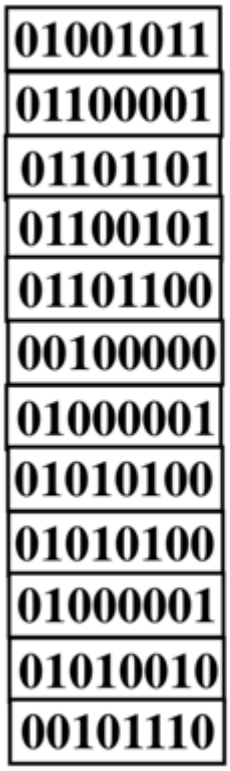
Math DigEng Quiz II - Ex1

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

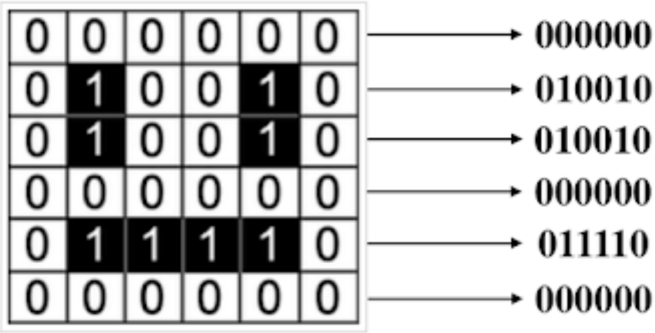


01001011
01100001
01101101
01100101
01101100
00100000
01000001
01010100
01010100
01000001
01010010
00101110

   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

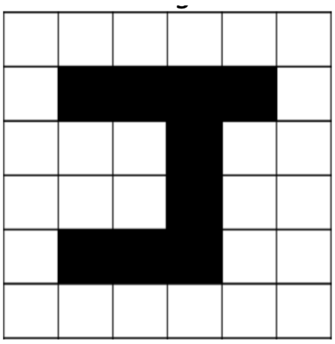
In order for the computer to store the image, each pixel is represented by a binary value. We call this representation of colours a “bit-plane”. Each bit doubles the number of available colours i.e. 1-bit would give us 2 colours, 2-bits would give us 4 colours and 3-bits would give us 8 colours etc.

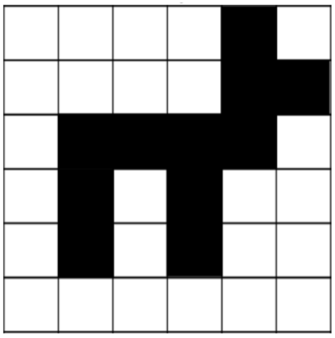
In a monochrome (two colour) image, like the example below, just 1 bit is needed to represent each pixel e.g. 0 for white and 1 for black. Images are stored in scan lines. Each line is encoded from left to right, top to bottom. The image here would receive the following binary values:

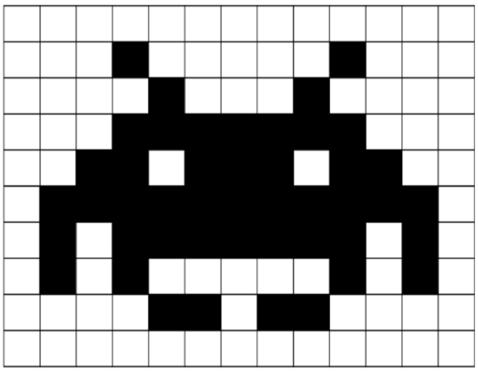


0	0	0	0	0	0	→ 000000
0	1	0	0	1	0	→ 010010
0	1	0	0	1	0	→ 010010
0	0	0	0	0	0	→ 000000
0	1	1	1	1	0	→ 011110
0	0	0	0	0	0	→ 000000

1. Convert the following images to Binary:

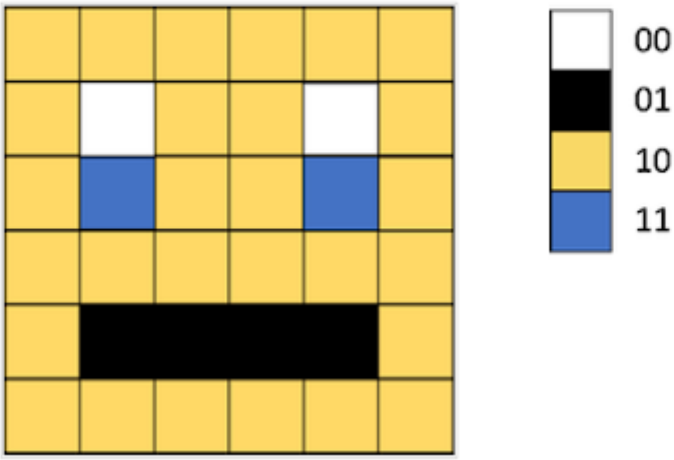






1. Questions:
   a. First Image. Write the answer in the form of: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
   b. Second Image. Write the answer in the form of: xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
   c. Third Image. Write the answer in the form of: xxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxx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



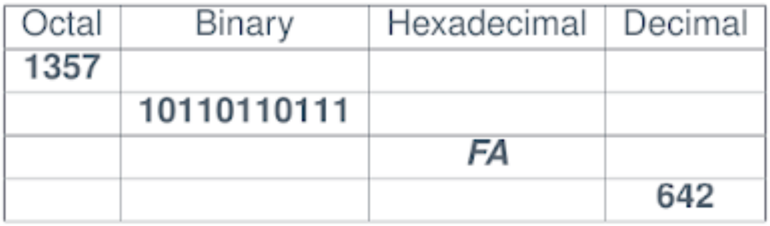
2. Questions:
    a. Convert the image to binary number
    b. Then to hexadecimal number

Math DigEng Quiz II - Ex2

1. Using the Horner's method, find the decimal expansion of the octal number 366
2. Find the Hexadecimal expansion of the decimal number 11070 by using the successively division.
3. Using expansion method find the binary expansion of the decimal number 469

Math DigEng Quiz II - Ex3

1. Complete the following table



Octal	Binary	Hexadecimal	Decimal
1357			
	10110110111		
		FA	
			642