

1.3 EXCHANGING DATA · 1.3.1

Compression

Original practice questions · 34 marks · about 45 minutes · spec 1.3.1(a)(b)

Instructions. Answer all questions. The number of marks is shown in brackets []. Quality of written communication is assessed in the extended-response question.

1 Total: 4 marks

This question is about compression.

(a) State what is meant by the term *compression*. [1]

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(b) State **two** benefits of compressing a file before it is sent over the internet. [2]

.....

(c) State whether lossy or lossless compression can restore the original file exactly. [1]

.....

2 Total: 6 marks

A company puts a document of text and a set of photographs on its website.

(a) Explain why lossless compression, not lossy, should be used for the text document. [3]

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(b) Explain why lossy compression is suitable for the photographs. [3]

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.....

3

Total: 6 marks

This question is about run length encoding (RLE).

(a) Show the result of compressing the sequence **AAAABBBBBBC** using RLE. [2]

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(b) Show the result of decompressing the RLE sequence **3C3M4C**. [2]

.....
(c) Explain one situation in which run length encoding would not reduce the size of a file. [2]

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4

Total: 6 marks

This question is about dictionary coding.

(a) Describe how dictionary coding compresses data. [3]

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(b) Explain why the dictionary must be stored with the compressed data. [2]

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(c) State one type of file for which dictionary coding works well. [1]

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Discuss run length encoding and dictionary coding, including how each works and the type of data each suits, and justify which method the developer should choose for files of English text. **[12]**

END OF QUESTIONS