

In [5]: # 1.Create 3 diamentional array and do the slicing

```
import numpy as np

# Create a 3D array (2x3x4)
array_3d = np.array([[[1, 2, 3, 4], [5, 6, 7, 8], [9, 10, 11, 12]],
                    [[13, 14, 15, 16], [17, 18, 19, 20], [21, 22, 23, 24]]])

print("3D Array:")
print(array_3d)

# Slicing the 3D array
# Slice the first 2 rows, 2nd dimension (3 rows) and the first 3 elements along the 3rd dimension
sliced_array = array_3d[:2, :2, :3]

print("\nSliced Array (first 2 rows, 2nd dimension, first 3 elements):")
print(sliced_array)
```

3D Array:

```
[[[ 1  2  3  4]
   [ 5  6  7  8]
   [ 9 10 11 12]]
```

```
[[13 14 15 16]
 [17 18 19 20]
 [21 22 23 24]]]
```

Sliced Array (first 2 rows, 2nd dimension, first 3 elements):

```
[[[ 1  2  3]
   [ 5  6  7]]
```

```
[[13 14 15]
 [17 18 19]]]
```

In [10]: # 2.create 2 D array and do the slicing from end (use negative index)

```
import numpy as np

# Create a 2D array (4x5)
array_2d = np.array([[1, 2, 3, 4, 5],
                    [6, 7, 8, 9, 10],
                    [11, 12, 13, 14, 15],
                    [16, 17, 18, 19, 20]])

print("2D Array:")
print(array_2d)

# Slicing using negative indices
# Slice the last 2 rows and the last 3 columns
sliced_array = array_2d[-2:, -3:]

print("\nSliced Array (last 2 rows and last 3 columns):")
print(sliced_array)
```

2D Array:

```
[[ 1  2  3  4  5]
 [ 6  7  8  9 10]
 [11 12 13 14 15]
 [16 17 18 19 20]]
```

Sliced Array (last 2 rows and last 3 columns):

```
[[13 14 15]
 [18 19 20]]
```

In [13]: # 3.Create 2D array and make a copy

```
import numpy as np

# Create a 2D array (3x3)
array_2d = np.array([[1, 2, 3],
                    [4, 5, 6],
                    [7, 8, 9]])

print("Original 2D Array:")
print(array_2d)

# Make a copy of the array
array_copy = array_2d.copy()

print("\nCopied 2D Array:")
print(array_copy)

# Modify the copied array
```

```
array_copy[0, 0] = 99

print("\nModified Copied Array:")
print(array_copy)

print("\nOriginal 2D Array after modification to copy:")
print(array_2d)
```

Original 2D Array:

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
```

Copied 2D Array:

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
```

Modified Copied Array:

```
[[99 2 3]
 [ 4 5 6]
 [ 7 8 9]]
```

Original 2D Array after modification to copy:

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
```

In []: