

Data Science & Artificial Intelligence



Python For Data Science

Basics Of Python

Lecture No.- 06



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Recap of Previous Lecture



- Arithmetic operators

- $==$ Vs $=$

- Operator Precedence and Associativity

$(** \text{ and } =)$
R To L



Topics to be Covered



Control statements

- Conditional
- Iterative
- Jumping





Topic : Control Statements in Python - 2

Conditional (or) Selection (or) Decision Making Statements

if, if-else, if-elif, if-elif-else, match-case

Ex:1

```
if Expression:
    Statement
    :
```

```
if Expression:
    Statements
else:
    Statements
    :
```

TRUE

FALSE

```
a=5
b=7

if a<b:
    print(a) ✓

# 5
```

Ex:2

```
a=5
b=7

if a<b:
    print(a) ✓
print(b) ✓

# 5
7
```

Ex:3

```
a=5
b=7

if a<b:
    print(a)
else:
    print(b)

# 7
```




Topic : Control Statements in Python - 2

Nested-if

```
if Expression 1 :  
    if Expression 2 :  
        if Expression 3 :  
            statement
```

Ex:

```
if Exp1 :  
    Stmt A  
    if Exp2 :  
        Stmt B  
        if Exp3 :  
            Stmt C  
            Stmt D  
            Stmt E  
            Stmt F
```

<u>Exp1</u>	<u>Exp2</u>	<u>Exp3</u>
<u>F</u>	F	F
<u>F</u>	F	T
<u>F</u>	T	F
<u>F</u>	T	T
<u>T</u>	<u>F</u>	<u>F</u>
<u>T</u>	<u>F</u>	<u>T</u>
<u>T</u>	<u>T</u>	<u>F</u>
<u>T</u>	<u>T</u>	<u>T</u>

Statement(s) executed

Stmt F

Stmt F

Stmt F

Stmt F

Stmt A, E, F

Stmt A, E, F

Stmt A, B, D, E, F

Stmt A, B, C, D, E, F



Topic : Control Statements in Python - 2

Nested if-else

Ex:

```
if Exp1:  
    Stmt A  
    if Exp2:  
        Stmt B  
    else:  
        Stmt C  
else:  
    Stmt D  
    if Exp3:  
        Stmt E  
    else:  
        Stmt G
```

Exp1 Exp2 Exp3

F F F

F F T

F T F

F T T

T F F

T F T

T T F

T T T

Statement(s) Executed

D, G

D, E

D, G

D, E

A, C

A, C

A, B

A, B



Topic : Control Statements in Python - 2

Ex: `a = int(input())`
`b = int(input())`
`c = int(input())`

if `a > b:`

```
Print('Banana')
if a < c:
    Print('Orange')
else:
    Print('apple')
```

else:

```
Print('Guava')
if b > c:
    Print('chiku')
```

```
if a < b:
    Print('Papaya')
else:
    Print('Mango')
```

else: `Print('Grapes')`

<u>a</u>	<u>b</u>	<u>c</u>	<u>o/p</u>
5	3	4	Banana apple
15	14	11	Banana apple
10	20	30	Guava Grapes
7	9	2	Guava chiku Papaya
15	10	25	Banana Orange





Topic : Control Statements in Python - 2

Ex:

a=3

b=4

c=5

if a < b:

Print(a) ✓

Print(b)

else: → // misplaced

Print(c)

Error, misplaced else

NOTE:

else need to be immediately after if.

if-elif , if-elif-else

elif \cong else + if

a = int(input())

b = int(input())

c = int(input())

a=3, b=4, c=5 4

a=4, b=3, c=5 3

a=5, b=2, c=1 1

a=1, b=5, c=2 1

if a > c:

Print(c) ✓

elif b < c: ✓

Print(b)

elif c > a: #4

Print(a) ✓



Topic : Control Statements in Python - 2

```
a = int(input())
```

```
b = int(input())
```

```
c = int(input())
```

```
if a < b:
```

```
    print('Hi')
```

```
elif a < c:
```

```
    print('Hey')
```

```
elif b > c:
```

```
    print('Hello')
```

```
elif c < a:
```

```
    print('Hai')
```

```
else:
```

```
    print('Bye')
```

a=1, b=2, c=3

Hi

a=10, b=7, c=5

Hello

a=5, b=10, c=15

Hi

a=20, b=10, c=30

Hey



Topic : Control Statements in Python - 2

match-Case

Syntax:

match (Expression) :

Case option :

| Statement(s)

Case option :

| Statement(s)

⋮

(# default case)

Case __ :

| Statement(s)

① Expression is Evaluated, result is compared with each case in order (first case to last) until match is found.
Then only matched case stmt(s) will be executed.
If No match is found, Then Default case (case __) executes.

② Duplicate cases are allowed. The first matched case will be executed.

③ All datatypes are valid for cases.
(String, int, float)

④ default case always optional

⑤ Cases can be in random order.

⑥ Cases can be of Non-Contiguous.

⑦ Cases can be of Mixed type



Topic : Control Statements in Python - 2

Unicode Values



Ex:

```
a = int(input())
```

```
match(a):
```

```
    case 3:
```

```
        print('BLUE')
```

```
    case -1:
```

```
        print('Black')
```

```
    case 'd':
```

```
        print('Yellow')
```

```
    case 65:
```

```
        print('Orange')
```

```
    case _:
```

```
        print('white')
```

a

1

3

2

-1

100

(Unicode char == 'd')

'A'

(Unicode value = 65)

o/p

white

BLUE

white

black

Yellow

Orange

'A' = 65

'a' = 97

Space = 32

'0' = 48



2 mins Summary



$\text{range}(\text{start}, \text{stop}, \text{step})$
default=0 default=1

Iterative Control statements (Iteration == Repetition == Loop)

while loop, for loop

While Expression :

statement(s)

Statement that makes
Expression False
(Optional)
but recommended
to keep.

Ex:

```
a = 3
while a > 1:
    print('Hai')
    a = a - 2
```

Hai
Hai

for Var in Collection (or) Limit :
statement(s)

Ex:

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

o/p:

```
i=0 Hi
i=1 Hi
i=2 Hi
i=3 Hi
i=4 Hi
```

start- stop
↓ ↓
for i in range(2, 5):
 print('Hi')

```
i=2 Hi
i=3 Hi
i=4 Hi
```

```
for x in range(10, 1, -3):
    print('Hi')
```

```
x=10 Hi
x=7 Hi
x=4 Hi
```




#NOTE: DO NOT MISS NEXT CLASS

THANK - YOU