Working with Data in Python Cheat Sheet

Reading and writing files

Package/Method	Description	Syntax and Code Example
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) 1. 1 1. Examples: with open("data.txt", "r") as file: content = file.read() print(content) with open("output.txt", "w") as file: file.write("Hello, world!") with open("log.txt", "a") as file: file.write("Log entry: Something happened.") with open("data.txt", "r+") as file: content = file.read() file.write("Updated content: " + content)</td> Copied!
File reading methods	Different methods to read file content in various ways.	Syntax: 1. 1 2. 2 3. 3 1. file.readlines() # reads all lines as a list 2. readline() # reads the next line as a string 3. file.read() # reads the entire file content as a string Copied! Example: 1. 1 2. 2

		3. 3 4. 4 1. with open("data.txt", "r") as file: 2. lines = file.readlines() 3. next_line = file.readline() 4. content = file.read() Copied!
File writing methods	Different write methods to write content to a file.	Syntax: 1. 1 2. 2 1. file.write(content) # writes a string to the file 2. file.writelines(lines) # writes a list of strings to the file Copied! Example: 1. 1 2. 2 3. 3 1. lines = ["Hello\n", "World\n"] 2. with open("output.txt", "w") as file: 3. file.writelines(lines) Copied!
Iterating over lines	Iterates through each line in the file using a `loop`.	Syntax: 1. 1 1. for line in file: # Code to process each line Copied! Example: 1. 1 2. 2

		1. with open("data.txt", "r") as file: 2. for line in file: print(line) Copied!
Open() and close()	Opens a file, performs operations, and explicitly closes the file using the close() method.	Syntax: 1. 1 2. 2 1. file = open(filename, mode) # Code that uses the file 2. file.close() Copied! Example: 1. 1 2. 2 3. 3 1. file = open("data.txt", "r") 2. content = file.read() 3. file.close() Copied!
with open()	Opens a file using a with block, ensuring automatic file closure after usage.	Syntax: 1. 1 1. with open(filename, mode) as file: # Code that uses the file Copied! Example: 1. 1 2. 2 1. with open("data.txt", "r") as file: 2. content = file.read() Copied!

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: 1. 1 1. dataframe_name = pd.read_excel("filename.xlsx") Copied! Example: 1. 1 1. df = pd.read_excel("data.xlsx") Copied!
.to_csv()	Writes DataFrame to a CSV file.	Syntax: 1. 1 1. dataframe_name.to_csv("output.csv", index=False) Copied! Example: 1. 1 1. df.to_csv("output.csv", index=False) Copied!
Access Columns	Accesses a specific column using [] in the DataFrame.	Syntax: 1. 1 2. 2 1. dataframe_name["column_name"] # Accesses single column 2. dataframe_name[["column1", "column2"]] # Accesses multiple columns Copied! Example:

		1. 1 2. 2 1. df["age"] 2. df[["name", "age"]] Copied!
describe()	Generates statistics summary of numeric columns in the DataFrame.	Syntax: 1. 1 1. dataframe_name.describe() Copied! Example: 1. 1 1. df.describe() Copied!
drop()	Removes specified rows or columns from the DataFrame. axis=1 indicates columns. axis=0 indicates rows.	Syntax: 1. 1 2. 2 1. dataframe_name.drop(["column1", "column2"], axis=1, inplace=True) 2. dataframe_name.drop(index=[row1, row2], axis=0, inplace=True) Copied! Example: 1. 1 2. 2 1. df.drop(["age", "salary"], axis=1, inplace=True) # Will drop columns 2. df.drop(index=[5, 10], axis=0, inplace=True) # Will drop rows Copied!
dropna()	Removes rows with missing	Syntax: 1. 1

	NaN values from the DataFrame. axis=0 indicates rows.	1. dataframe_name.dropna(axis=0, inplace=True) Copied! Example: 1. 1 1. df.dropna(axis=0, inplace=True) Copied!
duplicated()	Duplicate or repetitive values or records within a data set.	Syntax: 1. 1 1. dataframe_name.duplicated() Copied! Example: 1. 1 1. duplicate_rows = df[df.duplicated()] Copied!
Filter Rows	Creates a new DataFrame with rows that meet specified conditions.	Syntax: 1. 1 1. filtered_df = dataframe_name[(Conditional_statements)] Copied! Example: 1. 1 1. filtered_df = df[(df["age"] > 30) & (df["salary"] < 50000) Copied!
groupby()	Splits a DataFrame into groups based on specified criteria, enabling subsequent aggregation,	Syntax: 1. 1 2. 2 1. grouped = dataframe_name.groupby(by, axis=0, level=None, as_index=True, 2. sort=True, group_keys=True, squeeze=False, observed=False, dropna=True)

	transformation, or analysis within each group.	Copied! Example: 1. 1 1. grouped = df.groupby(["category", "region"]).agg({"sales": "sum"}) Copied!
head()	Displays the first n rows of the DataFrame.	Syntax: 1. 1 1. dataframe_name.head(n) Copied! Example: 1. 1 1. df.head(5) Copied!
Import pandas	Imports the Pandas library with the alias pd.	Syntax: 1. 1 1. import pandas as pd Copied! Example: 1. 1 1. import pandas as pd Copied!
info()	Provides information about the DataFrame, including data types and memory usage.	Syntax: 1. 1 1. dataframe_name.info() Copied! Example: 1. 1 1. df.info() Copied!

merge()	Merges two DataFrames based on multiple common columns.	Syntax: 1. 1 1. merged_df = pd.merge(df1, df2, on=["column1", "column2"]) Copied! Example: 1. 1 1. merged_df = pd.merge(sales, products, on=["product_id", "category_id"]) Copied!
print DataFrame	Displays the content of the DataFrame.	Syntax: 1. 1 1. print(df) # or just type df Copied! Example: 1. 1 2. 2 1. print(df) 2. df Copied!
replace()	Replaces specific values in a column with new values.	Syntax: 1. 1 1. dataframe_name["column_name"].replace(old_value, new_value, inplace=True) Copied! Example: 1. 1 1. df["status"].replace("In Progress", "Active", inplace=True) Copied!

tail()	Displays the last n rows of the DataFrame.	Syntax: `dataframe_name.tail(n)` Copied! Example: `df.tail(5)` Copied!

Numpy

Package/Method	Description	Syntax and Code Example
Importing NumPy	Imports the NumPy library.	Syntax: `import numpy as np` Copied! Example: `import numpy as np` Copied!
np.array()	Creates a one or multi-dimensional array,	Syntax: `array_1d = np.array([list1 values]) # 1D Array` `array_2d = np.array([[list1 values], [list2 values]]) # 2D Array` Copied! Example:

		`` 1. array_1d = np.array([1, 2, 3]) # 1D Array 2. array_2d = np.array([[1, 2], [3, 4]]) # 2D Array Copied! ```
Numpy Array Attributes	- 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: ``` 1. 1 2. 2 3. 3 4. 4 5. 5 ``` ``` 1. np.mean(array) 2. np.sum(array) 3. np.min(array 4. np.max(array) 5. np.dot(array_1, array_2) ```