List slicing in Python allows us to extract a portion of a list, creating a new list.

The syntax for list slicing is list[start:stop:step], where:

- start is the index where the slice begins (inclusive).
- stop is the index where the slice ends (exclusive).
- step is the step size used to iterate through the list.

Problem to understand list slicing:

Python

```python
# Create a list of numbers
numbers = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

# Extract a slice from index 2 to 5 (exclusive)
slice1 = numbers[2:5]

# Extract a slice from the beginning up to index 7 (exclusive)
slice2 = numbers[:7]

# Extract a slice from index 3 to the end
slice3 = numbers[3:]

# Extract every second element from index 1 to 8 (exclusive)
slice4 = numbers[1:8:2]

# Print the slices
print("Slice 1:", slice1)
print("Slice 2:", slice2)
print("Slice 3:", slice3)
```

```
print("Slice 4:", slice4)
```

Code explanation:

1. Created a list named `numbers` with integers from 0 to 9.
2. Used list slicing to create four different slices:
    - `slice1`: Contains elements from index 2 to 4 (excluding 5).
    - `slice2`: Contains elements from the beginning up to index 6 (excluding 7).
    - `slice3`: Contains elements from index 3 to the end.
    - `slice4`: Contains every second element from index 1 to 7 (excluding 8).
3. Printed out the resulting slices.

Output:

`Output`

```
Slice 1: [2, 3, 4]
Slice 2: [0, 1, 2, 3, 4, 5, 6]
Slice 3: [3, 4, 5, 6, 7, 8, 9]
Slice 4: [1, 3, 5, 7]
```

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