**Question:** Huffman Coding is a compression algorithm used for lossless data compression. You are required to do the following:

1. Input a string from the user (e.g., "huffman coding is fun").
2. Build a Huffman Tree based on the frequency of characters in the string.
   * Each character in the input string will have a frequency, and the Huffman Tree should be built using a priority queue or a min-heap. Display the frequency table in output screen.
3. Generate the Huffman Codes for each character in the string.
   * Display the character, its frequency, and its corresponding Huffman Code in a tabular format.
4. Encode the input string using the generated Huffman Codes.
   * Display the original string and its encoded binary representation.
5. Decode the binary representation back into the original string using the Huffman Tree.
   * Verify that the decoded string matches the original string.
6. Analyze and compare the size of the original string and the encoded binary representation to demonstrate compression.

**Submission guidelines:**

1. Submit your C++ implementation as a single source code file with proper comments.
2. Include a brief explanation of your logic and approach at the beginning of the code as a comment block.
3. Test your program with multiple input strings and include the test cases as part of your submission comments.
4. Submit PDF file with output screens.