# Data Representation Quiz

1. Convert to denary: 010011002

76

1. Convert to binary: 14610

10010010

1. Convert to hex: 9310

5D

1. Convert to denary: 1F316

399

1. How many bytes in a
   1. Kibi 1024
   2. Mibi 2^20
2. If A = 65, write your name in ASCII
3. Evaluate: 010011012 + 011101102

110000112

1. Evaluate 010100112 – 010111112

111101002

1. Evaluate 1102 x 1012

111102

1. Convert to fixed point binary 13.625

1101.1012

1. Length of sound clip = 10 seconds, bits per sample = 8 sample rate = 8000. What is the size of the file in kilobytes

80

1. Width of image = 12 pixels, height of image= 8 pixels, no of colours = 8. What is the size of the image in bytes:

36

1. List 3 pieces of metadata for an image

width, height, file type, resolution

1. Explain majority voting.

Each bit is sent three times. If a bit is corrupted, the majority bits of the same value are taken to be the correct value.

1. Explain how sound is converted from analogue to digital.

Sound is converted to electrical analogue signal by microphone. The analogue signal is sampled at regular intervals and then quantised, before being stored as binary data

1. Explain what MIDI is.

MIDI is sound protocol that allows communication between different musical devices. The sound that is comprised of messages (eg note on, note off, volume, pitch) that allows for easy editing.

1. If the Caesar cypher key is B, decipher the following cyphertext: CBOBOBT

Bananas

1. For even parity what bit would we add to 010001?

0

1. What are the advantages of vector graphics compared with bitmap graphics.

Easy to edit, generally smaller in size requiring less storage, scalable

1. Why do we compress data?

To make files smaller to save space, and take up less bandwidth when transmitting data

1. Apply RLE to the following sequence 011000111100010

1:0,2:1,3:0,4:1,3:0,1:1,1:0

1. Why might RLE compression actually increase the size of a file.

Because you have to stored both ethe value and the length of the run, so for a dataset with few consecutive pixels wit the same value, the file can end up being larger.