

Working with Data in Python Cheat Sheet

Reading and writing files

| Package/Method | Description | Syntax and Code Example |
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| File opening modes | Different modes to open files for specific operations. | Syntax: r (reading) w (writing) a (appending) + (updating: read/write) b (binary, otherwise text) Examples: with open("data.txt", "r") as file: content = file.read() print(content) with open("output.txt", "w") as f |
| File reading methods | Different methods to read file content in various ways. | Syntax: file.readlines() # reads all lines as a list readline() # reads the next line as a string file.read() # reads the entire file content as a string Example: with open("data.txt", "r") as file: lines = file.readlines() next_line = file.readline() content = file.read() |
| File writing methods | Different write methods to write content to a file. | Syntax: file.write(content) # writes a string to the file file.writelines(lines) # writes a list of strings to the file Example: lines = ["Hello\n", "World\n"] with open("output.txt", "w") as file: file.writelines(lines) |
| Iterating over lines | Iterates through each line in the file using a 'loop'. | Syntax: for line in file: # Code to process each line Example: with open("data.txt", "r") as file: for line in file: print(line) |
| Open() and close() | Opens a file, performs operations, and explicitly closes the file using the close() method. | Syntax: file = open(filename, mode) # Code that uses the file file.close() Example: file = open("data.txt", "r") content = file.read() file.close() |
| with open() | Opens a file using a with block, ensuring automatic file closure after usage. | Syntax: with open(filename, mode) as file: # Code that uses the file Example: with open("data.txt", "r") as file: content = file.read() |

Pandas

| Package/Method | Description | Syntax and Code Example |
|----------------|--|---|
| .read_csv() | Reads data from a '.CSV' file and creates a DataFrame. | Syntax: dataframe_name = pd.read_csv("filename.csv") Example: df = pd.read_csv("data.csv") |
| .read_excel() | Reads data from an Excel file and creates a DataFrame. | Syntax: dataframe_name = pd.read_excel("filename.xlsx") Example: df = pd.read_excel("data.xlsx") |
| .to_csv() | Writes DataFrame to a CSV file. | Syntax: dataframe_name.to_csv("output.csv", index=False) |

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| | | <p>Example:</p> <pre>df.to_csv("output.csv", index=False)</pre> |
| Access Columns | Accesses a specific column using [] in the DataFrame. | <p>Syntax:</p> <pre>dataframe_name["column_name"] # Accesses single column dataframe_name[["column1", "column2"]] # Accesses multiple columns</pre> <p>Example:</p> <pre>df["age"] df[["name", "age"]]</pre> |
| describe() | Generates statistics summary of numeric columns in the DataFrame. | <p>Syntax:</p> <pre>dataframe_name.describe()</pre> <p>Example:</p> <pre>df.describe()</pre> |
| drop() | Removes specified rows or columns from the DataFrame. axis=1 indicates columns. axis=0 indicates rows. | <p>Syntax:</p> <pre>dataframe_name.drop(["column1", "column2"], axis=1, inplace=True) dataframe_name.drop(index=[row1, row2], axis=0, inplace=True)</pre> <p>Example:</p> <pre>df.drop(["age", "salary"], axis=1, inplace=True) # Will drop columns df.drop(index=[5, 10], axis=0, inplace=True) # Will drop rows</pre> |
| dropna() | Removes rows with missing NaN values from the DataFrame. axis=0 indicates rows. | <p>Syntax:</p> <pre>dataframe_name.dropna(axis=0, inplace=True)</pre> <p>Example:</p> <pre>df.dropna(axis=0, inplace=True)</pre> |
| uplicated() | Duplicate or repetitive values or records within a data set. | <p>Syntax:</p> <pre>dataframe_name.duplicated()</pre> <p>Example:</p> <pre>duplicate_rows = df[df.duplicated()]</pre> |
| Filter Rows | Creates a new DataFrame with rows that meet specified conditions. | <p>Syntax:</p> <pre>filtered_df = dataframe_name[(Conditional_statements)]</pre> <p>Example:</p> <pre>filtered_df = df[(df["age"] > 30) & (df["salary"] < 50000)]</pre> |
| groupby() | Splits a DataFrame into groups based on specified criteria, enabling subsequent aggregation, transformation, or analysis within each group. | <p>Syntax:</p> <pre>grouped = dataframe_name.groupby(by, axis=0, level=None, as_index=True, sort=True, group_keys=True, squeeze=False, observed=False, dropna=True)</pre> <p>Example:</p> <pre>grouped = df.groupby(["category", "region"]).agg({"sales": "sum"})</pre> |
| head() | Displays the first n rows of the DataFrame. | <p>Syntax:</p> <pre>dataframe_name.head(n)</pre> <p>Example:</p> <pre>df.head(5)</pre> |
| Import pandas | Imports the Pandas library with the alias pd. | <p>Syntax:</p> <pre>import pandas as pd</pre> <p>Example:</p> <pre>import pandas as pd</pre> |
| info() | Provides information about the DataFrame, including data types and memory usage. | <p>Syntax:</p> <pre>dataframe_name.info()</pre> |

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| | | Example: <pre>df.info()</pre> |
| merge() | Merges two DataFrames based on multiple common columns. | Syntax: <pre>merged_df = pd.merge(df1, df2, on=["column1", "column2"])</pre> Example: <pre>merged_df = pd.merge(sales, products, on=["product_id", "category_id"])</pre> |
| print DataFrame | Displays the content of the DataFrame. | Syntax: <pre>print(df) # or just type df</pre> Example: <pre>print(df) df</pre> |
| replace() | Replaces specific values in a column with new values. | Syntax: <pre>dataframe_name["column_name"].replace(old_value, new_value, inplace=True)</pre> Example: <pre>df["status"].replace("In Progress", "Active", inplace=True)</pre> |
| tail() | Displays the last n rows of the DataFrame. | Syntax: <pre>dataframe_name.tail(n)</pre> Example: <pre>df.tail(5)</pre> |

Numpy

| Package/Method | Description | Syntax and Code Example |
|------------------------|---|---|
| Importing NumPy | Imports the NumPy library. | Syntax: <pre>import numpy as np</pre> Example: <pre>import numpy as np</pre> |
| np.array() | Creates a one or multi-dimensional array, | Syntax: <pre>array_1d = np.array([list1 values]) # 1D Array array_2d = np.array([list1 values], [list2 values]) # 2D Array</pre> Example: <pre>array_1d = np.array([1, 2, 3]) # 1D Array array_2d = np.array([1, 2], [3, 4]) # 2D Array</pre> |
| Numpy Array Attributes | <ul style="list-style-type: none"> - Calculates the mean of array elements - Calculates the sum of array elements - Finds the minimum value in the array - Finds the maximum value in the array - Computes dot product of two arrays | Example: <pre>np.mean(array) np.sum(array) np.min(array) np.max(array) np.dot(array_1, array_2)</pre> |



Skills Network