PYTHON

Pixel-Perfect File Compression/Decompression Program (GUI Based)

Scenario

You have been tasked with developing a File Compression/Decompression program. The program should be able to compress and decompress both single files and multiple files while ensuring that the original pixel data remains intact.

Task Description

Design and implement a program that allows users to compress and decompress files without compromising the integrity of the original pixel data. The program should provide options for selecting single files or multiple files for compression or decompression.

Requirements:

- The program should support various file formats, such as images (JPEG, PNG, etc.), text files (TXT), and more.
- The compression algorithm used should aim to reduce the file size while preserving the original pixel data or text content.
- The decompression process should accurately restore the original files from the compressed versions.
- The program should have a user-friendly interface that allows users to select files for compression or decompression.
- The compressed files should retain their original file extension for easy identification.

Condition:

- The program should be implemented using Python or Java.
- You are free to choose an appropriate compression algorithm or library to accomplish the task.
- The program should handle errors gracefully and provide informative error messages when necessary.

Explanation

File compression is the process of reducing the size of a file by encoding its data in a more efficient manner. The compression algorithm employed should ensure that the original pixel data in image files is not disturbed during compression and decompression. The program should provide a seamless user experience, allowing users to select one or multiple files for compression or decompression. It should maintain the file extensions for easy identification of compressed files.

Note: **It is important to strike a balance between file size reduction and maintaining the original pixel data integrity. Careful selection of compression algorithms and techniques is crucial to achieve this objective.**