Lempel–Ziv–Welch Program

Programming Language used-
Java

Compiler version-
Java 1.8

Project Files-

1. Encoder.java - Contains code for compressing the string to binary codes.
2. Decoder.java – Contains code for decompressing the binary codes to string.

Encoder.java- In my project, encoder has two functions. One is **main** function where we process command line arguments. Another method is **Compress** (Called by Main) which performs LZW compression on the input string. Input file is text file. Output generated is stored in .lzw file.

Decoder.java- Decoder also has two functions. One is **main** function where we process command line arguments. . Another method is **Decompress** (Called by Main) which performs LZW decompression on the binary codes. Input file is lzw compressed file. Output generated is stored in decoded file.

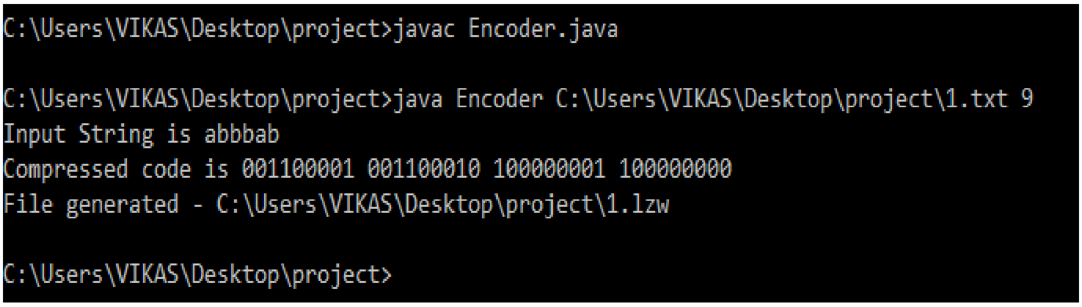
Data structures-

Data	**Data Type**
Dictionary(Table)	ArrayList
Text data	String/ StringBuilder
Binary code	String

Steps to Execute the program

1. Open Command prompt
2. Change directory to project folder
3. To Encode-
   a. **Javac Encoder.java**
   b. Java Encoder <filepath> <bitlength>
   Example :- **Java Encoder C:\VIKAS\project\1.txt 9**

   Sample ouput screen-



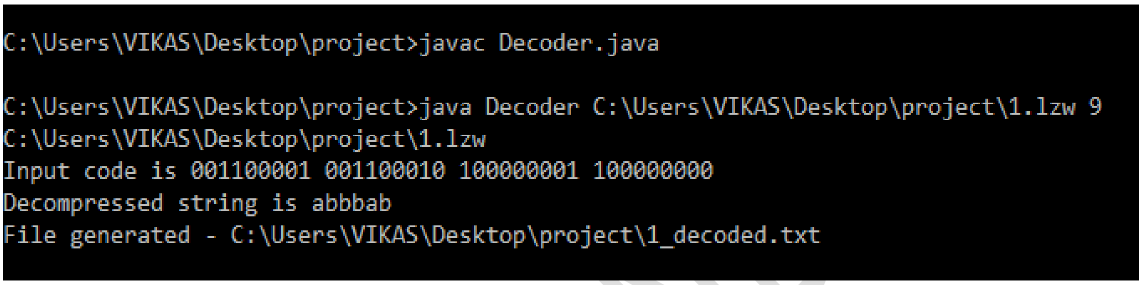
```
C:\Users\VIKAS\Desktop\project>javac Encoder.java

C:\Users\VIKAS\Desktop\project>java Encoder C:\Users\VIKAS\Desktop\project\1.txt 9
Input String is abbbab
Compressed code is 001100001 001100010 100000001 100000000
File generated - C:\Users\VIKAS\Desktop\project\1.lzw

C:\Users\VIKAS\Desktop\project>
```

4. To Decode-
   a. **Javac Decoder.java**
   b. Java Decoder <filepath> <bitlength>
      Example :- **Java Decoder C:\VIKAS\project\1.lzw 9**

Sample output screen-



```
C:\Users\VIKAS\Desktop\project>javac Decoder.java

C:\Users\VIKAS\Desktop\project>java Decoder C:\Users\VIKAS\Desktop\project\1.lzw 9
C:\Users\VIKAS\Desktop\project\1.lzw
Input code is 001100001 001100010 100000001 100000000
Decompressed string is abbbab
File generated - C:\Users\VIKAS\Desktop\project\1_decoded.txt
```

Note:- Make sure there are no spaces in the file path. Space should only be there between filepath and bitlength.

Summary-

This program works well with any strings and text. I have tested for strings separated by space and it worked well if I give bitlength >=9. If text contains space and bitlength given is <9 ,it might not work as expected. It is a good practice to give bitlength of 8 to 16 if the input string does not contain any spaces

By,

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