Faculty of Computers, Informatics and Microelectronics

Technical University of Moldova

WINDOWS PROGRAMMING

Laboratory work #1

Window. Basic window's form elements

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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

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

a) Created basic window that includes **WinMain** and **WndProc** functions.

b) Displayed text in the middle of the screen using function **DrawText** with text "Done by Calancea Daniel".

c) The text is centered and remains on center even after re-size.

d) Added 2 buttons, one with standard built-in styles and another with custom painted style.

e) Added 2 edit controls, one with standard parameters and another with custom background, font, color.

f) Added handling to the buttons:

- Button "Change Window Name" once pressed, changes the name of the program from "Program Title" to "Oh yeaaa".
- Button "Change Message" once pressed, changes the message in the middle of the screen from previous task.

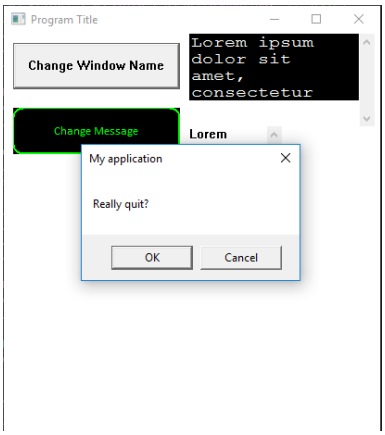
g) Changed behavior of window buttons:

- **Minimize** button now changes the position of the window and size by random numbers in range [0-500].
- **Maximize** button now opens a TextBox that asks if you want to close the program, if you press Ok the program will close, otherwise the TextBox will disappear.
- **Close** button now plays asynchronous the "connect device" sound from the windows default sounds.

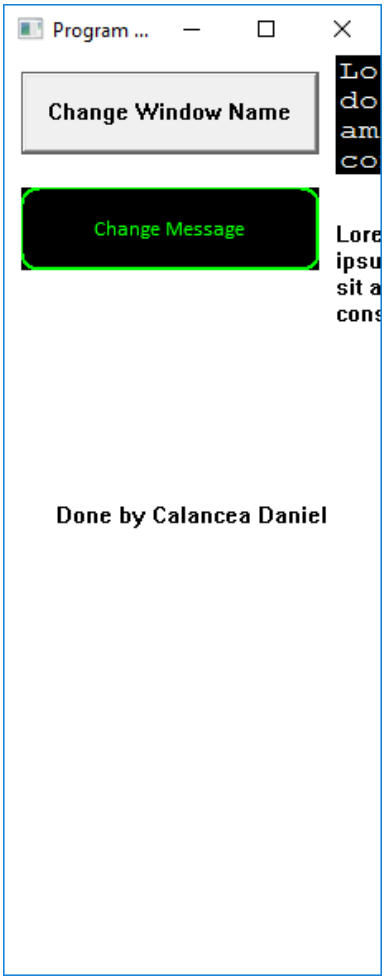
3.2 Laboratory work analysis

Clone with HTTPS :
`https://github.com/dcalance/WP.git`
Clone with SSH :
`git@github.com:dcalance/WP.git`
Repository Link :
`https://github.com/dcalance/WP`

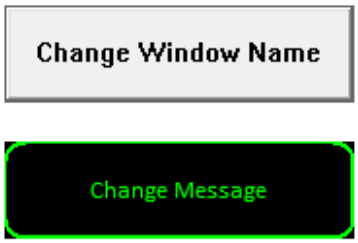
3.3 Prove your work with screens



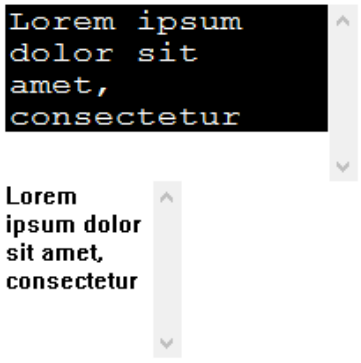
(a)Pressing maximize button



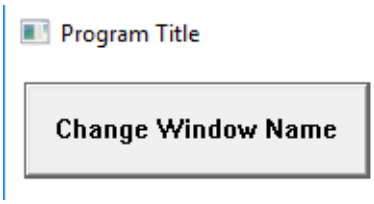
(b)Centered text after re-size



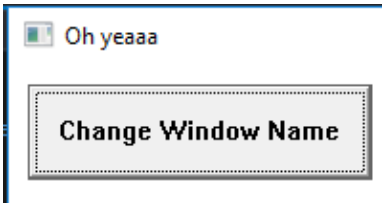
(a)Button with standard style and custom



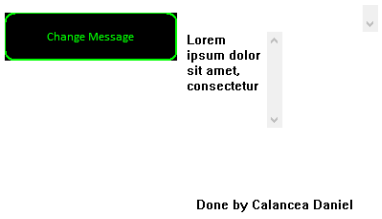
(b)Edit controls with standard style and customized



(a)Window name and button before pressing

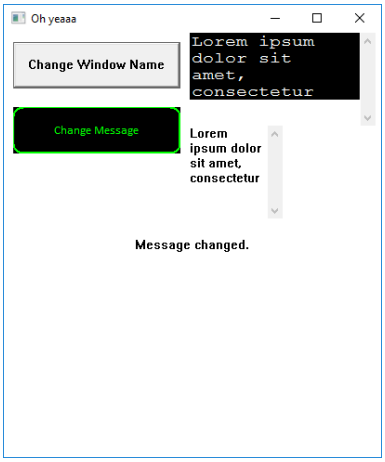


(b)Window name and button after pressing



(a)Centered text before pressing button

(b)Centered text after pressing button



(a)Window before pressing minimize button

(b)Window after pressing minimize button

Conclusions

– First of all we dove into event driven programming, analyzing a new way to program based on events and messages.

– We observed that classic style of windows programming is not well structured and we don't use any object oriented programming, resulting in a mess in our program, however this style is compatible with C programming language.

– We used elements implemented in windows and created our window and elements from win API.

– Even though we can achieve good results, this style of programming is not very good with nowadays complexity of programs.

– These basics can be used in advanced programming that uses as core a windows window and some advanced GUI, like OpenGL or Direct3D.

References

1 Aldebran Robotics, *official page*, www.aldebaran.com/en

2 Timo Ojala, *Multiresolution gray-scale and rotation invariant texture classification with local binary patterns*, 2002

3 Biometric, www.biometricupdate.com/201501/history-of-biometrics