GATE

CRASH COURSE

Data Science & AI

Subject

Python for Data Science
Most Expected 25 Model GATE Questions of Python
Lecture No. 07

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Topics to be covered

1. Homework Questions Solution
2. Set Methods and Operations
3. Dictionaries
4. Functions, Recursion
5. Examples

Question - 1

What will be the value of k in the below code?

```
i=-13.5
j=5
k=i % j
print(k)
```

% operator assign divisor sign to the result.

i % j when i & j signs are different

j - (i % j)

5 - (13.5 % 5)

5 - (+3.5)

3.5 → Remainder

Sign of divisor

= 5 - 3.5

= 1.5

A 0.0

B -1.5

C ✓ 1.5

D 3.5

Question - 2

What will be printed by below Python Code?

```
i=0xAE1
j= i & 152
k= j | 100
print(k)
```

$i = 0xAE1 \Rightarrow A \times 16^2 + E \times 16^1 + 1 \times 16^0 = 2560 + 224 + 1 = 2785$

$$\begin{array}{r} 101011100001 \\ 000010011000 \\ \hline 000010000000 = 128 \end{array}$$

$$\begin{array}{r} 1\ 1\ \\ 100 = 000001100100 = \\ \hline 000011100100 \end{array}$$

$= 228$

A	344	B	0o344
C	0xe4	D ✓	228

2	2785
2	1392 – 1
2	696 – 0
2	348 – 0
2	174 – 0
2	87 – 0
2	43 – 1
2	21 – 1
2	10 – 1
2	5 – 0
2	2 – 1
	1 – 0

$$\begin{array}{r} 2560 \\ 224 \\ 1 \\ \hline 2785 \end{array}$$

Question - 3

What will be printed by below Code Segment?

```
for i in range(10):
    print(i ^ 1, end=' ')
```

$\wedge \Rightarrow$ Same inputs, o/p : 0
diff. inputs, o/p : 1

$i=0 \quad 0 \wedge 1 = 1$

$i=1 \quad 1 \wedge 1 = 0$

$i=2 \quad 2 \wedge 1 \Rightarrow \begin{array}{r} 10 \\ 01 \\ \hline 11 = 3 \end{array}$

$i=3 \quad 3 \wedge 1 \Rightarrow \begin{array}{r} 11 \\ 01 \\ \hline 10 = 2 \end{array}$

$4 \wedge 1 = \begin{array}{r} 100 \\ 001 \\ \hline 101 = 5 \end{array}$

$5 \wedge 1 = \begin{array}{r} 101 \\ 001 \\ \hline 100 = 4 \end{array}$

A ✗ 1111111111

B 1010101010

C ✗ 0101010101

D ✓ 10325476 98

Question - 4

Match The Following Operators with their associativity.

LIST-I	LIST-II
A) ** (Exponentiation)	1. Left To Right
B) & (Bitwise AND)	2. Right To Left
C) is not (Identity)	
D) = (Assignment)	

