numpy

August 30, 2023

1 Creating a NumPy Array

[1]:
```
import numpy as np

arr1 = np.array([1, 2, 3, 4, 5])
arr2 = np.arange(10, 21)
arr3 = np.linspace(0, 1, 5)
print(arr1)
print(arr2)
print(arr3)
```

```
[1 2 3 4 5]
[10 11 12 13 14 15 16 17 18 19 20]
[0.   0.25 0.5  0.75 1.  ]
```

2 Indexing and Slicing

[2]:
```
arr1 = np.array([1, 2, 3, 4, 5])
arr2 = np.arange(10, 21)
print(arr1[2])
print(arr2[3:6])
```

```
3
[13 14 15]
```

3 Array Operations

[3]:
```
arr1 = np.array([1, 2, 3, 4, 5])
arr2 = np.array([10, 21,4,5,6])
result = arr1 + arr2
print(result)
```

```
[11 23  7  9 11]
```

4 Reshaping Arrays

[4]:
```
arr1 = np.array([1, 2, 3, 4, 5,7,8,9])
reshaped = arr1.reshape(2, 4)
print(reshaped)
```

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

5 Array Concatenation

[5]:
```
arr1 = np.array([1, 2, 3, 4, 5])
arr2 = np.array([10, 21,4,5,6])
concatenated = np.concatenate((arr1, arr2))
print(concatenated)
```

```
[ 1  2  3  4  5 10 21  4  5  6]
```

6 Aggregating Data

[6]:
```
arr1 = np.array([1, 2, 3, 4, 5,45,67,34])
mean_value = np.mean(arr1)
print(mean_value)
```

```
20.125
```

7 Filtering Data

[7]:
```
arr2 = np.array([10, 21,4,5,6,34,56,23])
filtered = arr2[arr2 > 15]
print(filtered)
```

```
[21 34 56 23]
```

8 Sorting Arrays

[8]:
```
arr1 = np.array([10,45,21,4,5,6,34,56,23])
sorted_arr = np.sort(arr1)
print(sorted_arr)
```

```
[ 4  5  6 10 21 23 34 45 56]
```

9 Unique Values

[9]:
```
arr1 = np.array([10,45,21,4,5,6,34,56,23,67,5,4,10])
unique_values, unique_counts = np.unique(arr1, return_counts=True)
print(unique_values)
print(unique_counts)
```

```
[ 4  5  6 10 21 23 34 45 56 67]
[2 2 1 2 1 1 1 1 1 1]
```

10 Vectorized Operations

[11]:
```
arr1 = np.array([1, 2, 3, 4, 5])
vectorized_result = arr1 * 2
print(vectorized_result)
```

```
[ 2  4  6  8 10]
```

[ ]:
```

```