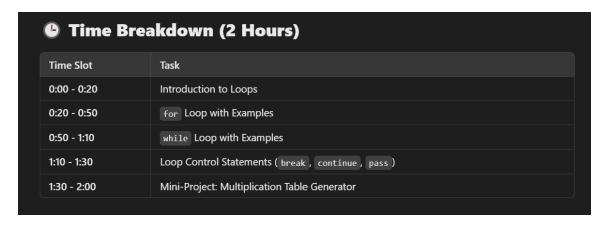
Day 4 of 6 weeks Python course:



What are Loops? ✓ Definition:Loops help execute a block of code multiple times, reducing redundancy. ✓ Types of Loops in Python: for loop → Used when the number of iterations is known. while loop → Used when the number of iterations is unknown. Loop Control Statements → break, continue, pass. ✓ Example Without Loops:

```
In [7]: print("Python is fun!")
    print("Python is fun!")
    print("Python is fun!")
    print("Python is fun!")

Python is fun!
    Python is fun!
Python is fun!
```

Example Using a Loop:

Python is fun! Python is fun!

```
In [9]: for i in range(5):
    print("Python is fun!") # Prints 5 times

Python is fun!
In []: 2 for Loop in Python:

Syntax of a for Loop:
```

for variable in sequence: # Code block Z Example: Looping Through a Range

```
In [20]: for i in range(7):
    print(i) # Prints numbers from 0 to 6
```

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```
Day 4
           0
           1
           2
           3
           4
           5
range(5) generates values 0, 1, 2, 3, 4, 5, 6(not 7) 🔽 Looping Through a List
  In [27]: fruits = ["apple", "banana", "cherry", "watermelon"]
             for fruit in fruits:
                 print(fruit)
           apple
           banana
           cherry
           watermelon
Looping Through a String
  In [31]: for letter in "Python":
                 print(letter)
           Р
           У
           t
           h
           0
✓ Using range(start, stop, step)
  In [35]: for num in range(1, 20, 3): # Start=1, Stop=20, Step=3
                 print(num) # Output: 1, 4, 7, 10, 13, 16, 19
           1
           4
           7
           10
           13
           16
3 while Loop in Python V Syntax of a while Loop: while condition: # Code block V Example: Print Numbers Until 10
  In [37]: num = 1
             while num <= 10:
```

print(num) num += 1

```
1
           2
           3
           4
           5
           6
           7
           8
           9
           10
             Example: Taking User Input Until Correct Answer
   In [ ]:
             password = ""
  In [41]:
             while password != "python123":
                 password = input("Enter the password: ")
             print("Access granted!")
           Access granted!
4 Loop Control Statements (break, continue, pass) ✓ break → Stops the loop immediately
  In [45]: for num in range(11):
                 if num == 7:
                      break # Stops the Loop at 4
                 print(num)
           0
           1
           2
           3
           4
           5
           6
Property Output: 0 1 2 3 4 5 6 ✓ continue → Skips the current iteration and moves to the next one
  In [51]: for num in range(11):
                 if num == 5:
                      continue # Skips printing 2
                 print(num)
           0
           1
           2
           3
           4
           6
           7
           8
           9
           10
\P Output: 0 1 2 3 4 6 7 8 9 10 \square pass \rightarrow Does nothing, used as a placeholder
  In [69]: for num in range(5):
                 if num == 3:
```

```
pass # Placeholder
print(num)

0
1
2
3
4
```

## **o** Mini-Project: Multiplication Table Generator

## Project Goal

- Ask the user for a number.
- Print the multiplication table for that number using a loop.

## Code Implementation

```
In [76]: # Step 1: Get user input
num = int(input("Enter a number: "))

# Step 2: Generate multiplication table
print(f"\nMultiplication Table for {num}:\n")
for i in range(1, 11): # Loop from 1 to 10
    print(f"{num} x {i} = {num * i}")
```

Multiplication Table for 6:

```
6 x 1 = 6
6 x 2 = 12
6 x 3 = 18
6 x 4 = 24
6 x 5 = 30
6 x 6 = 36
6 x 7 = 42
6 x 8 = 48
6 x 9 = 54
6 x 10 = 60
```

```
Step-by-Step Explanation

> Step 1: Taking User Input

python

python

input("Enter a number: "))

input() gets the number.

int() converts it to an integer.
```

Summary of Day 4 🗸 Learned for and while loops 🗸 Practiced loop control statements (break, continue, pass) 🗸 Completed a Mini-Project: Multiplication Table Generator