**Topics**

1. **Reading and Writing Files**:
   * Open files using the open() function with modes:
     + 'r' (read)
     + 'w' (write, overwrites the file)
     + 'a' (append)
   * Always close files after use (file.close()), or use with for automatic closing.
2. **File Handling Methods**:
   * read(): Reads the entire file.
   * readline(): Reads one line at a time.
   * readlines(): Reads all lines into a list.
   * write(): Writes to a file.
3. **Using os Module for File Operations**:
   * Check if a file exists, delete files, etc.
4. **File Handling in DevOps**:
   * Configuration files, logs, and automation scripts.

**Practical Exercises**

**1. Write to a File**

* Objective: Save server information to a file.
* Script:

python

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servers = ["web\_server1", "db\_server1", "cache\_server1"]

with open("servers.txt", "w") as file:

for server in servers:

file.write(server + "\n")

print("Server information written to 'servers.txt'")

* Check the servers.txt file:

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web\_server1

db\_server1

cache\_server1

**2. Read from a File**

* Objective: Display contents of a file.
* Script:

python

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with open("servers.txt", "r") as file:

for line in file:

print("Server:", line.strip())

* Output:

arduino

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Server: web\_server1

Server: db\_server1

Server: cache\_server1

**3. Append to a File**

* Objective: Add new servers to an existing file.
* Script:

python

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new\_servers = ["backup\_server1", "proxy\_server1"]

with open("servers.txt", "a") as file:

for server in new\_servers:

file.write(server + "\n")

print("New servers added to 'servers.txt'")

**4. Check If a File Exists**

* Script:

python

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import os

file\_name = "servers.txt"

if os.path.exists(file\_name):

print(f"The file '{file\_name}' exists.")

else:

print(f"The file '{file\_name}' does not exist.")

**5. Delete a File**

* Script:

python

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import os

file\_name = "test\_file.txt"

# Create a dummy file for testing

with open(file\_name, "w") as file:

file.write("This is a test file.")

# Delete the file

if os.path.exists(file\_name):

os.remove(file\_name)

print(f"The file '{file\_name}' has been deleted.")

else:

print(f"The file '{file\_name}' does not exist.")

**6. Process Configuration Files**

* Objective: Parse a configuration file in key-value format.
* Create a file named config.txt with the following content:

makefile

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server\_name=web\_server1

ip\_address=192.168.1.10

username=admin

password=pass123

* Script to parse and display:

python

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config = {}

with open("config.txt", "r") as file:

for line in file:

key, value = line.strip().split("=")

config[key] = value

print("Configuration Details:")

for key, value in config.items():

print(f"{key}: {value}")

* Output:

yaml

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Configuration Details:

server\_name: web\_server1

ip\_address: 192.168.1.10

username: admin

password: pass123

**7. Challenge: Log File Automation**

* Objective: Monitor a log file for errors and save them to a separate file.
* Create a file named app.log with the following content:

csharp

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[INFO] Application started

[ERROR] Connection failed

[INFO] Retrying connection

[ERROR] Connection timeout

[INFO] Application closed

* Script:

python

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with open("app.log", "r") as log\_file, open("errors.log", "w") as error\_file:

for line in log\_file:

if "[ERROR]" in line:

error\_file.write(line)

print("Errors have been saved to 'errors.log'")

* Check the errors.log file:

csharp

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[ERROR] Connection failed

[ERROR] Connection timeout

**8. Bonus: Create a Backup of a File**

* Objective: Duplicate a file and save it with a new name.
* Script:

python

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import shutil

original\_file = "servers.txt"

backup\_file = "servers\_backup.txt"

shutil.copy(original\_file, backup\_file)

print(f"Backup created: {backup\_file}")