**STACKS : Guided Exercises**

1. Represent the following expressions in postfix Polish form:

a+b , (a+b)/d , ((c+d) +(d-e))+5, -(a+b)+(5+b)c, -(((a+b)+(c-d))/5)+a

Try to give the evaluation algorithm without using a stack. What are the problems encountered? Give the evaluation algorithm without the use of a stack.

2. Let us analyze mathematical expressions which use symbols (, { and [ for the opening of the sub-expressions and symbols ), } and ] for their respective closing. Each closing symbol must be associated with its opening symbol. Use the abstract machine on stacks to write the algorithm that performs such a check.

3. Text editors generally use two special characters to process a line of text:

- the delete character, denoted #, deletes the previous character,

- the undo character, denoted @, deletes the whole current line.

Use the abstract machine on stacks to write the algorithm that edits a line of text.

4. Give a possible implementation(diagram+description) for:

- a queue of queues,

- a queue of stacks,

- a stack of queues,

- a stack of stacks.