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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Laboratory work #2

1 Purpose of the laboratory

Gain knowledge about basics of handle child window, understanding of basic work with keyboard and handle keyboard events in Win32 API.

2 Laboratory Work Requirements

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

a) Create a Windows application what will dispaly 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)

3   Laboratory work implementation

3.1   Tasks and Points

– Basic Level, all tasks

– Normal Level, all tasks

– Advanced Level, all tasks

3.2   Laboratory work analysis

All development process of this laboratory work was based on Programming Windows by Charlez Petzold book, using Visual Studio IDE with standard libraries.

Basic task of creating a Windows application what will display a dialog box on some event, was done by creating a resource file "LAB21.rc" where was added a dialog window with input box and 2 buttons, this dialog windows is initialized and displayed at button press in main window, this action is handled at message "WM_COMMAND". When dialog window is displayed user should input his name in edit box, and at press "OK" button in dialog window, it will be closed and in main window, user will see welcome message. Processing of dialog window commands is handled by function "AboutDlgProc".

System menu is added also by adding in resource file of menu element, and also by calling function "LoadMenu", where is indicated the id of menu element. Actions of clicking menu elements is handled at "WM_SYSCOMMANDS" message receiving and where variable "wParam" represent the id of menu item element.

Hook of keyboard input is performed by adding in resource file of "Accelerator" element where is indicated id and keyboard shortcut or key associated with this id. Handle of these actions is performed at the moment of receiving message "WM_COMMAND" with "wParam" equal to id from accelerator list.

For task from Normal Level, is performed change of text color of welcome message from main window. Color of text can be changed in new dialog window which contains 3 scroll bars which represent "RGB" values, handle of this process is performed in function "ColorDlgProc()" in which using id of each scroll bar is handled change of "RGB" value of color.

The Advanced Level task of creation of list box is performed by creating a window with properties of list box, which is a part of main window, and handling of clicking on list box element s is performed at receiving "WM_COMMAND" with "wParam" equal to id of list box, and by calling function "SendMessage()" with one parameter being "LB_GETCURSEL" we get index of clicked element from list box.

The cursor is customized by adding new cursor skin in resource file and initiating it by calling "LoadCursor()" at "WNDCLASS" initialization.

