

# 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 pencil. There are three small white birds flying above the rocket.

## Python For Data Science

Lecture No.- 02



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# Topics to be Covered



## Control Statements

- Conditional Control Statements

- if

- if-elif-else

- if-else

- Nested if

- match-case





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

#Q. The output printed by below code is \_\_\_\_\_

$$i = \underline{0x21} = (33)_{10}$$

$$j = \underline{0o36} = (30)_{10}$$

$$k = i \ll 2 = 33 * 2^2 = 132$$

$$x = j \gg 3 = 30 // 2^3 = 3$$

$$y = i + x = 33 + 3 = 36$$

$$z = k - j = 132 - 30 = 102$$

print(z-y)

$$102 - 36$$

$$= \underline{\underline{66}}$$

$$(21)_H = \begin{array}{|c|c|} \hline 1 & 0 \\ \hline 2 & 1 \\ \hline \end{array}$$

$$1 * 16^0 + 2 * 16^1$$

$$= 1 + 32 = 33$$

$$(36)_8 = \begin{array}{|c|c|} \hline 1 & 0 \\ \hline 3 & 6 \\ \hline \end{array}$$

$$= 6 * 8^0 + 3 * 8^1$$

$$= 6 + 24$$

$$= 30$$

## SUPER 1500+ - CLASS - 1 - Homework Question - 2

#Q. The output printed by below code is \_\_\_\_\_

a=ord('a') = 97

b=ord('E') = 69

c=a^b = 36

d=b|a = 101

e=c&d

print(e) #36

97 ^ 69

97 = 0110 0001

69 = 0100 0101

c = 0010 0100

d = 0110 0101

c & d = 0010 0100

36

69, 97

69 = 0100 0101

97 = 0110 0001

d = 0110 0101

= 101



# SUPER 1500+ - CLASS - 1 - Homework Question - 3

#Q. The output printed by below code is \_\_\_\_\_

$$x = \text{ord}('2') + \underbrace{(21 >> 2)}_5 * \underbrace{(41 \& 23)}_1 - \underbrace{(11 \wedge 20)}_{31} // \underbrace{2^{**3}}_8$$

$$\text{print}(x)$$

$$2^{**3} = 2^3 = 8$$

$$\text{ord}('2') = 50$$

$$21 >> 2 = 21 // 2^2 = 21 // 4 = 5$$

$$\begin{aligned}
 41 \& 23 &\Rightarrow 41 = 00101001 \\
 &23 = 00010111 \\
 &\hline
 &= 1 \quad 00000001
 \end{aligned}$$

$$11 \wedge 20$$

$$\Rightarrow 11 = 00001011$$

$$20 = 00010100$$

$$\begin{aligned}
 &00010100 \\
 &\hline
 &00011111 \\
 &= 31
 \end{aligned}$$

$$\Rightarrow 5 * 1 = 5$$

$$\Rightarrow 31 // 8 = 3$$

$$50 + 5 = 55$$

$$55 - 3 = \underline{\underline{52}}$$

$$'0' = 48$$

$$'1' = 49$$

$$'2' = 50$$

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

#Q. The output printed by below code is \_\_\_\_\_

$x = \text{float}(1) = 1.0$

$y = \text{int}(2.8) = 2$

$z = \text{complex}(3) = 3+0j$

$i = x + y + z = 1.0 + 2 + (3+0j) = \underline{\underline{6+0j}}$

`print(i, type(i))`

- A) 6, <class, int>
- B) 6.0, <class, float>
- ☒ C) 6+0j, <class, complex>
- D) Compiler Error

#Q. The Output of below Code, if executed on a Python Interpreter is \_\_\_\_\_

```
if True "GATE":  
    print("EXAM") ✓  
else:  
    print("2025")
```

A) GATE

B) GATE EXAM

C) 2025

✓ D) EXAM



#Q. What will be printed by below Python Code Segment?

<sup>↳ None</sup>  
 if print("GATE", end=' '): → # GATE  
     print("EXAM") ✗ ↳ if None: # false  
 else:  
     print("2025") ✓ # 2025

- A) GATE EXAM
- ☒ B) GATE 2025
- C) None EXAM
- D) Syntax Error



#Q. The Output printed will be \_\_\_\_

a=0 ✓

b=-1 ✓

c=1 ✓

if <sup>False</sup> a and b: # False

print(a+1)

elif b and c: True and True # True

print(b+1)

~~elif c or a:~~

~~print(c+1)~~

~~else:~~

~~print(a,b,c)~~

A) 1

~~B) 0~~

C) 2

D) 0 -1 1

#Q. What is printed by below code segment?

```

i=12
j=16
k=14
if (not i) or j and (not k): # False
    print('Hi') X
elif (not j) and k or (not i): # False
    print('Hello') X
elif i and j and k: # TRUE
    print('Hai') ✓
else:
    print('Bye')

```

Handwritten annotations:

- For `if (not i) or j and (not k):`, a bracket groups `not i` (labeled `False`) and `j and (not k)` (labeled `True and False`), with the overall result marked as `# False`.
- For `elif (not j) and k or (not i):`, `not j` is labeled `F`, `k` is labeled `T`, and `not i` is labeled `F`, with the overall result marked as `# False`.
- For `elif i and j and k:`, the result is marked as `# TRUE`.
- The `print('Bye')` line is crossed out with a large X.

