Template Week 1 – Bits & Bytes

Student number: 588421

Assignment 1.1: Bits & Bytes intro

What are Bits & Bytes?

Bytes worden gebruikt om groten van bestanden aan te geven, bits zijn waar of niet waar, 0 of 1
1 byte bestaat uit 8 bits.

What is a nibble?

Een 4 bit nummer, half een byte.

What relationship does a nibble have with a hexadecimal value?

Elke vier bits in binair komen overeen met 1 symbool in hexadecimaal.

Why is it wise to display binary data as hexadecimal values?

Voor mensen is het minder foutgevoelig om hexadecimaal te lezen dan een lange reeks aan binair te lezen.

What kind of relationship does a byte have with a hexadecimal value?

Een byte is gelijk aan twee hexadecimale cijfers

An IPv4 subnet is 32-bit, show with a calculation why this is the case.

Een 32-bit IPv4 subnet bestaat uit 4 8-bit delen, als je deze bij elkaar optelt 8 x 4 = 32 krijg je 32 bits.

Assignment 1.2: Your favourite color

Hexadecimal color code: #000000

Assignment 1.3: Manipulating binary data

Color	Color code hexadecimaal (RGB)	Big Endian	Little Endian
RED	#FF0000		
GREEN	#00FF00		
BLUE	#0000FF		
WHITE	#FFFFFF		
Favourite (previous assignment)	#000000		

Screenshot modified BMP file in hex editor:

Assignment 1.4: Student number to HEX and Binary

Convert your student number to a hexadecimal number and a binary number.

Explain in detail that the calculation is correct. Use the PowerPoint slides of week 1.

Student nummer: 588421

588421 / 16 = 36776,3125
36776 x 16 = 588416 remainder 5
36776 / 16 = 2298,5
2298 x 16 = 36768 remainder 8
2298 / 16 = 143,625
143 x 16 = 2288 remainder 10 (A in hex)
143 / 16 = 8,9375
8 x 16 = 128 remainder 15 (F in hex)
8 / 16 = 0 remainder 8

588421 in hexadecimaal is 8FA85

588421 / 2 = 294210,5
294210 x 2 = 588420 remainder 1
294210 / 2 = 147105 remainder 0
147105 / 2 = 73552,5
73552 x 2 = 147104 remainder 1
73552 / 2 = 36776 remainder 0
36776 / 2 = 18388 remainder 0
18388 / 2 = 9194 remainder 0
9194 / 2 = 4597 remainder 0
4597 / 2 = 2298,5
2298 x 2 = 4596 remainder 1
2298 / 2 = 1149 remainder 0
1149 / 2 = 574,5
574 x 2 = 1148 remainder 1
574 / 2 = 287 remainder 0
287 / 2 = 143,5
143 x 2 = 286 remainder 1
143 / 2 = 71,5
71 x 2 = 142 remainder 1
71 / 2 = 35,5
35 x 2 = 70 remainder 1
35 / 2 = 17,5
17 x 2 = 34 remainder 1
17 / 2 = 8,5
8 x 2 = 16 remainder 1
8 / 2 = 4 remainder 0
4 / 2 = 2 remainder 0
2 / 2 = 1 remainder 0
1 / 2 = 0 remainder 1

10001111101010000101 is mijn studentennummer in binair

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