VISHWAKARMA INSTITUTE OF TECHNOLOGY, PUNE

Text Compression Using Huffman Compression Algorithm

By Group 6

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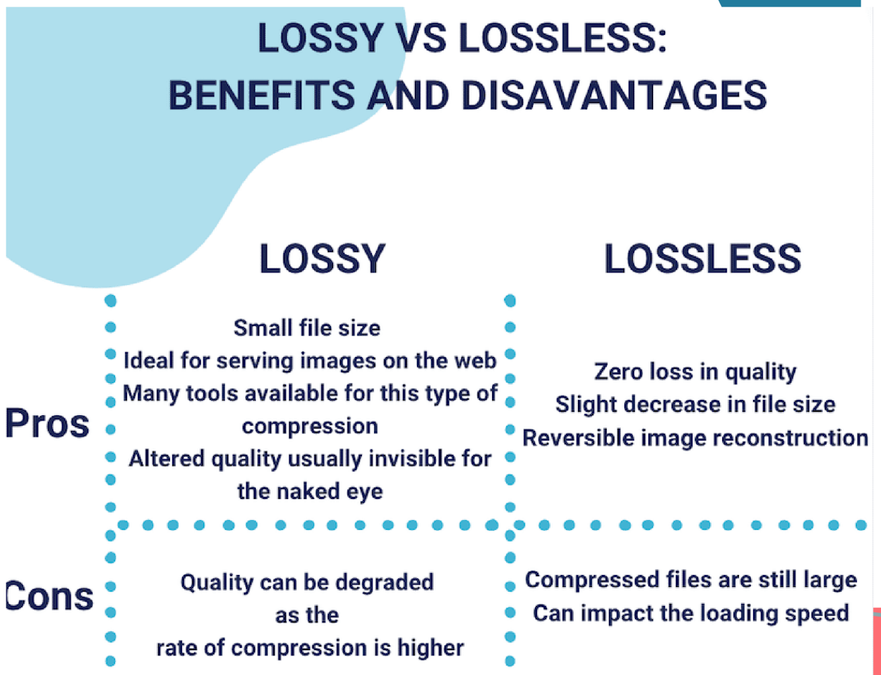
INTRODUCTION

- Huffman Coding is a technique of compressing data to reduce its size without losing any of the details.
- Instead of using standard 8-bit size, It adapts bit lengths according to the frquencies in which they occur.
- Shorter codes assigned to frequent characters for efficiency.
- Optimal code generation reduces the required storage space to a minimum.
- Enhanced data compression efficiency.



OBJECTIVES

GUI DEVELOPMENT

Creating a GUI for Huffmann Compression Algorithm.

CLI CREATION

Implementing Huffman Algorithm to Compress and Decompress text.

