MODULE B MEMORY AND STORAGE · B8

Calculating file sizes

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 1.3.2

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. Do not use a calculator. Show all your working. 1 kibibyte (KiB) = 1024 bytes; 1 mebibyte (MiB) = 1024 KiB. Give each answer in the unit the question asks for. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 3 marks

(a) State what is meant by the **resolution** of an image. **[1]**

(b) State what is meant by the **colour depth** of an image. **[1]**

(c) State what is meant by the **sample resolution** of a sound. **[1]**

2

Total: 3 marks

A museum shows a map of its galleries on a touch screen. The map image has a resolution of 512 × 256 pixels and a colour depth of 8 bits.

(a) Calculate the file size of the map image in kibibytes (KiB). Show all your working. **[3]**

Answer: ..... KiB

3 **Total: 3 marks**

An archive scans old photographs. One scan has a resolution of 1024 × 1024 pixels and a colour depth of 24 bits.

(a) Calculate the file size of the scan in mebibytes (MiB). Show all your working. **[3]**

Answer: ..... MiB

4 **Total: 4 marks**

A radio presenter records a jingle that is 128 seconds long. It is recorded with a sample rate of 8192 Hz and a sample resolution of 8 bits.

(a) Calculate the file size of the jingle in mebibytes (MiB). Show all your working. **[3]**

Answer: ..... MiB

(b) The jingle is recorded again with a sample resolution of 16 bits. The sample rate and length stay the same. State the new file size in MiB. **[1]**

Answer: ..... MiB

5 **Total: 3 marks**

A weather station stores a 30-second sound recording of the wind. The sample rate is 4096 Hz and the sample resolution is 16 bits.

(a) Calculate the file size of the recording in kibibytes (KiB). Show all your working. **[3]**

Answer: ..... KiB

6 **Total: 2 marks**

An engineer calculates the file size of an icon with a resolution of 64 × 64 pixels and a colour depth of 8 bits. This is the working:

64 × 64 × 8 = 32 768 bits
32 768 ÷ 8 = 4096 bytes
4096 ÷ 1000 = 4.096 KiB

(a) Identify the error in the working **and** give the correct file size in KiB. **[2]**

Error

Correct file size ..... KiB

7 **Total: 2 marks**

(a) A sound is recorded again with a lower sample rate. Explain the effect this has on the file size and on the accuracy of the recording. **[2]**

Total for this worksheet: 20 marks