- A) Hi
- B) Hello
- ☒ C) Hai
- D) Bye



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

a='none' [Unicode values for each character]

b='None'

c='NONE'

if a < b: # False

~~print(b)~~

elif b < c: # False

~~print(c)~~

else:

print(a) ✓

n > N

'a' = 97

'A' = 65

'0' = 48

UPPER Case < Lower Case

☒ A) none

B) None

C) NONE

D) Error

#Q. The 'a' value printed is \_\_\_\_\_

if not not None: *# False*

a=1

elif None: *# false*

a=2

elif not None: *# True*

a=3 ✓

else:

~~a=4~~

print(a)

A) 4

☒ B) 3

C) 2

D) 1



#Q. The Output is \_\_\_\_\_

$a = \text{'ABCDEF'}[4]$   
 $b = \text{'abcdef'}[2]$   
 $c = \text{chr}(\text{ord}(a)+2) \text{ concat } \text{chr}(\text{ord}(b)-2)$   
 $\text{print}(\text{ord}(c[1]) - \text{ord}(c[0]))$   
 $97 - 71 = 26$

$$\text{ord}(a) = 69 + 2 = 71$$

$$\text{chr}(71) = 'G'$$

$$\text{ord}(b) = 99 - 2 = 97$$

$$\text{chr}(97) = 'a'$$

$S = \text{"ABCDEF"}$

$a = S[4]$

$c = 'Ga'$

#Q. The Output of below code segment is \_\_\_\_\_

```

a=2
b=3
c=4
if a<b>=c:
    print(a+1,b,c-2)
elif c>b!=a: ✓
    print(a5+b7,b7+c6,c6+a) ✓
elif b>a<=c:
    print(a,b,c)
else:
    print(a+b,b+c,c+a)

```

<sup>True</sup>  
 $(2 < 3)$  and  $(3 >= 4)$  # False  
<sup>True</sup>  
 $(4 > 3)$  and  $(3 \neq 2)$  # True

A) 3 1 4  
 B) 3 3 2  
 C) 2 3 4  
 ✓ D) 5 7 6



#Q. The Output of below Code will be\_\_\_\_\_

i=1

j=2

k=3

count=0

match i:

case 1: ✓

match k: *# no match*

case 2:

match j:

case 3:

print(i)

case 1:

pass

case 1:

print(j) *# End of case 1 of 1st match i*

print("ERROR") ✓

case \_:

print("NONE")

A) 1

B) 2

☒ C) ERROR

D) NONE

#Q. The Output printed is \_\_\_\_\_

```
i=1
j=2
k=3
count=0
match i:
```

```
case 1: ✓
    match k: # No Case 3
        case 2:
            match j:
                case 3:
                    print(i)
                case 1:
                    pass
            case 1:
                print(j)
                print("ERROR")
```

```
case _:
    print("NONE")
```

- A) 1
- B) 2 ERROR
- C) NONE
- ✓ D) No Output



#Q. The Output printed is \_\_\_\_\_

i=1

j=2

k=3

if i&j:

print("Hi")

elif j|k:

print("Hai")

print('Hey') # misplaced

else:

print('Bye')

A) Hi

B) Hai Hey

C) Bye

☒ D) Syntax Error

## SUPER 1500+ - CLASS – 2 - Homework Question - 1

#Q. The final count value is \_\_\_\_\_

i=1

count=2

while i<=5:

    while count<5:

        count=count+i

    i=i+2

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

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

```
i=1
count=0
while i<4:
    match i:
        case 1:
            count+=2
            count<<=i
        case 3:
            count-=i
        case _:
            count>>=i
    i=i+1
print(count)
```



## SUPER 1500+ - CLASS – 2 - Homework Question - 3

#Q. How Many Times print statement executes in the below Code?

```
i=1
j=5
while i is not j:
    i=i+1
    while j is not i:
        j=j-1
        print(" ")
```

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

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

```
i=1
j=5
count=1
while i<j:
    count=count+j
    while j<10:
        count=count-i
        j+=2
    i+=3
print(count)
```

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

#Q. The output printed by below code is \_\_\_\_\_

```
a=1
count=1
while a<5:
    while count<10:
        count<<=a
    a=a+1
print(count)
```





## 2 mins Summary



### Conditional Control Statements

**THANK - YOU**