Faculty of Computers, Informatics and Microelectronics

Technical University of Moldova

WINDOWS PROGRAMMING

Laboratory work #3

Basics of Working with Mouse. GDI Primitives. Bezier Curve.

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Laboratory work #3

1 Purpose of the laboratory

Gain knowledge about the basics of working with Mouse, GDI Primitives and Bezier Curves.

2 Laboratory Work Requirements

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

a) Draw 5 lines of different colors and weights

b) Draw 2 Bezier curves

c) Draw 4 plane objects (ex. circle, square, pie, polygon...) of different colors, weights, filled and not

d) Draw 2 different objects using mouse

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

a) Realize the tasks from Basic Level.

b) Draw a custom bitmap image

c) Fill 2 object with gradient

d) Hook keyboard input. Add 2 different keyboard combinations that will change mouse ability to draw objects (ex. on Ctrl+C will draw circles, on Alt+R will continue to draw circles but of read color)

e) Draw a Bezier curve using mouse

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

a) Realize the tasks from Normal Level.

b) Zoom in and out application working area using keyboard or mouse wheel

c) Use mouse as an eraser (choose 1 option):

1) delete objects using mouse clicking

2) eraser of a fixed width

3) eraser with adjustable width

– **Bonus point task:**

a) Realize the task with mouse eraser for all 3 cases listed above. In order to choose one of them, add 3 buttons/icons or check boxes.

3 Laboratory work implementation

3.1 Tasks and Points

Basic Level (grade 5 —— 6):

- Draw 5 lines of different colors and weights

- Draw 2 Bezier curves

- Draw 4 plane objects (ex. circle, square, pie, polygon...) of different colors, weights, filled and not

- Draw 2 different objects using mouse

Normal Level (grade 7 —— 8):

- Realize the tasks from Basic Level.

- Hook keyboard input. Add 2 different keyboard combinations that will change mouse ability to draw objects (ex. on Ctrl+C will draw circles, on Alt+R will continue to draw circles but of read color) Draw a Bezier curve using mouse

Advanced Level (grade 9 —— 10):

- Realize the tasks from Normal Level.

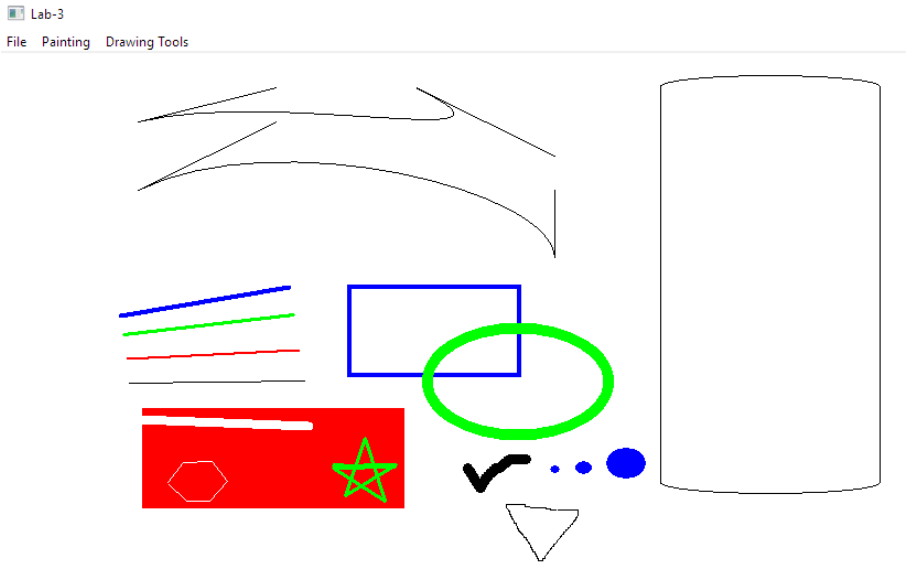
- Use mouse as an eraser (chosen option): eraser with adjustable width

