

Exercise 2

Module 2: Bits and Bytes

1. Complete the byte diagram and explain what each part means:

A byte has _____ bits in total.

The leftmost bit has the highest position value of _____.

The rightmost bit always has a position value of _____.

With 8 bits, a computer can represent _____ different values.

The byte 01000001 equals decimal _____ which is the ASCII code for the letter _____.

2. Hex in the Wild

(a) Convert B4 from hexadecimal to binary. Show each 4-bit group.

(b) Convert B4 from hexadecimal to decimal.

3. Binary Match-Up: Draw a line, or write the letter, matching each binary number on the left to its decimal value on the right.

Binary numbers: Decimal values:

- | | |
|-------------|--------|
| 1. 00001010 | A. 255 |
| 2. 11111111 | B. 128 |
| 3. 10000000 | C. 10 |
| 4. 00001111 | D. 204 |
| 5. 11001100 | E. 15 |

4. A sensor reading of 23.5 °C is stored in a computer. Which statement best describes how this value is physically saved in RAM?

- A) As the text characters '2', '3', '.', '5'
- B) As a voltage pattern, a sequence of transistors set to ON or OFF representing bits
- C) As a colour value using the RGB system
- D) As a file saved directly to the SD card