Reading from and Writing to Text Files (Python)

What is file handling?

File handling means storing data permanently in files and reading it back when needed.

Python mainly uses the open() function for this.

Writing to a text file

```
# Writing text to a file
file = open("example.txt", "w")   # "w" = write mode
file.write("Hello, this is my first file.\n")
file.write("Python file handling is easy.")
file.close()
```

Explanation

- "w" → creates a new file or overwrites existing file
- write() → writes text
- close() → saves and closes the file

Reading from a text file

```
# Reading text from a file
file = open("example.txt", "r")   # "r" = read mode
content = file.read()
print(content)
file.close()
```

Explanation

- "r" → read mode
- read() → reads entire file content

Best Practice: Using with (recommended)

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

✓ Automatically closes the file

✓ Cleaner and safer code

Understanding File Paths

What is a file path?

A file path tells Python where the file is located.

Types of file paths

1. Relative Path (recommended for beginners)

File is in the same folder as your Python file.

```
with open("data.txt", "w") as file:
    file.write("This uses a relative path")
```

Python looks in the current working directory

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2. Absolute Path

Full path from the root directory.

```
with open("C:/Users/Athar/Desktop/data.txt", "r") as file:
    print(file.read())
```

On Windows:

- Use / OR \\
- Avoid single \

Check current working directory

```
import os

print(os.getcwd())
```

This helps you know where Python is searching for files.

Activity: Read Data from a File and Write Output to Another File
(Simple Log / Diary Program)

Example: Diary Entry Program

Step 1: Read input from a file (input.txt)

```
with open("input.txt", "r") as file:
    diary_text = file.read()
```

Step 2: Write output to another file (diary_log.txt)

```
from datetime import datetime

with open("diary_log.txt", "a") as file:
    file.write("\n--- Diary Entry ---\n")
    file.write(f"Date: {datetime.now()}\n")
    file.write(diary_text)
    file.write("\n--------------------\n")
```

"a" → append mode (keeps old data, adds new)

Complete Program (Read + Write)

```
from datetime import datetime

# Read from input file
with open("input.txt", "r") as file:
    text = file.read()

# Write to diary log file
with open("diary_log.txt", "a") as file:
    file.write("\n--- New Entry ---\n")
```

```
    file.write(f"Date: {datetime.now()}\n")
    file.write(text)
    file.write("\n----------\n")

print("Diary entry saved successfully!")
```

File Modes Summary

Mode	Meaning
"r"	Read
"w"	Write (overwrite)
"a"	Append
"r+"	Read & Write