Faculty of Computers, Informatics and Microelectronics

Technical University of Moldova

WINDOWS PROGRAMMING

Laboratory work #2

Advanced Form Elements. Child Windowses. Basics of Working With Keyboard.

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1 Purpose of the laboratory

Gain knowledge about basics of event-driven programming, understanding of window's class and basic possibilities of Win32 API. Also she will try to understand and process OS messages.

2 Laboratory Work Requirements

– **Basic Level (grade 5 - 6) you should be able to:**

a) Create a Windows application what will display a dialog box on some event (ex. on clicking some button)

b) Add a system menu to your application with at least 3 items (add actions to that items)

c) Hook keyboard input. Add 2 custom events for 2 different keyboard combinations (ex. change window background on ctrl+space)

– **Normal Level (grade 7 - 8) you should be able to:**

a) Realize the tasks from *Basic Level*.

b) Add a scroll bar that will change any visible parameter of any other element (color of a text) OR other 2 scroll bars that will manage main window size or position

– **Advanced Level (grade 9 - 10) you should be able to:**

a) Realize the tasks from *Normal Level*.

b) Customize your application by adding an icon and using different cursor in application

c) Add a listbox and attach some events when any element is accessed (clicked)

– **Bonus Point Task:**

a) Use a scroll bar to scroll through application working space. Scroll should appear only when necessary (eg. when window width is smaller than 300px)

3 Laboratory work implementation

3.1 Tasks and Points

I chose to implement the tasks for *Advanced Level*:

a) Create a Windows application what will display a dialog box on some event (ex. on clicking some button)

b) Add a system menu to your application with at least 3 items (add actions to that items)

c) Hook keyboard input. Add 2 custom events for 2 different keyboard combinations (ex. change window background on ctrl+space)

d) Add a scroll bar that will change any visible parameter of any other element (color of a text) OR other 2 scroll bars that will manage main window size or position

e) Customize your application by adding an icon and using different cursor in application

f) Add a listbox and attach some events when any element is accessed (clicked)

g) *Bonus Task*:Use a scroll bar to scroll through application working space. Scroll should appear only when necessary (eg. when window width is smaller than 300px)

3.2 Laboratory work analysis

Here is the lick to my repository: `https://github.com/thirteenmd/WP_LABS`

Like in the previous laboratory work, I chose to work in Visual Studio, I created a new Windows Form Application, added a button with the text "Show Message". Then I handled the event Click of this button in such manner, that when it is clicked a message box appears. (Task a)) Then I added a system menu to my application and added 3 item there: "Change Color", "Change Text" and "Change Size". After that I added actions to those items that are suggested by their name. (Task b)) I added two custom events for two different keyboard combinations: "Ctrl+U" - moves the window to the top left of the screen and "Ctrl+X" - Closes the application. (Task c)) I added a scroll bar that changes randomly the color of the background of the button. (Task d)) I customized my application by changing the cursor to "Cross" and added a custom icon. (Task e)) I added a list box with the elements "Up", "Down", "Left", and "Right" that, when clicked, change the position of the window according to their name. (Task f)) Then I added the scroll bars to my application, they appear only when there is no more space for the elements of the window. (Bonus Task)

