Template Week 1 – Bits & Bytes

Student number:

Assignment 1.1: Bits & Bytes intro

What are Bits & Bytes?

A bit (binary digit) is the smallest unit of data in a computer, representing a value of either 0 or 1.

A byte consists of 8 bits and is the standard unit used to represent a character of data, such as a letter or symbol.

What is a nibble?

4 bits

What relationship does a nibble have with a hexadecimal value?

2 nibbles makes 1 hexadecimal number

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

Easier to read for humans

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

Every byte is 2 hexadecimal digits

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

There are 4 numbers that go up to 255 and to reach 255 u need an 8-bit number so 4*8 = 32

Assignment 1.2: Your favourite color

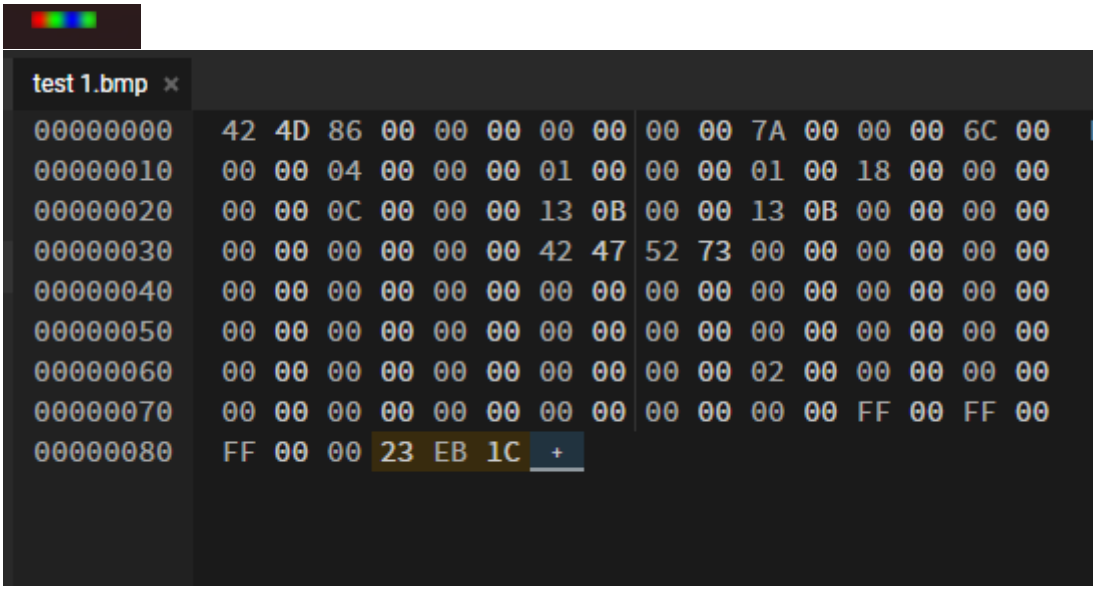
Hexadecimal color code:

#23eb1c

Assignment 1.3: Manipulating binary data

Color	Color code hexadecimaal (RGB)	Big Endian	Little Endian
RED	#FF0000	#0000FF	#FF0000
GREEN	#00FF00	#00FF00	#00FF00
BLUE	#0000FF	#FF0000	#0000FF
WHITE	#FFFFFF	#FFFFFF	#FFFFFF
Favourite (previous assignment)	#23EB1C	#1CEB23	#23EB1C

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.

529847/16 = 33115 remainder 7

33115/16 = 2069 remainder 11 (B)

2069/16 = 129 remainder 5

129/16 = 8 remainder1

8/16 = 0 remainder 8

0x815B7

0b1000 0001 0101 1011 01111

Ready? Save this file and export it as a pdf file with the name: **week1.pdf**