

FACULTY OF COMPUTERS, INFORMATICS AND MICROELECTRONICS

TECHNICAL UNIVERSITY OF MOLDOVA

## WINDOWS PROGRAMMING

LABORATORY WORK #3

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**Basics of working with mouse.GDI  
Primitives.Bezier Curve.**

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## Laboratory work #3

### 1 Purpose of the laboratory

Gain knowledge about 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 mouseRealize the tasks from *Basic Level*.
- **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
  - c) Use mouse as an eraser (choose 1 option):
  - d) delete objects using mouse clicking
  - e) eraser of a fixed width
  - f) 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

I chose to implement the tasks for *Normal Level*:

- 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
- e) Draw a Bezier curve using mouse
- f) Clean with mouse.
- g) Draw a custom bitmap image
- h) Fill 2 object with gradient

#### 3.2 Laboratory work analysis

<https://github.com/szrakasy/WP>

I created a window and i put there 7 different buttons which are drawing Planes, Drawing lines, Drawing Bezier Curves, Drawing with mouse, generating bitmap, gradient and clearing all things.

When we click the drawing planes button then we will see there 4 different planes such rectangle, square, ellips and circle.

When we click the drawing lines then we can see there 5 different lines which are different colors and wieghts.

When we click the drawing bezier Curves button then we can see 2 different bezier curves.

When we click the draw with mouse button then a new popup windows will appeare there and we can draw lines with our mouse and also there is the another button down bellow the new window it works to do rectangle or squere by mouse.

When we click the Bitmap then its generating a bitmap file and it is writing file format.

When we click the Gradient then we will see the 4 different gradient planes.

When we click the clean button then all screen will be clean. Also When we right click then will clear all secreen too.

On the white area we can draw a circle and bezier curve.

