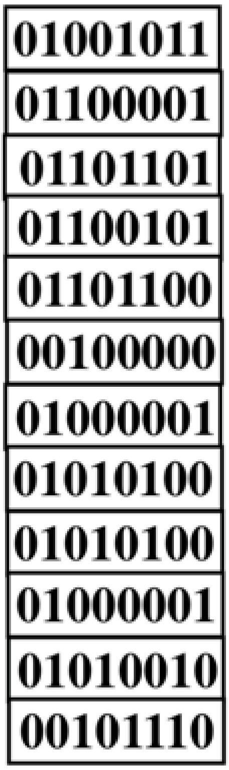
Math DigEng Quiz II - Ex1

1. How many bits are required to encode all **26** letters, **10** symbols and numerals
2. We consider the following data:

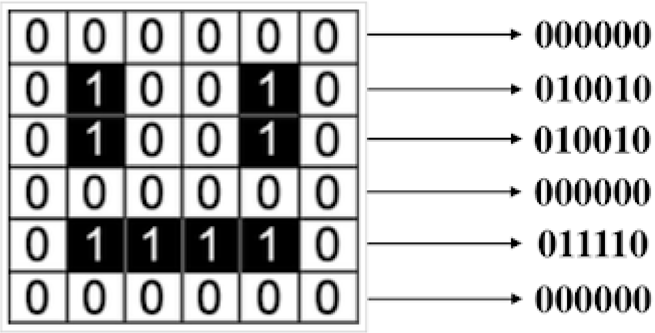


01001011
01100001
01101101
01100101
01101100
00100000
01000001
01010100
01010100
01000001
01010010
00101110

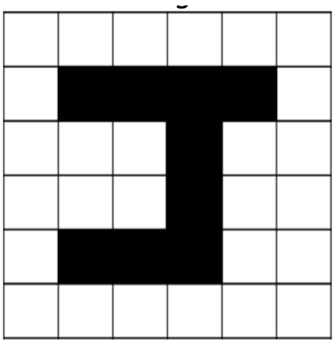
   1. Questions:
      a. What is the total memory size in Byte (xxB)
      b. Convert this data to a string of characters by using ASCII - character table

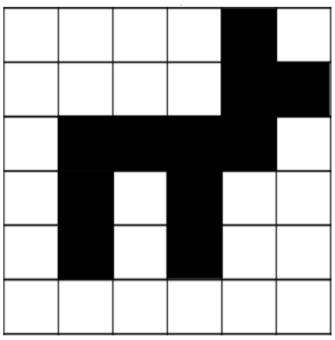
In order for the computer to store the image, each pixel is represented by a binary value. We call this representation of colours a “bit-plane”. Each bit doubles the number of available colours i.e. 1-bit would give us 2 colours, 2-bits would give us 4 colours and 3-bits would give us 8 colours etc.

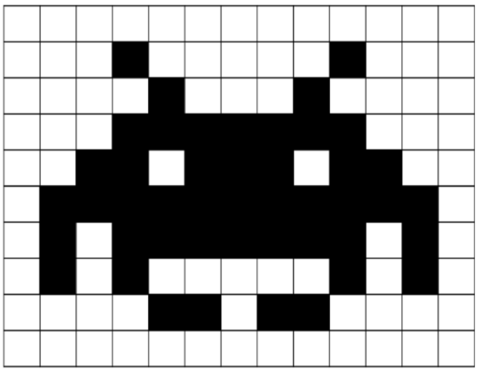
In a monochrome (two colour) image, like the example below, just 1 bit is needed to represent each pixel e.g. 0 for white and 1 for black. Images are stored in scan lines. Each line is encoded from left to right, top to bottom. The image here would receive the following binary values:


0 0 0 0 0 0
0 1 0 0 1 0
0 1 0 0 1 0
0 0 0 0 0 0
0 1 1 1 1 0
0 0 0 0 0 0
000000
010010
010010
000000
011110
000000

1. Convert the following images to Binary:

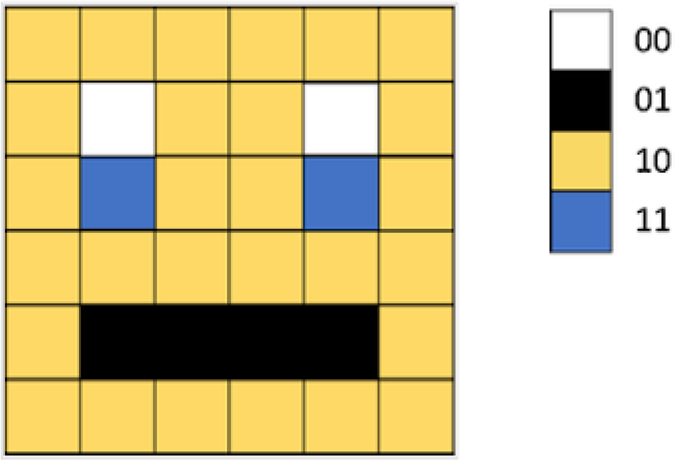






1. Questions:
    a. First Image. Write the answer in the form of: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
    b. Second Image. Write the answer in the form of: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
    c. Third Image. Write the answer in the form of: xxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxx etc…

2. In an image that uses 4 colours, 2 bits are needed for each pixel. The following image uses two bits to store the following colours: 00 – White; 01 – Black; 10 – Yellow; 11 – Blue



2. Questions:
    a. Convert the image to binary number
    b. Then to hexadecimal number