MODULE C DATA REPRESENTATION · C11

Compression, lossy and lossless

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 1.3.3, 1.3.4

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. No calculator. In run length encoding (RLE), each run is written as a count followed by a colour, e.g. 5W means five white pixels. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 3 marks

A surveying company sends large files from its office to engineers working on site.

(a) Explain why the company compresses the files before sending them. **[3]**

2

Total: 2 marks

(a) Describe the difference between lossy and lossless compression. **[2]**

3 **Total: 7 marks**

A row of 16 pixels in an image is:
W W W W W W B B B W W W W G G G
(W = white, B = black, G = grey)

(a) Write this row using run length encoding (RLE). **[2]**

RLE: .....

(b) State how many values are stored in your answer to (a). Count each count and each colour as one value. **[1]**

Values: .....

(c) Another row is stored as **4R 2W 1R 5W** (R = red). Write out the original row of pixels. **[2]**

(d) A row of 8 pixels alternates: B W B W B W B W. Explain why RLE would **not** reduce the size of this row. **[2]**

4 **Total: 3 marks**

(a) Describe **two** ways lossy compression can reduce the file size of an image. **[2]**

1

2

(b) Identify **one** way lossy compression can reduce the file size of a sound file. **[1]**

5 **Total: 3 marks**

(a) A law firm compresses a text file containing a contract before emailing it. Explain why the firm should use lossless compression and not lossy compression. **[3]**

6 **Total: 2 marks**

(a) A travel website shows photographs of hotels. Identify the most suitable type of compression for the photographs and give **one** reason for your choice. **[2]**

Type: .....

Reason:

Total for this worksheet: 20 marks