Section 5, Chapter 26

worksheet – Representing sound, images and other information

1 Below is a list of file types that are used to store multimedia content.

For each type, explain what type of file it is and what type of data it stores.

1. bmp

*Image – uncompressed, RGBA channels stored for each pixel*

1. gif

*Image – lossy compression, limited colour range, no partial transparency, supports animation*

1. mpg

*Video – lossy compression, stores changes from frame to frame*

1. jpg

*Image – lossy compression, groups some colours, no transparency*

1. avi

*Video – can be lossless, storing bitmap data for each frame*

1. mp3

*Sound – lossy compression, sounds of particularly high and low frequency are removed*

1. wav

*Sound – uncompressed, stores samples for all sound frequencies*

2 Three of the file types above are used to store still images. There are other types of files that also store still images.

a) Why are there so many different ways of storing the same type of information?

*They can be compressed in different ways – each has a varying loss and compression ratio*

b) In the case of the three image file types in the list above, explain under what circumstances you would choose one rather than the other.

*– JPEGs are used most often, compresses well without much noticeable loss*

*– GIFs are very space efficient, and can be used to store animations*

*– BMPs are used when images are being edited, as they are lossless; they can also be used when a high degree of quality is required*

3 Video messaging is now available on mobile phones.

Do you think a time will come when all calls are made using video? Explain your answer.

4 Some people think that mp3 will become the standard format for all music files.

What are the advantages and disadvantages of this format?

5 Different image types use very different amounts of memory to store what is apparently the same image.

Why is this?

6 Graphics can be stored either using bitmap or vector techniques.

Explain the difference between the two types and give examples where each might be used.

7 Most data from the physical world, such as temperature, sound or pressure, is analogue.

Explain how a digital computer can cope with this sort of data.