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WE1.3

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Video explanation of solution is provided below the problem.

### Huffman Encoding

4 points possible (ungraded)

**Note:** For this problem, your answers will be marked as wrong unless the encodings for all cases are correct.

The table below shows the enrollments in the various EECS majors. To save a bit of space in their database the department would like to use a variable-length Huffman code to encode a student’s choice of major. For each of the four majors, please give the encoding the department should use.

<i>Major</i>	<i>Count</i>	<i>p</i>	<i>plog<sub>2</sub> (1/p)</i>
6-1	74	0.09	0.30
6-2	387	0.44	0.52
6-3	360	0.41	0.53
6-7	54	0.06	0.25
Total	875	1.00	1.60

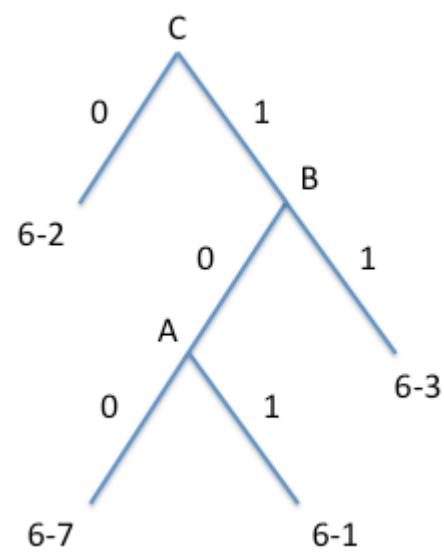
6-1:

6-2:

6-3:

6-7:


Explanation  
Below is a valid Huffman tree for the given messages and frequencies.



Any labeling of a huffman encoding tree such that each non-leaf node has a 0 and 1 label coming out of it would work as a valid encoding for that tree. For example, the following is a valid encoding for our huffman encoding tree:

**Major Code**

- 6-1    001
- 6-2    1
- 6-3    01

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6-7     000

Submit

Answers are displayed within the problem

Huffman Encoding

### Average information in a message

Major	Count	$p$	$p * \log_2(1/p)$
6-1 <i>111</i>	74	0.09	0.30
6-2 <i>0</i>	387	0.44	0.52
6-3 <i>10</i>	360	0.41	0.53
6-7 <i>110</i>	54	0.06	0.25
Total	875	1.00	1.60

*3(0.09) + 1(0.44) + 2(0.41) + 3(0.06) = 1.71*

▶ 6:29 / 6:29

▶ 1.0x 🔊 🗒️ 📺

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Topic: 1. Basics of Information / WE1.3

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- Is the grader working as intended?

8

Entered exactly the solution from "show answer" I get this exception: "list index out of range"
- Worked Examples videos

2

The videos accompanying the worked examples are great! It explains the topics addressed much better than the lecture videos the...
- [staff] clash with minimum bits required to give information

4
- A general comment about 'Basics of Information'

2

The materials presented in the 'Basics of Information' is a bit disconnected. It's not clear to me how Two's complement is related to...
- Wrong solution

2

The solution is wrong !! see the video!

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