Template Week 1 – Bits & Bytes

Student number: 588734

Assignment 1.1: Bits & Bytes intro

What are Bits & Bytes?

Bits is een 1 of een 0. En een byte zijn 8 bits.

What is a nibble?

Dat zijn 4 bits.

What relationship does a nibble have with a hexadecimal value?

1 nibbel = 1 hexidecimaal cijfers

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

Het is compacter, je kan meer data kwijt in een kortere waarde.

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

1 byte is 2 nibbels/2 hexidecimale waardes.

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

Ieder vakje is 8 bits, dus 1 byte. En intotaal heb je 4 bytes, dus 32 bits.

192.168.1.1
4 x 1 byte = 4 bytes, 4 x 8bits = 32bits.

Assignment 1.2: Your favourite color

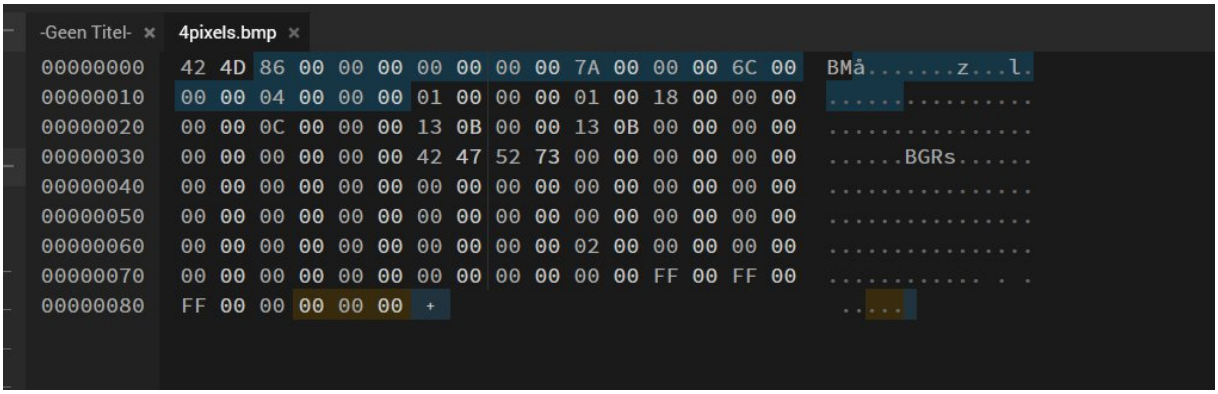
Hexadecimal color code:

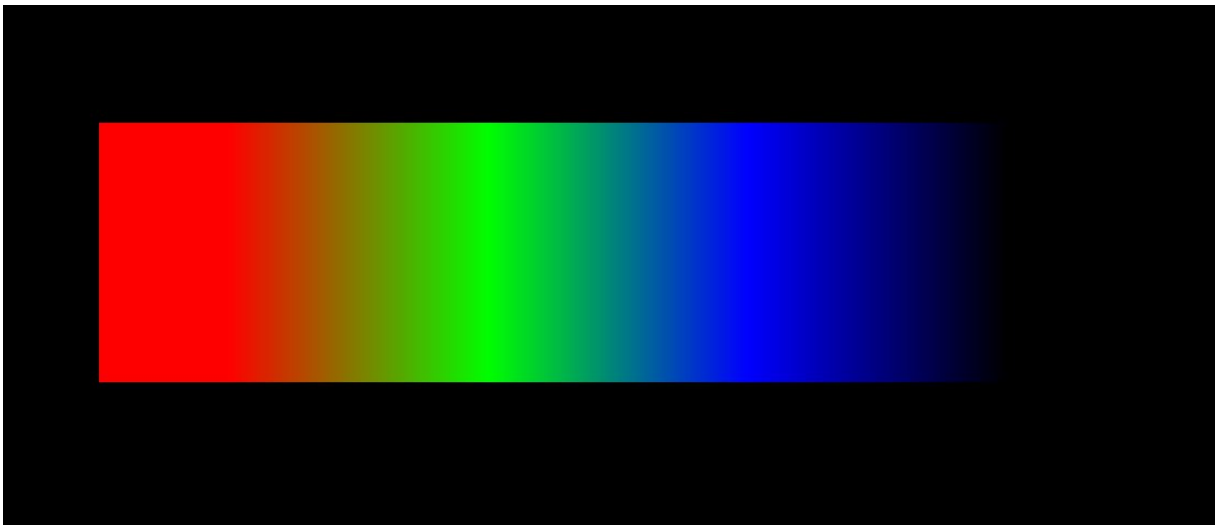
#32a852

Assignment 1.3: Manipulating binary data

Color	Color code hexadecimaal (RGB)	Big Endian	Little Endian
RED	#ff0000	FF 00 00	00 00 FF
GREEN	#00FF00	00 FF 00	00 FF 00
BLUE	#0011FF	00 00 FF	FF 00 00
WHITE	#ffffff	FF FF FF	FF FF FF
Favourite (previous assignment)	#ffffff	32 A8 52	52 A8 32

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.

591527

591527 / 2 = 295763, 1
295763 / 2 = 147881, 1
147881 / 2 = 73940, 1
73940 / 2 = 36970, 0
36970 / 2 = 18485, 0
18485 / 2 = 9242, 1
9242 / 2 = 4621, 0
4621 / 2 = 2310, 1
2310 / 2 = 1155, 0
1155 / 2 = 577, 1
577 / 2 = 288, 1
288 / 2 = 144, 0
144 / 2 = 72, 0
72 / 2 = 36, 0
36 / 2 = 18, 0
18 / 2 = 9, 0
9 / 2 = 4, 1
4 / 2 = 2, 0
2 / 2 = 1, 0
1 / 2 = 0, 1

10010000011010100111

1001 0000 0110 1010 0111

9 0 6 A 7

906A7

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