File Handling: Reading and Writing Files in Python

File handling in Python allows you to work with files—read from them, write to them, and manage them efficiently. Python provides built-in functions to handle files using the open() function.

# File Operations in Python

Python provides several modes to open a file for different operations:

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| Mode | Description |
| 'r' | Read mode (default). Opens the file for reading. Raises an error if the file doesn’t exist. |
| 'w' | Write mode. Creates a new file if it doesn’t exist or truncates the file if it exists. |
| 'a' | Append mode. Adds content to the end of the file without overwriting. |
| 'x' | Create mode. Creates a new file, but raises an error if it already exists. |
| 'b' | Binary mode. Used for binary files (e.g., images, videos). |
| 't' | Text mode (default). Used for text files. |

# Opening a File

The open() function is used to open a file. It returns a file object that can be used to perform operations like reading or writing.

# Reading a File

Reading a file can be done in different ways: reading the entire file, reading line by line, or reading a specific number of characters.

# Writing to a File

Python allows writing to a file using write mode ('w') or append mode ('a'). Write mode overwrites the file, while append mode adds content to the end of the file.

# Using with Statement

Using the with statement is the recommended way to handle files. It automatically closes the file, even if an error occurs.

# File Pointer (seek() and tell())

The seek() method moves the file pointer to a specific position, while tell() returns the current file pointer position.

# Working with Binary Files

For images, videos, or any binary data, use 'b' mode to read or write binary files.

# File Handling Exceptions

Errors during file handling can be managed using try-except blocks to ensure the program doesn’t crash.

# Summary of Common File Methods

Here are some common methods used in file handling:

* read() - Reads the entire file.
* readline() - Reads a single line.
* readlines() - Returns a list of lines.
* write() - Writes a string to the file.
* writelines() - Writes a list of strings.
* close() - Closes the file.
* seek() - Moves the file pointer.
* tell() - Returns the current position.