



Data Compression



2/3 points earned (66%)

You haven't passed yet. You need at least 80% to pass.
Review the material and try again! You have 3 attempts every 8 hours.

[Review Related Lesson](#)



0 / 1
points

```
(seed = 943349)
Compute the Huffman trie for the following string of length 65?

YUUPWDIITUTTPYUDUDWYIUUIIIPPUPPPYUUUYWUIUMUUPIYPTPPPUUUUTPTYYYYU

For reference, here are the frequencies of each of the characters in the string:
```

char	freq
D	3
I	8
P	14
T	6
U	21
W	4
Y	9

Using the encodings from the Huffman trie you computed, how many bits are needed to encode the above string? Do not count the bits to represent the encoding table or any bits used for padding and byte alignment.

1.

175



Incorrect Response

The correct answer is: 167

Here is the encoding table that results from one Huffman trie:

char	freq	encoding	bits
D	3	0010	12
I	8	100	24
P	14	01	28
T	6	000	18
U	21	11	42
W	4	0011	16
Y	9	101	27

			167

Note: different Huffman tries result in different encoding tables, but they all result in 167 bits.



1 / 1
points

2.

(seed = 50828)

What is the result of expanding the following LZW-encoded sequence of 11 hexadecimal integers?

43 42 81 41 42 82 83 41 43 84 80

Assume the original encoding table consists of all 7-bit ASCII characters and uses 8-bit codewords. Give your answer as a sequence of characters, with one space between each character.

C B C B A B B C C B A A C A B

Correct Response

The correct answer is: C B C B A B B C C B A A C A B

```
43 42 81    41 42 82    83    41 43 84    80
C  B  C  B  A  B  B  C  C  B  A  A  C  A  B
```

```
i  codeword
```

```
-----
41  A
42  B
43  C
...
80  [end-of-file]
81  CB
82  BC
83  CBA
84  AB
85  BB
86  BCC
87  CBAA
88  AC
89  CA
```



1 / 1
points

(seed = 132298)

What is the result of compressing the following string of length 15 using LZW compression?

C B B C B A B C B B B C B A B

Assume the original encoding table consists of all 7-bit ASCII characters and uses 8-bit codewords. Give your answer as a sequence of 10 hexadecimal integers, starting with 43 and ending with the stop codeword 80.

3.

43 42 42 81 41 83 82 86 85 80



Correct Response

The correct answer is: 43 42 42 81 41 83 82 86 85 80

```
C B B C B A B C B B B C B A B
43 42 42 81 41 83 82 86 85 80
```

```
i codeword
```

```
-----
```

```
41 A
```

```
42 B
```

```
43 C
```

```
...
```

```
80 [end-of-file]
```

```
81 CB
```

```
82 BB
```

```
83 BC
```

```
84 CBA
```

```
85 AB
```

```
86 BCB
```

```
87 BBB
```

```
88 BCBA
```

