

FACULTY OF COMPUTERS, INFORMATICS AND MICROELECTRONICS

TECHNICAL UNIVERSITY OF MOLDOVA

## WINDOWS PROGRAMMING

LABORATORY WORK #1

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### Window. Basic window's form elements

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*Authors:*

Bega VALERIA

*Supervisor:*

Irina COJANU

## Laboratory work #1

### 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
  - b) In the middle of the window should be present the following text: "Done with Pride and Prejudice by student name". Replace student name with your name.
  - c) On windows resize, text should reflow and be in window's middle (vertically and horizontally)
- **Normal Level (grade 7 - 8) you should be able to:**
  - a) Realize the tasks from *Basic Level*.
  - b) Add 2 buttons to window: one with default styles, one with custom styles (size, background, text color, font family/size)
  - c) Add 2 text elements to window: one with default styles, one with custom styles (size, background, text color, font family/size)
- **Advanced Level (grade 9 - 10) you should be able to:**
  - a) Realize the tasks from *Normal Level*.
  - b) Make elements to interact or change other elements (2 different interactions) (ex. on button click, change text element color or position)
  - c) Change behavior of different window actions (at least 3). For ex.: on clicking close button, move window to a random location on display working space

### 3 Laboratory work implementation

#### 3.1 Tasks and Points

-Create a Windows application

Open IDE, go to File-¿New-¿Project-¿Win 32 GUI Project. This is an example of the simplest Windows Application. -Add 2 buttons to window: one with default styles, one with custom styles  
In order to create a button I used CreateWindowEx() with second parameter BUTTON, which creates a default style button. For creating a custom style button, I used CreateFont() function which allows to define a style, size for font, then I've send there parameters to the object trough SendMessage().

-Add 2 text inputs to window: one with default styles, one with custom styles

For default text I use CreateWindowEx() function again with the EDIT parameter.To custom it, I created a new font with CreateFont and sent it to the text area trough SendMessage function.

-Add 2 text elements to window: one with default styles, one with custom styles

This is created in WMPAINT message with DrawText() function.SetTextColor is the function for setting another color for text.

-Make elements to interact or change other elements (0-2 pt)

When I click the submit button, the text from textarea1 is sent to textarea2 trough SendMessage function. When I click Clear button, the text from the second area is deleted, using again the SendMessage function. By clicking the color buttons, the text changes its color. This feature was created by using the SetTextColor() function.

-Change behavior of different window actions (at least 3) (1 pt)

When I click the Minimize button, the background color of the window changes. By clicking Minimize button, the background color of the window is changed. By clicking Maximaze button, the window is moving up and down on the desktop. This was done by using SetWindowPos() in 2 for loops, one for top limit, and another for bottom limit. By clicking Close button, a message is appearing which waits for user's response(YES/NO) to exit from the program.In order to do this, MessageBox() function is used.

