

# Data Science & Artificial Intelligence

An illustration of two children, a girl and a boy, sitting on a white rocket with red fins and a red nose cone. The rocket is launching upwards, leaving a trail of orange and yellow flames. The girl is holding a purple book, and the boy is holding a red book. There are three small white birds flying above the rocket.

## Python For Data Science

Lecture No.- 05



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# Recap of Previous Lecture



## Collection Types in Python

- Strings
- Lists
- Tuples\*





# Topics to be Covered



- Tuples
- Sets
- Dictionaries

## SUPER 1500+ - CLASS - 4 - Homework Question - 1

#Q. The output will be \_\_\_\_\_

a="EXAMINATION"  
<sup>0 1 2 3</sup>

b="competition"

c=a.count('N')  $c=2$

d=b.count('n')  $d=1$

e=c+d  $e=3$

str=[] = ""

for i in range(3):

    str+=chr(ord(a[e])+2)

    e=e+1

print(str)

A. ['O', 'K', 'P']

B. ['P', 'K', 'O']

C. ['o', 'k', 'p']

D. ['P', 'L', 'Q']

$i=0$

$$\text{ord}(a[3]) + 2 = (\text{ord}('M') + 2) = \text{chr}(\quad) = \underline{'O'}$$

$e=4$

$i=1$

$$\text{ord}(a[4]) + 2 = \text{chr}(\text{ord}(a[4]) + 2) = \underline{'K'}$$

$e=5$

$i=2$

$$\text{ord}(a[5]) + 2 \Rightarrow \text{chr}(\text{ord}(a[5]) + 2) = \underline{'P'}$$



## SUPER 1500+ - CLASS - 4 - Homework Question - 2

#Q. What does the following Python code segment print?

```

1i=2[1,2,3[3,4,1,2,[3,4,2,[1,2],3],4],42]
j=['a',1'ab',2'abc',3'abcd',4'abcde']
x=len(i)+len(j) = 4+5 = 9
y=len(j)-len(i) = 5-4 = 1
print('p' * (x-y))  'p' * 8
    
```

- A) pppppppp
- ☒ B) pppppppppp
- C) ppppppp
- D) ppppppppppp

## SUPER 1500+ - CLASS - 4 - Homework Question - 3

#Q. The final value of count will be \_\_\_\_

```

p=len('GATE EXAM')    # p=9
q=len('EXAMINATION')  # q=11
r=len('PRACTICE')     # r=8
l=len('REVISION')     # l=8
i=p+l    i=17
j=q+r    j=19
k=j-i    k=2
count=1
while k>=0:
    count*=2
    k=k-1
print(count) # 8

```

$k=2$      $\text{count} = 1 * 2 = 2$   
 $k=1$      $\text{count} = 2 * 2 = 4$   
 $k=0$      $\text{count} = 4 * 2 = 8$



## SUPER 1500+ - CLASS - 4 - Homework Question - 4

#Q. The output will be \_\_\_\_\_

a=[<sup>0</sup>1,<sup>1</sup>'Two',(<sup>0</sup>'III',<sup>1</sup>'four'),<sup>3</sup>5,<sup>4</sup>'SIX']

b=(<sup>0</sup>'SIX',(<sup>1</sup>5,<sup>2</sup>'four'),<sup>3</sup>'III',<sup>4</sup>'Two',1)

print(a[2][1],b[1][1])