3.3   Prove your work with screens

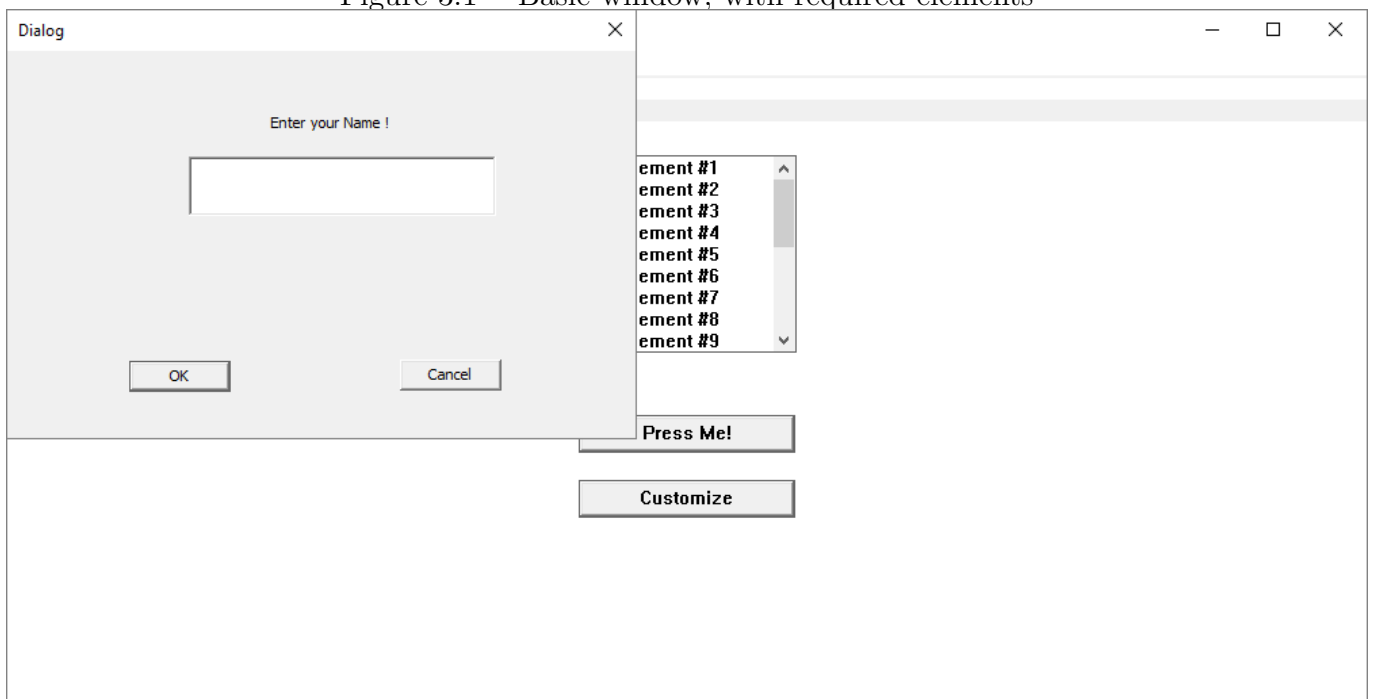Figure 3.1 – Basic window, with required elements
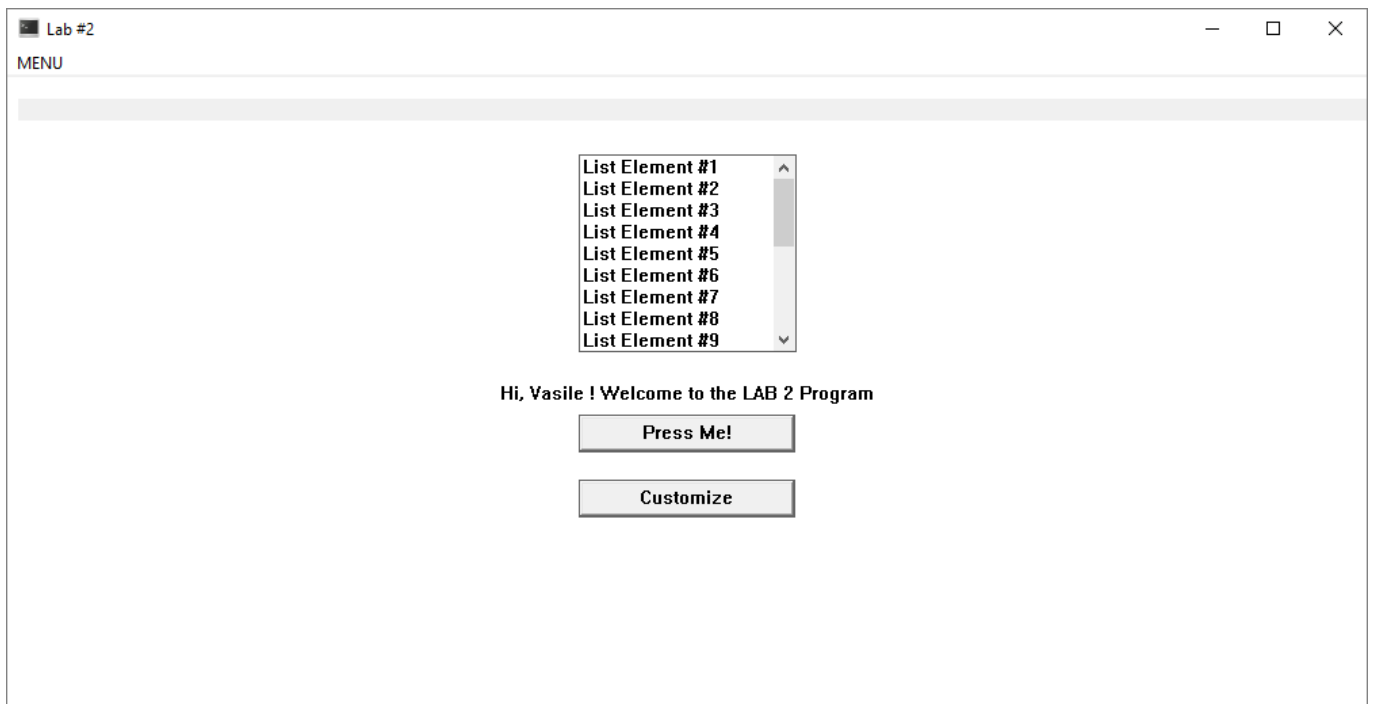