#### 3.3 Prove your work with screens

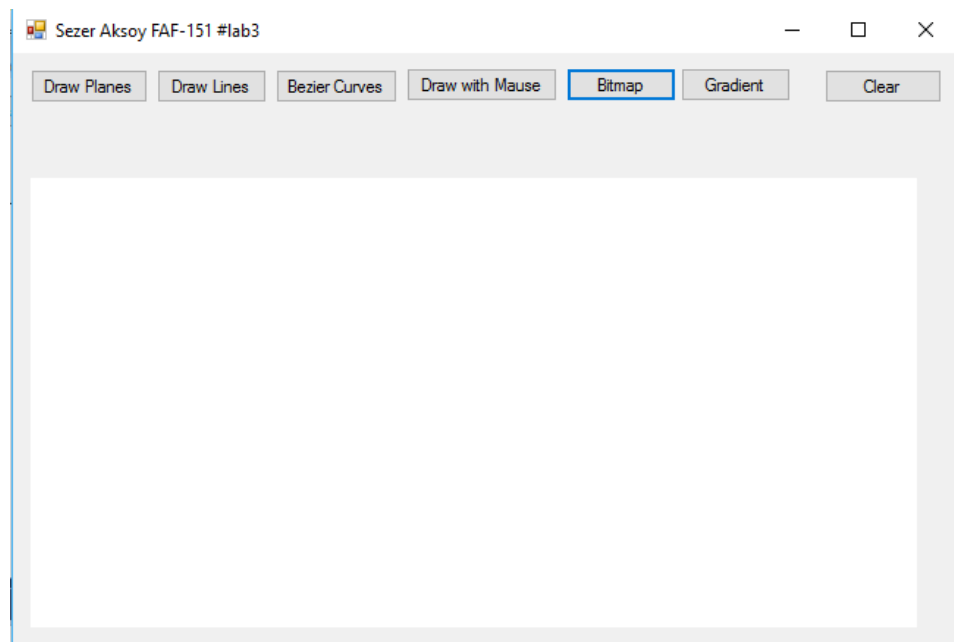


Figure 3.1

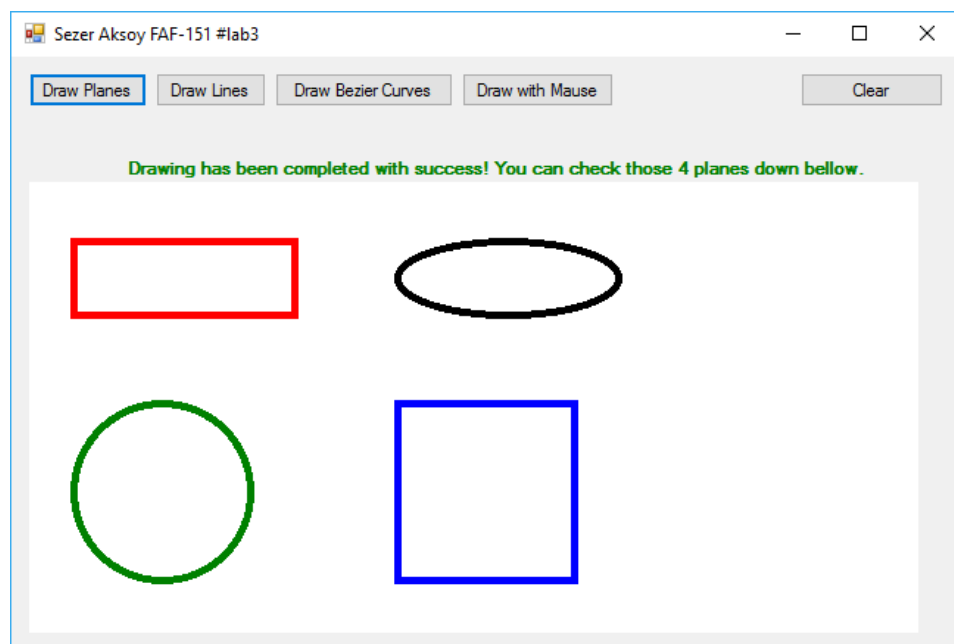


Figure 3.2

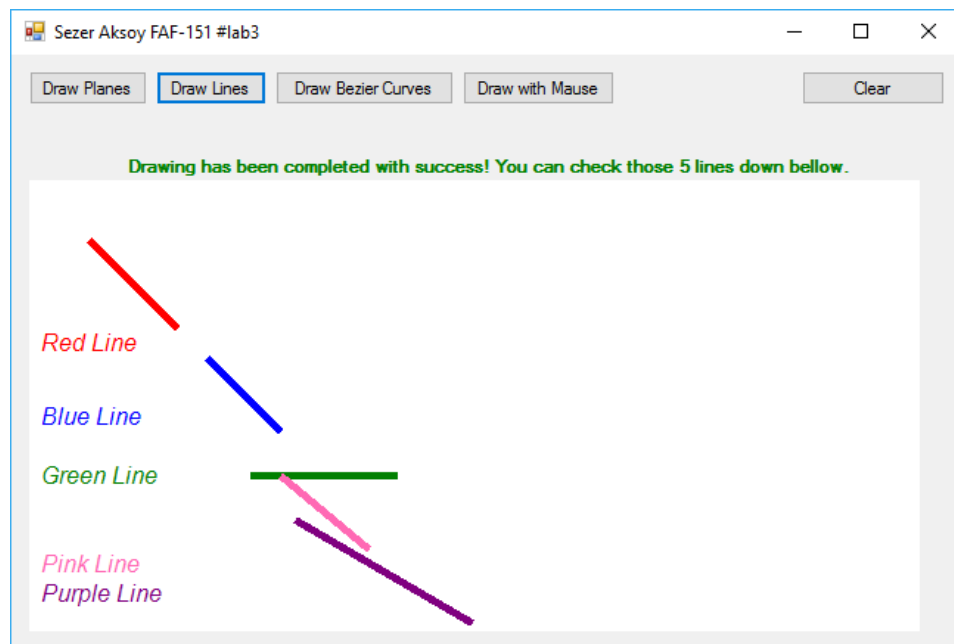


Figure 3.3

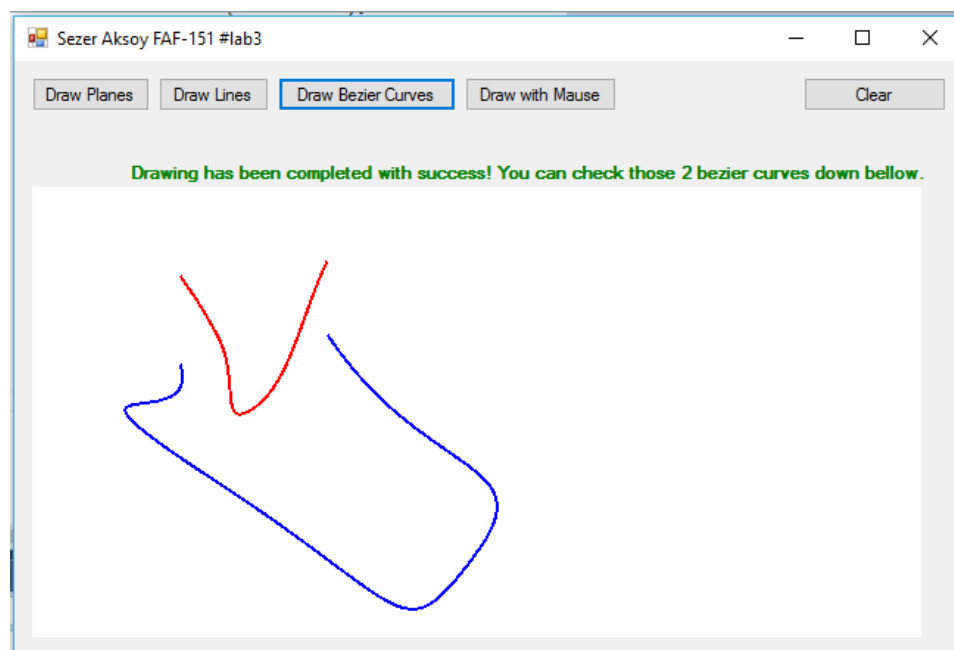


Figure 3.4

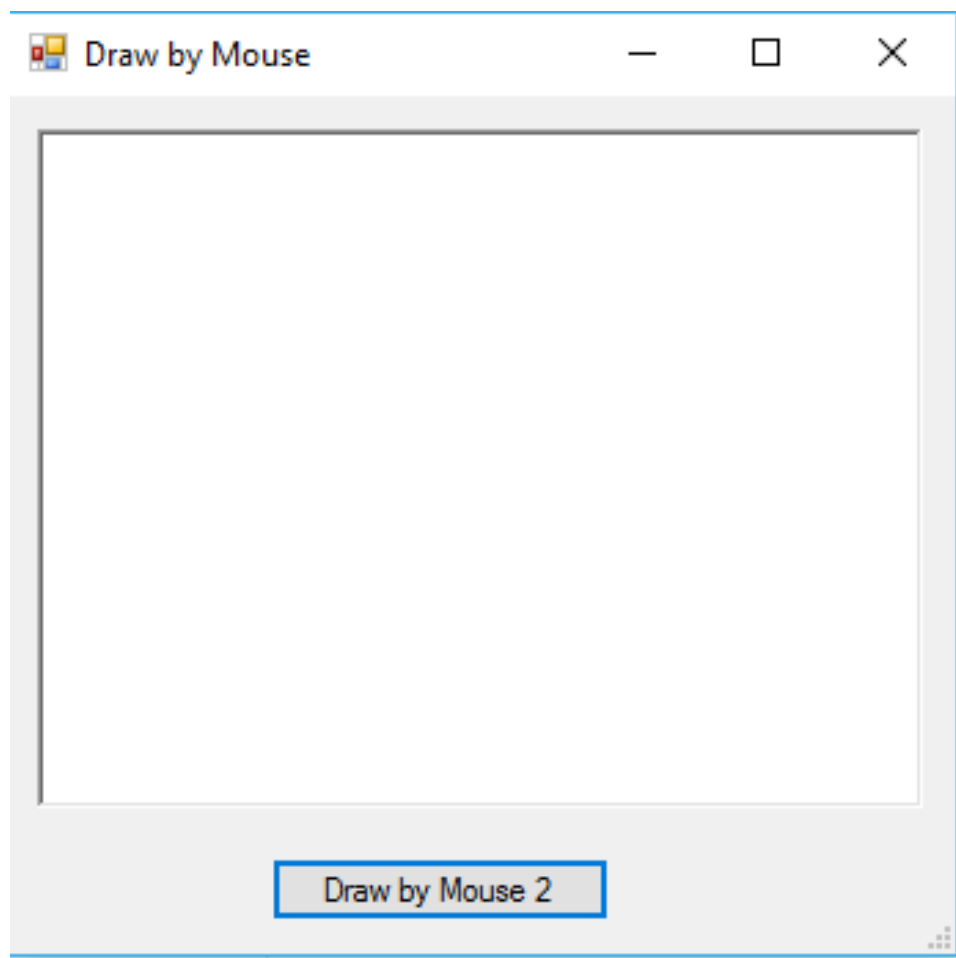


Figure 3.5

