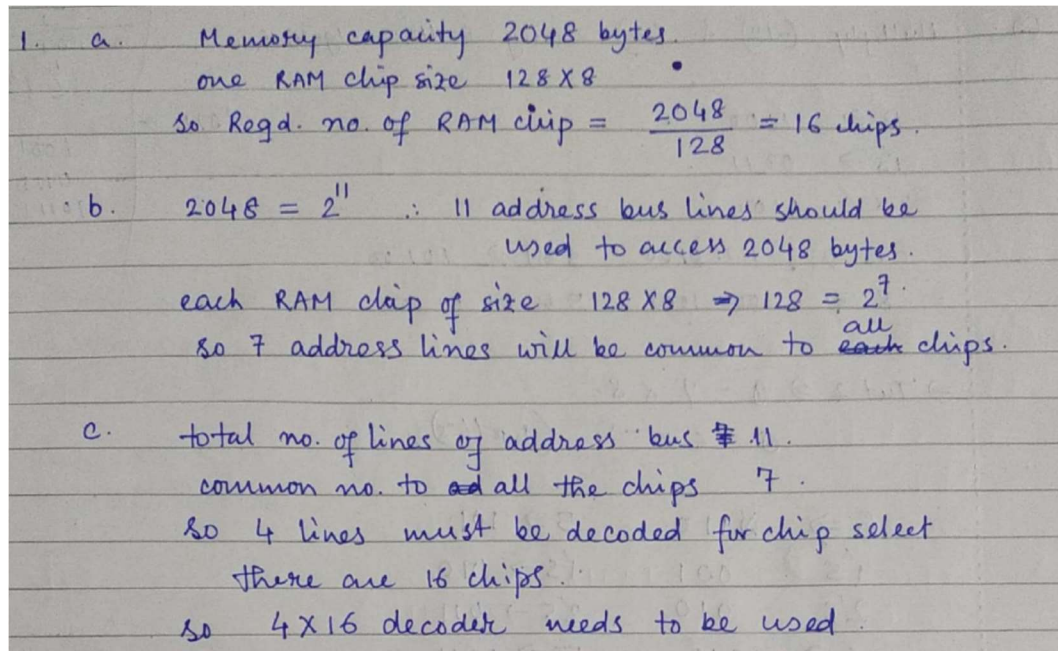


Practice Set 1:

1.
 - a. How many 128×8 RAM chips are required to provide a memory capacity of 2048 Bytes? You can assume the size of one memory location is 1 Byte.
 - b. How many lines of the address bus must be used to access 2048 Bytes of memory? How many of these lines will be common to all chips?
 - c. How many lines must be decoded for chip select? Specify the size of the decoders.



2. A type of Minicomputer has 18 address signals and of course, the 18-bit address bus. Answer the following questions:
 - a) What was the address space of these computers?
 - b) What may have been the largest possible memory of these computers in bytes if the memory location is 1 Byte?
 - c) What would be needed to change in these computers if we would like to increase address space 8-times?

Solution:

- a) $2^{18} = 2^8 \times 2^{10} = 256k$ ($2^{10} = 1K$, $2^{20} = 1M$, $2^{30} = 1G$, $2^{40} = 1T$...)
- b) $2^{18}B = 256KB$
- c) add 3 address signals towards the higher order bits. ($x / 2^{18} = 8 \Rightarrow x = 2^{18} \cdot 2^3 = 2^{21}$)