Final Report on

File Compressor & Decompressor

Submitted to,

SPL I Evaluation Committee 2020-2021
Bachelor of Science in Software Engineering
Institute of Information Technology
Noakhali Science and Technology University

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Final Report on <*Project Name*>

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Project Description

Introduction

- Compression is the process of encoding information using fewer bits than the original representation of the data.
- Before transmitting the data, encoding is done for security purposes.
- The reverse process of compression is called decompression which is used to get the original data from the compressed data.
- We don't have unlimited storage on our memory and while transferring big files on the internet, the transfer speed is too low. So we need to compress the files and reduce it's size.
- The transfer speed will be fast and the file quality will be the same as before.

Target Users

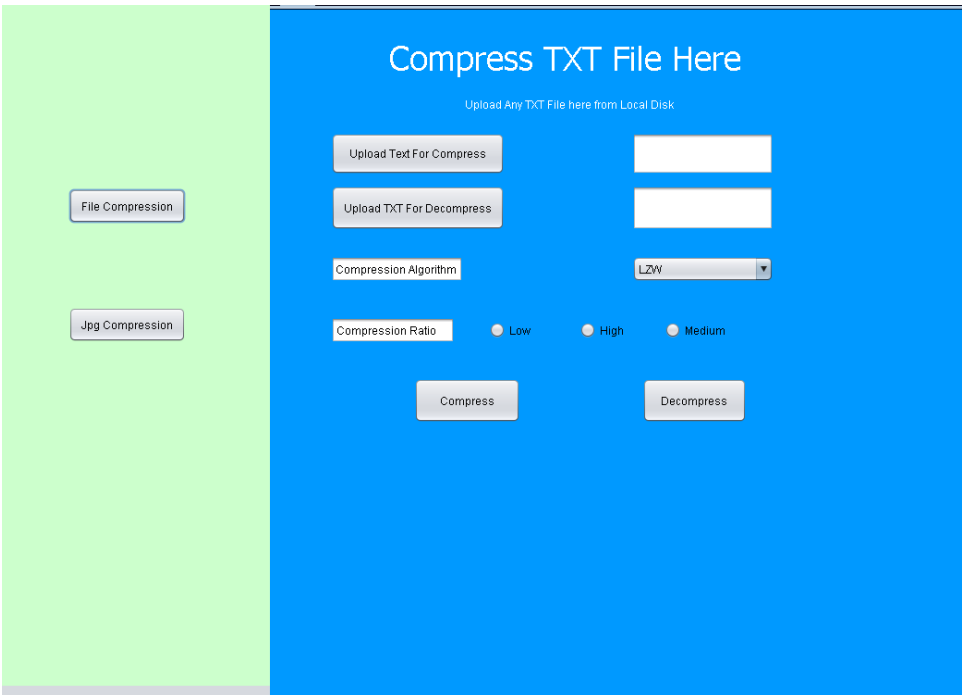
- Students
- Teachers
- Govt, Non-Govt Institute
- Every People in the internet

Application Features

- **File Compression**
- **JPG Compression**

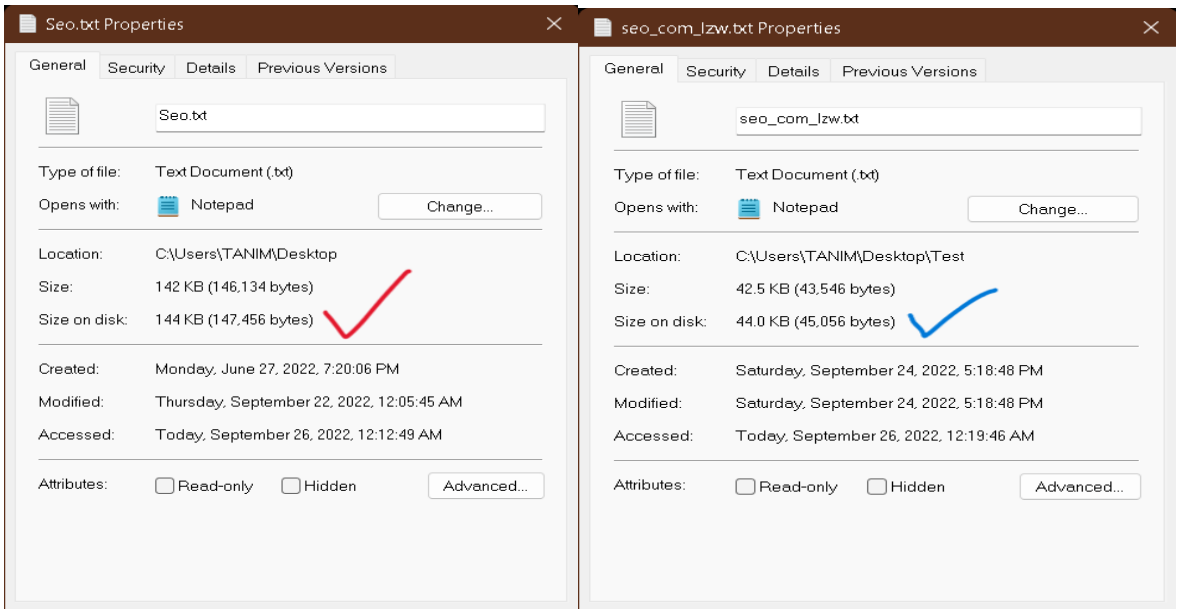
File Compression & Decompression:

