Template Week 1 – Bits & Bytes

Student number: 571334

Assignment 1.1: Bits & Bytes intro

What are Bits & Bytes?

Bits are the smallest units a computer can process.

8 bits = 1 byte

What is a nibble?

1 nibble is a collection of 4 bits
4 bits = 1 nibble

What relationship does a nibble have with a hexadecimal value?

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

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

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

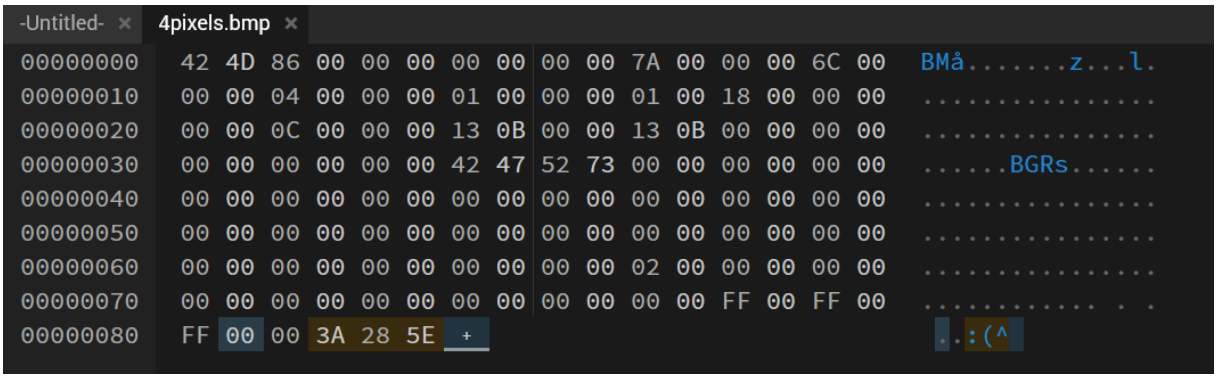
Assignment 1.2: Your favourite colour

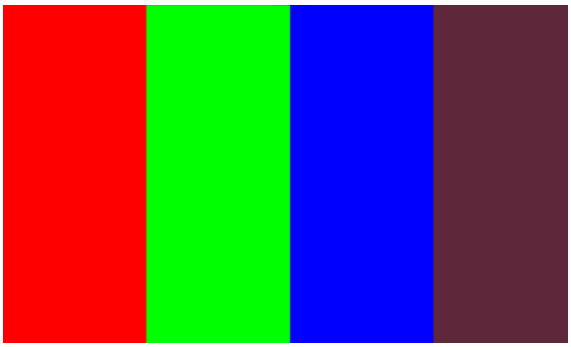
Hexadecimal colour code: #3a285e

Assignment 1.3: Manipulating binary data

Colour	Colour code hexadecimaal (RGB)	Big Endian	Little Endian
RED			
GREEN			
BLUE			
WHITE			
Favourite (previous assignment)	#3a285e		

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.

571334 / 2 = 285667 = 0
285667 / 2 = 142833 = 1
142833 / 2 = 71416 = 1
71416 / 2 = 35708 = 0
35708 / 2 = 17854 = 0
17854 / 2 = 8927 = 0
8927 / 2 = 4463 = 1
4463 / 2 = 2231 = 1
2231 / 2 = 1115 = 1
1115 / 2 = 557 = 1
557 / 2 = 278 = 1
278 / 2 = 139 = 0
139 / 2 = 69 = 1
69 / 2 = 34 = 1
34 / 2 = 17 = 0
17 /2 = 8 = 1
8 / 2 = 4 = 0
4 / 2 = 2 = 0
2 / 2 = 1 = 0
1 / 2 = 0 = 1

Student Number: 571334
Binary : 1000 1011 0111 1100 0110
Hex :8 B 7 C 6

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Binary	Decimal	Hex
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	10	A
1011	11	B
1100	12	C
1101	13	D
1110	14	E
1111	15	F

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