NumPy Array (1 – 10)

1. Write a NumPy program to print the NumPy version on your system.
2. Write a NumPy program to convert a list of numeric values into a one-dimensional NumPy array.

   Expected Output:

   Original List: [12.23, 13.32, 100, 36.32]

   One-dimensional NumPy array: [12.23 13.32 100. 36.32]
3. Write a NumPy program to create a 3x3 matrix with values ranging from 2 to 10.

   Expected Output:

   [[2 3 4]

   [5 6 7]

   [8 9 10]]
4. Write a NumPy program to create a null vector of size 10 and update the sixth value to 11.

   [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]

   Update sixth value to 11

   [0. 0. 0. 0. 0. 0. 11. 0. 0. 0.]
5. Write a NumPy program to create an array with values ranging from 12 to 38.

   Expected Output:

   [12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37]
6. Write a NumPy program to reverse an array (the first element becomes the last).

   Original array:

   [12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37]

   Reverse array:

   [37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12]
7. Write a NumPy program to convert an array to a floating type.

Sample output:

Original array

[1, 2, 3, 4]

Array converted to a float type:

[1. 2. 3. 4.]

8. Write a NumPy program to create a 2D array with 1 on the border and 0 inside.

   Expected Output (5 x 5):

   [[1. 1. 1. 1. 1.]

   [1. 0. 0. 0. 1.]

   [1. 0. 0. 0. 1.]

   [1. 0. 0. 0. 1.]

   [1. 1. 1. 1. 1.]]

9. Write a NumPy program to add a border (filled with 0's) around an existing array.

   Original 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 25]]
```

   Expected Output:

```
[[0  0  0  0  0  0  0]
[ 0  1  2  3  4  5  0]
[ 0  6  7  8  9 10  0]
[ 0 11 12 13 14 15  0]
[ 0 16 17 18 19 20  0]
[ 0 21 22 23 24 25  0]
[ 0  0  0  0  0  0  0]]
```

10. Write a NumPy program to create an 8x8 matrix and fill it with a checkerboard pattern.

    Checkerboard pattern:

    [[0 1 0 1 0 1 0 1]

     [1 0 1 0 1 0 1 0]

     [0 1 0 1 0 1 0 1]

     [1 0 1 0 1 0 1 0]

     [0 1 0 1 0 1 0 1]

     [1 0 1 0 1 0 1 0]

     [0 1 0 1 0 1 0 1]

     [1 0 1 0 1 0 1 0]]