Figure 3.2 – Child dialog window

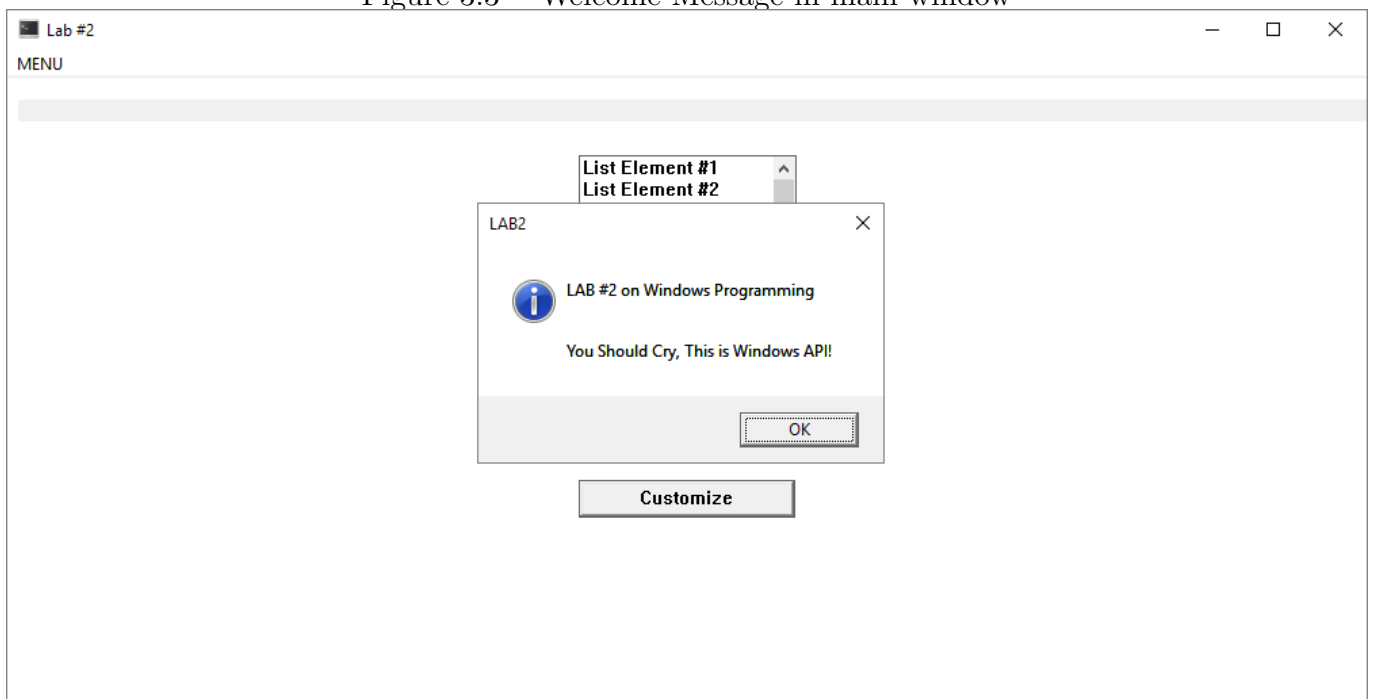Figure 3.3 – Welcome Message in main window

