**README**

PROGRAMMING LANGUAGE: Java

COMPILER VERSION:   
C:\Users\soura\Desktop\LZW code>java -version

java version "1.8.0\_131"

Java(TM) SE Runtime Environment (build 1.8.0\_131-b11)

Java HotSpot(TM) 64-Bit Server VM (build 25.131-b11, mixed mode)

FILES included:

1] Encoding.java - Class file: used for encoding.

2] Decoding.java - Class file: used for decoding.

3] README - Summary of Project.

TO RUN PROJECT:

1] Copy the 'Encoding.java' and 'Decoding.java' class files in a folder.

2] Put the input '.txt' file in the same folder.

3] Use the command: 'javac Encoding.java' and 'javac Decoding.java' to compile.

4] Then run the Encoding first using command: 'java Encoding <your .txt input file> <bit length>'. The output of this will be an encoded file, saved in the same working directory with name: '<your input file>.lzw'.

5] Then run the Decoding using command: 'java Decoding <your input file.lzw file> <bit length>'. The output of this will be a decoded file, saved in the same working directory with name: '<your input file>\_decoded.txt'.

PROGRAM DESIGN:

1. Encoding.java:

Data Structure used Table: ArrayList<String>;

Commandline input is taken for the original input '.txt' file and the bit length for codes. File Reader is used to read the original '.txt' file and File Output Stream to output the codes for encoded data in UTF-16BE in the '.lzw' file. The table is implemented with string ArrayList. The function tableInit() with the 256 extended ASCII characters is initialized at their respective indicesNew codes will be added, generated from index number 256 through the max table size determined by bit length. New code created from index number 256 through max table size specified by bit length will be added. To perform encoding, the pseudo code is implemented, and the line feed character is treated as required; this is because it is removed when reading lines using readline().

1. Decoding.java:

Data Structure used Table: ArrayList<String>;

Commandline input is taken for the encoded '.lzw' file and the bit length for codes. File Input Stream is used to read the encoded '.lzw' file and File Writer to output the encoded data in UTF-8 in the '\_decoded.txt' file. The Table is implemented with ArrayList of strings. It is initialized with the tableInit() function with the 256 extended ASCII characters at their corresponding indices. New codes generated will be added from index number 256 through max table size defined by bit length. The pseudo code is implemented to perform decoding and the line feed character is handled as per requirement; this is because it is removed while reading lines using readline().

WHAT WORKS AND WHAT FAILS:

Since there is no ASCII value for an EOF (End-Of-File) character, we do not take that into consideration.

Blank spaces however do work within the program.