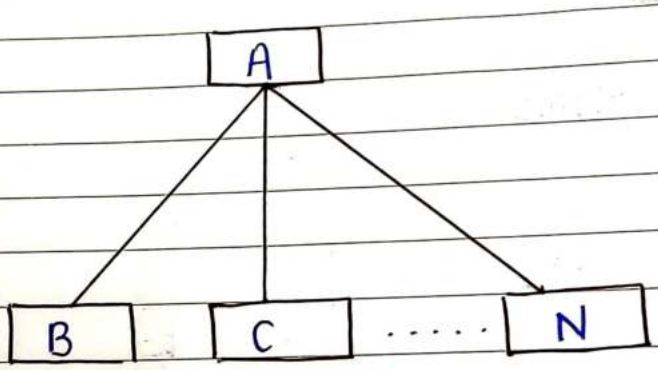
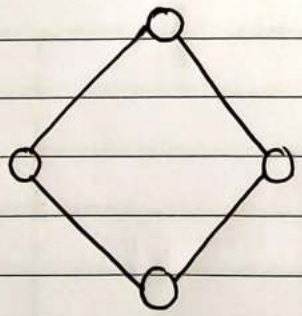
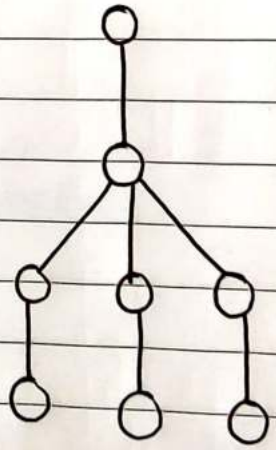


Multiple inheritance



Tree / Hierarchy





Hybrid

10/09/22
3:32 p

classmate

P351.py

```
class Base : # parent
    def __init__(me):
        me.__x = 0
    # end: init
    def inputx(me):
        print('enter x: ', end = '')
        me.__x = int(input())
    # end: inputx
    def outputx(me):
        print(f'x : {me.__x}')
    # end: outputx
# end: Base
class Derived(Base): # child
    def __init__(me):
        Base.__init__(me)
        me.__y = 0
    # end: init
    def inputy(me):
        print('enter y: ', end = '')
        me.__y = int(input())
    # end: inputy
    def outputy(me):
        print(f'y: {me.__y}')
    # end: outputy
# end: Derived
def main():
    d1 = Derived()
    d1.inputx()
    d1.inputy()
    d1.outputx()
    d1.outputy()
```

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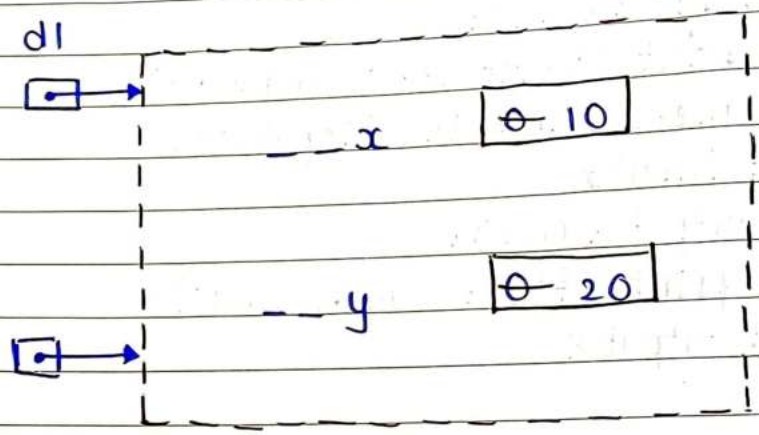
end : main

main()



%p

enter x : 10 ↵
enter y : 20 ↵
x : 10
y : 20