3.2 Laboratory work analysis

Repository:
https://github.com/StasBizdiga/WP

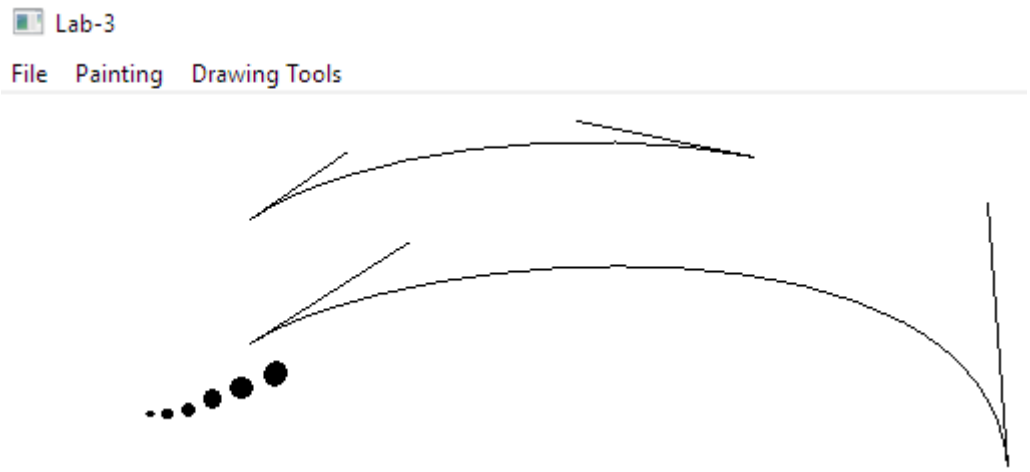
3.3 Proving my work

Basic level:



- All the required things are drawn.

Normal level:

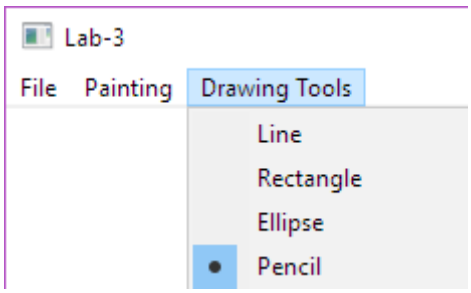


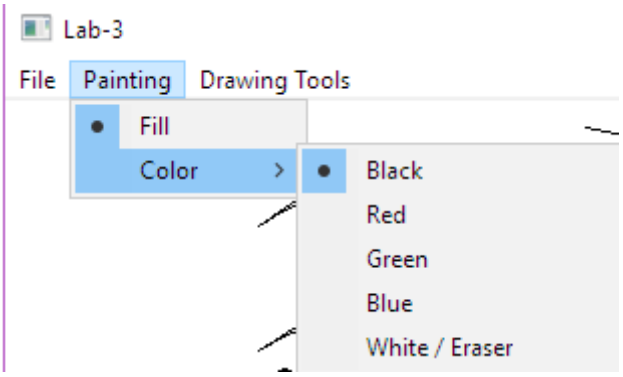
Bezier curves are being modified by:
Top Curve: Shift+RClick / Shift+LClick
Bottom Curve: Ctrl+RClick / Ctrl+LClick

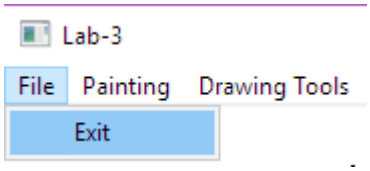
Advanced level / Other features:
- Weight is adjustable by numpad ” + ” and ” - ”
(Thus by selecting the white color and using this feature we obtain the dynamically adjustable eraser required in Advanced level)
- Pen/Border/Fill Color is chosen from menu (see more below in the menus description)

Hotkeys cheat-sheet:
- Pressing Del clears the screen.
- Pressing Esc deselects any tool currently enabled.
- Pressing Space sets Fill on/off.
- Pressing +/- adjusts weight.

Menus notes:
- Fill option may be on/off by either clicking it in menu or pressing Space.
- Colors and painting tools are selection based - choosing an option enables it and disables the conflicting ones.


Lab-3
File
Painting
Drawing Tools
Line
Rectangle
Ellipse
Pencil


Lab-3
File
Painting
Drawing Tools
Fill
Color
Black
Red
Green
Blue
White / Eraser


Lab-3
File
Painting
Drawing Tools
Exit

Conclusions

The current laboratory work was of great use in terms of the fact that I learnt a whole lot: Starting from how to handle mouse messages, and their combinations and finishing with complex menu tools that aid in drawing, in any way we want on a surface - the so called "device context" (hdc). Also I've grasped the way of working with check-able system menus. It was challenging but fun to complete therefore I'm excited to continue unveiling the mysteries of Win32Api onward.