

Text Editor (un)do functionality:

In this assignment you are going to implement an application that will demonstrate the benefits of stacks. The application should allow users to edit text. By storing actions in a stack the user will be able to undo their actions.

Below you see a possible GUI, although you are encouraged to make something more user-friendly.

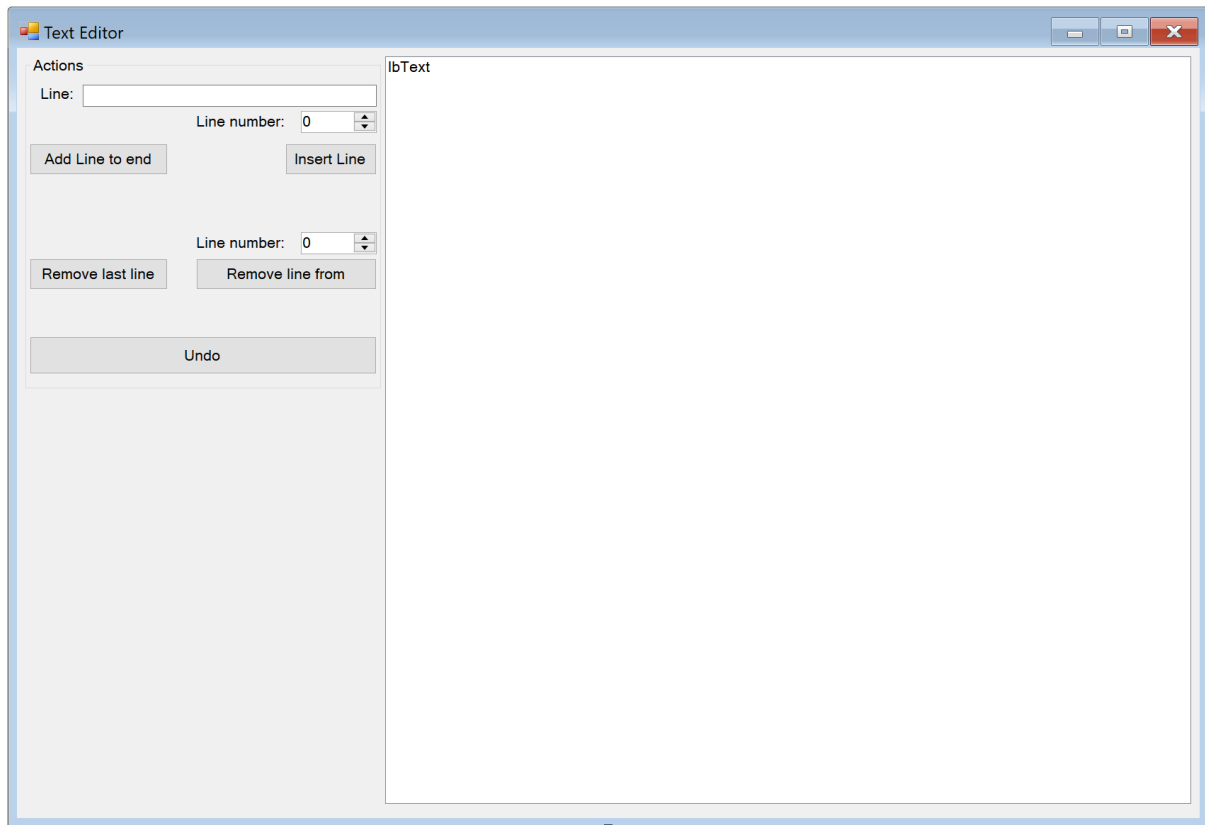


Figure 1: Possible graphical user interface for the text editor

A user can add lines to the end of the text by typing text in the textbox and click on the button “Add Line to end”. This will store the action on a stack (see UML class diagram with description).

Alternatively, the user can also insert lines by selecting the target line number and clicking on the button “Insert Line” instead. *The remove functionality is optional if you want an extra challenge.*

By clicking on the button “Undo” you should be able to undo the last action by undoing the last action. Since the stack handles elements LiFo (last in first out), a stack is the perfect data structure for the job.

Below you may find a UML class diagram and requirements that you can use as foundation to implement the code.

