Information representation

A-Level Computer Science · Vocabulary in context

Word	Example
number system /ˈnʌmbə ˈsɪstəm/	Binary and denary are two kinds of **number system**.
binary /ˈbaɪnəri/	In **binary**, the number 5 is written 101. 5 101
denary /ˈdiːnəri/	We count in **denary**, using the digits 0 to 9. 0 9
digit /ˈdɪdʒɪt/	In 352, the first **digit** is 3. 352 3
place value /pleɪs ˈvæljuː/	In 352, the **place value** of the 5 is ten. 352 5
byte /baɪt/	One **byte** can store one letter, such as A. A
bit /bɪt/	A **bit** is a single 0 or 1. 0 1
hexadecimal /ˌheksəˈdesɪml/	In **hexadecimal**, the number 255 is written FF. 255 FF
nibble /ˈnɪbl/	A **nibble** is half a byte, or four bits.
register width /ˈredʒɪstə wɪtθ/	A **register width** of 8 bits allows 256 different values. 8 256
register /ˈredʒɪstə/	The processor keeps the number it is using in a **register**.
unsigned /ʌnˈsaɪnd/	An **unsigned** byte can store 0 to 255. 0 255
BCD /ˌbiː siː ˈdiː/	In **BCD**, each denary digit gets its own four bits.
overflow /ˌəʊvəˈfləʊ/	Adding 200 and 100 in one byte causes **overflow**. 200 100

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most significant bit /məʊst sɪgˈnɪfɪkənt bɪt/	The **most significant bit** is the leftmost bit.
two's complement /tuːz ˈkɒmplɪmənt/	In **two's complement**, 11111111 means −1. 11111111 −1
signed integer /saɪnd ˈɪntɪdʒə/	A **signed integer** can be positive or negative.
sign bit /saɪn bɪt/	A **sign bit** of 1 shows a negative number. 1
arithmetic shift /ˌærɪθˈmetɪk ʃɪft/	An **arithmetic shift** to the right halves the number and keeps its sign.
one's complement /wʌnz ˈkɒmplɪmənt/	To get the **one's complement**, flip every bit.
7-segment display /ˈsevən ˈsegmənt dɪˈspleɪ/	A digital clock shows each number on a **7-segment display**.
memory address /ˈmeməri əˈdres/	Each byte in memory has its own **memory address**.
code point /kəʊd pɔɪnt/	The letter A has the **code point** 65. A 65
character set /ˈkærɪktə set/	ASCII is a **character set** for English letters. ASCII
encoding /enˈkəʊdɪŋ/	UTF-8 is a common **encoding** for text. UTF-8
bitmap /ˈbɪtmæp/	A photo is stored as a **bitmap**.
pixel /ˈpɪksl/	Each **pixel** is one small dot of colour.
file header /faɪl ˈhedə/	The **file header** stores the image's width and height.

Word	Example
colour depth /ˈkʌlə depθ/	A **colour depth** of 8 bits gives 256 colours. 8 256
image resolution /ˈɪmɪdʒ ˌrezəˈluːʃn/	An **image resolution** of 1920 × 1080 has about two million pixels. 1920 × 1080
screen resolution /skriːn ˌrezəˈluːʃn/	A bigger **screen resolution** shows more detail.
bit depth /bɪt depθ/	A higher **bit depth** gives more colours.
frame /freɪm/	Each **frame** of the video is one picture.
compression /kəmˈpreʃn/	**Compression** makes the file smaller.
frame rate /freɪm reɪt/	A **frame rate** of 30 means 30 pictures every second. 30 30
vector graphic /ˈvektə ˈgræfɪk/	A **vector graphic** stays sharp when you make it bigger.
drawing list /ˈdrɔːɪŋ lɪst/	The **drawing list** stores every shape in the picture.
drawing objects /ˈdrɔːɪŋ ˈɒbdʒekts/	Circles and lines are **drawing objects**.
primitive /ˈprɪmɪtɪv/	A circle is a basic shape, or **primitive**.
properties /ˈprɒpətiz/	A circle's **properties** include its centre, radius and colour.
render /ˈrendə/	The computer must **render** the shapes before you can see them.
analogue data /ˈænəlɒg ˈdeɪtə/	Sound in the air is **analogue data**.

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Word	Example
digital data /ˈdɪdʒɪtl ˈdeɪtə/	A computer stores sound as **digital data**.
sampling /ˈsæmplɪŋ/	**Sampling** measures the sound many times every second.
sampling rate /ˈsæmplɪŋ reɪt/	A **sampling rate** of 44 100 Hz is used for music. 44 100 Hz
sampling resolution /ˈsæmplɪŋ ˌrezəˈluːʃn/	A higher **sampling resolution** stores each sample more exactly.
amplitude /ˈæmplɪtjuːd/	Loud sounds have a large **amplitude**.
sample resolution /ˈsæmpl ˌrezəˈluːʃn/	A **sample resolution** of 16 bits gives 65 536 levels. 16 65 536
quantisation /ˌkwɒntaɪˈzeɪʃn/	**Quantisation** rounds each sample to the nearest level.
bandwidth /ˈbændwɪdθ/	A fast connection has a high **bandwidth**.
lossless /ˈlɒsləs/	**Lossless** compression keeps every bit of the original file.
lossy /ˈlɒsi/	**Lossy** compression removes some detail to save space.
run-length encoding /rʌn leŋθ enˈkəʊdɪŋ/	**Run-length encoding** stores AAAAA as 5A. AAAAA 5A
dictionary methods /ˈdɪkʃənəri ˈmeθədz/	**Dictionary methods** replace common words with short codes.
Huffman coding /ˈhʌfmən ˈkəʊdɪŋ/	**Huffman coding** gives short codes to common letters.

Word	Example
entropy /ˈentrəpi/	A file with high **entropy** is hard to compress.
spatial /ˈspeɪʃl/	**Spatial** compression saves space within one picture.
temporal /ˈtempərəl/	**Temporal** compression saves space between video frames.

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