**3 ) Opening and Closing Files**

* **Opening files in different modes ('r', 'w', 'a', 'r+', 'w+').**

In Python, the built-in open() function is used to open a file. It takes two main arguments:

1. **Filename** – the name or path of the file to open.
2. **Mode** – a string that specifies the purpose for which the file is opened.

**File Opening Modes:**

1. **'r'**

**Read mode (default)**: Opens the file for reading. The file must exist.

* Used when you only want to **read** the file.
* If the file does **not exist**, it will raise a FileNotFoundError.

1. **'w'**

**Write mode**: Opens the file for writing. If the file exists, it is truncated . If it doesn’t exist, a new file is created.

* Used to **write data** to a file.
* If the file exists, it will be **overwritten**.
* If it doesn't exist, a new file is created.

1. **'a'**

**Append mode**: Opens the file for appending. Data is added at the end of the file. If the file doesn’t exist, it is created.

* Used to add new data to the end of the file without deleting existing content.
* If the file doesn't exist, it will be created.

1. **'r+'**

**Read and write mode**: Opens the file for both reading and writing. The file must exist.

* Opens the file for both reading and writing.
* The file must exist. It does not truncate the file.
* Allows modification of existing content.

1. **'w+'**

**Write and read mode**: Opens the file for reading and writing. The file is truncated if it exists, or created if it doesn’t.

* Opens the file for both writing and reading.
* Truncates the file if it exists.
* Creates a new file if it doesn't.

1. **'a+'**

Append and read mode: Opens the file for reading and appending. The file is created if it does not exist.

* **Using the open() function to create and access files.**

In Python, the open() function is a built-in method used to create, read, write, and append files. It is the primary method for file handling and works with both text files and binary files.

Syntax :

file\_object = open(file\_name, mode)

* file\_name: Name (or path) of the file you want to open.
* mode: Specifies the mode in which the file is opened.

1. **Creating a File**

To create a file in Python, you can use modes like 'w', 'a', or 'x':

* 'w' will create the file if it doesn't exist or overwrite it if it does.
* 'a' will create the file if it doesn't exist and append data if it does.
* 'x' will only create a new file; it raises an error if the file already exists.

file = open("file.txt", "w")

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

file.close()

1. **Accessing (Opening) a File:**

Reading a File

* You use 'r' mode to read the contents of a file.

file = open("file.txt", "r")

content = file.read()

print(content)

file.close()

1. **Appending Data**

Using 'a' mode allows you to add data at the end of the file without deleting its current content.

file = open("file.txt", "a")

file.write("\nAppended line.")

file.close()

* **Closing files using close().**

In Python, after a file is opened and operations such as reading, writing, or appending are performed, it is important to close the file using the close() method.

**Why Use close()?**

* To free up system resources.
* To make sure all data written to the file is flushed.
* To avoid data corruption or file access issues.

file = open("file1.txt", "w")

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

file.close() # Closing t