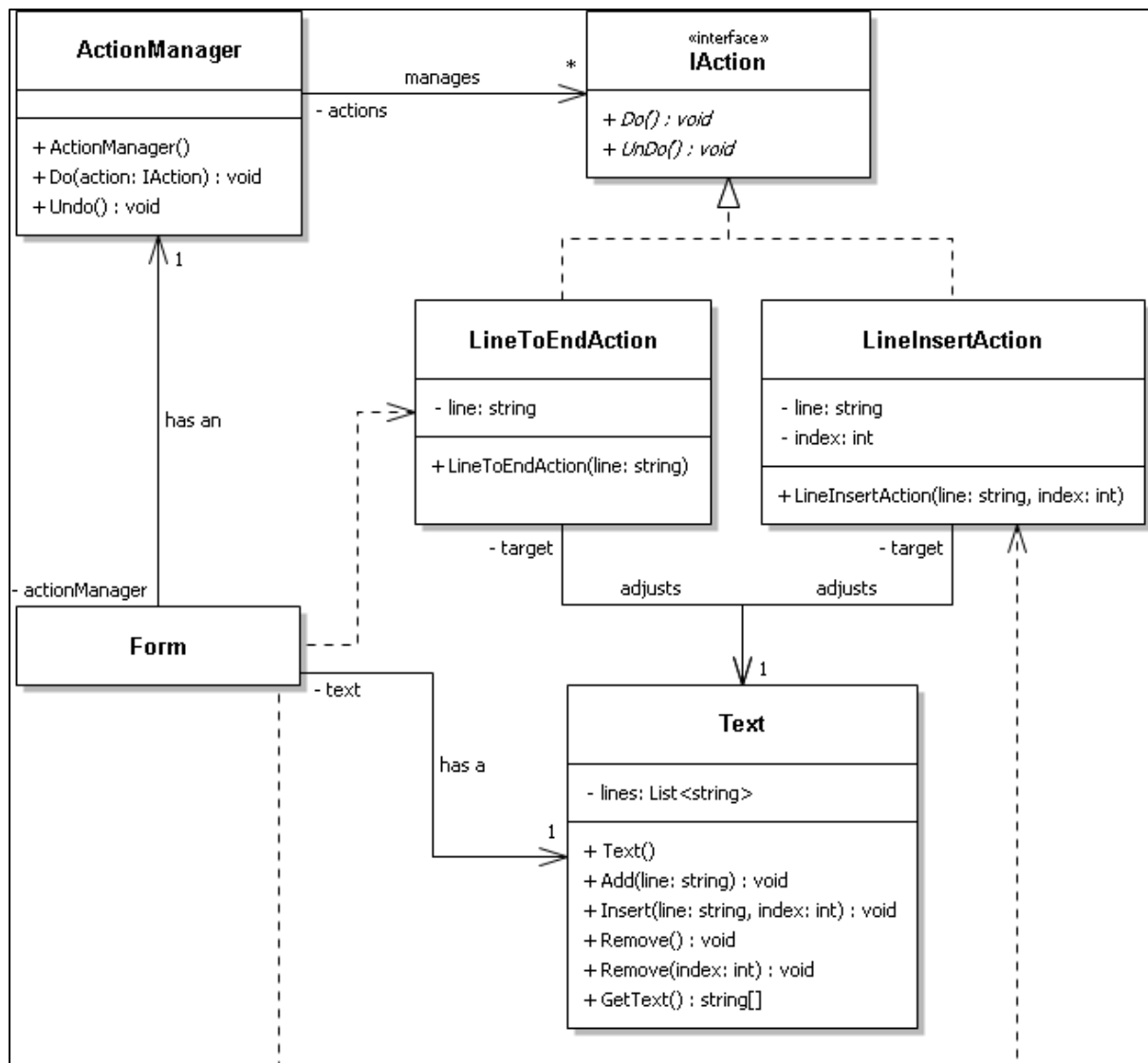


Figure 2: UML Class diagram for text editor

When the user wants to perform an action according to the above description, the form creates a related object of a sub-class of `IAction`. It provides this action to the `ActionManager` which in turn will call the `Do` method to perform the action, and add it to the stack “actions”. `IAction` Sub-classes perform their actions on the `Text` object provided in their constructor. By calling the `Undo` method from the `ActionManager`, the `ActionManager` Pops the last `IAction` and calls the `undo`. The `IAction` is then removed and its action is undone.

Make sure that “actions” in the `ActionManager` is a stack.

Requirements:

FR-01: Add new lines to the end of the text.

FR-02: Insert lines into the text.

FR-03: Undo the last action (unless there are no previous actions).

Possible extension:

FR-04: Remove the last line the text. (requires an extension to the class diagram).

FR-05: Remove a line inside the text. (requires an extension to the class diagram).