CAs - Lab 01

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Exercise

Write a program in 8086 assembly to:

1. Read in input a short text of 4 lines, each of these lines long from 20 to 50 characters.
2. Count number of occurrences of the letters.
3. Apply a cryptographic algorithm.

Reading

- The program reads the lines with the instruction `INT 21H` and stores them in

```
first_line DB 50 DUP(?)
second_line DB 50 DUP(?)
third_line DB 50 DUP(?)
fourth_line DB 50 DUP(?)
```

End of reading

- Reading stops when one of this conditions is satisfied:
  - After at least 20 characters, an ENTER has been read.
  - 50 characters have been read without any ENTER, after the first 20 characters.
- The ENTER character corresponds to 13 in ASCII table.
- PLEASE NOTE: if you read an ENTER in the first 20 characters, the reading must continue.

Number of occurrences

- For each line, the program has to count how many times a certain character appears.
- Consider only letters, a...z, A...Z, discerning upper and lower case.
- For each line, output the most frequent character (appearing *MAX* times).
- For each line, print the list of characters appearing at least *MAX*/2 times.
- After each character printed, print also the number of occurrences.

Cryptographic algorithm

- Print the text using Caesar cipher, only applied to a...z, A...Z characters.
- Given parameter *k*, the Caesar cipher transforms the letter in *a*+*k*, considering the following pattern: a...zA...Za...zA...Z etc.
- Non-alphabetic characters stay the same.
- *k* = 1 for the first row, 2 for the second, 3 for the third, 4 for the fourth.
- Eample with *k* = 3: piZza -> slcCd