3.3 Prove your work with screens

Figure 3.1– Initial window

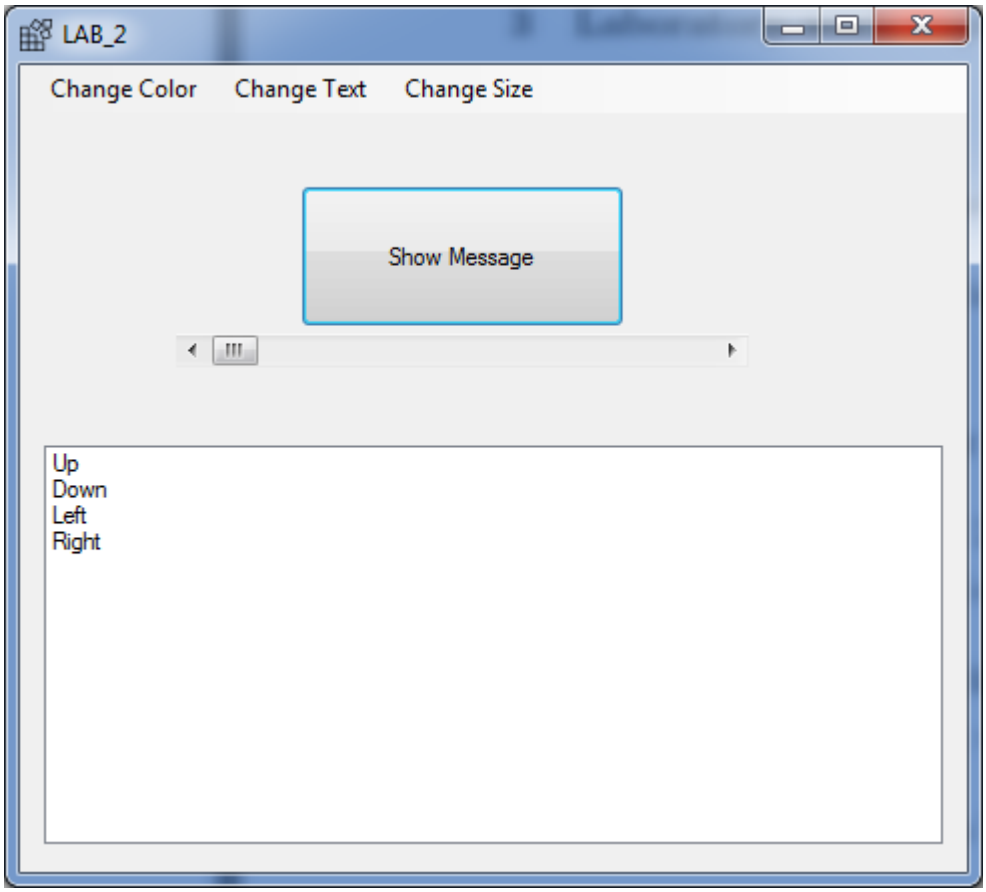


Figure 3.2– The window after I clicked the button

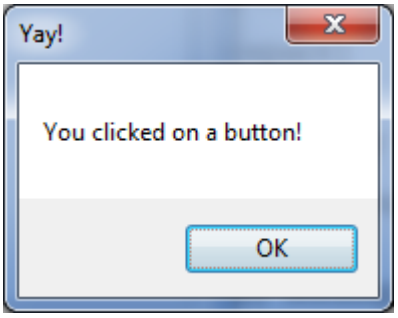


Figure 3.3– The window after I clicked on Change Color

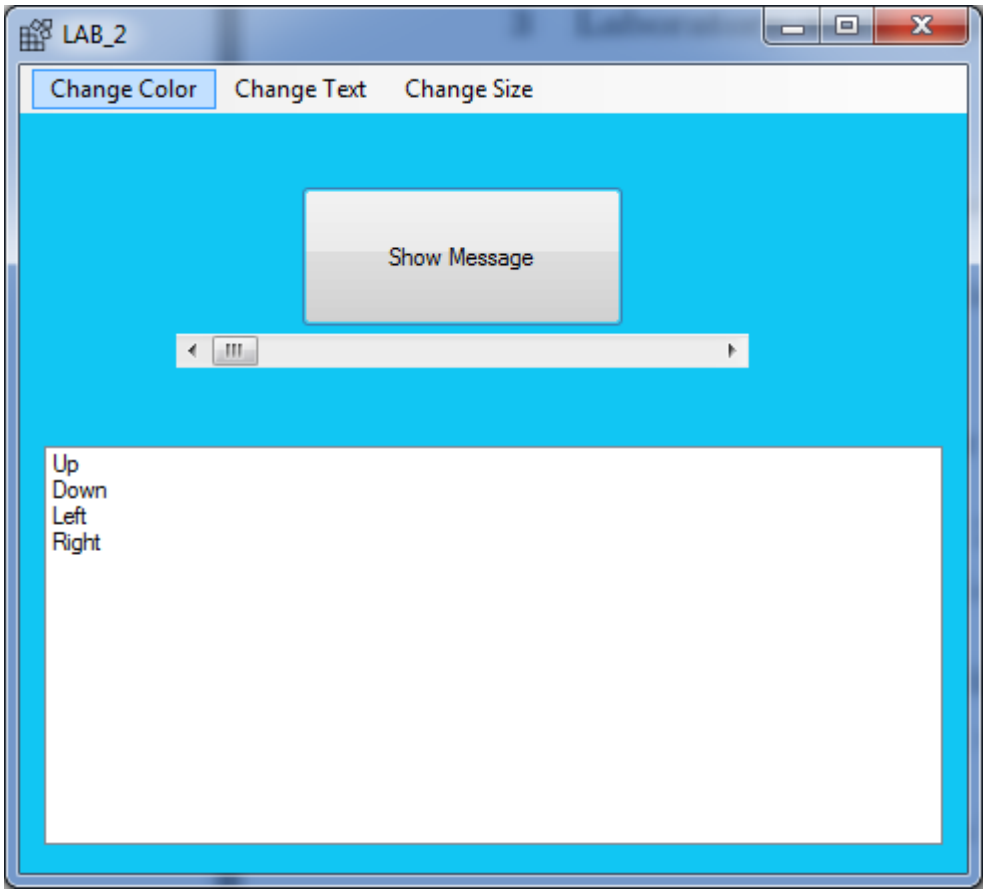


Figure 3.4– The window after I clicked on Change Text

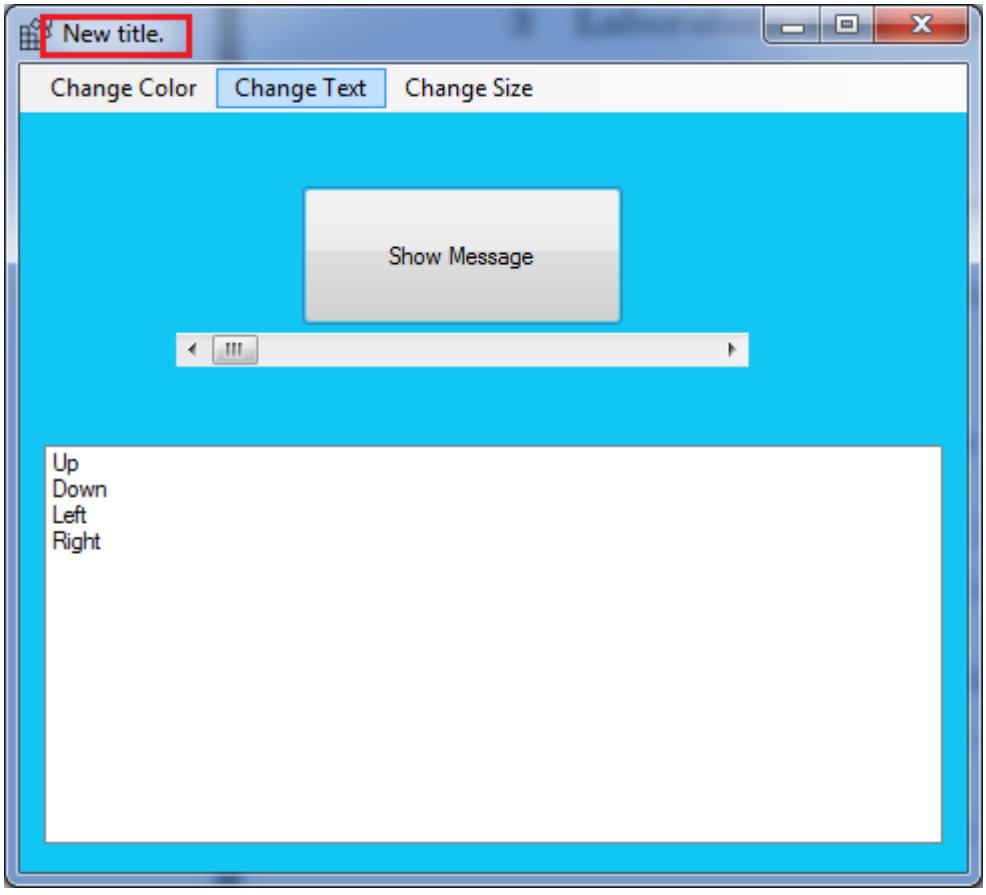


Figure 3.5– The window after I clicked on Change Size

