In [computer programming](https://en.wikipedia.org/wiki/Computer_programming), **pandas** is a [software library](https://en.wikipedia.org/wiki/Software_library) written for the [Python programming language](https://en.wikipedia.org/wiki/Python_(programming_language)) for data manipulation and analysis. In particular, it offers data structures and operations for manipulating numerical tables and [time series](https://en.wikipedia.org/wiki/Time_series). It is [free software](https://en.wikipedia.org/wiki/Free_software) released under the [three-clause BSD license](https://en.wikipedia.org/wiki/3-clause_BSD_license).[[1]](#footnote-1) The name is derived from the term "[panel data](https://en.wikipedia.org/wiki/Panel_data)", an [econometrics](https://en.wikipedia.org/wiki/Econometrics) term for data sets that include observations over multiple time periods for the same individuals.

Library features

* DataFrame object for data manipulation with integrated indexing.
* Tools for reading and writing data between in-memory data structures and different file formats.
* Data alignment and integrated handling of missing data.
* Reshaping and pivoting of data sets.
* Label-based slicing, fancy indexing, and subsetting of large data sets.
* Data structure column insertion and deletion.
* Group by engine allowing split-apply-combine operations on data sets.
* Data set merging and joining.
* Hierarchical axis indexing to work with high-dimensional data in a lower-dimensional data structure.
* Time series-functionality: Date range generation[[3]](https://en.wikipedia.org/wiki/Pandas_(software)#cite_note-3) and frequency conversion, moving window statistics, moving window linear regressions, date shifting and lagging.

The library is highly optimized for performance, with critical code paths written in [Cython](https://en.wikipedia.org/wiki/Cython" \o "Cython) or C.

1. [License – Package overview – pandas 0.21.1 documentation"](https://pandas.pydata.org/pandas-docs/stable/overview.html#license). *pandas*. 12 December 2017. Retrieved 13 December 2017 [↑](#footnote-ref-1)