

# Glossary: Working with Data in Python

Welcome! This alphabetized glossary contains many of the terms you'll find within this course. This comprehensive glossary also includes additional industry-recognized terms not used in course videos. These terms are important for you to recognize when working in the industry, participating in user groups, and participating in other certificate programs.

| Term                            | Definition                                                                                                                                                                                                                                              |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| .csv file                       | A .csv (Comma-Separated Values) file is a plain text file format for storing tabular data, where each line represents a row and uses commas to separate values in different columns.                                                                    |
| .txt file                       | A .txt (Text) file is a common file format that contains plain text without specific formatting, making it suitable for storing and editing textual data.                                                                                               |
| Append                          | To "append" means to add or attach something to the end of an existing object, typically used in the context of adding data to a file or elements to a data structure like a list in Python.                                                            |
| Attribute                       | An "attribute" in Python refers to a property or characteristic associated with an object, which can be accessed using dot notation.                                                                                                                    |
| Broadcasting in NumPy           | Broadcasting in NumPy allows arrays with different shapes to be combined in element-wise operations by automatically extending smaller arrays to match the shape of larger ones, making operations more flexible.                                       |
| Component                       | In NumPy, a "component" typically refers to a specific element or value within a multi-dimensional array, which can be accessed using indexing.                                                                                                         |
| Computation                     | Computation in NumPy involves performing numerical operations on arrays and matrices, making it a powerful library for mathematical and scientific computing in Python.                                                                                 |
| Data analysis                   | Data analysis is the process of inspecting, cleaning, transforming, and interpreting data to discover useful information, draw conclusions, and support decision-making.                                                                                |
| DataFrames                      | A DataFrames in Pandas is a two-dimensional, tabular data structure for storing and analyzing data, consisting of rows and columns.                                                                                                                     |
| Dependencies                    | Dependencies in Pandas are external libraries or modules, such as NumPy, that Pandas rely on for fundamental data manipulation and analysis functionality.                                                                                              |
| File attribute                  | File attributes generally refer to properties or metadata associated with files, which are managed at the operating system level.                                                                                                                       |
| File object                     | A "file object" in Python represents an open file, allowing reading from or writing to the file.                                                                                                                                                        |
| Grid                            | In Python, a "grid" typically refers to a two-dimensional structure composed of rows and columns, often used to represent data in a tabular format or for organizing objects in a coordinate system.                                                    |
| Hadamard Product                | The Hadamard product is a mathematical operation that involves element-wise multiplication of two matrices or arrays of the same shape, producing a new matrix with each element being the product of the corresponding elements in the input matrices. |
| Importing pandas                | To import Pandas in Python, you use the statement: <code>import pandas as pd</code> , which allows you to access Pandas functions and data structures using the abbreviation "pd."                                                                      |
| Index                           | In Python, an "index" typically refers to a position or identifier used to access elements within a sequence or data structure, such as a list or string.                                                                                               |
| Libraries                       | Libraries in Python are collections of pre-written code modules that provide reusable functions and classes to simplify and enhance software development.                                                                                               |
| Linspace                        | In Python, "linspace" refers to a NumPy function that generates an array of evenly spaced values within a specified range.                                                                                                                              |
| NumPy                           | NumPy in Python is a fundamental library for numerical computing that provides support for large, multi-dimensional arrays and matrices, as well as a variety of high-level mathematical functions to operate on these arrays.                          |
| One dimensional NumPy           | A one-dimensional NumPy array is a linear data structure that stores elements in a single sequence, often used for numerical computations and data manipulation.                                                                                        |
| Open function                   | In Python, the "open" function is used to access and manipulate files, allowing you to read from or write to a specified file.                                                                                                                          |
| Pandas                          | Pandas is a popular Python library for data manipulation and analysis, offering data structures and tools for working with structured data like tables and time series.                                                                                 |
| Pandas library                  | Pandas library in Python refer to the various modules and functions within the Pandas library, which provides powerful data structures and data analysis tools for working with structured data.                                                        |
| Plotting Mathematical Functions | Plotting mathematical functions in Python involves using libraries like Matplotlib to create graphical representations of mathematical equations, aiding visualization, and analysis.                                                                   |
| Shape                           | In NumPy, "shape" refers to an array's dimensions (number of rows and columns), describing its size and structure.                                                                                                                                      |
| Slicing                         | Slicing in NumPy entails extracting specific portions of an array by specifying a range of indices, enabling you to work with subsets of the data.                                                                                                      |
| Two dimensional NumPy           | A two-dimensional NumPy array is a structured data representation with rows and columns, resembling a matrix or table, ideal for various data manipulation and analysis tasks.                                                                          |
| Universal Functions             | Universal functions (ufuncs) in NumPy are functions that operate element-wise on arrays, providing efficient and vectorized operations for a wide range of mathematical and logical operations.                                                         |

| Term            | Definition                                                                                                                                                              |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vector addition | Vector addition in Python involves adding corresponding elements of two or more vectors, producing a new vector with the sum of their components.                       |
| Visualizations  | Visualizations in Python refer to the creation of graphical representations, such as charts, plots, and graphs, to illustrate and communicate data and trends visually. |



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