- It will first access file from local disk
- It will compress file using Huffman and LZW Algorithm
- User can select any algorithm
- It will allow user to select compression ratio
- It will Compress Txt, Java, html and many other files
- Lastly user can save file in their likely location



In the user guide i have discussed how you can use this software. Now i am giving a comparative study about the project.

Comparative study:



Here from the picture you see that from the main file with the using of the compression algorithm file has reduced so much..

Working with different file:

File Type	File Size	Compressed Size Using Huffman	Compressed size using LZW
Seo.txt	143 kb	82kb	42kb
Framedemo1.java	140kb	78kb	41kb
New.html	126kb	52kb	20kb
Css1.css	138kb	71kb	22kb

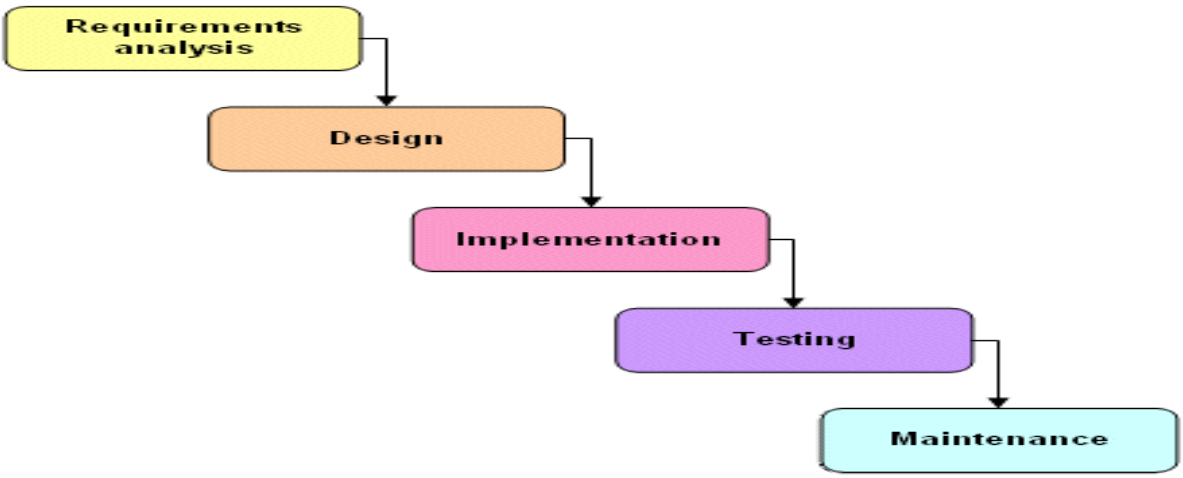
JPG Compression:

1. User Can Select any jpg file from the local disk
2. User can select the compression ratio
3. The jpg will be compressed without loosing it's quality

Models, Tools and Resources

Waterfall Model:

I followed waterfall software process model in my project. The waterfall model is a linear, sequential approach to the software development life cycle (SDLC) that is popular in software Enginrring and product development. The waterfall model emphasizes a logical progression of steps. Similar to the direction water flows over the edge of a cliff, distinct endpoints or goals are set for each phase of development and cannot be revisited after completion.



Tools:

- **Java JDK:** The JDK is **an implementation of the Java platform specification**, which includes the compiler and standard class libraries.
- **Netbeans: NetBeans** IDE Bundle for Web and **Java** EE — NetBeans is **an integrated development environment (IDE) for Java**.
- **Eclipse:** The Eclipse IDE is a leading Java-based development environment and has captured a large share of the market.

