

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.	<div>Syntax: r (reading) w (writing) a (appending) + (updating: read/write) b (binary, otherwise text)</div> <div><div>1. 1</div><div>1. Examples: with open("data.txt", "r") as file: content = file.read() print(content) with open("output.txt", "w") as f:</div><div>Copied!</div></div> <div>Syntax:</div> <div><div>1. 1</div><div>2. 2</div><div>3. 3</div><div>1. file.readlines() # reads all lines as a list</div><div>2. readline() # reads the next line as a string</div><div>3. file.read() # reads the entire file content as a string</div></div>
File reading methods	Different methods to read file content in various ways.	<div><div>Copied!</div><div>Example:</div><div><div>1. 1</div><div>2. 2</div><div>3. 3</div><div>4. 4</div><div>1. with open("data.txt", "r") as file:</div><div>2. lines = file.readlines()</div><div>3. next_line = file.readline()</div><div>4. content = file.read()</div></div><div><div>Copied!</div><div>Syntax:</div><div><div>1. 1</div><div>2. 2</div><div>1. file.write(content) # writes a string to the file</div><div>2. file.writelines(lines) # writes a list of strings to the file</div></div></div></div>
File writing methods	Different write methods to write content to a file.	<div><div>Copied!</div><div>Example:</div><div><div>1. 1</div><div>2. 2</div><div>3. 3</div><div>1. lines = ["Hello\n", "World\n"]</div><div>2. with open("output.txt", "w") as file:</div><div>3. file.writelines(lines)</div></div><div><div>Copied!</div><div>Syntax:</div><div><div>1. 1</div><div>1. for line in file: # Code to process each line</div></div></div></div>
Iterating over lines	Iterates through each line in the file using a 'loop'.	<div><div>Copied!</div><div>Example:</div><div><div>1. 1</div><div>2. 2</div><div>1. with open("data.txt", "r") as file:</div><div>2. for line in file: print(line)</div></div><div><div>Copied!</div><div>Syntax:</div><div><div>1. 1</div><div>2. 2</div></div></div></div>
Open() and close()	Opens a file, performs operations, and explicitly closes the file using the close() method.	<div><div>1. file = open(filename, mode) # Code that uses the file</div><div>2. file.close()</div><div><div>Copied!</div><div>Example:</div><div><div>1. 1</div><div>2. 2</div><div>3. 3</div><div>1. file = open("data.txt", "r")</div><div>2. content = file.read()</div><div>3. file.close()</div></div></div></div>
with open()	Opens a file using a with	<div><div>Copied!</div><div>Syntax:</div></div>

```
block,
ensuring
automatic
file closure
after usage.
```

```
1. 1
1. with open(filename, mode) as file: # Code that uses the file
```

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Example:

```
1. 1
2. 2

1. with open("data.txt", "r") as file:
2. 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.	<p>Syntax: dataframe_name = pd.read_csv("filename.csv") Example: df = pd.read_csv("data.csv")</p> <p>Syntax:</p> <pre>1. 1 1. dataframe_name = pd.read_excel("filename.xlsx")</pre> <div>Copied!</div> <p>Example:</p> <pre>1. 1 1. df = pd.read_excel("data.xlsx")</pre> <div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. dataframe_name.to_csv("output.csv", index=False)</pre> <div>Copied!</div>
.read_excel()	Reads data from an Excel file and creates a DataFrame.	<p>Example:</p> <pre>1. 1 1. df = pd.read_excel("data.xlsx")</pre> <div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. dataframe_name.to_csv("output.csv", index=False)</pre> <div>Copied!</div>
.to_csv()	Writes DataFrame to a CSV file.	<p>Example:</p> <pre>1. 1 1. df.to_csv("output.csv", index=False)</pre> <div>Copied!</div> <p>Syntax:</p> <pre>1. 1 2. 2 1. dataframe_name["column_name"] # Accesses single column 2. dataframe_name[["column1", "column2"]] # Accesses multiple columns</pre> <div>Copied!</div>
Access Columns	Accesses a specific column using [] in the DataFrame.	<p>Example:</p> <pre>1. 1 2. 2 1. df["age"] 2. df[["name", "age"]]</pre> <div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. dataframe_name.describe()</pre> <div>Copied!</div>
describe()	Generates statistics summary of numeric columns in the DataFrame.	<p>Example:</p> <pre>1. 1 1. df.describe()</pre> <div>Copied!</div>
drop()	Removes specified rows or columns from the DataFrame. axis=1 indicates columns. axis=0 indicates rows.	<p>Syntax:</p> <pre>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)</pre> <div>Copied!</div> <p>Example:</p> <pre>1. 1 2. 2</pre>