- A) Two, four
- B) four, Two
- C) Two, Two
- ☒ D) four, four

## SUPER 1500+ - CLASS - 4 - Homework Question - 5

#Q. The Final score is \_\_\_\_

List=[11,22,33,44,55,66,77]

score=0

for x in List:

if  $x \% 2 == 0$ :

score=score+x

else:

score=score+1

X=11

Score = 0+1=1

True X=22

Score = 1+22=23

X=33

Score = 23+1=24

True X=44

Score = 24+44=68

X=55

Score = 68+1=69

True X=66

Score = 69+66=135

X=77

Score = 135+1=136



#Q. What will be final count value in the below code segment?

```

Tuple1=("GATE") # str    len(Tuple1)=4
Tuple2=("EXAM",) len(Tuple2)=1
Length=len(Tuple1)+len(Tuple2) = 4+1=5
count=1
for i in range(Length,1,-2):
    for j in range(len(Tuple1)):
        for k in range(len(Tuple2)):
            count=count+i+j+k
print(count) # 45
    
```

$i=5$ $j=0, k=0$ $Count = 1 + 5 + 0 + 0$ $= 6$	$j=1, k=0$ $Count = 6 + 5 + 1 + 0$ $= 12$	$j=2, k=0$ $= 12 + 5 + 2 + 0$ $= 19$	$j=3, k=0$ $= 19 + 5 + 3 + 0$ $= 27$
$i=3$ $j=0, k=0$ $Count = 27 + 3 + 0 + 0$ $= 30$	$j=1, k=0$ $= 30 + 3 + 1 + 0$ $= 34$	$j=2, k=0$ $= 34 + 3 + 2 + 0$ $= 39$	$j=3, k=0$ $= 39 + 3 + 3 + 0$ $= 45$



#Q. What will be The Output printed from below code segment?

Tuple1=("GATE") # 4

Tuple2=("EXAM",)

Tuple3=Tuple2 \* len(Tuple1) = ("EXAM", "EXAM", "EXAM", "EXAM")

Tuple4=Tuple3[1:3] = ("EXAM", "EXAM")

count=1

for i in range(1,len(Tuple3)):

    Tuple4=Tuple4\*i

    count+=len(Tuple4) # 19

print(count-len(Tuple4))

$$19 - 12 = 7$$

$i=1 = ("EXAM", "EXAM")$

$$\text{Count} = 1 + 2 = 3$$

$i=2 = ("EXAM", "EXAM", "EXAM", "EXAM")$  Count = 3 + 4 = 7

$i=3 = ("EXAM" \dots 12 \text{ times})$  Count = 7 + 12 = 19



#Q. What will be final count value in the below code segment?

`i=(1,2,1,3,1,2,3,1,2,3,4)`

`j=i[-9:-3]`

`length=i.count(1)+j.index(1)=#4`

`k=j[-3:-1]`

`count=1`

`for i in range(length):`

`Tup=k*i`

`for j in Tup:`

`count+=j`

`print(count)#31`

A) 15

B) 19

C) 23

D) 31

$i =$

0	1	2	3	4	5	6	7	8	9	10
1	2	1	3	1	2	3	1	2	3	4

-11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1

$j =$

0	1	2	3	4	5
1	3	1	2	3	1

-6 -5 -4 -3 -2 -1

$k =$

0	1
2	3

-2 -1

$i=0$   $Tup = ( )$

$i=1$   $Tup = (2, 3)$   $j=2$   $Count = 1+2 = 3$   $j=3$   $Count = 3+3 = 6$

$i=2$   $Tup = (2, 3, 2, 3)$   $j=2$   $Count = 6+2 = 8$   $8+3 = 11$   $11+2 = 13$   $13+3 = 16$

$i=3$   $Tup = (2, 3, 2, 3, 2, 3)$   $Count = 16+2+3+2+3+2+3 = 31$



#Q. What will be final result in the below code segment?