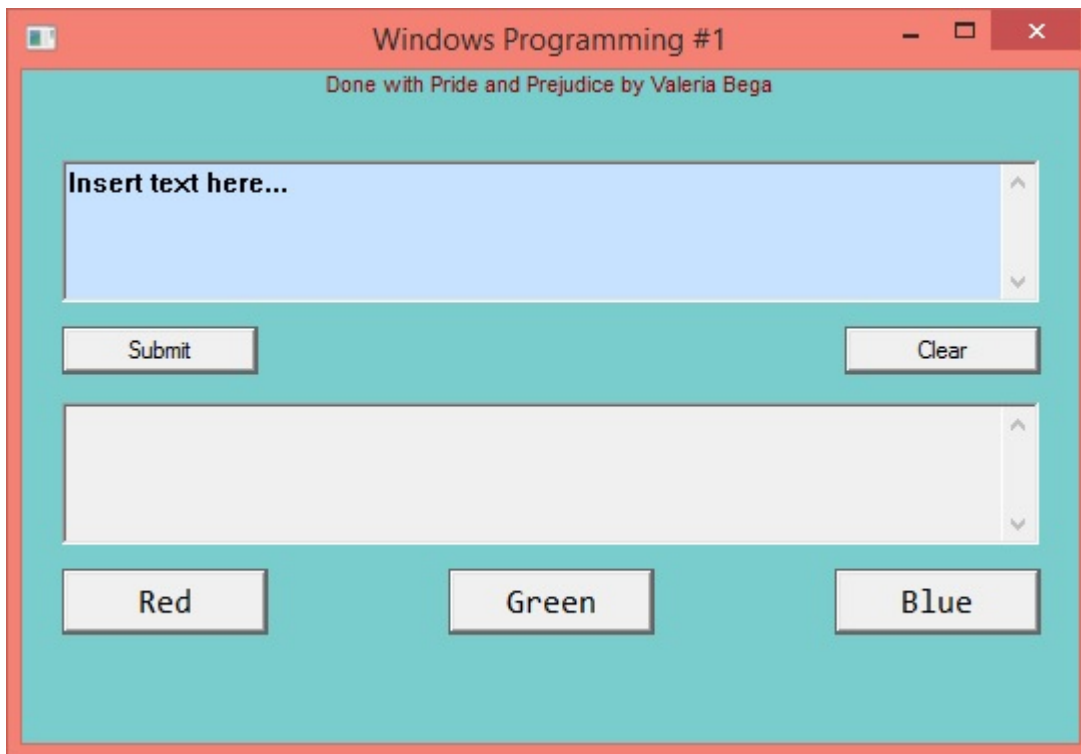
#### 3.2 Laboratory work analysis

Add link to your repository. Create a README.md file for each laboratory work you submit.  
<https://github.com/ValeriaBega/PW>

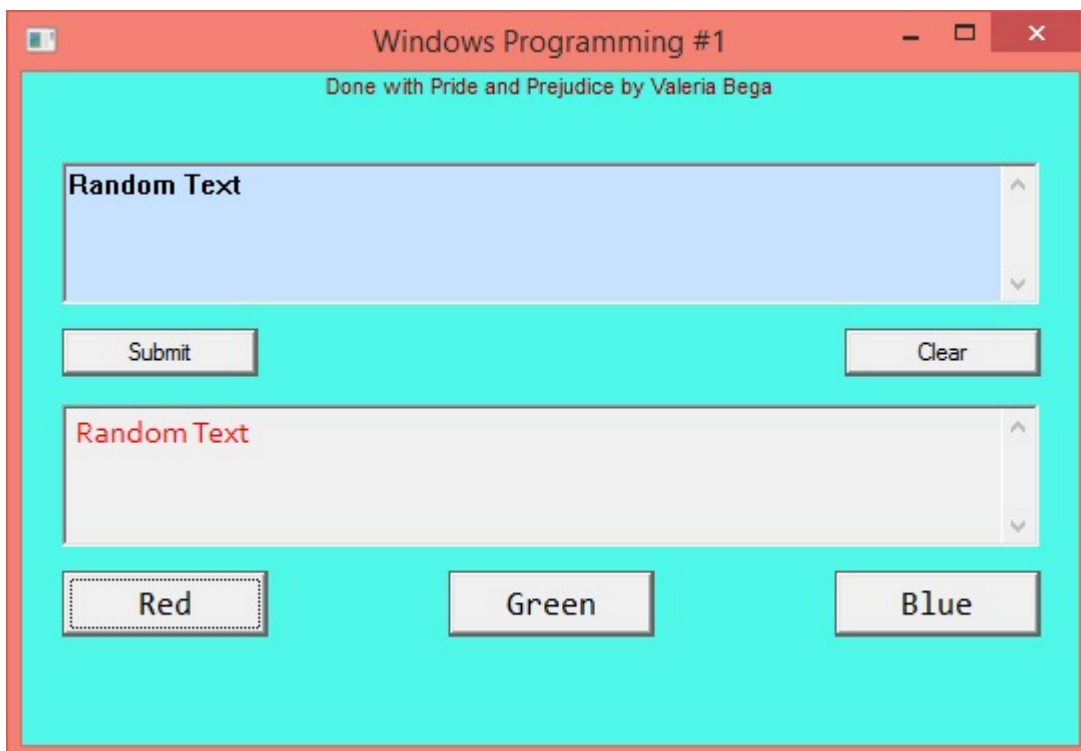
Actually I explained explicitly the features that my windows has in the above section.How is my window special? It has three buttons for changing the text color and two buttons which work with the both text areas.There are two text areas, in one we write and in the second one, when I press the submit button the text appears.The minimize button makes the background color change.The maximize button makes the window move vertically and the exit button is for the proper exit from the window.

