Looping Statement

🎯 Session Objectives

- ✅ Understand conditional statements with shorthand notations.
- ✅ Understand what looping statements are
- ✅ Understand what a for loop is
- ✅ Understand what a while loop is

Shorthand Conditional Statements :

```
if : if condition: statement

if-else : result = value1 if condition else value2

if-elif-else : result = (value1 if condition1 else value2) if condition2 else value3
```

Looping Statement

car

```
'Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta'
```

```
idx = 0,1,2,3,4
range(start,stop,step)
```

```
for car in car_list:
    print(car)
```

```
Taigun
Slavia
Verna
Thar
Innova
Defender
Virtus
Creta
```

```python
# Appended to a Set .....
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
            'Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
            'Safari','Harrier','Bolero','XUV700','Altroz','Kushaq']
car_set = set() # empty set

for car in car_list:
    car_set.add(car)
print(car_set)  # No Duplicates and Unidexed
```

{Slavia,Taigun,Thar,Verna,}

Memory

car_list = [.....]
car_set = {}

car = Taigun
Slavia
Verna
Thar

0,0	0,1	0,2	0,3
1,0	1,1	1,2	1,3
2,0	2,1	2,2	2,3
3,0	3,1	3,2	3,3

i →

```
for i in range():
    for j in range():
        2D Matrix Iteration
```

i == j [Diagonal Column]

```python
# If_Else : result = value1 if condition else value2
# Comparing the value
val1 = "Apple"
val2 = "apple" # [ASCII]
result = val1 if val1 > val2 else val2
print(result) # 'val2' ['apple']
```

```
apple
```

```python
# Comparing the value
val1 = 100
val2 = 100
result = val1 if val1 > val2 else val2
print(result) # 'val2' [100]
```

```
100
```

```python
# Comparing the value
height1 = 170
height2 = 189
result = height2 if height2 > height1 else height1
print(result) # height2 - 189
```

```
189
```

```python
# Error -> else can't be skipped in shorthand if-else code.
# If : if condition: statement
# If_Else : result = value1 if condition else value2
val = int(input("Enter the value: "))
result = "Even" if val % 2 == 0
# SyntaxError: expected 'else' after 'if' expression
```

```python
val = int(input("Enter the value: "))
result = "Even" if val % 2 == 0 else "Odd"
print(result)
```

```
Enter the value:  99
Odd
```

```python
val = int(input("Enter the value: "))
result = "Even" if val % 2 == 0 else "Odd"
print(result)
```

```
Enter the value:  10
Even
```

```python
val = int(input('Enter the value: '))
if val % 2 == 0:
    print("Even")
else:
    print("Odd")
```

```
Enter the value:  77
Odd
```

```python
# if-elif-else : result = (value1 if condition1 else value2) if condition2 else value3
value1 = 'Python'
value2 = 'Java'
value3 = 'JavaScript'
condition1 = True
condition2 = True
result = (value1 if condition1 else value2) if condition2 else value3
print(result) # 'Python'
```

```
Python
```

```python
value1 = 'Python'
value2 = 'Java'
value3 = 'JavaScript'
condition1 = False
condition2 = True
result = (value1 if condition1 else value2) if condition2 else value3
print(result) # 'Java'
```

```
Java
```

```
value1 = 'Python'
value2 = 'Java'
value3 = 'JavaScript'
condition1 = False
condition2 = False
result = (value1 if condition1 else value2) if condition2 else value3
print(result) # 'JavaScript'
```

```
JavaScript
```

```
# Grading System
score = 77
grade = 'A' if score >=90 else ('B' if score >= 80 else ('C' if score >= 70 else 'D'))
print(grade) # 'C'
```

```
C
```

```
# Grading System
score = int(input('Enter the Valid score :'))
Grade = ''
if score >=90:
    Grade = 'A'
elif score >= 80:
    Grade = 'B'
elif score >= 70:
    Grade = 'C'
else:
    Grade = 'D'

print(Grade)
```

```
Enter the Valid score : 99
A
```

```
# Grading System
score = int(input('Enter the Valid score :'))
Grade = ''
if score >=90:
    Grade = 'A'
elif score >= 80:
    Grade = 'B'
elif score >= 70:
    Grade = 'C'
else:
    Grade = 'D'

print(Grade)
```

```
Enter the Valid score : 81
B
```

```python
# Looping Statment
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta']
print(car_list[0]) # 'Taigun'
print(car_list[1])
print(car_list[2])
print(car_list[3])
print(car_list[4])
print(car_list[5])
print(car_list[6])
print(car_list[7]) # 'Creta'
```

```
Taigun
Slavia
Verna
Thar
Innova
Defender
Virtus
Creta
```

```python
# Loop Works on Iterables
# Variable Name is defined ['Iterator'] to iterate on iterables
for car in car_list: # car is an iterator which iterates on iterable [car_list]
    print(car)
```

```
Taigun
Slavia
Verna
Thar
Innova
Defender
Virtus
Creta
```

```python
# Loop : Conditional Statements....
# Even or Odd Identify
_list = [-11,10,5,7,9,100,21,-22,77,99,-65,91,199]