A) A-2, B-1, C-1, D-2

B) A-2, B-2, C-1, D-1

C) A-2, B-1, C-2, D-2

D) A-1, B-2, C-2, D-1

Question - 5

The output of below code segment is 363

```
a=0o54
b=a<<3
c=a>>2
print(b+c)
```

$a = 0o54 \Rightarrow (54)_8 = 5\times8^1+4\times8^0 = (44)_{10}$

$b = a<<3 \Rightarrow 44<<3 \Rightarrow 44*2^3 = 352$

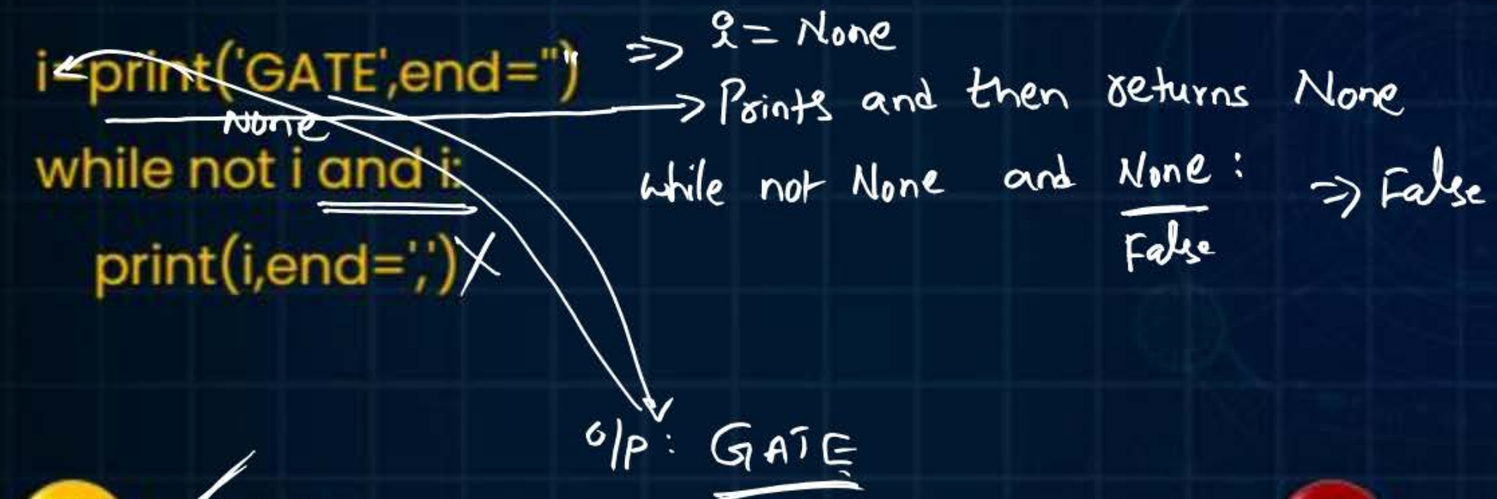
$c = a>>2 \Rightarrow c = 44>>2 \Rightarrow 44/2^2 = 11$

$\# 352+11 = 363$

Question - 6

The output of below code is _____

```
i=print('GATE',end='')
while not i and i:
    print(i,end=',')
```



A. GATE ✓

B. GATE 4,3,2,1

C. GATE 4,3,2

D. Infinite Execution

Question - 7

The value of result at the end of execution of below code is _____

50

```
result = 0
i = 1
for i in range(5):
    i*=2
    for j in range(i - 1):
        j += 1
        result += i-j
```

i starts with '0' by default

i = i*2	i	j loop	
i=0	i=0	—	
i=1	i=2	j=1 j=j+1=1+1=2 result=0+2-2=0	j=0 ⇒ +1 ⇒ 49+1=50
i=2	i=2*2=4	j=0 j=1 result=0+4-1 =3	j=1 j=2 =3+4-2 =5	j=2 j=3 =5+4-3 =6
i=3	i=6	j=0 j=1 result=6+6-1 =11	j=1 j=2 11+6-2 =15	j=2 j=3 15+6-3 =18	j=3 j=4 18+6-4 =20	j=4 j=5 20+6-5 =21
i=4	i=8	j=0 1 2 3 4 5 6 7	21+8-1=28 28+6=34 34+5=39 39+4=43 43+3=46 46+2=48 48+8-7=49				

Question - 8

The Output of below Code Segment is _____

```
i = 1 3
j = 1 True False
while j:
    print(i, j, end=' ')
    j = i <= 1
    i += 2
```

1 ? True

Print 1, 1

j = (1<=1) True

i = 3

True ?

Print 3, True

j = (3<=1) False

i = 5

False ?

—

A ✗ 1 3 1 True

B ✓ 1 1 3 True

C ✗ 1 3 1 False

D 1 1 3 False

Question - 9

What will be final 'ans' value from the below code?

ANS: 12

```
a=1 3
b=4 2
ans=1 5 10 12
while a<4:
    ans=ans+b
    while b>1:
        if b<=2:
            break
        ans=ans+b+a
        b=b-2
    a=a+2
```

a=1
1<4 True
ans=1+4=5
b=4>1 True
ans=5+4+1=10
b=2
2>1 True
2<=2 True
break

---

a=3
ans=10+2
=12
b=2>1 True
2<=2 True
break

a=5
5<4 False

Question - 10

The output of below code is _____ 16

```
x={11,12,21,1,23,32,23}
y=len(x)
z=1 3 8 16 15
for i in range(z,y):
    match i:
        case 2:
            for j in range(y-1):
                z=z+j
        case 1:
            for j in range(z):
                z=z+1
        case 3:
            for j in range(3):
                z=z+i
        case __:
            z=z-1
print(z)
```

