CSE 535

Finals May 4 12:20 - 210 PH

Tue 18. - Come up with paper with justification (Papers for presentation will be selected by voting)

Source Coding

Dictionary

Receiver Decoding

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>1</td>
</tr>
<tr>
<td>b</td>
<td>2</td>
</tr>
<tr>
<td>c</td>
<td>3</td>
</tr>
<tr>
<td>ab</td>
<td>4</td>
</tr>
<tr>
<td>bc</td>
<td>5</td>
</tr>
<tr>
<td>cb</td>
<td>6</td>
</tr>
</tbody>
</table>

Ships added to pool

a b a b c b a b a b a a a

1 2 4 3
↓ ↓ ↓ ↓
ab ab ab c

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C1: Next unused code word
C2: Code word size : 9 bits
N2: Max size of dictionary = number of code words
N2 : Character size : 8 bits
N5: First code word used to represent a string of more than one character
N7: Max strings length that can be encoded.

Coding procedure:
1. Process incoming char. to produce the longest matching string
2. If the matched string is of max length (N5 char) then transmit the code for the string and goto 1
3. Otherwise append the next char. to the matched string and add the string to the dictionary & assign a code to it. However, since the new string
does not yet exist in the receiver's dictionary, transmit the code for the original matched string and use the remaining chars to begin again at step 1.

Dictionary satisfies the property that if a string is a symbol then all its prefix substrings are also symbols in the dictionary.

Deletion procedure:
Assume $C_i$ is new
1. $C_i$ is incremented by 1
2. If $C_i = N$, set it equal to $N_5$
3. If the node identified by the value of $C_i$ is not a leaf node then go to 1
4. If the node is a leaf node, then delete it from the dictionary.
Dictionary is maintained as forest of tries