

Day 6 (1/9/25): Slicing and Striding Strings in Python

1. Introduction

In Python, strings are **sequences of characters**, which allows us to **access individual characters or parts of strings** using **indexing, slicing, and striding**.

2. Indexing

- Each character in a string has an **index**.
- Indexing starts from 0 for the first character and -1 for the last character.

Example:

```
text = "Python"
print(text[0]) # P
print(text[-1]) # n
```

3. Slicing

Definition

Slicing allows you to **extract a substring** from a string using the syntax:

```
string[start:end]
```

- **start** → index to start slicing (inclusive)
- **end** → index to stop slicing (exclusive)

Example:

```
text = "PythonProgramming"
print(text[0:6]) # Python
print(text[6:17]) # Programming
```

If **start** is omitted → starts from index 0

If **end** is omitted → goes up to the end of the string

4. Striding

Definition

Striding allows you to **skip characters** while slicing using the syntax:

```
string[start:end:step]
```

- **step** → number of characters to skip

Example:

```
text = "PythonProgramming"  
print(text[0:17:2]) # Picks every 2nd character  
print(text[::-1])  # Reverses the string
```

5. Negative Indexing with Slicing

- Python allows **negative indices** in slicing.
- Example: `text[-5:-1]` slices from 5th last to 2nd last character.

```
text = "PythonProgramming"  
print(text[-11:-1]) # "Programming"
```

6. Example Program – Slicing and Striding Strings

```
# Slicing and Striding Example
text = "PythonProgramming"

# Basic slicing
slice1 = text[0:6]
slice2 = text[6:]

# Striding
stride1 = text[0:17:2]
reverse_text = text[::-1]

print("Original text:", text)
print("First word (slice):", slice1)
print("Second word (slice):", slice2)
print("Every 2nd character (stride):", stride1)
print("Reversed text:", reverse_text)
```

7. Sample Output

```
Original text: PythonProgramming
First word (slice): Python
Second word (slice): Programming
Every 2nd character (stride): PtoPormig
Reversed text: gnimmargorPmnohtyP
```

8. Summary

- **Indexing** accesses single characters.
- **Slicing** extracts substrings using `[start:end]`.
- **Striding** allows skipping characters with `[start:end:step]`.
- Negative indices make it easy to slice from the **end of the string**.