```
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
```

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Syntax:

```
1. 1
```

```
1. dataframe_name.dropna(axis=0, inplace=True)
```

dropna()

Removes rows with missing NaN values from the DataFrame. axis=0 indicates rows.

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Example:

```
1. 1
```

```
1. df.dropna(axis=0, inplace=True)
```

Copied!

Syntax:

```
1. 1
```

```
1. dataframe_name.duplicated()
```

duplicated()

Duplicate or repetitive values or records within a data set.

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Example:

```
1. 1
```

```
1. duplicate_rows = df[df.duplicated()]
```

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Syntax:

```
1. 1
```

```
1. filtered_df = dataframe_name[(Conditional_statements)]
```

Filter Rows

Creates a new DataFrame with rows that meet specified conditions.

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Example:

```
1. 1
```

```
1. filtered_df = df[(df["age"] > 30) & (df["salary"] < 50000)]
```

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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)
```

groupby()

Splits a DataFrame into groups based on specified criteria, enabling subsequent aggregation, transformation, or analysis within each group.

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Example:

```
1. 1
```

```
1. grouped = df.groupby(["category", "region"]).agg({"sales": "sum"})
```

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Syntax:

```
1. 1
```

```
1. dataframe_name.head(n)
```

head()

Displays the first n rows of the DataFrame.

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Example:

```
1. 1
```

```
1. df.head(5)
```

Copied!

Syntax:

```
1. 1
```

```
1. import pandas as pd
```

Import pandas

Imports the Pandas library with the alias pd.

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Example:

```
1. 1
```

```
1. import pandas as pd
```

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		<div>Syntax: <pre>1. 1 1. dataframe_name.info()</pre><div>Copied!</div><div>Example: <pre>1. 1 1. df.info()</pre><div>Copied!</div></div></div>
info()	Provides information about the DataFrame, including data types and memory usage.	<div>Syntax: <pre>1. 1 1. merged_df = pd.merge(df1, df2, on=["column1", "column2"])</pre><div>Copied!</div><div>Example: <pre>1. 1 1. merged_df = pd.merge(sales, products, on=["product_id", "category_id"])</pre><div>Copied!</div></div></div>
merge()	Merges two DataFrames based on multiple common columns.	<div>Syntax: <pre>1. 1 1. print(df) # or just type df</pre><div>Copied!</div><div>Example: <pre>1. 1 2. 2 1. print(df) 2. df</pre><div>Copied!</div></div></div>
print DataFrame	Displays the content of the DataFrame.	<div>Syntax: <pre>1. 1 1. dataframe_name["column_name"].replace(old_value, new_value, inplace=True)</pre><div>Copied!</div><div>Example: <pre>1. 1 1. df["status"].replace("In Progress", "Active", inplace=True)</pre><div>Copied!</div></div></div>
replace()	Replaces specific values in a column with new values.	<div>Syntax: <pre>1. 1 1. dataframe_name.tail(n)</pre><div>Copied!</div><div>Example: <pre>1. 1 1. df.tail(5)</pre><div>Copied!</div></div></div>
tail()	Displays the last n rows of the DataFrame.	

Numpy

Package/Method	Description	Syntax and Code Example
Importing NumPy	Imports the NumPy library.	<div>Syntax: <pre>1. 1 1. import numpy as np</pre><div>Copied!</div><div>Example: <pre>1. 1 1. import numpy as np</pre><div>Copied!</div></div></div>
np.array()	Creates a one or multi-dimensional array,	<div>Syntax: <pre>1. 1</pre></div>

```
2. 2
```

```
1. array_1d = np.array([list1 values]) # 1D Array  
2. array_2d = np.array([list1 values], [list2 values]]) # 2D Array
```

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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
```

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Example:

```
1. 1  
2. 2  
3. 3  
4. 4  
5. 5
```

- 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

Numpy Array Attributes

```
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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