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

```
marks = int(input("Enter a valid marks : "))
if marks >=90 : print("Excellent")
```

```
Enter a valid marks :  77
```

```
marks = int(input("Enter a valid marks : "))
if marks >=90 : print("Excellent")
```

```
Enter a valid marks :  97
Excellent
```

```
# if-else -> result = value1 if condition else value2
marks = int(input("Enter a valid marks : "))
print("Not Passed") if marks <=33 else print("Passed")
```

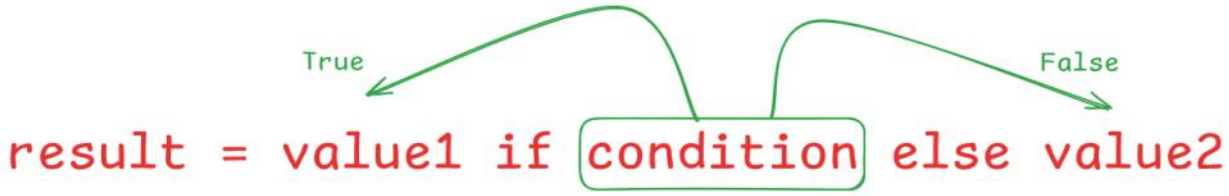
```
Enter a valid marks :  29
Not Passed
```

```
marks = int(input("Enter a valid marks : "))
print("Not Passed") if marks <=33 else print("Passed")
```

```
Enter a valid marks :  77
Passed
```

```
# if-else -> result = value1 if condition else value2
marks = int(input("Enter a valid marks : "))
result = "Not Passed" if marks <=33 else "Passed"
print(result)
```

```
Enter a valid marks :  55
Passed
```




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

```
# Compare the value
val1 = 'Apple'
val2 = 'apple' # [ASCII]
result = val1 if val1 > val2 else val2
print(result) # val2 ['apple']
```

```
apple
```

```
val1 = 100
val2 = 100
result = val1 if val1 > val2 else val2
print(result) # val2 - 100
```

```
100
```

```
height1 = 170
height2 = 189
result = height2 if height1 < height2 else height1
print(result) # height2 - 189
```

```
189
```

```
# Error -> if you are using if-else shorthand -> else can't be skipped
val = int(input("Enter the value: "))
result = "Even" if val % 2 == 0 else "Odd"
print(result)
```

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

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

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

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

```
Enter the value:  29
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
```

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

```
JavaScript
```

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

```
C
```

```python
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
```

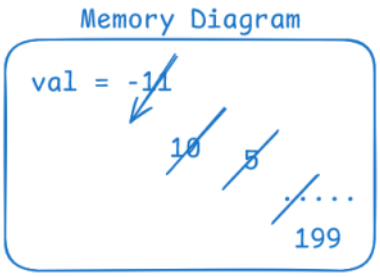
```python
score = int(input("Enter the valid score: "))
grade = '?'
if score >= 90:
    grade = 'A'
elif score >= 80:
    grade = 'B'
elif score >= 70:
    grade = 'C'
elif score >= 50:
    grade = 'D'
else :
    grade
print(grade)
```

```
Enter the valid score:  33
?
```

Looping Statement

```python
# Even and Odd Number
_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 odd value.')
    elif val % 2 == 0: # even
        print(f'{val} is even value.')

print("Loop is Ended")
```

Memory Diagram



Console:

```
-11 is odd value
10 is even value
5 is odd value
......
...
...
...
199 is odd value
Loop is Ended
```

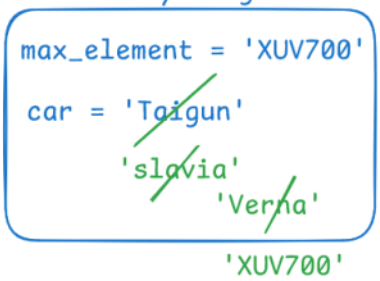
```python
# min / max -> Loops [alphabetical Order for a string]
car_list = ('Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz')
max_element = car_list[0] # 'Taigun'
for car in car_list:
    if car > max_element:
        max_element = car

print(max_element) # 'XUV700'
```

car

[ASCII]

```
XUV700
```

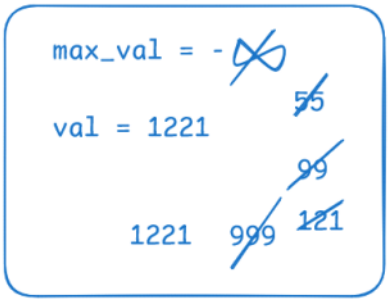
Memory Diagram




```python
# max_element
_list = [55,99,121,91,999,-77,False,1221,77,29,100,1,5]
max_val = float('-inf')
for val in _list:
    if val > max_val:
        max_val = val

print(max_val) # 1221
```

```
1221
```

Memory Diagram




```python
# Looping Statement
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto']
print(car_list[0])
print(car_list[1])
print(car_list[2])
print(car_list[3])
print(car_list[4])
print(car_list[5])
print(car_list[6])
```

```
Taigun
Slavia
Verna
Thar
Innova
Defender
Lord Alto
```

