



## TD5: memory

### ■ Ex1 :

We have a RAM memory whose starting address is 2000H and ending address is 23FFH.

- What is the total capacity of this memory (in bytes and kilobytes)?
- What is the decimal value of the ending address?
- If each memory word contains 8 bits, how many data bits can this memory store in total?

### ■ EX2

How can we obtain a 2 KB memory using memory chips of the following types:

- 512 words  $\times$  8 bits
- 2048 words  $\times$  4 bits
- 256 words  $\times$  4 bits

### ■ Ex3

We consider a microprocessor with 11 address lines. What is the maximum number of memory blocks (each of 1KB), and give the memory range of each block, knowing that the first address is 000H?"

### ■ EX4

Eight memory chips of 8 KB each are used to build a central computer memory with 8 data bits and 16 address lines.

- What are the number of address lines and data lines of each chip?
- What is the total size of the constructed memory?
- Give the start and end addresses (in hexadecimal) of each chip.





## ■ EX5

A system based on the 8085 microprocessor allows addressing:

- ROM: 2 KB starting from address 0000H
- RAM: 4 KB
- I/O interface: 4 registers, base address 20H

Draw the design diagram showing details of each component.

