Slicing

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Slicing is a phenomenon of extracting group of values from the collection.

Q. How can we perform slicing on a collection?

Syntax: variable name[SI:EI+1:updation]

- **SI (Start Index)**: The index from where slicing should begin.
- **EI (End Index)**: The index where slicing should end (not included).
- **Updation (Step)**: The step size for moving to the next element. Default is 1.

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Direction of Traversal:

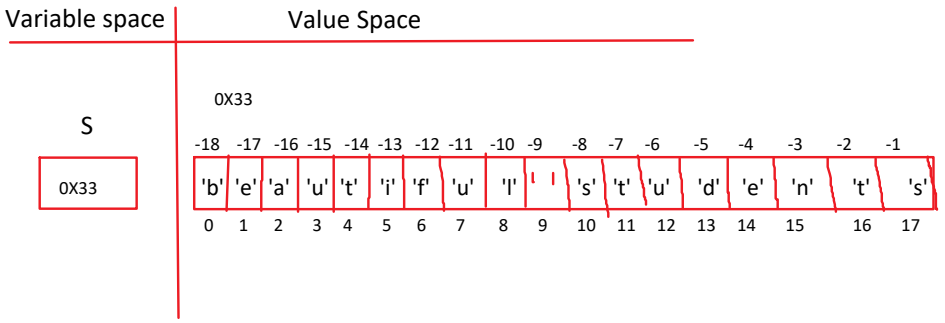
- **Left to Right**: Use +1 as the step (e.g., EI+1)
- **Right to Left**: Use -1 as the step (e.g., EI-1)

Note:

Slicing can only be performed on collections that support indexing, such as:

- **Strings,List,Tuples**

Example: S='beautiful students'




```
S='beautiful students'
S
'beautiful students'
```

Using Positive Index to extract "student":

```
S[10:16+1:1]
'student'
```

Using Negative Index to extract "student"

```
S[-8:-2+1:1]
'student'
```

Extract "students" using negative index

```
S[-8:-1+1:1]
Output : ' '
```

Note: in the above example, the slicing returns an empty string because the **ending index becomes 0** after simplification. This causes confusion for the interpreter, as it doesn't reach the expected extraction point.

Extract "beautiful" using positive index:

```
S[0:8+1:1]
Output:'beautiful'
```

Reverse "beautiful" using positive index:

S[8:0-1:-1]
Output:''

Reverse "beautiful" using negative index:

S[-10:-18-1:-1]
'lufituaeb'

Extract entire string using positive index:

S[0:17+1:1]
'beautiful students'

Reverse the entire string using negative index:

S[-1:-18-1:-1]
'stneduts lufituaeb'

Simplification Syntaxes:

Original syntax: Variable name[SI:EI± 1:Updation]

1. **When the starting index is 0 or -1, we can omit the starting index**

Syntax: Variable name[:EI± 1:Updation]
Example: S[:8+1:1]
Output: 'beautiful'
Example: S[:-8-1:-1]
Output: 'stneduts'

2. When the ending index is equal to ± the length of the collection, we can omit the ending index

Syntax: Variable name[SI: :Updation]
Example: S[0: :1]
Output: 'beautiful students'
Example: S[-1: : -1]
Output:'stneduts lufituaeb'

3. If the step (updation) is 1, we can omit it

Syantax: Variable name[SI:EI±1:]
Example: S[10:16+1:]
Output: 'student'

Example: S[: :1]
Output: 'beautiful students'
Example: S[: :-1]
Output: 'stneduts lufituaeb'

Q. How to extract characters from Even index positions?

Syntax: S[0:17+1:2]
Output: 'batflsuet'

Q. How to extract characters from Odd index positions?

Syntax: S[1:17+1:2]
Output:'euiu tdns'