Pre-Read: Food Delivery Data Exploration and analysis 2

1. Aggregate Functions

- **Description**: Functions like sum(), mean(), min(), max(), std() that summarize multiple values into a single result.

- **Importance**: Essential for **descriptive statistics** and understanding the central tendencies & variability in data.

2. Logical Operators

- **Description**: Used for element-wise comparisons in arrays (>, <, ==, &, |, ~). Example: arr[arr > 5].

- **Importance**: Powerful for **filtering and conditional selection**, which is crucial in data preprocessing.

3. Sorting in NumPy

📌 **Description:**
Sorting is the process of arranging elements of an array in ascending or descending order. In NumPy, functions like `np.sort()` and `ndarray.sort()` provide fast and efficient ways to sort 1D and multi-dimensional arrays.

💡 **Importance:**

- Helps in organizing data for easier analysis.

- Useful in ranking values (e.g., top-k scores, sorting by feature importance).

- Often a first step in tasks like finding percentiles, medians, or removing outliers.

- Under the hood, NumPy uses highly optimized sorting algorithms (like quicksort, mergesort, heapsort).

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4. Matrix Multiplication in NumPy

📌 **Description:**
Matrix multiplication is a core operation where rows of one matrix are combined with columns of another. In NumPy, this can be done using `np.dot()`, `np.matmul()`, or the `@` operator.

💡 **Importance:**

- Fundamental for linear algebra operations in data science and machine learning.

- Used in neural networks (weight × input), computer graphics (transformations), and solving systems of equations.

- Highly optimized using BLAS libraries, making it much faster than pure Python loops.