Member Details

Group ID: G21

2018-CS-123

2018-CS-121

Section: C

PROJECT

Project Title: File Compression

Summary:

There are many algorithms used that can be used to reduce the file size. Some of them are lossy while some are lossy file compression methods. In our project, we have used a lossless file compression method that reduces the size of the text file without losing data. The algorithm used is a Huffman algorithm. The basic concept of this algorithm is building a binary tree which generated a code for each character and similarly the tree is also used for decoding process. The binary tree assigns a value of combination of 0s and 1s known as bit string. The leaf nodes in a tree contains the character. The code is assigned to a character by traversing the tree from root to each leaf node. Using this algorithm, each character in a text file is assigned a unique code by calculating frequencies of characters in a text file. a character with least frequency is assigned a lonest code as it is the least occurring character. Similarly, a character with most frequency is assigned shortest code. The code is in form of bits. We have implemented this algorithm for text files only. After file compression, we get two files, the compressed and the coded scheme file. Hence, the characters are decoded by traversing the same Huffman tree using a coded scheme file. This technique is commonly used for data compression and decompression without losing any data. We have also used a concept of RLE algorithm which is also used for data compression. For large files, the only Huffman was not suitable, therefore, we have used the concept of RLE to more compress file after applying Huffman. Thus, the output is in form of reduced bits after compression. This decreases the size of the file.

Business Case

Business need:

As limited size file can be transferred over internet, therefore, file compression tool provides a way to transfer files without data loss and in less time.

End user of the product:

Anyone who wants to compress their file without data loss can use this tool.

Motivation for the Project:

Files are transferred over internet frequently. So, to transfer the file with less cost and efficient way, file compressors are frequently used all over the world.

Description of Project Objectives:

1. The main objective is to compress the original text file.
2. Faster file transfer.

State the level of impact expected should the project proceed and implications of not proceeding:

Functional Requirements:

1. This file compressor tool can compress the file to certain bits. If more compression required, the compress more button will compress the compressed file more.
2. This tool can also perform the decompression process.
3. It also shows the sizes of original and compressed files.

Benefits:

1. Bit size reduced
2. Easily transfer of file over internet
3. Less time consuming
4. Free to use by users

Link to GitHub Repository:

https://github.com/EmanTahir/CS311S20PID21

Total number of commits: 34 total commits

Exact Contribution of each member:

- 17 commits by 2018-CS-123
- 16 commits by 2018-CS-121