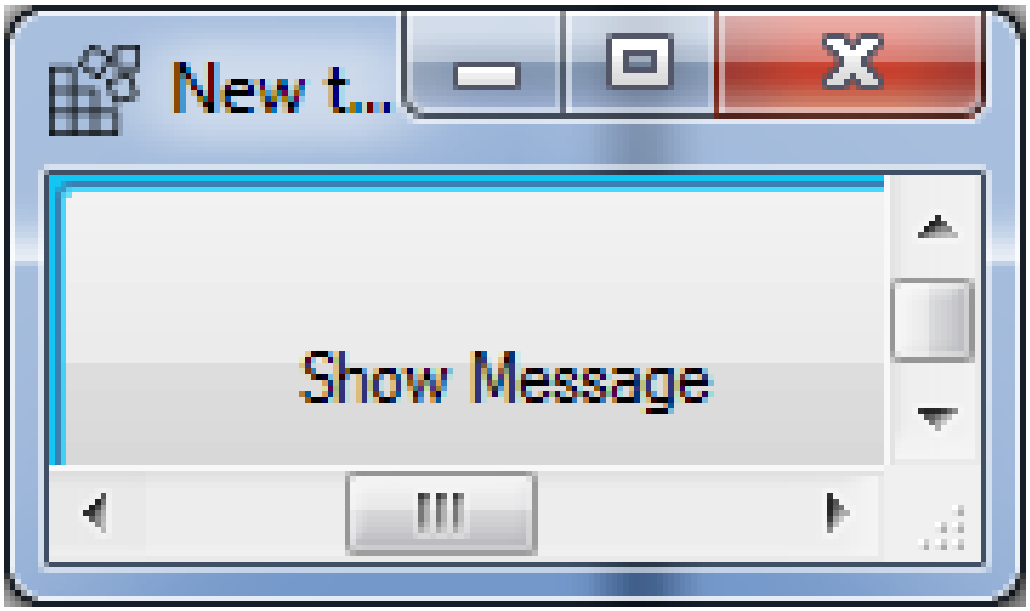


Figure 3.6– The window after I changed the position of the scroll

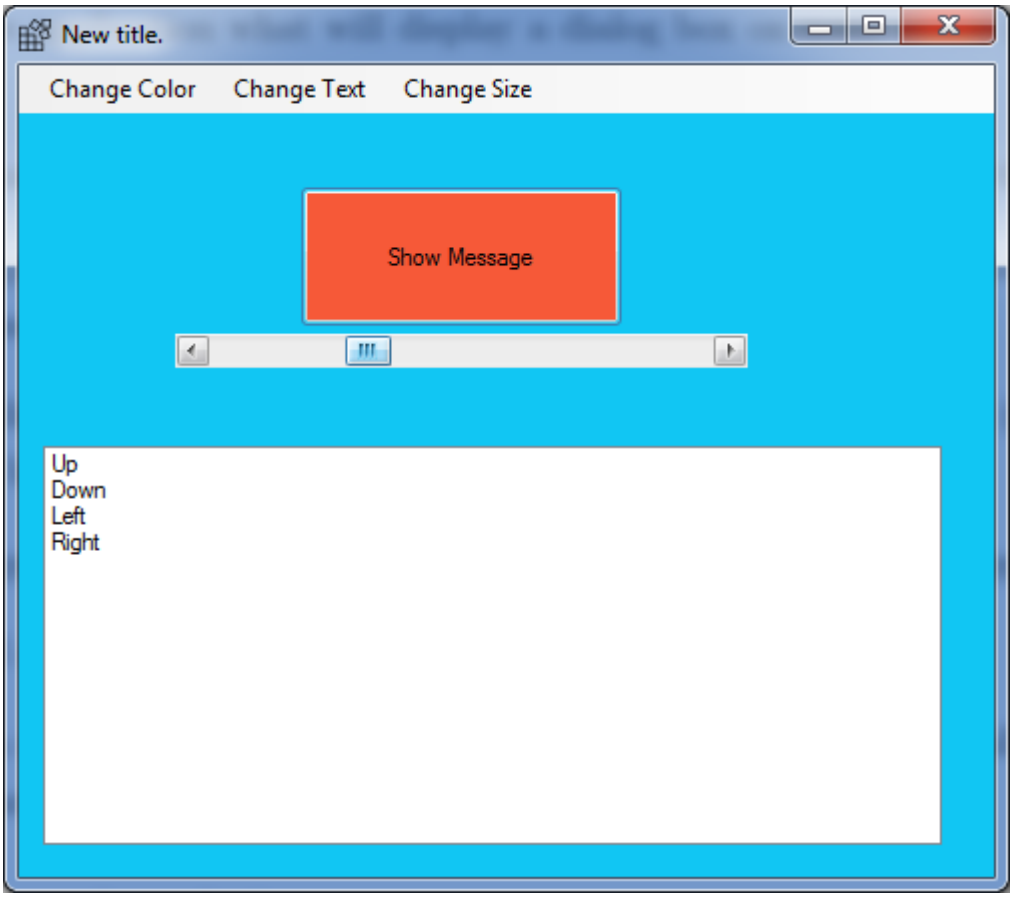
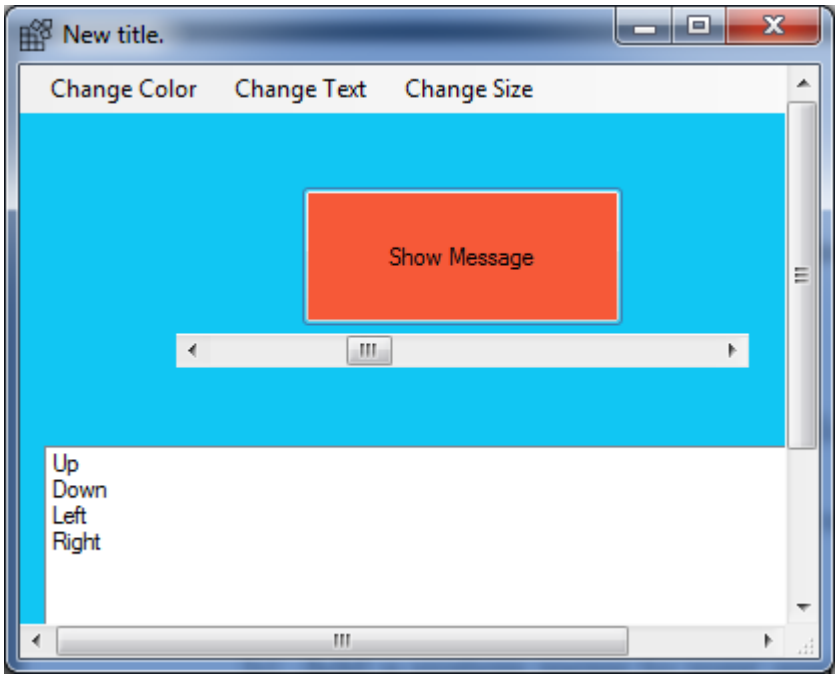


Figure 3.7– The window after being resized (the scroll bars appear)



Conclusions

One of the main purposes of this laboratory work was to familiarize in working with Window Forms. As IDE I chose Microsoft's Visual Studio, because I worked in this environment before. I created a new Windows Form Application, added all the necessary elements and then made the elements interact with each other and changed the behavior of three windows actions.

In this laboratory work I familiarized with the scroll bar element, an element which I have never used before, also I worked with icons, and learned how to add and set an icon to my form. I learned how to handle the KeyDown event when there are two or more keys pressed.

Concerning the coding part of the laboratory work, all the code is written in C# and I followed the C++ Programming Style Guidelines, because that style matches my own.

References

1 Random Colors,http://stackoverflow.com/questions/8465675/creating-random-colors-system-drawing-color

2 Control.KeyPress Event,https://msdn.microsoft.com/en-us/library/system.windows.forms.control.keypress(v=vs.110).aspx

3 Control.KeyPress Event,https://msdn.microsoft.com/en-us/library/system.windows.forms.control.keydown(v=vs.110).aspx