Resources:

1. Java the Complete Reference by Herbert Schildt
2. https://www.researchgate.net/publication/304395425_Huffman_coding
3. https://www.researchgate.net/publication/274352209_A_Review_of_Lempel_Ziv_Compression_Techniques
4. Software Engineering By Lan Sommerville, 10th edition.
5. https://stackoverflow.com/questions/10611455/what-is-character-encoding-and-why-should-i-bother-with-it

Project Members

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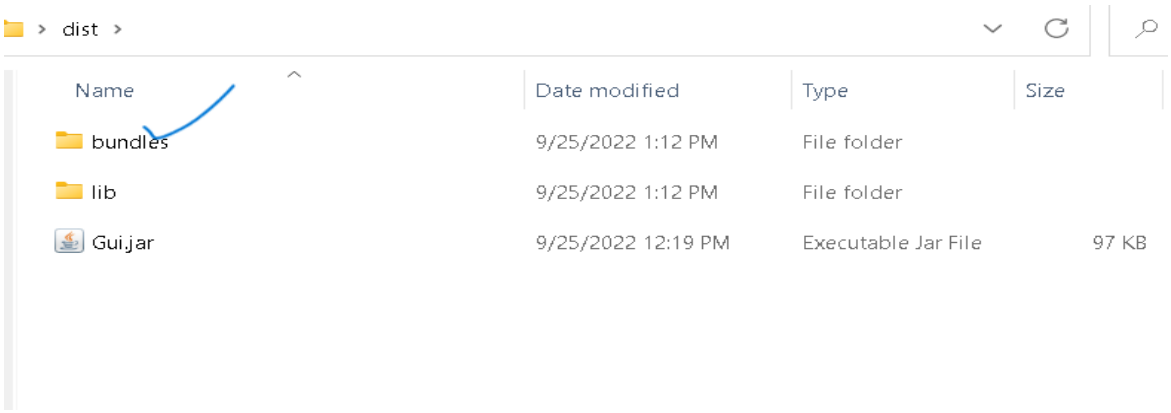
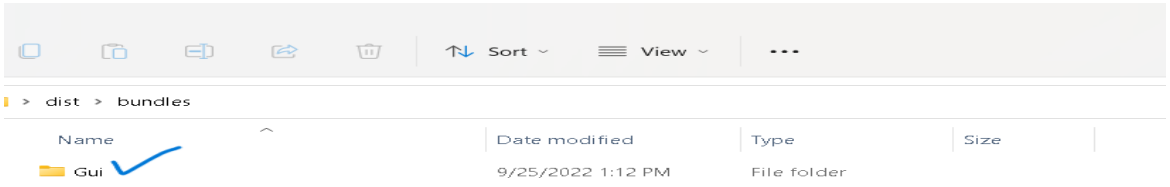
User Guide:

When use will open the project folder then they will get this kind of file. They will have do following steps to use this software in their pc/laptop.

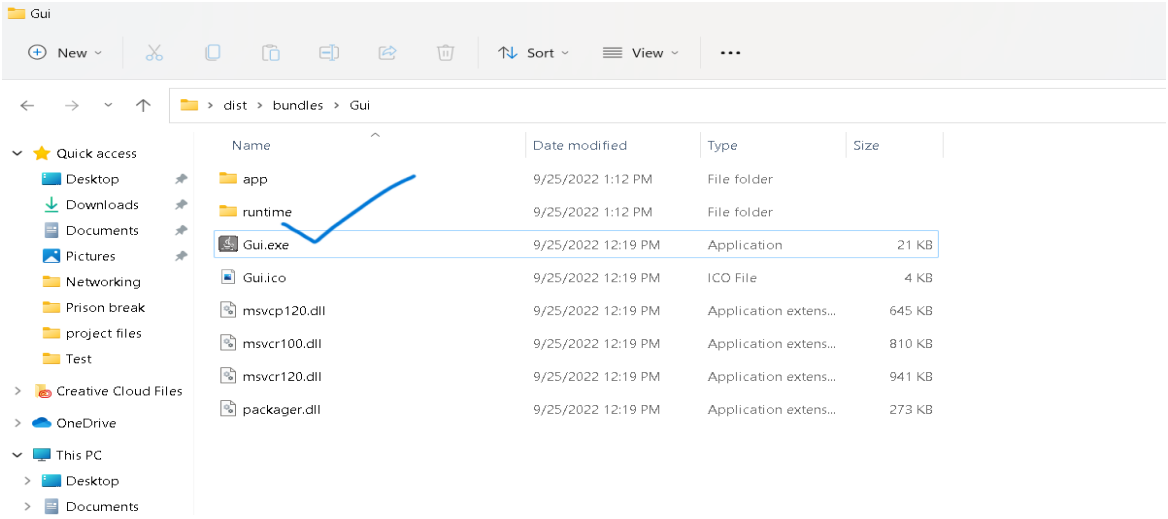
Step 1: Open bundles folder



Step 2: Inside the bundles folder you will find Gui folder. Open it



Step 3: Inside the Gui Folder You will get the Gui.exe file. It is the executable file of our project. Double click it to run it and enjoy.