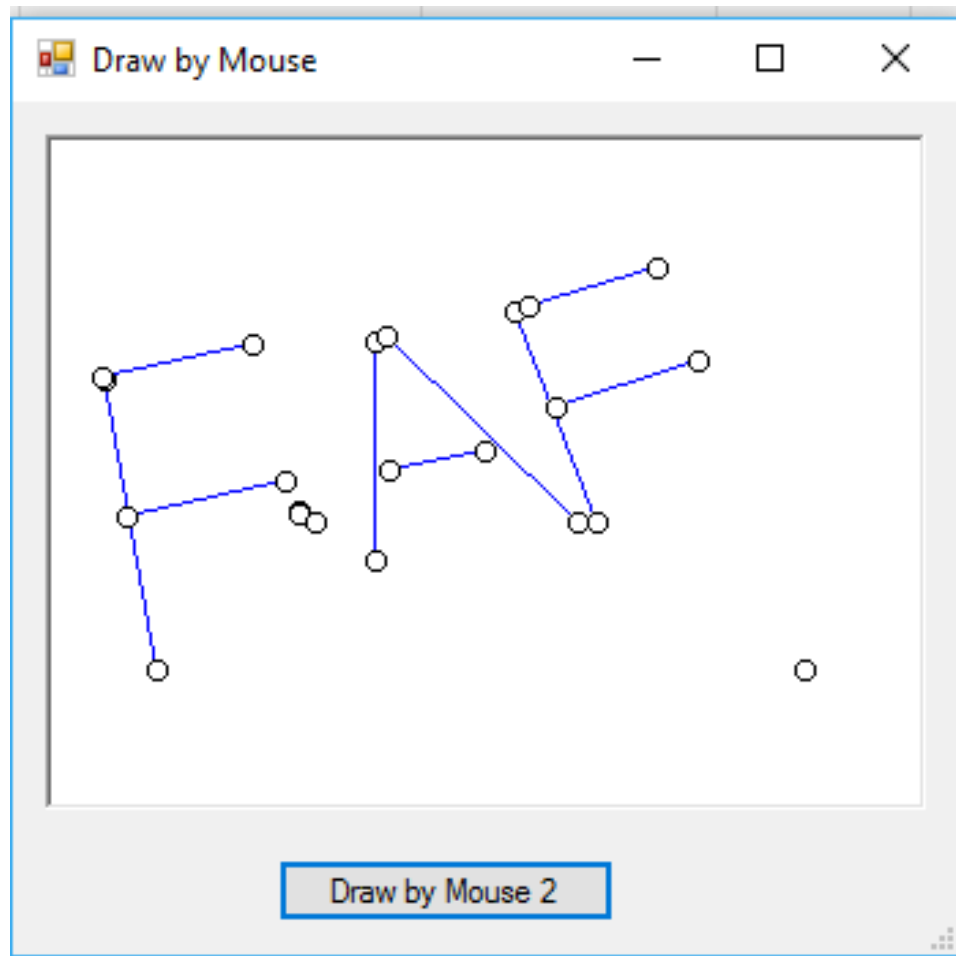


Figure 3.6

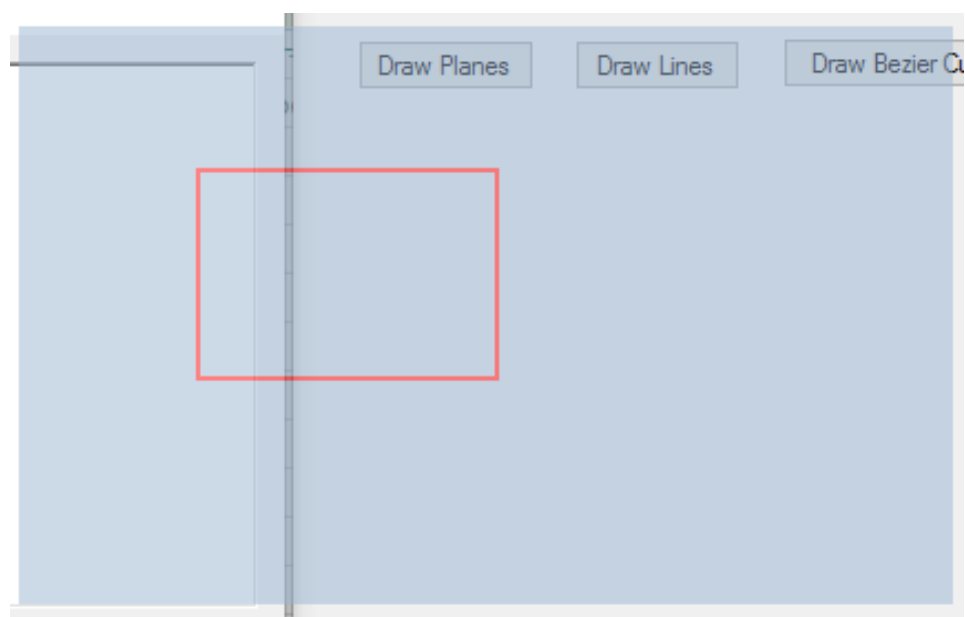


Figure 3.7



Figure 3.8



Figure 3.9



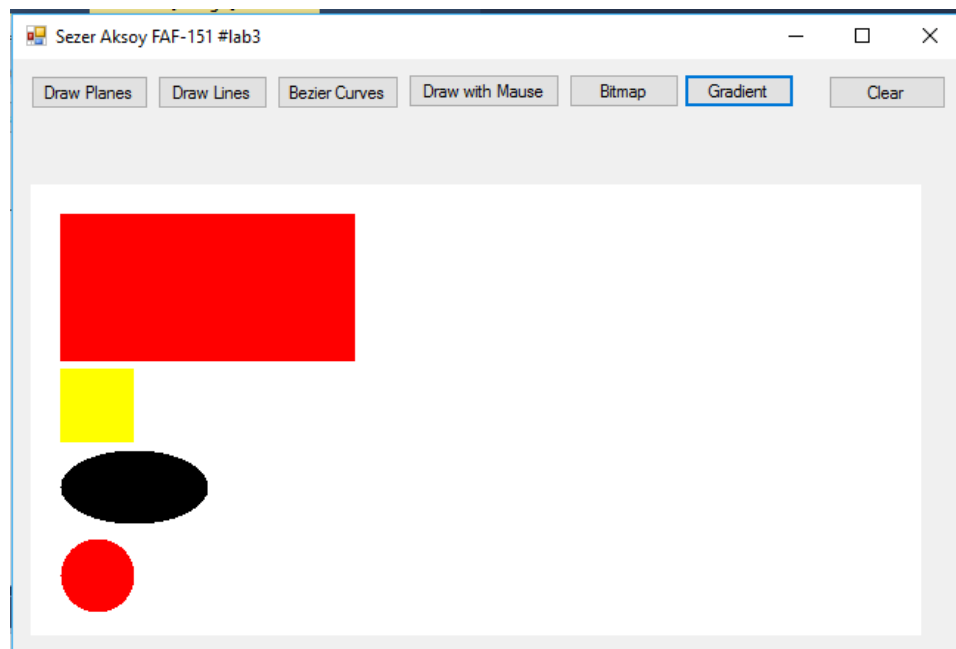


Figure 3.10

## Conclusions

In lab work nr. 3 I have worked with mouse, GDI Primitives and bezier curves. I had to study the material on these topics. I have learned some of basic windows commands, like creating GDI primitives, bezier curves or working with mouse. All studied topics are really useful working with a Windows application. Now we can work not just with text I/O but also create some images.

## References

- 1 Random Colors,<http://stackoverflow.com/questions/8465675/creating-random-colors-system-drawing-color>
- 2 Control.KeyPress Event,[https://msdn.microsoft.com/en-us/library/system.windows.forms.control.keypress\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/system.windows.forms.control.keypress(v=vs.110).aspx)