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**Program Design and Data structure Design:**

Encode.java has the code to encode the string. The code takes the file(“.txt”) as input and encodes the string provided in the file. The encoded the string is written in the “.lzw” file using the UFT\_16BE encoding. The code uses hash map to store character to ascii code mapping. Then this ascii code is used to encode the string. If the character is present in the map the ascii value of the character is used, else the new value is added to the map with the value as ascii code.

Decode.java has the code to decode the encoded string. The code takes the “.lzw” file as input and produces the decoded string which is written the “.txt” file. The code uses the hash map to store the ascii code and the character mapping. The input encoded value is converted to the decimal format and map is used to retrieve the corresponding character.

**Programming Language used**: Java.

**Compiler version:** 1.8.

**Steps to run code:**

Encode:

* Run “javac Encode.java” in terminal from the parent directory.
* Run “**java Algo\_Project1.Encode <Input file path> n**” from the terminal.
* Example:
  + “java Algo\_Project1.Encode /Users/yashbonde/Desktop/Algos/Algo\_Project1/input.txt 9” – Ran on Mac Terminal

Decode:

* Rung “javac Decode.java” in terminal from the parent directory.
* Run “**java Algo\_Project1.Decode <Encoded file(“.lzw”) path> n**”.