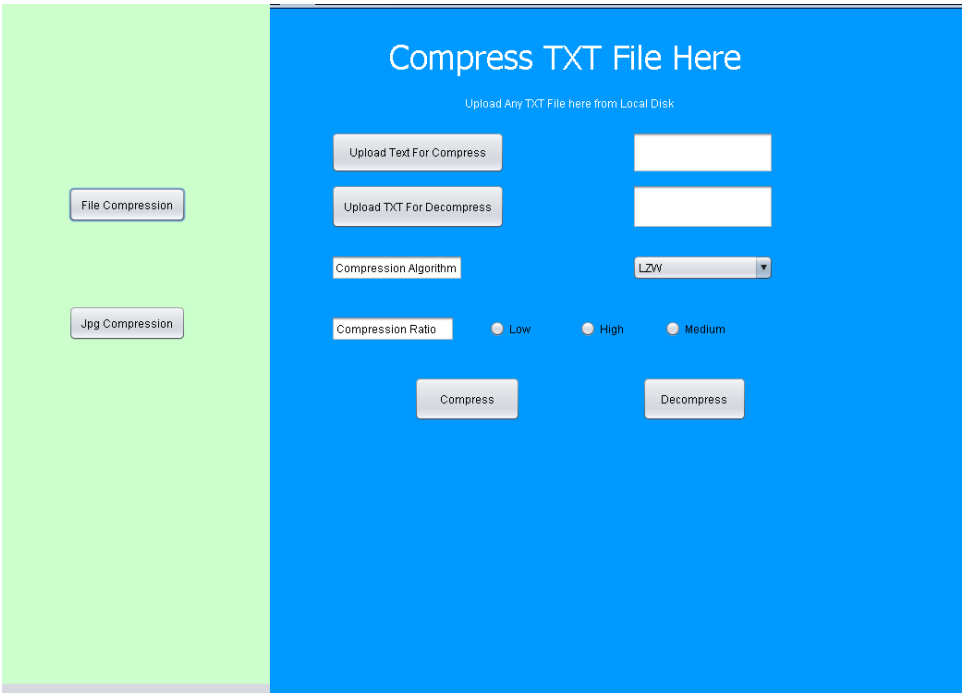


Project Link : https://1drv.ms/u/s!AtvKUQhpGPVHhinPN6nFXqGxubTB?e=I6iSS7
Github Link: https://github.com/Tahsin007/File-Compressor-Decompressor

This is my one drive project link. In this link you will get everything about my project. It includes all source file of the project.

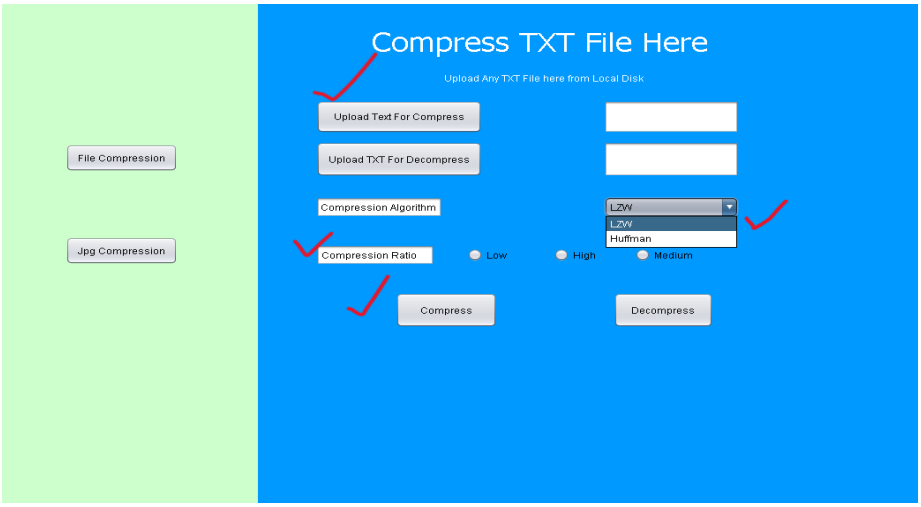
How to use the software:

Step 1: When you will open the software you will get this layout



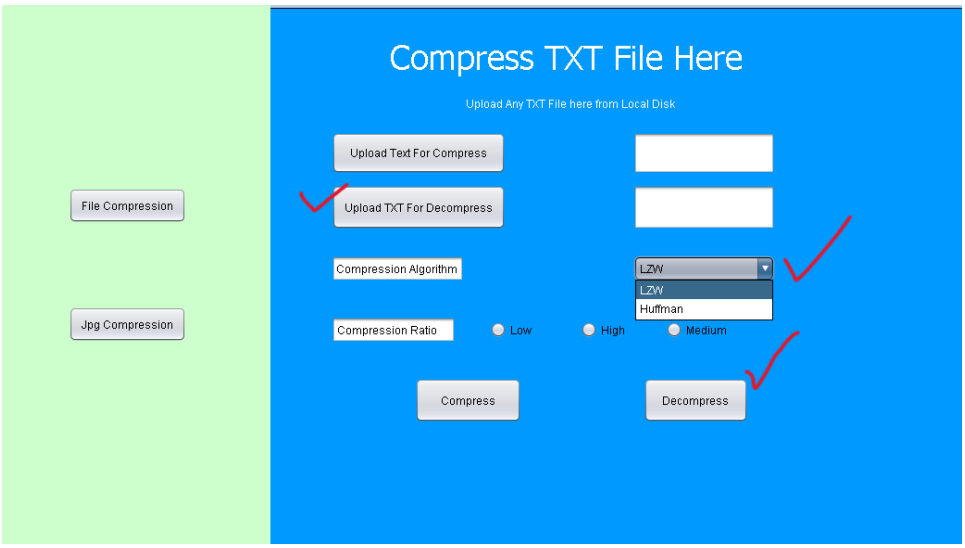
Step 2: Compress file

In this step you will have to upload file from your local disk. Then you can select the compression algorithm. After that you can select the compression ratio. If you select low then the file will compressed low, if you select high then the file will compressed high and if you select medium it will compress the file in medium file.



Step 3: Decompress File

While Decompressing the file you will need upload the compressed file from your local disk. You have to upload the previously compressed file. Otherwise it won't work. After uploading you have to select the algorithm for decompression. Then click on the decompress.



Source Code Documentation

Description of my classes:

Class Name	**Class Work**	Line of Code
framedemo1_copy	It is the main file	891
Huffman.java	For creating tree	64
HuffmanEncode.java	Encoding using huffman	227
HuffmanDecoder.java	Decoding using huffman	167
Encoder.java	encoding using lzw	114
Decoder.java	Decoding using lzw	101
ImageCompression.java	Jpg Compreession	57
Fileopener.java	For Opening file	35
Filesave.java	For saving file	35

Description of methods of my different classes:

Location	Name	Description	Access Modifiers
HuffmanEncode	countFrequency	Will count frequency	public
HuffmanEncode	encode	Encode using huffman	public
HuffmanEncode	traverse	Traverse the tree	public
HuffmanEncode	BitFile	Create bit file	public
HuffmanDecoder	decode	Decode using huffman	public
Encoder	Encode_string	Encode using lzw	public
Decoder	Decode_String	Decode using lzw	public
FileOpen	Pick me	fileopener	public
FileSave	save	For saving file	public

Challenges and Future Work

Challenges:

1. Working with file: There were a lot of challenges while doing the project. File handeling was one of them. But it became easier as this project is based on java. Java has a enrich file handling library.

2. Working with Bit: It was dificult to work with bit. I had to do some bit manipulatio application for the project. In the huffman coding, i needed to work with the bit file. Writing bit file in the file was some kind of hard task for me.

3. Encoding the compressed file: It was a quite challenge for me. Because i was confused about the project. But then i came with the solution from stackoverflow. The communityu of stackoverflow helped me so much with my different questions.

Future work:

1. Encryption Decryption: I will try to do encryption and decryption with my project. I want to make it as a multidimentional project which will help my user to do a lot of work in one place. Encryption and deryption file will help the privacy of the project.

2. Transfer multiple files at a time: I have used socket programming for transferring files between two pc. But i will work on it further. I have huge plan for that. I will try to make it multithreaded project. Which will accept multiple file at a time and send multiple file at a time.

3. Upgrade The Algorithm Efficiency: I will try to upgrade the efficiency of my algorithm. I will try to reduce the file size in future. I will also try to do pdf compression in my project.