Working with Data in Python Cheat Sheet

Reading and writing files

Package/Method	Description
File opening modes	Different modes to open files for specific operations.
File reading methods	Different methods to read file content in various ways.
File writing methods	Different write methods to write content to a file.
Iterating over lines	Iterates through each line in the file using a `loop`.
Open() and close()	Opens a file, performs operations, and explicitly closes the file using the close() method.
with open()	Opens a file using a with block, ensuring automatic file closure after usage.

Syntax: r (reading) w (writing) a (appending) + (updating: read/write) b (binary, otherwise text)

```
1
```

```
Examples: with open("data.txt", "r") as file: content = file.read() print(content) with open("output.txt", "w") as file:
```

Copied!

Syntax:

```
1
2
3
```

```
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
```

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Example:

```
1
2
3
4
```

```
with open("data.txt", "r") as file:
    lines = file.readlines()
    next_line = file.readline()
    content = file.read()
```

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Syntax:

```
1
2
```

```
file.write(content) # writes a string to the file
file.writelines(lines) # writes a list of strings to the file
```

Copied!

Example:

```
1
2
3
```

```
lines = ["Hello\n", "World\n"]
with open("output.txt", "w") as file:
    file.writelines(lines)
```

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Syntax:

```
1
```

```
for line in file: # Code to process each line
```

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Example:

```
1
2
```

```
with open("data.txt", "r") as file:
for line in file: print(line)
```

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Syntax:

```
1
2
```

```
file = open(filename, mode) # Code that uses the file
file.close()
```

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Example:

```
1
2
3
```

```
file = open("data.txt", "r")
content = file.read()
file.close()
```

Copied!

Syntax:

```
1
```

```
with open(filename, mode) as file: # Code that uses the file
```

Copied!

Example:

```
1
2
```

```
with open("data.txt", "r") as file:
content = file.read()
```

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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. dataframe_name = pd.read_excel("filename.xlsx")`
		Copied!
		Example:
		`1. df = pd.read_excel("data.xlsx")`
		Copied!

.to_csv()	Writes DataFrame to a CSV file.	Syntax:
		`1. dataframe_name.to_csv("output.csv", index=False)`
		Copied!
		Example:
		`1. df.to_csv("output.csv", index=False)`
		Copied!

Access Columns	Accesses a specific column using [] in the DataFrame.	Syntax:
		`1. dataframe_name["column_name"] # Accesses single column`
		`2. dataframe_name[["column1", "column2"]] # Accesses multiple columns`
		Copied!
		Example:
		`1. df["age"]`
		`2. df[["name", "age"]]`
		Copied!

describe()	Generates statistics summary of numeric columns in the DataFrame.	Syntax:
		`1. dataframe_name.describe()`
		Copied!
		Example:
		`1. df.describe()`
		Copied!

drop()	Removes specified rows or columns from the DataFrame. axis=1 indicates columns. axis=0 indicates rows.	Syntax:
		`1. dataframe_name.drop(["column1", "column2"], axis=1, inplace=True)`
		`2. dataframe_name.drop(index=[row1, row2], axis=0, inplace=True)`
		Copied!
		Example:
		`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 NaN values from the DataFrame. axis=0 indicates rows.	Syntax:
		`1. dataframe_name.dropna(axis=0, inplace=True)`
		Copied!
		Example:
		`1. df.dropna(axis=0, inplace=True)`
		Copied!

duplicated()	Duplicate or repetitive values or records within a data set.	Syntax:
		`1. dataframe_name.duplicated()`
		Copied!
		Example:
		`1. duplicate_rows = df[df.duplicated()]`
		Copied!

Filter Rows	Creates a new DataFrame with rows that meet specified conditions.	Syntax: `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, transformation, or analysis within each group.	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)`
		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:

```
1. 1

1. dataframe_name.tail(n)
```

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Example:

```
1. 1

1. df.tail(5)
```

Copied!

Numpy

Package/Method	Description	Syntax and Code Example

Importing NumPy	Imports the NumPy library.	Syntax:
		`1. 1`
		`1. import numpy as np`
		Copied!
		Example:
		`1. 1`
		`1. import numpy as np`
		Copied!

np.array()	Creates a one or multi-dimensional array,	Syntax:
		`1. 1`
		`2. 2`
		`1. array_1d = np.array([list1 values]) # 1D Array`
		`2. array_2d = np.array([[list1 values], [list2 values]]) # 2D Array`
		Copied!
		Example:
		`1. 1`
		`2. 2`
		`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)`
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Skills Network