for val in _list:
    if val % 2 == 1: # 'Odd'
        print(f'{val} is an Odd Value.')
    elif val % 2 == 0: # 'Even'
        print(f'{val} is an Even Value.')

print("Loop is Ended.")
```

```
-11 is an Odd Value.
10 is an Even Value.
5 is an Odd Value.
7 is an Odd Value.
9 is an Odd Value.
100 is an Even Value.
21 is an Odd Value.
-22 is an Even Value.
77 is an Odd Value.
99 is an Odd Value.
-65 is an Odd Value.
91 is an Odd Value.
199 is an Odd Value.
Loop is Ended.
```

```python
# Appended to a List:
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
            'Safari','Harrier','Bolero','XUV700','Altroz','Kushaq']
fav_car = []
for car in car_list:
    if(car == 'Taigun') or (car == 'Defender') or (car == 'Harrier'):
        fav_car.append(car)

print(fav_car) # ['Taigun' , 'Defender', 'Harrier']
```

```
['Taigun', 'Defender', 'Harrier']
```

```python
# Appended to a List:
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
            'Safari','Harrier','Bolero','XUV700','Altroz','Kushaq']
fav_car = []
fav_car1 = input('Enter your 1st Car:')
fav_car2 = input('Enter your 2nd Car:')
fav_car3 = input('Enter your 3rd Car:')
for car in car_list:
    if(car == fav_car1) or (car == fav_car2) or (car == fav_car3):
        fav_car.append(car)

print(fav_car)
```

```
Enter your 1st Car: XUV700
Enter your 2nd Car: Taigun
Enter your 3rd Car: BYD
['Taigun', 'XUV700']
```

```python
# Appended to a Set .....
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
           'Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
           'Safari','Harrier','Bolero','XUV700','Altroz','Kushaq']
car_set = set() # empty set

for car in car_list:
    car_set.add(car)
print(car_set)  # No Duplicates and Unidexed
```

```
{'Altroz', 'Creta', 'Defender', 'Verna', 'Slavia', 'Innova', 'Virtus', 'Safari', 'Bolero', 'Harrier', 'XUV70
0', 'Thar', 'Kushaq', 'Taigun'}
```

```python
print('Slavia' in car_set) # True/False
```

```
True
```

```python
# min , max -> Loops [Alphabetical Order for a string] [ASCII]
# Find the Maximum Element w.r.t ASCII Value
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
           'Safari','Harrier','Bolero','XUV700','Altroz','Kushaq']
max_element = car_list[0] # 'Taigun'
for car in car_list:
    if car > max_element:
        max_element = car

print(max_element) # 'XUV700'
```

```
XUV700
```

```python
# min , max -> Loops [Alphabetical Order for a string] [ASCII]
# Find the Maximum Element w.r.t ASCII Value
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Virtus','Creta',
           'Safari','Harrier','Bolero','XUV700','Altroz','Kushaq']
min_element = car_list[0] # 'Taigun'
for car in car_list:
    if car < min_element:
        min_element = car

print(min_element) # 'Altroz'
```

```
Altroz
```

```python
# Numerical List [min]
_list = [55,99,121,91,999,-77,False,1221,77,29,100,1,5]
min_val = float('inf') # extreme Positive Value can be replaced with any element from a list
# min_val = _list[0]
for val in _list:
    if val < min_val:
        min_val = val

print(min_val) # -77
```

```
-77
```

```python
# Numerical List [max]
_list = [55,99,121,91,999,-77,False,1221,77,29,100,1,5]
max_val = float('-inf') # extreme Negative Value can be replaced with any element from a list
# min_val = _list[0]
for val in _list:
    if val > max_val:
        max_val = val

print(max_val) # 1221
```

```
1221
```

```
print(float('inf'))
```

```
inf
```

```
print(float('-inf'))
```

```
-inf
```

```
# String Iterations -> Extracting Characters from it
string = 'Coding Ninja'
for char in string:
    print(char , end = " ")
```

```
C o d i n g   N i n j a
```

```
num_list = [1,2,3,4,5,6,7,8,9,10]
_mult = 1
_sum = 0
for val in num_list:
    _mult *= val
    _sum += val
print(_mult)
print(_sum)
```

```
3628800
55
```

```
# SLicing # [Start : 0 , Stop : Length (Non-Inclusive) , Step : 1]
# range(start,stop,step)
for i in range(10): # 0 based indexing [0,1,2,3,4,5,....9] # 10 [stop] [Non-Inclusive]
    print(i , end = ' ')
```

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

```
for i in range(1,11): # [1,11) = [1,2,3,4,5....10]
    print(i , end = ' ')
```

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

```
for i in range(1,11,2): # [1,11,2) = Odd Iteration [1,3,5,7,9]
    print(i , end = ' ')
```

```
1 3 5 7 9
```

```
for i in range(0,11,2): # [0,11,2) = Even Iteration [0,2,4,6,8,10]
    print(i , end = ' ')
```

```
0 2 4 6 8 10
```

```
num_list = [1,2,3,4,5,6,7,8,9,10]
squared = []
for val in num_list:
    squared.append(val ** 2)

print(squared)
```

```
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```