$A = (1, 2, 1, 3, 1, 2, 3)$

$a, b, *c = A$  #  $a = 1$      $b = 2$      $c = (1, 3, 1, 2, 3)$

$p, *q, r = c$  #  $p = 1$      $q = (3, 1, 2)$      $r = 3$

$*x, y, z = q$  #  $x = 3$      $y = 1$ ,  $z = 2$

$result = a + b + p + r + y + z = 1 + 2 + 1 + 3 + 1 + 2 = 10$

for i in c:

    for j in q:

        for k in x:

$result += i + j + k$

print(result)

#115

	$j = 3, k = 3$	$j = 1, k = 3$	$j = 2, k = 3$
$i = 1$	$result = 10 + 1 + 3 + 3 = 17$	$= 17 + 1 + 1 + 3 = 22$	$= 22 + 1 + 2 + 3 = 28$
$i = 3$	$j = 3, k = 3$ $= 28 + 3 + 3 + 3 = 37$	$j = 1, k = 3$ $= 37 + 3 + 1 + 3 = 44$	$j = 2, k = 3$ $44 + 3 + 2 + 3 = 52$
$i = 1$	$= 52 + 1 + 3 + 3 = 59$	$59 + 1 + 1 + 3 = 64$	$64 + 1 + 2 + 3 = 70$
$i = 2$	$= 70 + 2 + 3 + 3 = 78$	$78 + 2 + 1 + 3 = 84$	$84 + 2 + 2 + 3 = 91$
$i = 3$	$= 91 + 3 + 3 + 3 = 100$	$100 + 3 + 1 + 3 = 107$	$107 + 3 + 2 + 3 = 115$



#Q. What will be final count value in the below code segment?

$s1 = \{11, 22, 33, 11, 22, 44, 55\} \Rightarrow \{11, 22, 33, 44, 55\}$

$s2 = \{10, 11, 20, 22, 30, 33\}$

$p = s1 \& s2 = \{11, 22, 33\}$

$q = s2 - s1 = \{10, 20, 30\}$

$count = len(s2) + len(s1) = 6 + 5 = 11$

for i in p:

for j in range(len(q)):

count += i + j

print(count)

$j=0$

$j=1$

$j=2$

$i=11$

$Count = 11 + 11 + 0 = 22$

$22 + 12 = 34$

$34 + 13 = 47$

$i=22$

$47 + 22 = 69$

$69 + 23 = 92$

$92 + 24 = 116$

$i=33$

$116 + 33 = 149$

$149 + 34 = 183$

$183 + 35 = \underline{\underline{218}}$

A) 29

B) 200

☒ C) 218

D) 389

#Q. What will be The Output?

```

set1={'blue','Blue','BLUE'}
set2={'Blue','Blue',"Blue"} = {"Blue"}
set3={'blue',"blue"} = {'blue'}
a=set3.symmetric_difference(set2) a = {'Blue', 'blue'}
set1.difference_update(set3) # set1 = {'Blue', 'BLUE'}
b=set1.difference(set2) b = {'BLUE'}
c=0
# 2 + 1 = 3
for i in range(len(a)+len(b)):
    c+=i
    c = 0 + 1 + 2 = 3
print(c)

```

✓ A) 3

B) 4

C) 5

D) 6



#Q. What will be final count value in the below code segment?

$d = \{ 'A': \{ 'a': 10, 'b': 20 \}, 'B': \{ 'a': 20, 'b': 10 \}, 'C': \{ 'a': 10, 'b': 10 \}, 'D': \{ 'a': 20, 'b': 20 \} \}$

$i = d['B']['a']$  ~~#20~~

$j = d['C']['b']$  ~~#10~~

$k = d['D']['b']$  ~~#20~~

$x = i + k - j$  ~~#30~~

$count = x$  ~~#30~~

for i in d:

    for j in d[i].values():

$count = count + j$   $= 30 + 10 + 20 + 20 + 10 + 10 + 10 + 20 + 20$

$print(count)$   $= 30 + 120 = \underline{\underline{150}}$

A) 30

B) 110

C) 140

D) 150

#Q. The final count value will be \_\_\_\_\_

```
myList=[10,21,-14,33,-45,56]
```

```
newList=[item for item in myList if item%2==0] = [10, -14, 56]
```

```
count=1
```

```
for i in range(len(newList)):
```

```
    count+=newList[i]
```

$$= 1 + 10 + (-14) + 56$$

$$= \underline{\underline{53}}$$



#Q. The output of below code will be \_\_\_\_\_

d1={'a':1,'b':2,'c':3} *d1 = {'a':1, 'b':2, 'c':4, 'd':5, 'e':6}*

d2={'c':4,'d':5,'e':6}

d1.update(d2)

print(d1)

