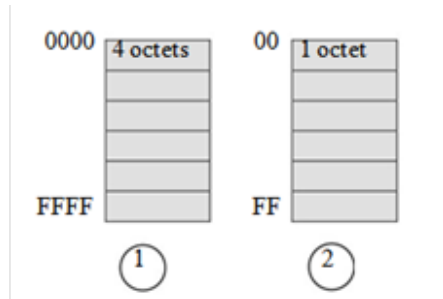




TD N°4: Management memory (Pagination)

Exercise n°1

You have the following main memory (RAM) structure:



- Calculate the size of the main memory for the 2 types of memory.
- Give the length of a physical address for the following main memories: 128MB, 512KB.
- Calculate the number of bits used to address or identify the 4 kilobyte blocks in a 256 MB memory.

Exercise n°2

Consider the following table of pages:

0	4
1	6
2	8
3	9
4	12
5	1

Given that the virtual and physical pages are 1 KB in size, what is the memory address corresponding to each of the following virtual addresses coded in hexadecimal: 142A and 0AF1.

Exercise n°3

A computer with the following characteristics:

- 2 GB physical memory,
- 32-bit architecture,
- The size of a page is 4 KB,
- A virtual address indexing one byte.

- Give the size of the page table, giving details of your answer, knowing that each entry in the table contains: a reference to a frame + 1 bit presence absence.
- How many pages are needed to load the entire page table into memory?

Exercise n°4

Let's consider an architecture characterized by the following assumptions:

- A page table of size 128 KB,
- Each entry in the table contains a reference to a page frame and a presence/absence bit,
- The size of a page is 64 KB,

- The size of physical memory is 2 GB,
- A virtual address indexes one byte.

Answer the following questions and justify your answer:

- How many page frames does physical memory contain?
- What is the bit size of a page table entry (the size in term of bits)?
- What is the number of entries in the page table?
- What is the size of the virtual memory for this architecture?
- What is the bit size of the address bus in this architecture?
- Consider the following two logical addresses expressed in decimal: 1024 and 65540. If possible, give the corresponding physical addresses (expressed in decimal) based on the first 10 entries in the page table given below.

Page No.	Page frame no.	Presence/absence bit
0	0	1
1	2	0
2	8	0
3	2050	1
4	21054	1
5	31463	1
6	2187	0
7	260	0
8	1266	0
9	1024	1