### 3.3 Prove your work with screens

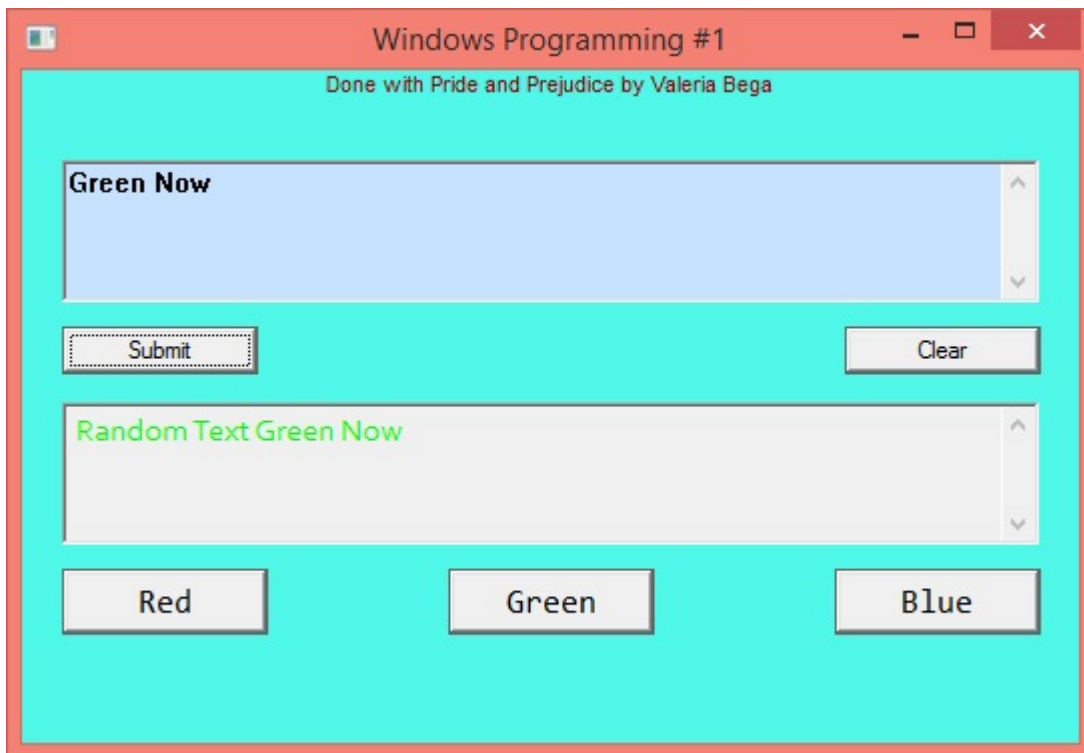
The basic window:



Inserting the text and submitting it:



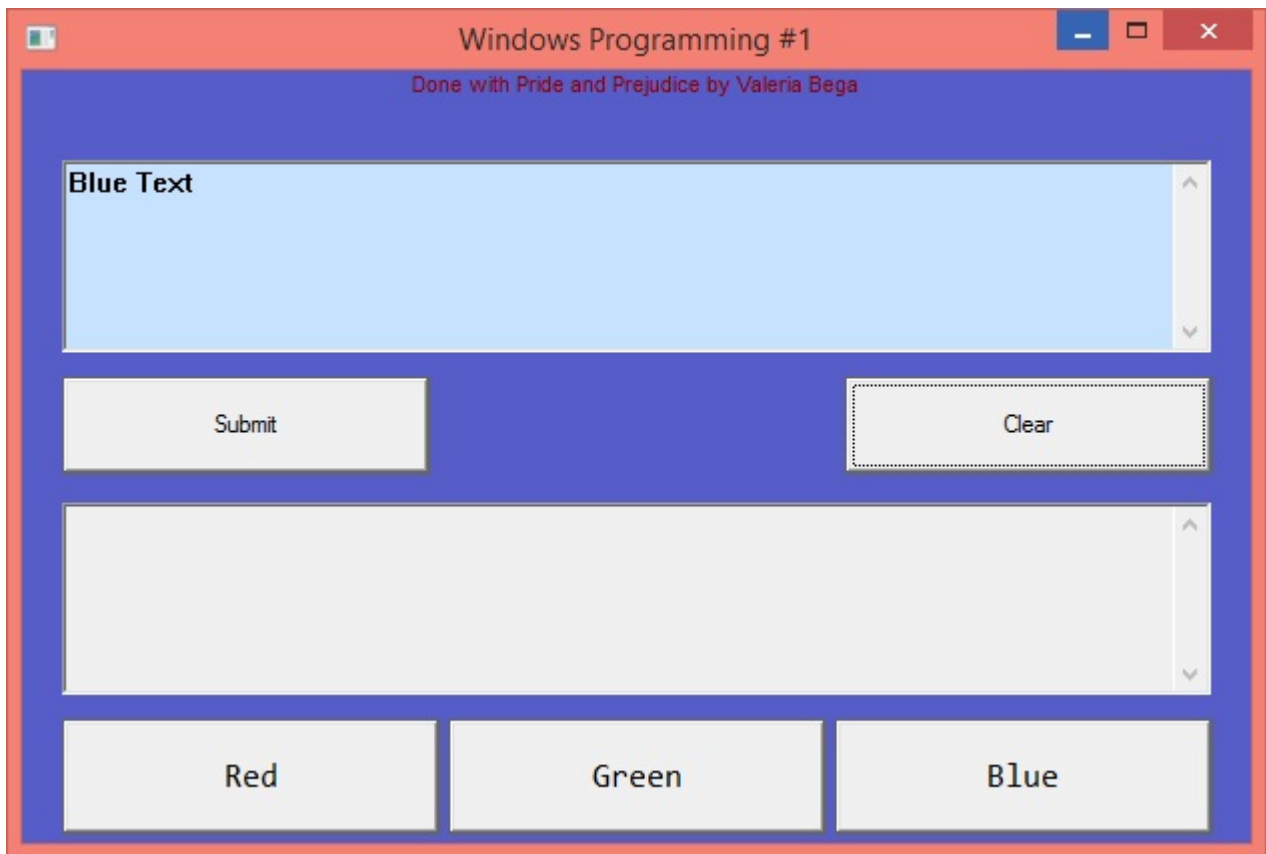
Changing the text color:



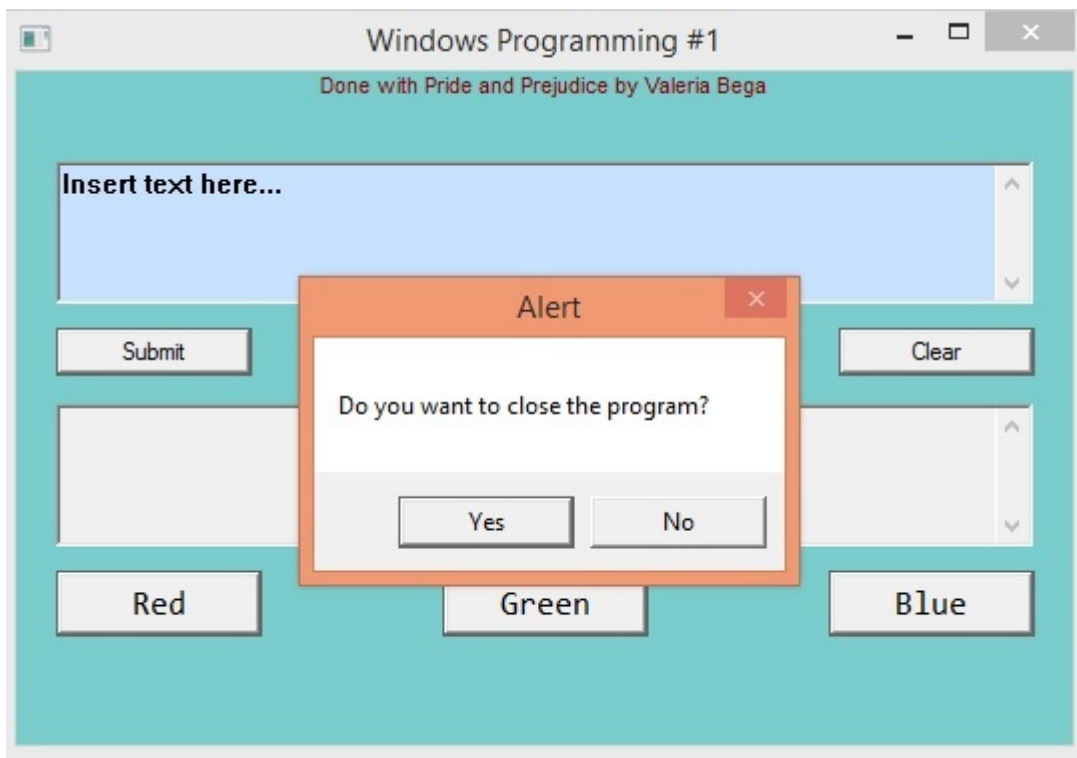
The resize of the window:



Changing the background color:



Exiting the window:



## **Conclusions**

The making of the first laboratory was though, but I've learned some of the basics of Windows Programming. I made by myself a window and added some features to it. I used different functions and structures so that my window could change its background color, its size, write and delete text in it. This laboratory work gave me a good insight, regarding Windows Applications and working with them.

## References

- 1 Microsoft Windows, *official page*, <https://msdn.microsoft.com/en-us/library/bb384843.aspx>
- 2 C++ website, [http://www.cprogramming.com/tutorial/opengl\\_first\\_windows\\_app.html](http://www.cprogramming.com/tutorial/opengl_first_windows_app.html)
- 3 LaTeX basics, <https://www.sharelatex.com>