

## Exercise 7.

$$1) a) 2002 = 1024 + 512 + 256 + 128 + 64 + 16 + 2 =$$

$$= 11111010010_2$$

$$1001 = 512 + 256 + 128 + 64 + 32 + 8 + 1 =$$

$$= 01111101001_2$$

$$2002 \oplus 1001 = 10000111011$$

$$b) \begin{array}{cccccccccc} 1 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 & 1 \\ 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \end{array} = 11111010010 = 2002$$

$$2) a) 695 = 512 + 128 + 32 + 16 + 4 + 2 + 1 = 1010110111_2$$

$$347 = 256 + 64 + 16 + 8 + 2 + 1 = 0101011011_2$$

$$695 \oplus 347 = 1111101100$$

$$b) 1111101100 = 1010110111_2 = 695$$

$$3) a) 39 = 32 + 4 + 2 + 1 = 100111_2$$

$$19 = 16 + 2 + 1 = 010011_2$$

$$39 \oplus 19 = 110100$$

$$b) 110100 = 100111_2 = 39$$

$$4) a) 4042 = 2048 + 1024 + 512 + 256 + 128 + 64 + 8 + 2 = 111111001010_2$$

$$2021 = 1024 + 512 + 256 + 128 + 64 + 32 + 4 + 1 = 011111100101_2$$



$$4042 \oplus 2021 = 10000010111$$

$$8) 10000010111 = 111111001010_2 = 4042$$