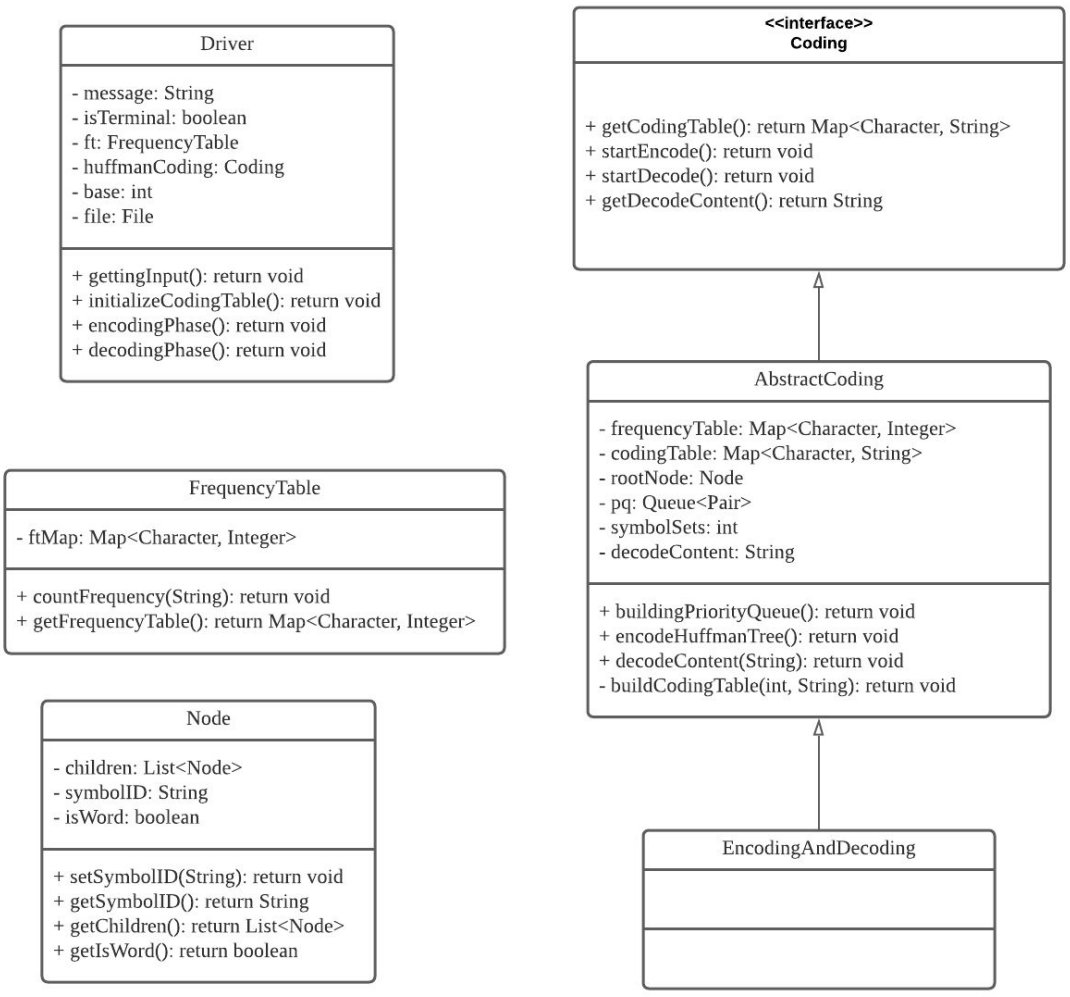
- UML diagram




- Test Case:
  1. Initializing Driver:
     // Choose input type: terminal or file(read or write)
     // Get input message and initialize frequency table
     // Choose the symbolSets (2~16)
     FrequencyTable ft = new FrequencyTable(input)

  2. Encode the message:
     Coding huffmanCoding = new EncodingAndDecoding(ft.getFrequencyTable(), base)
     huffmanCoding.startEncode()

  3. Decode the password:
     // Get input password and pass to huffmanCoding
     huffmanCoding,startDecode(password)

4. Test:

FrequencyTable ft = new FrequencyTable(“SHE SELLS SEA SHELLS BY THE SEA SHORE”)

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Coding huff = new EncodingAndDecoding(ft.getFrequencyTable(), 2)
Map<Character, String> expectedCT = new HashMap<>();
expectedCT.put(' ', "110");
expectedCT.put('A', "0001");
expectedCT.put('B', "00100");
expectedCT.put('R', "00110");
expectedCT.put('S', "10");
expectedCT.put('T', "00111");
expectedCT.put('E', "111");
expectedCT.put('H', "010");
expectedCT.put('Y', "0000");
expectedCT.put('L', "011");
expectedCT.put('O', "00101");

huff.startEncode();
assertEquals(expectedCT, huff.getCodingTable());

huff.startDecode("0100010101110000");  // HOLY
assertEquals("HOLY", huff.getDecodeContent());


// Test Invalid Password(expected = IndexOutOfBoundsException.class)
huff.startEncode();
huff.startDecode("2");

// Test Invalid Password2(expected = StringIndexOutOfBoundsException.class)
huff.startEncode();
huff.startDecode(“1101”)
```