Example Questions: Data compression

Due No due date **Points** 39 **Questions** 11 **Time Limit** None
Allowed Attempts Unlimited

Instructions

Attention! If an answer consists of a sequence of items, the items must be separated with commas, with no blank. No sign is to be put at the ends of the sequence.
For example: 1,3,4,6
Another example: APPLE,ORANGE,BANANA

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	less than 1 minute	0 out of 39

Submitted Dec 16 at 12:21pm

Question 1 — 0 / 1 pts

Consider text `ABCA.` How many bits are needed for its naive compression?

You Answered

Correct Answers: 8 (with margin: 0)

Question 2 — 0 / 1 pts

Unanswered

One can easily split the *naive code* of a text into smaller parts, and these parts can be decoded independently from each other.

Correct Answer

- true
- false

Unanswered

Question 3

0 / 1 pts

One can easily split the *Huffman code* of a text into smaller parts, and these parts can be decoded independently from each other.

Correct Answer

- false
- true

Question 4

0 / 3 pts

Consider the Huffman codes of the following texts. Which text or texts have code trees with **exactly 7 internal** nodes?

1. - `ABCDEFGHADBCEH`
2. - `AABBCCAAHDEFFG`
3. - `DEGHHADBCCEHAB`

`[ Select ]`

Answer 1:

You Answered

(You left this blank)

Correct Answer

1 and 2

Question 5

0 / 3 pts

Compress the following text with Huffman coding:

MEKK_ELEKKEL_MEKEG

How long is the compressed text in bits (without the code tree)?

ou Answered

orrect Answers 43 (with margin: 0)

Question 6

0 / 3 pts

Compress the following text with Huffman coding:

ALMAFA_ALATT_ALMA

How long is the compressed text in bits (without the code tree)?

ou Answered

orrect Answers 40 (with margin: 0)

Question 7

0 / 9 pts

The Huffman code of a text is usually shorter than the compressed code received by the naive method. The relative compression rates of the two methods are depending on the input text.

Let the *relative compression rate* of the two methods be defined with formula *(length of code received with naive method) / (length of code received with Huffman coding*)
where the code lengths do not include the sizes of the code tables/trees.

Put the following texts into order according to their *relative compression rates*.

AAAABCDE AAAAABCD AAABBCDD

(1. - greatest, 2. - middle, 3. - smallest)

ou Answered

1

Correct Answer AAAABCDE

ou Answered 2

Correct Answer AAAAABCD

ou Answered 3

Correct Answer AAABBCDD

Question 8

0 / 4 pts

Compress the following text with algorithm LZW where the initial content of the dictionary is A:1, B:2, C:3.

AABABAABCABAC

Which words were put into the dictionary during the process of compression? The words must be given in the order in which they are put into the dictionary.
The words must be separated with commas. Do not use blanks.
For example: AB,BB,ABC

Present the output code sequence, too. The codes must be separated with commas. Do not use blanks.
For example: 1,3,4,2

Answer 1:

ou Answered (You left this blank)

orrect Answer AA,AB,BA,ABA,AAB,BC,CA,ABAC

Answer 2:

ou Answered (You left this blank)

orrect Answer 1,1,2,5,4,2,3,7,3

Question 9

0 / 4 pts

Compress the following text with algorithm LZW where the initial content of the dictionary is A:1, B:2, C:3.

BBCABCABABAAC

Which words were put into the dictionary during the process of compression? The words must be given in the order in which they are put into the dictionary.
The words must be separated with commas. Do not use blanks.
For example: AB,BB,ABC

Present the output code sequence, too. The codes must be separated with commas. Do not use blanks.
For example: 1,3,4,2

Answer 1:

ou Answered (You left this blank)

orrect Answer BB,BC,CA,AB,BCA,ABA,ABAA,AC

Answer 2:

ou Answered (You left this blank)

orrect Answer 2,2,3,1,5,7,9,1,3

Question 10

0 / 5 pts

Decompress the following code with algorithm LZW where the initial content of the dictionary is 1:A, 2:B, 3:C.

3, 1, 1, 4, 2, 8, 6, 10, 9, 12

Which words were put into the dictionary during the process of decompression?
The words must be linked to the appropriate codes given.
If their is no word for a code, write a minus sign there.

4 5 6 7

8 9 10

11 12 13

(Use no other character in your answers.)

Answer 1:

ou Answered (You left this blank)

orrect Answer CA

Answer 2:

ou Answered (You left this blank)

orrect Answer AA

Answer 3:

ou Answered (You left this blank)

orrect Answer AC

Answer 4:

ou Answered (You left this blank)

orrect Answer CAB

Answer 5:

ou Answered (You left this blank)

orrect Answer BB

Answer 6:

ou Answered (You left this blank)

orrect Answer BBA

Answer 7:

ou Answered (You left this blank)

orrect Answer ACA

Answer 8:

ou Answered (You left this blank)

orrect Answer ACAB

Answer 9:

ou Answered (You left this blank)

orrect Answer BBAB

Answer 10:

ou Answered (You left this blank)

orrect Answer -

Question 11

0 / 5 pts

Decompress the following code with algorithm LZW where the initial content of the dictionary is 1:A, 2:B.

2, 3, 1, 3, 2, 5, 8, 7, 10, 8

Which words were put into the dictionary during the process of decompression?
The words must be linked to the appropriate codes given.
If their is no word for a code, write a minus sign there.

3 4 5 6

7 8 9

10 11 12

(Use no other character in your answers.)

Answer 1:

ou Answered (You left this blank)

orrect Answer BB

Answer 2:

ou Answered (You left this blank)

orrect Answer BBA

Answer 3:

ou Answered (You left this blank)

orrect Answer AB

Answer 4:

ou Answered (You left this blank)

orrect Answer BBB

Answer 5:

ou Answered (You left this blank)

orrect Answer BA

Answer 6:

ou Answered (You left this blank)

orrect Answer ABA

Answer 7:

ou Answered (You left this blank)

orrect Answer ABAB

Answer 8:

ou Answered (You left this blank)

orrect Answer BAB

Answer 9:

ou Answered (You left this blank)

orrect Answer BABA

Answer 10:

ou Answered (You left this blank)

orrect Answer -