Here are **25 NumPy assignments** with gradually increasing difficulty. I'll provide guidance for datasets where needed:

**Beginner Level (1-10)**

1. **Create and Inspect an Array**  
   Create a 1D NumPy array of integers from 0 to 9 and print its shape, size, and data type.
2. **Array Slicing**  
   Extract the even numbers from a 1D array of integers ranging from 1 to 20.
3. **Array Reshaping**  
   Reshape a 1D array of 12 elements (from 0 to 11) into a 3x4 2D array.
4. **Basic Arithmetic Operations**  
   Create two 1D arrays of size 5 and perform element-wise addition, subtraction, multiplication, and division.
5. **Array Indexing**  
   Create a 2D array (3x3) and replace all elements in the second row with 7.
6. **Statistical Operations**  
   Create a random array of 10 integers between 1 and 50. Find the mean, median, minimum, and maximum values.
7. **Boolean Masking**  
   Create an array of integers from 0 to 10. Replace all elements greater than 5 with -1.
8. **Matrix Multiplication**  
   Create two 2x3 and 3x2 matrices and compute their dot product.
9. **Identity Matrix**  
   Create a 4x4 identity matrix.
10. **Flatten an Array**  
    Create a 3D array of shape (2, 3, 4). Flatten it into a 1D array.

**Intermediate Level (11-20)**

1. **Sorting**  
   Create a 2D array of size 4x4 with random integers between 10 and 50. Sort it row-wise and column-wise.
2. **Unique Elements**  
   Generate a random array of size 15. Find all the unique elements and their counts.
3. **File Reading (CSV)**  
   Download and read a CSV file like data.csv. Use NumPy to calculate the sum of a specific column.  
   Example dataset: [Iris Dataset](https://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data).
4. **Broadcasting**  
   Create two arrays: one of size (3, 1) and another of size (1, 4). Use broadcasting to add them.
5. **Clipping Values**  
   Create a random array of size 10 and clip its values to the range [3, 7].
6. **Find Unique Elements**  
   Create a 1D array with duplicate elements. Use NumPy to find and display the unique elements in the array, as well as their counts.
7. **Sorting and Indices**  
   Generate a random 1D array of 15 numbers. Sort the array in ascending order and also retrieve the indices of the sorted array.
8. **Broadcasting Operations**  
   Create a 3x3 matrix and a 1D array of size 3. Perform a broadcasting operation to add the 1D array to each row of the matrix.
9. **Stacking Arrays**  
   Generate two random 2D arrays of shape 3x3. Concatenate them both horizontally and vertically using NumPy stacking functions.
10. **Advanced Indexing and Masking**  
    Create a 1D array of integers from 0 to 20. Use boolean indexing to extract all prime numbers from the array.

**Advanced Level (21-25)**

1. **Image Data**  
   Download a grayscale image (e.g., lena.png). Load it as a NumPy array using Pillow or matplotlib, then calculate its mean pixel intensity.  
   Example dataset: [Grayscale Lena Image](https://github.com/scikit-image/scikit-image/raw/main/skimage/data/astronaut_gray.jpg).
2. **Custom Function**  
   Create a 2D array and implement a custom function to calculate the Euclidean distance between two rows.
3. **Nearest Neighbors**  
   Generate a random 2D array of shape (10, 2) representing points in 2D space. Find the pair of points closest to each other.
4. **Linear Regression**  
   Simulate a dataset with 100 points where y=3x+7+random noisey = 3x + 7 + \text{random noise}. Use NumPy's linalg to compute the best-fit line coefficients.
5. **Eigenvalues and Eigenvectors**  
   Create a random 3x3 matrix. Compute its eigenvalues and eigenvectors.

Let me know if you'd like explanations, hints, or solutions for any of these, or if you'd like datasets for specific problems.