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Summary

Pandas

Pandas is a data analysis library built on NumPy.

Introduction to Pandas

Pandas:

Pandas

Pandas is an **open source** library which is known for its **rich applications** and utilities for all kinds of mathematical, financial and statistical functions

The different functions:

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Operator	Explanation	Example
pd.Series()	Create a pandas series from array-like objects	s = pd.Series([2, 4, 5, 6, 9]) print(s)
pd.date_range()	Create a series of type date-time	date_series = pd.date_range(start = '11-09-2017', end = '12-12-2017') date_series
Indexing using pd.Series()	Used for indexing explicitly	pd.Series([0, 1, 2], index = ['a', 'b', 'c'])
.Dataframe()	Create dataframes from dictionaries	df = pd.DataFrame({'name': ['Vinay', 'Kushal', 'Aman', 'Saif'], 'age': [22, 25, 24, 28], 'occupation': ['engineer', 'doctor', 'data analyst', 'teacher']}) df
pd.read_csv()	Read a CSV file as a dataframe	market_df = pd.read_csv("global_sales_data/market_fact.csv")
.head()	Look at the top and bottom entries of a dataframe	market_df.head()
.info()	Look at the data types of each column	market_df.info()
.describe()	Gives you a summary of all numeric columns	market_df.describe()
.columns	Gives you column names	market_df.columns
.shape	Gives the number of rows and columns	market_df.shape
.values	Extract the values of a dataframe as a NumPy array	market_df.values
.set_index()	Changing the index	market_df.set_index('Ord_id', inplace = True)

Loading, Indexing and Iterating data

Indexing and iterating through data:

Operator	Explanation
df.iloc	Position based indexing
df.loc	Label based indexing

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Operator	Explanation	Example
df[start_index:end_index]	Select the rows between the start and end indices	market_df[2:7]
df['column_name']	Select a single column from a dataframe	sales = market_df['Sales']
df.column_name	Select a single column from a dataframe	sales = market_df.Sales
df[['column_1', 'column_2', 'column_n']]	Select multiple columns in a dataframe	market_df[['Cust_id', 'Sales', 'Profit']].head()

Filtering data in a dataframe

Filtering

Filtering essentially is a way of pulling out **specific datasets** or parts of the datasets to get the **relevant data** for analysis

Sorting in a dataframe

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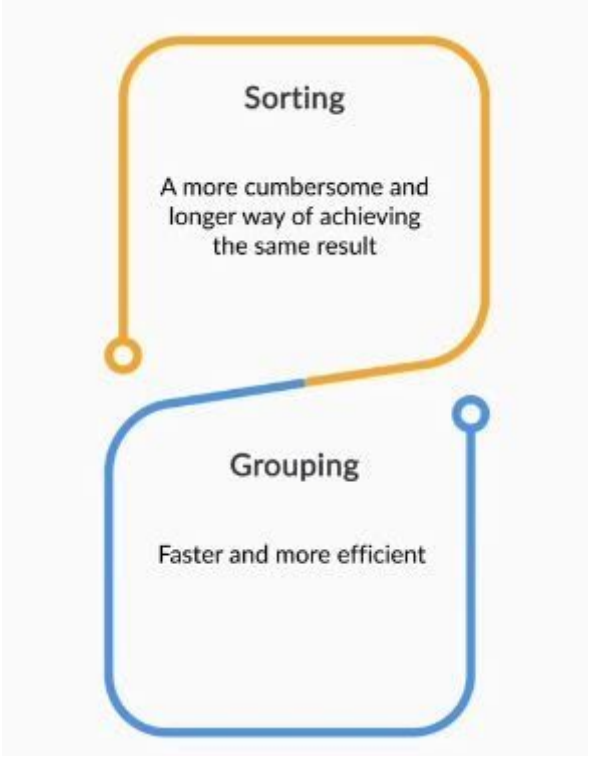
Sorting

A way of **arranging** data as per some **criteria**

How it differs from grouping:



Editing Dataframes

Functions for editing in a dataframe:

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Operator	Explanation	Example
pd.merge()	Merge multiple dataframes using common columns/keys	df_1 = pd.merge(market_df, customer_df, how='inner', on='Cust_id')
pd.concat()	Concatenate two dataframes	pd.concat([df1, df2], axis = 0)

Grouping Data

Grouping

A way of efficiently picking a **part of the dataset** based on some criteria, looking at some specific elements within that and then providing it into a **new or existing** dataset

Functions for grouping:

Operator	Explanation
df.groupby()	Grouping data using a categorical variable
.sum()	Concatenate two dataframes
.sort_values()	Sorting values

Lambda functions and Pivot tables

Lambda functions and pivot tables in Pandas:

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Operator	Explanation	Example
.apply()	Apply lambda function to a row	master_df['Profit'] = master_df['Profit'].apply(lambda x: round(x, 1))
.pivot_table()	Create a pivot table	master_df.pivot_table(values = 'Sales', index = 'Customer_Segment', aggfunc = 'mean')

Outputting data

Outputting data to different file formats in Pandas:

Operator	Explanation	Example
.to_csv()	Output to csv	master_df.to_csv('master_sheet.csv')
.to_html()	Output to html	master_df.to_html('test.html')
.to_pickle()	Output as a pickle file	master_df.to_pickle('dummy.pkl')

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