

Ministry of Education of the Republic of Moldova  
Technical University of Moldova  
Department of Applied Informatics

# Report

Laboratory Work Nr.2  
on Event-Driven Programming

Advanced Form Elements. Child Windows. Basic of  
Working With Keyboard.

Performed by Metei Vasile  
Supervised by Coslet Mihai

March 19, 2018

## Laboratory Work Nr.2

### 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:

#### Mandatory Objectives:

- Display a dialog box on some event(ex. on clicking some button)
- Add a system menu to the application with at least 3 items(add actions to that items)
- Add a scroll bar that will change any visible parameter of any other element(ex. color of a text)
- Hook keyboard input. Add 2 custom events for 2 different keyboard combinations(ex. change window background on ctrl+space)

#### Objectives With Points:

- (2pt) Add a list box and attach some events when any element is accessed(clicked)
- (1pt) Add 2 scroll bars that will manage main window size or position
- (1pt) Customize your application by adding an icon and using different cursor in application
- (1pt) Use a scroll bar to scroll through application working space. Scroll should appear only when necessary(ex. when window width is smaller than 300px)

### 3. Laboratory Work implementation

#### 3.1 Tasks and Points

Mandatory Objectives:

- Display a dialog box on some event(ex. on clicking some button)
- Add a system menu to the application with at least 3 items(add actions to that items)
- Add a scroll bar that will change any visible parameter of any other element(ex. color of a text)
- Hook keyboard input. Add 2 custom events for 2 different keyboard combinations(ex. change window background on ctrl+space)

Objectives with points:

- (2pt) Add a list box and attach some events when any element is accessed(clicked)
- (1pt) Add 2 scroll bars that will manage main window size or position
- (1pt) Customize your application by adding an icon and using different cursor in application
- (1pt) Use a scroll bar to scroll through application working space. Scroll should appear only when necessary(ex. when window width is smaller than 300px)

#### 3.2 Laboratory Work Analysis

First of all I added a system menu to my application. I had implemented it using a resource. My menu has 3 items: File, Edit and Help. Each of them has a subitem: Exit, Background and About correspondingly. Clicking on Exit you will close the application. Next is Background, clicking on it a message box will pop up and will inform you about how is possible to change background color. The final item from menu is About, it will display a dialog box with 2 buttons Ok and Cancel. Clicking on previous mentioned buttons the dialog box will close.

In order to change the background color I added an horizontal scroll bar, it has 5 positions from 0 to 4. For every positions is attached a color, when you change the positions of scroll box by arrows or by dragging it, the background will change.

Next objective I implemented is keyboard inputs. First of all I registered 2 hot keys. First one is alt+p and the second one is ctrl+space. To the first key I attached a close message and to the second one a size message. That's why

when you will press alt+p the application will close while pressing ctrl+space the main window will be maximized.

In order to get a bonus point I added a list box in my application. At the beginning it is empty but you can enter a string at a time in it. The string should not be larger than 10 characters. After you add some content in the list box you are able to remove or to clear its content. Both functionalities are performed by corresponding buttons which are placed below the list box. By clicking on "Remove" button you will erase the selected element. By clicking on "Clear" button all the content will be deleted.

Beside the scroll bar discussed above, I added 4 more scroll bars which are grouped 2 by 2. First group is responsible for moving the window and another one for sizing the window. As the coloring scroll bar, these ones also have 5 positions. While you are changing the positions of the scroll box by clicking on the arrows or dragging it the corresponding changes are made. Here I want to mention that 2 of the scroll bars are vertical and 2 are horizontal. Bars which are moving the window on the x-axis and changing window's width are drawn horizontal. The vertical ones are moving the window on the y-axis and changing window's height.

The customization process consists of adding an icon and using a different cursor in the application. In my case I loaded an icon that already exists in the system and it is called IDC\_ASTERISK. For the cursor I loaded IDC\_CROSS. Now when you will play with the mouse on the main window surface a different cursor will be displayed.

The last bonus point was performed partially. For this point I have added 2 scroll bars to the main window. One of them is used in order to walk horizontally through the working space and another one to walk vertically.

### 3.3 Screens

You will be able to find screens in my repository in folder "Screens".

## Conclusion

This laboratory work introduced to me a lot of new elements, such as: scroll bars, menus, dialog boxes, hotkeys, list boxes. I learned how to create them, to manage and to treat their messages.

Also I have customized my application by adding an icon to it. This icon may be one from the system or an external one. The same for the cursor, it can be displayed in different modes. It is important to mention that the customized cursor will be displayed in the corresponding way only on the surface of the specified window.