Binary systems and Hexadecimal

→ Converting from binary to denary
↳ multiply the 0/1 values with respective 2^x values.
eg. 01100110
0 + 64 + 32 + 0 + 0 + 4 + 2 + 0
= 102

→ Converting from denary to binary
↳ divide number by two, make note of the remainders, place remainders from bottom to top.

→ 1 bit → Binary DigIT
4 bits → 1 nibble
8 bits → 1 Byte
1024 bytes → 1 kB
1024 kB → 1 MB
1024 MB → 1 GB
1024 GB → 1 TB
1024 TB → 1 PB

→ Converting binary to hexadecimal
↳ split binary into groups of 4 and replace with corresponding Hexa decimal value.

→ Converting Hexa to binary

↳ replace each hexa digit with corresponding 4-bit binary code.

→ Converting Hexa to denary

↳ multiply each Hexa digit with its 16^x position value. and add those values.

eg. 5 B 6 A

$(5 \times 4096) + (11 \times 256) + (6 \times 16) + (10 \times 1)$

$= 20480 + 2816 + 96 + 10$

$= 4970$

→ Converting denary to hexadecimal

↳ divide denary number with 16, take note of all remainders and arrange them from bottom to top to give Hexa number.

→ Uses of Hexadecimal:

↳ memory dumps: more manageble

↳ when memory contents are output to printer or monitor.

↳ HTML

↳ used for colour #RRGGBB

↳ MAC address

↳ Media access control is a unique identification

number given to a device. Usually made of of 48 bits

NN-NN-NN - DD-DD-DD

identity no. of manufacturer serial no. of device

Two types of MAC → UAA (most common)

→ LAA

↳ Web addresses

↳ in form of Ascii code

↳ more precise thus used as security feature

↳ Assembly and Machine Code

↳ easier, faster, less errorprone when compared to binary.