5
(1,5)

$i=1$ for j in range(1) $j=0$ $z=1+1=2$

$i=2$ for j in range(4) ⇒ $j=0$ $z=2+0=2$; $j=1$ $z=2+1=3$; $j=2$ $z=3+2=5$; $j=3$ $z=5+3=8$

$i=3$ for j in range(3) $z=z+i$ ⇒ $z=8+3+3+3=17$

$i=4$ → case __ ⇒ $z=z-1$, $z=17-1$, $=16$

Score ?
10

Question - 11

What will be printed by below code segment?

```
x=6
y=3
b=0
for i in range(1, x, 3):
    a=i * 3
    for j in range(3):
        b-=i-j-a
print(b)
```

$b -= i - j - a \Rightarrow b = b - (i - j - a)$

$= b - i + j + a$

$i = 1 \quad a = 3$

$j=0 \quad b = 0 - 1 + 0 + 3 = 2$

$j=1 \quad b = 2 - 1 + 1 + 3 = 5$

$j=2 \quad b = 5 - 1 + 2 + 3 = 9$

$i = 4 \quad a = 12$

$j=0 \quad b = 9 - 4 + 0 + 12 = 17$

$j=1 \quad b = 17 - 4 + 1 + 12 = 26$

$j=2 \quad b = 26 - 4 + 2 + 12$

$= 36$

Ans : 36

A. 21

B. 24

C. 36 ✓

D. -66

Question - 12

The output of below code is _____

```
result = 0
for i in range(4):
    j = 7 - i
    if j >= 1:
        result = i * j - result
print(result)
```

$i=0$	$j=7$	$r = 0*7 - 0 = 0$
$i=1$	$j=6$	$r = 6 - 0 = 6$
$i=2$	$j=5$	$r = 10 - 6 = 4$
$i=3$	$j=4$	$r = 12 - 4 = 8$

$j = 7 - i$

A. 5

B. 6

C. 7

D. 8 ✓

Question - 13

The final count value printed by below code is _____

```
a=[[0,1,2,3],[4,5,6,7],[2,3,4,0],[1,4,6,7]]
count=0
for i in range(1,4):
    for j in range(2,4):
        count+=a[j][i]
print(count)
```

#24

	j=2	j=3
i=1	count = 0 + a[2][1] = 0+3=3	= 3 + a[3][1] = 3+4 = 7
i=2	7 + a[2][2] = 7+4=11	11 + a[3][2] = 11+6 = 17
i=3	17 + a[2][3] = 17+0=17	17 + a[3][3] = 17+7 = 24.

A 24

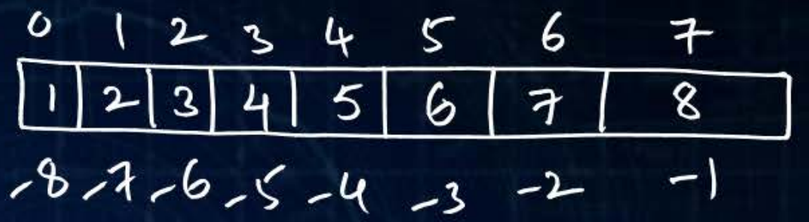
B 28

C 48

D 55

Question - 14

What is printed by below Python Code Segment?




```
My_list = [1, 2, 3, 4, 5, 6, 7, 8]
new_list1 = My_list[::-3]
new_list2 = My_list[3::]
new_list3= new_list1.extend(new_list2)
print(new_list3)
```

step ⇒ [8, 5, 2]

Start ⇒ [4, 5, 6, 7, 8]

[8, 5, 2, 4, 5, 6, 7, 8]

A. [8, 5, 2, 4, 5, 6, 7, 8]

B. [8, 7, 6, 5, 4, 2, 5, 8]

C. [4, 5, 6, 7, 8]

D. None

Question - 15

Consider the below Python Code Segment

```
a=(1,2,3)
b=(4,5,6)
(*I,j)=b
(i,*J)=a
print(I,end=',')
print(J)
```

I = [4,5], j = 6
i = 1, J = [2,3]

The output will be [4,5] [2,3]

A. [1,2],[6]

B. [1],[5,6]

C. [2,3],[4,5]

D. ✓ [4,5],[2,3]

Score? 15

Question - 16

The Value of a[3][3][1] is 8 for a tuple,

a=[(1,2,(3,4,(5,6,7)),(4,5,(6,7),(7,8,9),0))]

