1. What is a file? Explain the need for files in Python.

A file is a named location on a storage device used to save data permanently. Files allow programs to store, retrieve, and organize data even after the program has ended, which makes the data accessible for future use. In Python, files are crucial for various tasks, including reading inputs, saving output, configuration settings, and data storage.

2. State and explain the different modes for opening a file in Python

- r (Read Mode): Opens the file for reading only. The file pointer is placed at the beginning. If the file does not exist, an error occurs.

- w (Write Mode): Opens the file for writing only. If the file exists, it will be overwritten. If the file does not exist, a new file is created.

- a (Append Mode): Opens the file for writing only, with the pointer placed at the end. If the file doesn't exist, it creates a new file.

- r+ (Read and Write Mode): Opens the file for both reading and writing, with the pointer at the beginning. If the file does not exist, an error occurs.

- w+ (Write and Read Mode): Opens the file for reading and writing, overwriting the file if it exists or creating a new one if it doesn't.

3. State the difference between write and append mode when opening a file in Python.

- Write Mode (w): Opens the file for writing and overwrites any existing content. Use it when starting fresh each time you write to the file.

- Append Mode (a): Opens the file for writing without deleting existing content, appending new data at the end while preserving the previous data.