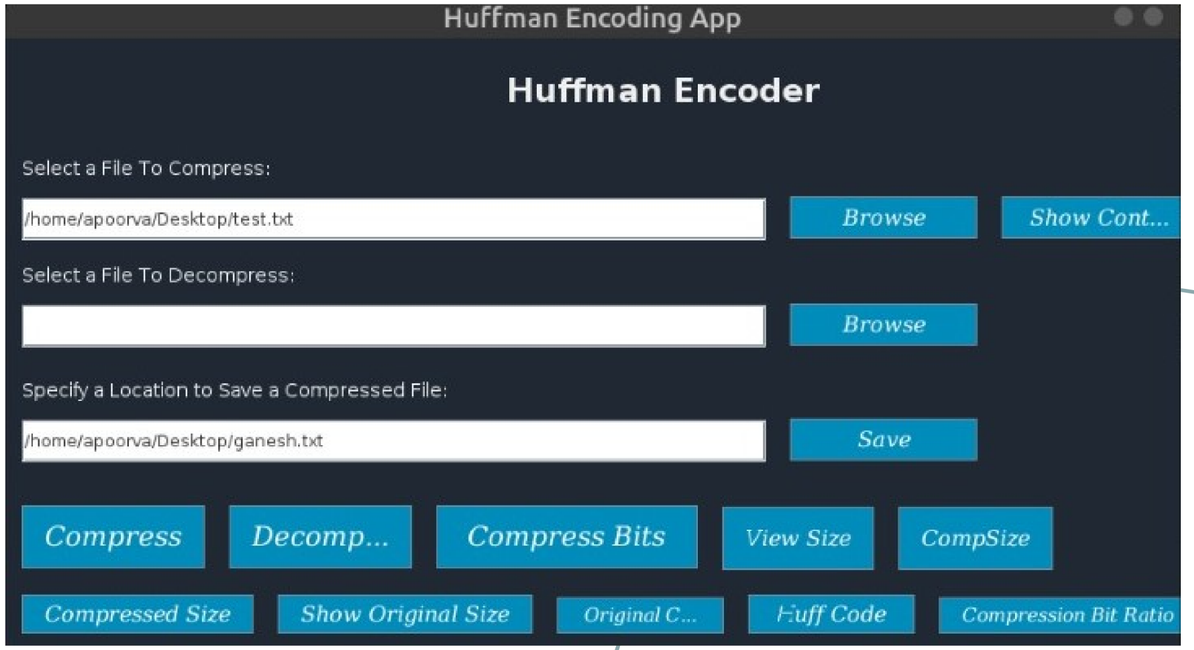
EFFICIENCY

Enabling efficient storage of data without loss.

PROBLEM STATEMENT

This project aims to create a user-friendly GUI for Text File Compression using Huffman Algorithm. It allows users to compress text files while maintaining data integrity, and efficiently store binary sequences of alphabetic characters, enhancing data management.

GUI



METHODOLOGY

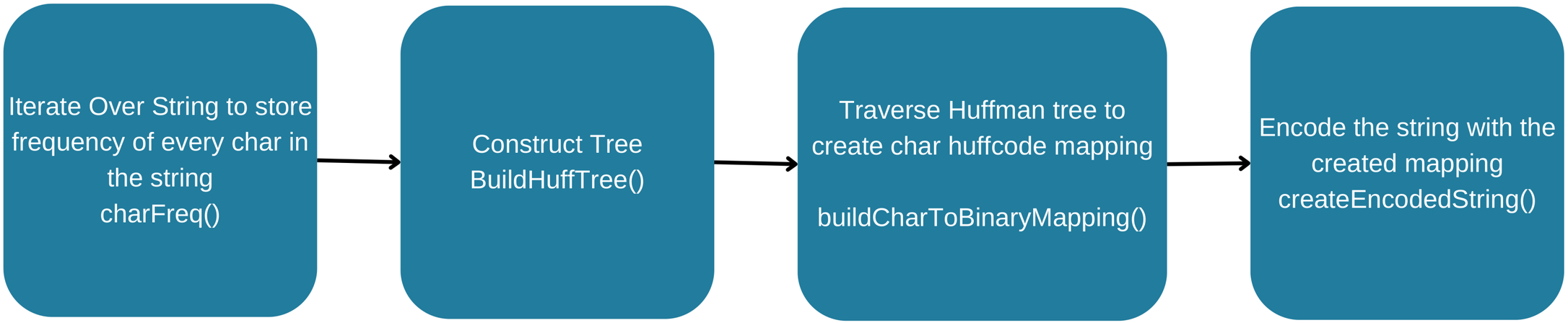
- Gather requirements and create a design plan.
- Write code for the GUI.
- Write code for compression and decompression algorithm.
- Implement the algorithm using GUI.

METHODOLOGY

- Huffman Tree
- Min Heap
- Unordered Map
- Vectors
- Priority Queue

```
class node{
public:
    char ch;
    int freq;
    node *left;
    node *right;
};
```

FLOW DIAGRAM



CONCLUSION

- Successful creation of a user-friendly Huffman Coding GUI application.
- Efficient data compression and decompression while preserving data integrity.
- Systematic project methodology ensured a reliable application.
- Saved disk space due to reduced file size.

REFERENCES

- StanFord University (Paper): Huffman Encoding and Data Compression
- A Study on Data Compression Using Huffman Coding Algorithms
  -D.Jasmine Shoba, Dr.S Sivakumar
- GeeksForGeeks - Huffman Coding
- Huffman Codes: An Information Theory Perspective
  -Reducible

THANK YOU