COMPUTER ARCHITECTURES (02LSEOV)

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Problem solving session nº2
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Prepare a program in Assembly for Intel 8086 able to get as input a brief text of four rows, each of them with a minimum of 20 characters and a maximum of 50 characters. The program has to perform these computations on the text, as follows:

1. Write the Assembly code required to get text by means of calls to INT 21H; at the end of the acquisition phase text has to be in the arrays:
   FIRST_ROW DB 40(?)
   SECOND_ROW DB 40(?)
   THIRD_ROW DB 40(?)
   FOURTH_ROW DB 40(?)

2. For each row it is required to count the number of times each character appears (desired characters are only a..z, A...Z), printing, for each row, the character that appears a number of times equal to half the maximum times. If more than one character appears for the same number of times, it is required to print all of them.

3. Print the character that appears more times given all the four rows together.

4. Finally, print the text using a Caesar cipher, applied only to a..z and A..Z characters of each row. Every other character has to be simply copied. Parameter *k* has to be defined as a constant in the program, and has to be incremented of 1 after the first row, of 2 after the second row, of 3 after the third row. A Caesar cipher transforms letter *a* in *a*+*k*, given this succession of characters: a..zA...Za...zA..Za...z, etc..
   As example, with k=3, maZzo is transformed in pdcCr.