A) {'a': 1, 'b': 2, 'c': 3, 'd': 5, 'e': 6}

B) {'a': 1, 'b': 2, 'c': 3, 'c': 4, 'd': 5, 'e': 6}

☒ C) {'a': 1, 'b': 2, 'c': 4, 'd': 5, 'e': 6}

D) {'a': 1, 'b': 2, 'd': 5, 'e': 6}



#Q. The output would be \_\_\_\_\_

```
i={10,20,30,40,50}
j=[11,22,33,44,55]
k=[22,33,44,11,55]
l={30,20,40,10,50}
a=(5,7,9,3,1)
b=(1,3,5,7,9)
x=i == l  True
y=j == k  False
z=a != b  True
print(x,y,z)
```

- a) False, False, True
- b) True, False, False
- c) False, True, False
- ~~d) True, False, True~~



## SUPER 1500+ - CLASS – 5 - Homework Question - 1

#Q. Output Printed by below Code is \_\_\_\_\_

```
Set1={1,2,4,6,8,10}  
Set2={1,2,3,4,5,6}  
Set3={1,3,5,6,7,9,1,5}  
s1=Set1 & Set2  
s2=Set2 | Set3  
x=len(Set3)  
for i in s1:  
    for j in s2:  
        x=x+1  
print(x)
```



SUPER 1500+ - CLASS – 5 - Homework Question - 2

#Q. The number of times print statement is executed is \_\_\_\_\_

```
s1={5,7,9,7,5}
```

```
s2={3,5,7,5,3}
```

```
s3={1,2,3,4,5}
```

```
for i in range(len(s1.intersection(s3))):
```

```
    for j in range(len(s3.symmetric_difference(s2))):
```

```
        print("Hi")
```

## SUPER 1500+ - CLASS – 5 - Homework Question - 3

#Q. What is printed by below code?

```
a={'apple','banana','mango'}
```

```
b={'mango','grapes','chiku'}
```

```
c={'chiku','banana','guava'}
```

```
x=len(a&b)
```

```
y=len(b^c)
```

```
z=len(c-a)
```

```
print(x+y+z)
```



SUPER 1500+ - CLASS – 5 - Homework Question - 4

#Q. The output of below code will be \_\_\_\_\_

```
i=[10,20,30,40,50]  
j=(60,70,80)  
for i,j in zip(i,j):  
    print(i,',',j,end=',')
```

- A) 10,20,30,40,50,60,70,80
- B) 10,20,30,60,70,80
- C) [10,20,30],[60,70,80]
- D) 10,60,20,70,30,80

## SUPER 1500+ - CLASS – 5 - Homework Question - 5

#Q. The output of below Python Code Segment is \_\_\_\_\_

```
from collections import OrderedDict
d = OrderedDict()
d['p'] = 10
d['q'] = 12
d['r'] = 23
d['s'] = 34
d.pop('r')
d.pop('p')
d['r'] = 20
d['t'] = 55
d.pop('q')
d['p'] = 15
```

```
for key, value in d.items():
    print(key, value, end=' ')
```

- A. p 15 r 20 s 34 t 55
- B. t 55 s 34 r 20 p 15
- C. s 34 r 23 t 55 p 15
- D. s 34 r 20 t 55 p 15





## 2 mins Summary



- Tuples
- sets
- Dictionaries

Functions (Recursion)  
NEXT CLASS TOPIC: ~~COLLECTION TYPES: Tuples, Sets, Dictionaries~~

**THANK - YOU**