

Q1: Convert a 1D array to 2D array with 2 rows

Answer : Using NumPy: `arr.reshape(2, -1)`

Q.2 Get the common items between a and b

Input: `a = np.array([1,2,3,2,3,4,3,4,5,6])` , `b = np.array([7,2,10,2,7,4,9,4,9,8])`

Desired Output: `array([2, 4])`

Answer : `np.intersect1d(a,b)` → Output: `[2,4]`

Q.3 Get all items between 5 and 10 from a

Input: `a = np.array([2, 6, 1, 9, 10, 3, 27])`

Desired Output: `(array([6, 9, 10])`

Answer : `a[(a>=5)&(a<=10)]` → `[6,9,10]`

Q.4 Limit the number of items printed in python NumPy array a to a maximum of 6 elements.

Input: `array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14])`

Desired Output: `array([0, 1, 2, ..., 12, 13, 14])`

Answer :

```
import numpy as np
a = np.array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14])
np.set_printoptions(threshold=6)
print(a)
```

Q.13 What are the features of TensorFlow?

- Open-source deep learning framework by Google
- Supports CPU, GPU, and TPU execution
- Provides TensorBoard for visualization
- Auto-differentiation (computes gradients automatically)
- Highly scalable for large datasets and distributed training
- Offers high-level API (Keras) for easy model building
- Supports deployment on mobile, web, and edge devices

Q.14 List a few limitations of TensorFlow.

- Steeper learning curve compared to Keras/PyTorch
- Debugging can be difficult (graphs were complex before TF 2.0)
- More verbose coding in some cases
- Slower execution than PyTorch in certain dynamic models
- Consumes more memory for large models

Q.15 What do you know about supervised and unsupervised machine learning?

Supervised Learning

- Uses **labeled data** (input → output)
- Goal: learn a mapping to predict outputs
- Examples: classification, regression

Unsupervised Learning

- Uses **unlabeled data**
- Goal: find hidden patterns and groups
- Examples: clustering (k-means), dimensionality reduction (PCA)