0 1 2 3 4

0 1

2

3

a[3][3][1]

Question - 17

The Total number of times print statement is executed is _____

```
s1={5,7,5,7,5}
s2={3,5,3,5,7}
s3={1,2,3,4,5}
for i in range(len(s1.difference(s3))):
    for j in range(len(s3.union(s2))):
        print(" ")
```

s1 = {5,7}
s2 = {3,5,7}
s1.difference(s3) = {7}, len() = 1
s3.union(s2) = {1,2,3,4,5,7}, len() = 6
i = 0
j = 0,1,2,3,4,5
Print() → 6 times

- A. 4
- B. 5
- C. 6 ✓
- D. 7

Question- 18

Consider the below code:

The return value of f(3) is 7

```
def f(i):
    count=0
    if i<0:
        return
    for x in range(i-1):
        k=count+g(x+1)
        count=count+i
    return k
def g(i):
    j=0
    if i<1:
        return i-1
    for x in range(i):
        j=j+i
    return j
```

f(3) i

x=0 k= 0+g(1) = 0+1=1, count= 0+3=3

x=1 k= 3+g(2) = 3+4=7 count= 3+3=6

return 7

g(1) i

x=0 j=0+1 =1

return 1

g(2) i

j=0

x=0 j= 0+2=2

x=1 j= 2+2=4

return 4

Question - 19

The total number of times print statement executed is _____ 9

```
a=[10,20,[30,40,50],60,70]
b=(5,10,15,(20,25,30,(35,40,45,50),55,60),70)
c=a[2][1]
d=b[3][3][3]
i=1
for j in (c,1,c//4):
    for k in (d,1,c//5):
        print(i)
```

0 1 2 3 4

0 1 2

[3][3][3]

c = a[2][1] # 40

d = b[3][3][3] # 50

	k = 50	k = 10	k = 2
j = 40	①	②	③
j = 10	④	⑤	⑥
j = 2	⑦	⑧	⑨ → 9 times Print() Executes.

Question - 20

The return value of f(2,8) is _____ 9

```
def f(x,y):
    if x==y:
        return x+y;
    else:
        return x+y-f(x+1,y-2)
```

$f(\overset{x}{2}, \overset{y}{8})$

$2+8-f(\overset{x}{3}, \overset{y}{6})$

$3+6-f(\overset{x}{4}, \overset{y}{4}) = 9-8=1$

return 8

$\Rightarrow 2+8-1$

$= 9$

Question - 21

H/W

The return value of fun(8) is _____

```
def fun(x):
    if x<=0:
        return x+1
    elif x<=2:
        return x+fun(x-2)
    else:
        return fun(x-1)+ fun(x-3)
```

Question - 22

HW

The output of below code segment is _____

```
def f(x):
    if x>=20:
        return x+3
    else:
        return f(f(x+2))+ x
print(f(10))
```

Question - 23

H|w

The number of times print statement is executed is _____

```
def fun(x):
    if x>=10:
        print(x)
        return
    elif x>=5:
        print(x+2,end=',')
        fun(x+2)
    else:
        print(x-1,end=',')
        fun(x+1)
fun(2)
```

Question - 24

Hw

The output printed by below code is _____

```
def f(i):
    if len(i)==0:
        return
    else:
        i[-1]=i[0]
        j=i[:-2]
        print(j)
        f(j[3:])
a=[11,23,34,45,56]
f(a)
```

A [11,23]

B [11,23,34]

C [11,23,34,45]

D [11,23,34,45,56]

Question - 25

Hlw

What will be final list arr1?

```
arr=[-3,-2,-5,3,2,-1]
arr1=[]
for i in range(len(arr)):
    if arr[i]<0:
        arr1.append(arr[i-2]+i)
    elif arr[i]<= -1:
        arr1.append(i-arr[i+1])
    else:
        arr1.append(arr[i])
print(arr1)
```

A [2, -2, -5, 3, 2, -2]

B [2, 0, -1, 3, 2, 8]

C [2, 0, 1, 3, -2, 8]

D [2, 2, -5, 3, 2, 2]

Post Your Queries / Doubts in My Telegram Channel

/ANSWERS

t.me/ satyasirpw


Thank
THANK
Keep Hustling!