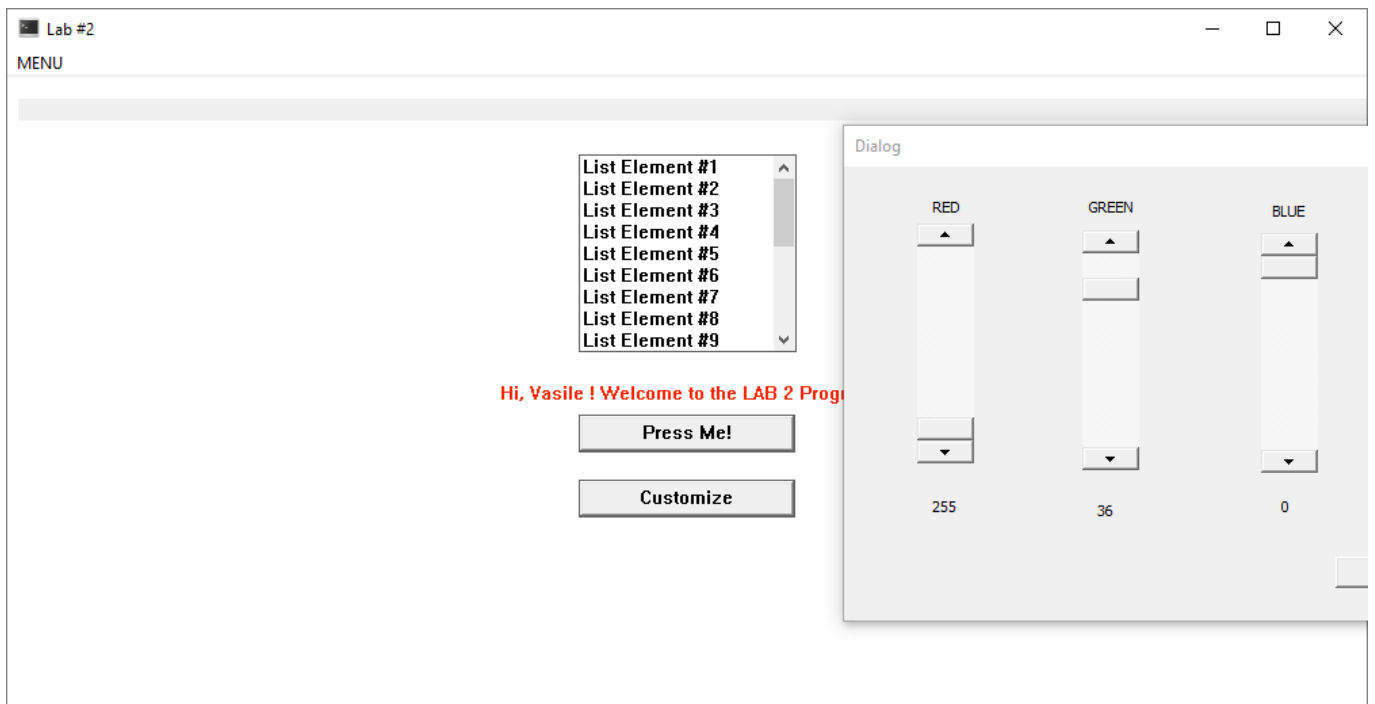Figure 3.4 – Dialog box which appear at clicking about option from system menu
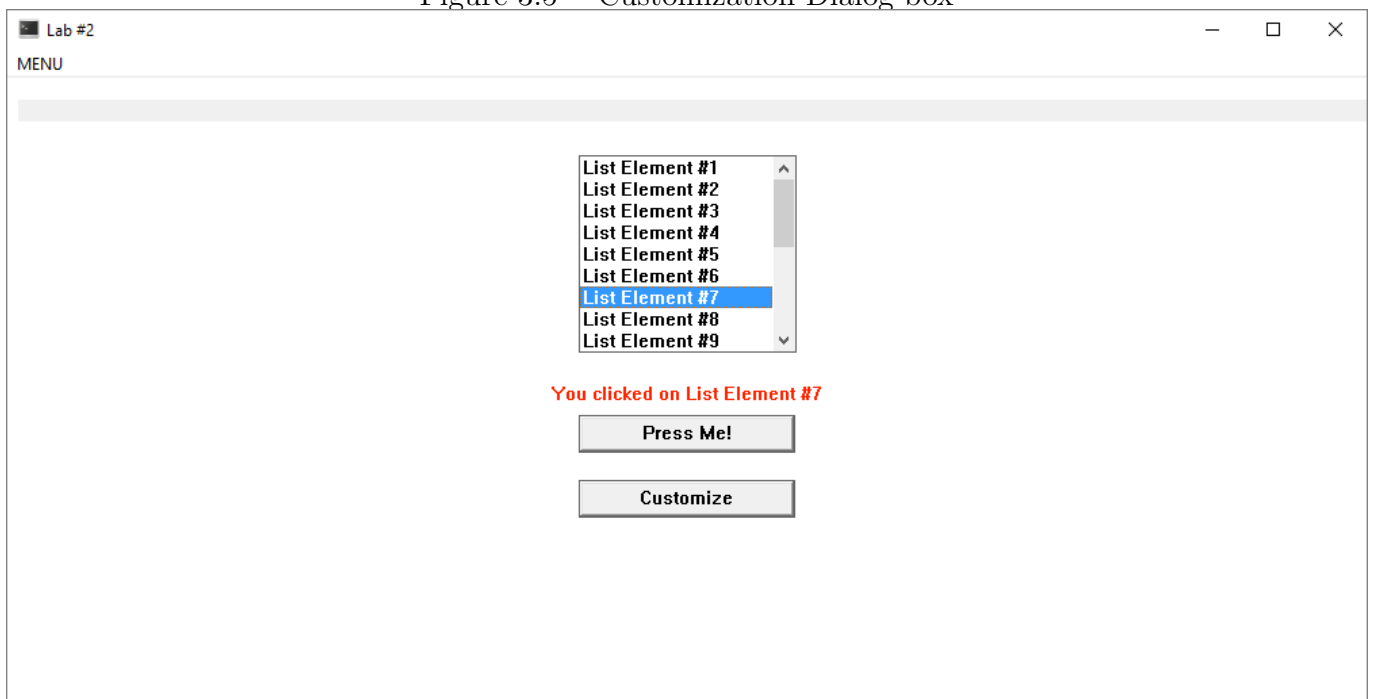
Figure 3.5 – Customization Dialog box

Figure 3.6 – Customized text element

Conclusions

Performing this laboratory work, we can see what handling of child windows in WinApi is not very hard process but in fact this allow you to extend our application and make it more intuitive and user friendly.

References

1 Programming Windows by Charlez Petzold, 5th edition,

    a) Section I, Chapter 6

    b) Section I, Chapter 9

    c) Section I, Chapter 10

    d) Section I, Chapter 11

2 Creation of resources in WinApi `https://msdn.microsoft.com/en-us/library/8fc1e5by.aspx`