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

```
Taigun
Slavia
Verna
Thar
Innova
Defender
Lord Alto
```

```python
# Even and Odd Number
_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 odd value.')
    elif val % 2 == 0: # even
        print(f'{val} is even value.')

print("Loop is Ended")
```

```
-11 is odd value.
10 is even value.
5 is odd value.
7 is odd value.
9 is odd value.
100 is even value.
21 is odd value.
-22 is even value.
77 is odd value.
99 is odd value.
-65 is odd value.
91 is odd value.
199 is odd value.
Loop is Ended
```

```python
# Appended to a List
car_list = ['Taigun','Slavai','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz']
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']
```

```python
# Appended to a List
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz']
fav_car_list = []
fav_car1 = input("Enter your first fav_car")
fav_car2 = input("Enter your second fav_car")
fav_car3 = input("Enter your third fav_car")

for car in car_list:
    if (car == fav_car1) or (car == fav_car2) or (car == fav_car3):
        fav_car_list.append(car)
print(fav_car_list)
```

```
Enter your first fav_car Thar
Enter your second fav_car Safari
Enter your third fav_car Hector
['Thar', 'Safari']
```

```python
# appeding to a set -> Mutable Container -> Unordered & Unique Elements
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz','Innova','Safari',
            'Thar','Slavia','Verna','Verna','Slavia','Thar','Thar','Safari'
           ]
car_set = set() # empty set
for car in car_list:
    car_set.add(car) # car_set [Unordered , Unique Elements]

print(car_set)
```

```
{'Verna', 'Defender', 'Bolero', 'Slavia', 'Thar', 'Taigun', 'Harrier', 'Innova', 'XUV700', 'Altroz', 'Safari',
'Lord Alto'}
```

```python
# min / max -> Loops [alphabetical Order for a string]
car_list = ('Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz')
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 [Numerical _ List]
_list = [55,99,121,91,999,-77,False,1221,77,29,100,1,5]
min_val = float('inf') # extreme positive else [first_element]
for val in _list:
    if val < min_val:
        min_val = val

print(min_val) # -77
```

```
-77
```

```python
_list = [55,99,121,91,999,-77,False,1221,77,29,100,1,5]
min_val = _list[0]
for val in _list:
    if val < min_val:
        min_val = val

print(min_val) # -77
```

```
-77
```

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

```
inf
-inf
```

```python
# max_element
_list = [55,99,121,91,999,-77,False,1221,77,29,100,1,5]
max_val = float('-inf')
for val in _list:
    if val > max_val:
        max_val = val

print(max_val) # 1221
```

```
1221
```

```python
# String Iteration -> Characters from it.
string  = 'Coding Ninja'
for char in string:
    print(char , end = ' ')
```

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

```python
# slicing [start=0:stop=(len of a list)[non-inclusive]:step=1]
# range(start,stop,step)
for i in range(10): # 10 stop[non-inclusive] -> [0-9]
    print(i , end = " ")
```

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

```python
for i in range(1, 11):
    print(i , end = " ") # 1 to 10
```

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

```python
for i in range(1, 11, 2):
    print(i , end = " ") # Odd Elements
```

```
1 3 5 7 9
```

```python
for i in range(0, 11, 2):
    print(i , end = " ") # Even Elements
```

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

```python
car_tuple = ('Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
             'Safari','Harrier','Bolero','XUV700','Altroz')
for car in car_tuple:
    print(car , end = ' ')
```

```
Taigun Slavia Verna Thar Innova Defender Lord Alto Safari Harrier Bolero XUV700 Altroz
```

```python
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz']
stop = len(car_list) #
print(stop) # 12
for car in range(stop):
    print(car , end = ' ')
    print(car_list[car])
```

```
12
0 Taigun
1 Slavia
2 Verna
3 Thar
4 Innova
5 Defender
6 Lord Alto
7 Safari
8 Harrier
9 Bolero
10 XUV700
11 Altroz
```

```python
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz']
new_car_list = []
stop = len(car_list) #
print(stop) # 12
for car in range(stop):
    print(car , end = ' ')
    new_car_list.append(car_list[car])

print()
print(new_car_list)
```

```
12
0 1 2 3 4 5 6 7 8 9 10 11
['Taigun', 'Slavia', 'Verna', 'Thar', 'Innova', 'Defender', 'Lord Alto', 'Safari', 'Harrier', 'Bolero', 'XUV70
0', 'Altroz']
```

```python
# Filling Alternative Car_list
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz']
alt_car_list = []
stop = len(car_list) #
print(stop) # 12
for car in range(0,stop,2):
    print(car , end = ' ')
    alt_car_list.append(car_list[car])

print()
print(alt_car_list)
```

```
12
0 2 4 6 8 10
['Taigun', 'Verna', 'Innova', 'Lord Alto', 'Harrier', 'XUV700']
```

```python
# Filling Car_list in reverse order
car_list = ['Taigun','Slavia','Verna','Thar','Innova','Defender','Lord Alto',
            'Safari','Harrier','Bolero','XUV700','Altroz']
rev_car_list = []
stop = len(car_list) #
print(stop) # 12
for car in range(stop-1,-1,-1):
    print(car , end = ' ')
    rev_car_list.append(car_list[car])

print()
print(rev_car_list)
```

```
12
11 10 9 8 7 6 5 4 3 2 1 0
['Altroz', 'XUV700', 'Bolero', 'Harrier', 'Safari', 'Lord Alto', 'Defender', 'Innova', 'Thar', 'Verna', 'Slavi
a', 'Taigun']
```