

Template Week 1 – Bits & Bytes

Student number: 569508

Assignment 1.1: Bits & Bytes intro

What are Bits & Bytes?

A bit is the smallest data on the computer that has value 0 or 1. A bytes has a bits of 8 and is the standard unit used to represent a character of data, such as letter or symbol.

What is a nibble?

It's a group of 4bits

What relationship does a nibble have with a hexadecimal value?

One nibble can hold one hexadecimal digit

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

Because it makes more compact and readable

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

A byte matches exactly 2 hexadecimal digits because each hex digit represents 4 bits

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

Assignment 1.2: Your favourite colour

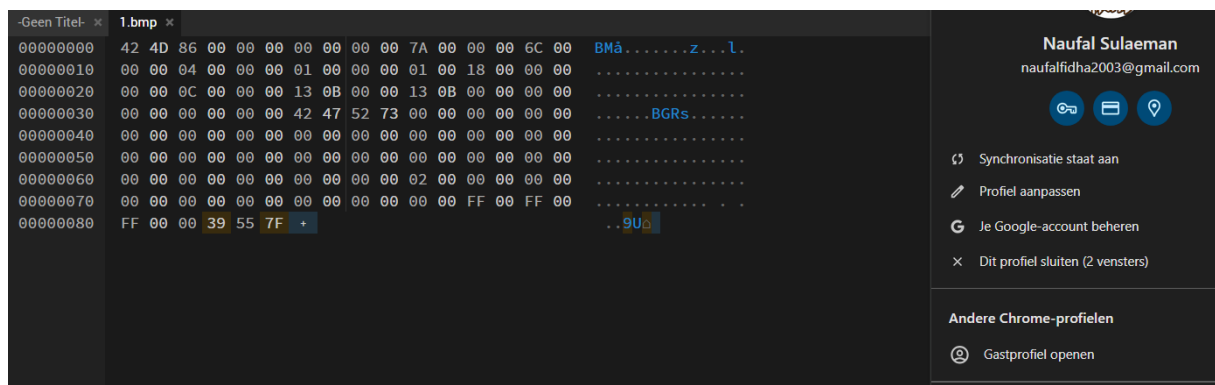
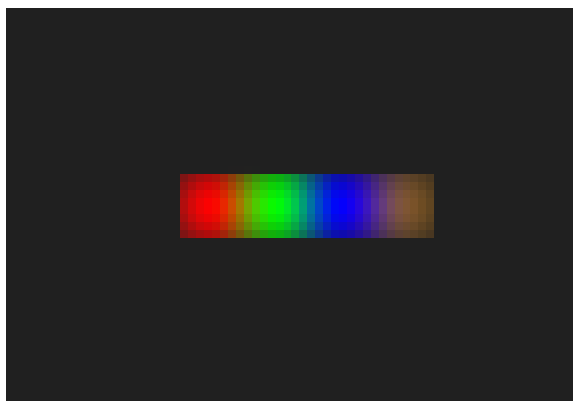
Hexadecimal colour code:

HEX: 7f5539

Assignment 1.3: Manipulating binary data

Colour	Colour code hexadecimal (RGB)	Big Endian	Little Endian
RED	FF 00 00	FF 00 00	00 00 FF
GREEN	00 FF 00	00 FF 00	00 FF 00
BLUE	00 00 FF	00 00 FF	FF 00 00
WHITE	FF FF FF	FF FF FF	FF FF FF
Favourite (previous assignment)	7F 55 39	7F 55 39	39 55 7F

Screenshot modified BMP file in hex editor:



Bonus point assignment – week 1

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 number: 569508

Hexadecimal: $569508 : 16 = 35669 \text{ remainder } 4$

$35669 : 16 = 2229 \text{ remainder } 5$

$2229 : 16 = 139 \text{ remainder } 5$

$139 : 16 = 8 \text{ remainder } 11 \text{ (Hex B)}$

$8 : 16 = 0 \text{ remainder } 8$

8B554

Binary: 1000 1011 0101 0101 0100

Hex Digit	Binary Equivalent
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

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