Chapter 3 - 11Loops

Theory:
```
Loops like for and while repeat a block of code multiple times.
```

Code Example:
```
# # ■ Loops in Python
# # ---------------------------------
# # ■ For Loop Example
# for i in range(0, 101):
# print(i)
# # ---------------------------------
# # ■ While Loop Example
# i = 0
# while i <= 50:
# print(i)
# i += 1
# # ---------------------------------
# # ■ Print a name using while loop
# i = 0
# while i <= 5:
# print("Milan")
# i += 1
# # ---------------------------------
# # ■ Print list elements using while loop
# l = [1, "Harry", False, "Milan", "this", "hello", "mf"]
# i = 0
# while i < len(l):
# print(l[i])
# i += 1
# # ---------------------------------
# # ■ Simple password check using while loop
# password = ""
# while password != "milan123":
# password = input("Enter pass key: ")
# print("■ Access granted")
# # ---------------------------------
# # ■ Advanced password check (Max 5 attempts)
# correct_password = "milan123"
# attempts = 0
# while attempts < 5:
# password = input("Enter pass key: ")
# if password == correct_password:
# print("■ Access granted")
# break
# else:
# print("■ Incorrect password, try again.")
# attempts += 1
# if attempts == 5:
# print("■ Too many wrong attempts. Access denied.")
# # ---------------------------------
# # ■ Sum of first N numbers using while
# n = int(input("Enter a number: "))
# i = 1
```

```python
# total = 0
# while i <= n:
# total += i
# if total > 10:
# print("Stopping early as total > 10")
# break
# i += 1
# print("Total:", total)
# # --------------------------------
# # ■ For Loop Examples in Python
# # ■ Basic For Loop: 0 se 3 tak print karega
# for i in range(4):
# print(i)
# # ---------------------------------
# # ■ Advanced For Loop with step size
# # range(start, stop, step)
# # Yahaan:
# # start = 1
# # stop = 101 (exclusive, i.e., 100 tak chalega)
# # step = 5 (har baar 5 se badhega)
# for i in range(1, 101, 5):
# print(i)
# # ---------------------------------
# # ■ Explanation (Hinglish):
# # i = 1 se shuru hoga
# # i < 101 tak chalega
# # i har baar 5 se badhega → 1, 6, 11, 16, ..., 96
# ---------------------------------
# ■ For Loop in Different Data Types
# ---------------------------------
# ■ 1. For loop in a List
lst = [1, 3, 5, 79, 545, 3]
for i in lst:
print(i)
# ■ 2. For loop in a Tuple
tpl = (6, 231, 75, 122)
for i in tpl:
print(i) # ■ You forgot to write print()
# ■ 3. For loop in a Dictionary (keys only)
dict = {
"milan": 54,
"sharma": 43
}
for i in dict:
print(i)
# ■ 4. For loop for both key and value
for key, value in dict.items():
print(key, value)
# in character vise
text = "milan"
for char in text:
print(char)
#output
```

```python
# m
# i
# l
# a
# n
# Loop With range() + Index
fruits = ["apple", "banana", "cherry"]
for i in range(len(fruits)):
print(f"Index {i} → {fruits[i]}")
#Loop With enumerate()
names = ["milan", "sharma", "raj"]
for index, name in enumerate(names):
print(f"{index} → {name}")
# ■ Example: for loop with else
l = [1, 7, 8, 9, 6]
for item in l:
print(item)
else:
print("■ Done! Loop finished without break.")
#■ With break → else will NOT run
l = [1, 7, 8, 9, 6]
for item in l:
print(item)
if item == 8:
break
else:
print("■ Done!") # This won't run because break was used
#■ When To Use?
#Searching in a list: agar item mil gaya → break; agar nahi mila → else block.
# PASS , is null statement in python , its use to do nothing just skip the step
# like
for i in range(222):
pass # this pass will skip the for loop (just skip this step)
i+=1
while(i>=9):
print(i)
break
```