Laboratory Assignment 1

Data Structures

Fall 2013

Terms and conditions:

- Assignment should be done in groups (preferred size of 2, max. 3 people).
- Assignment shall be zipped and submitted to BlackBoard. Accepted formats are .zip, .rar and .7z.
- Rename the zipped file as *Surname_Firstname* before submission. Only one person per group will send the assignment and the file will be named after this sender.
- Assignment shall include the source files/projects as well as a document (.doc or .pdf). The document must also include the IDs and names of all the members of the group.

Students have to present every assignment to the teacher and answer the teacher's questions about it on the corresponding lab session (see deadlines).

Submission deadlines:

- Assignment 1: 5-Nov-2013
- Assignment 2: 3-Dec-2013
- Assignment 3: To be added…

Submissions that do not meet the deadlines and/or the requirements may not be reviewed. It is responsibility of the students to meet the requirements and it is not responsibility of the teacher to warn students and go after students when such requirements are not met. Exceptions will not be considered (except for those included in the examination regulation- "*normativa de examenes*").

Students that do not pass the practical part of the course (i.e. the lab) on the January call may be required to complete an additional assignment for the extraordinary call (June).

Important note: On these assignments only basic requirements are described. Students need to do additional assumptions and to make design decisions based on the given requirements. Students also need to decide on the input data and on the way in which that data is inputted into the system. Sample data needs to be provided to facilitate testing. Students are free to implement the solution in the way they prefer. Any decision will be reasonable providing that (1) it is explained on the written document and commented on the source code, and (2) it does not contradict blatantly the requirements stated here.

Assignment 1: Stacks and Queues – *Palindrome problem*

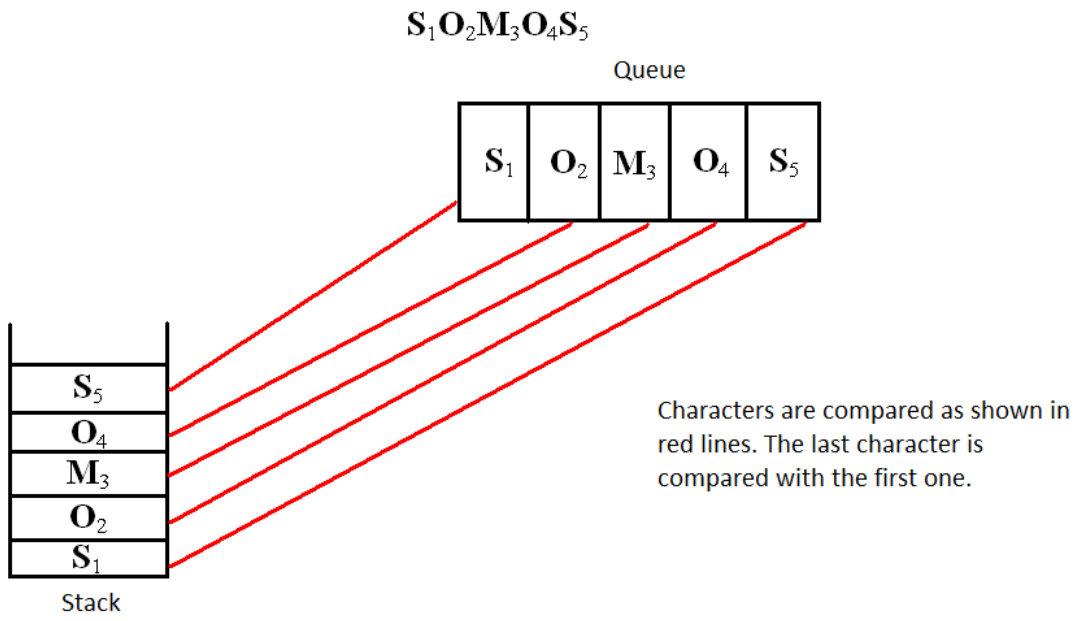
The problem is described as follows:

From an input text (obtained from a string or a text file), it is needed to check whether or not the phrases contained are palindromes. Each line of the input text is a string (phrase). To do this, the following steps are carried out:

1. One string is obtained from source and each character of the phrase is piled into a stack.
2. At the same time characters are inserted also in a queue structure.
3. When this process is finished, characters are extracted one by one from both structures and comparing them to determine whether or not the phrase is a palindrome.

A palindrome is a word (or a phrase) that is read equally from left to right than from right to left. E.g.: “Somos” (in Spanish).

The strategy is showed in the figure below:



NB: Stack and Queue structures have to be implemented using pointers.

** Optionally: the input text has to be obtained from a text file or a string.

When the assignment is completed, the documentation should contain the sections of the following index:

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