

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 #1

### 1 Purpose of the laboratory

Gain knowledge about basics of event-driven programming, understanding of drawing inside a window, processing mouse commands.

### 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 red 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

Link to my git repository,<https://github.com/LordOfNightmares/WP-LABS>

## 2.1 Laboratory work analysis

The features added to my window are:

- Created a Windows application what will dispaly 5 lines ,2 bezier lines, 4 objects,1 gradient object
- Added mouse polygon draw on left click,circle draw with right click
- Added a bitmap.
- Added mouse bezier draw function.

On the following pics below i show exaple of program execution.

## 2.2 Prove your work with screens

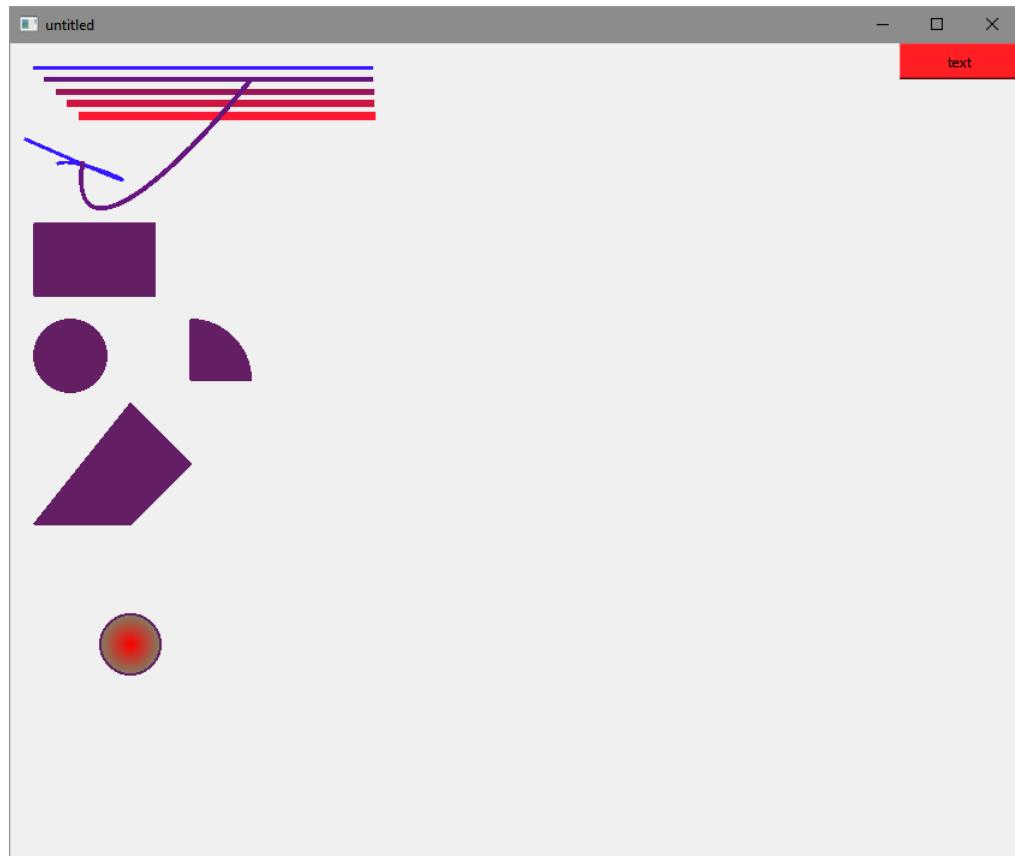


Figure 2.1 – Default

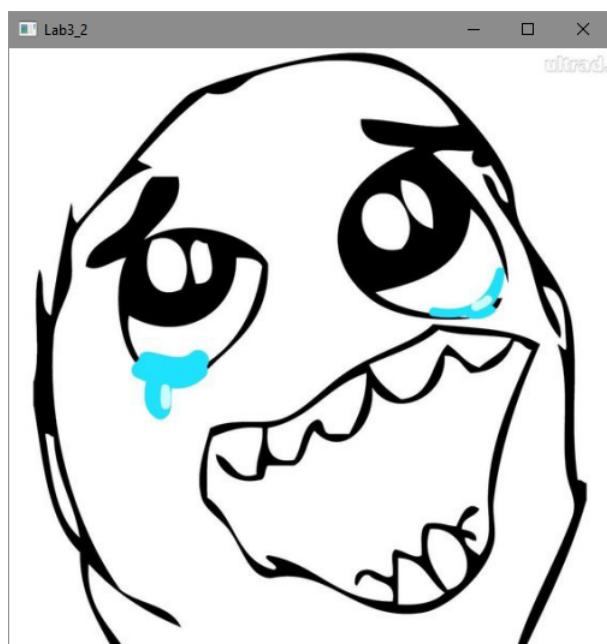


Figure 2.2 – Bitmap

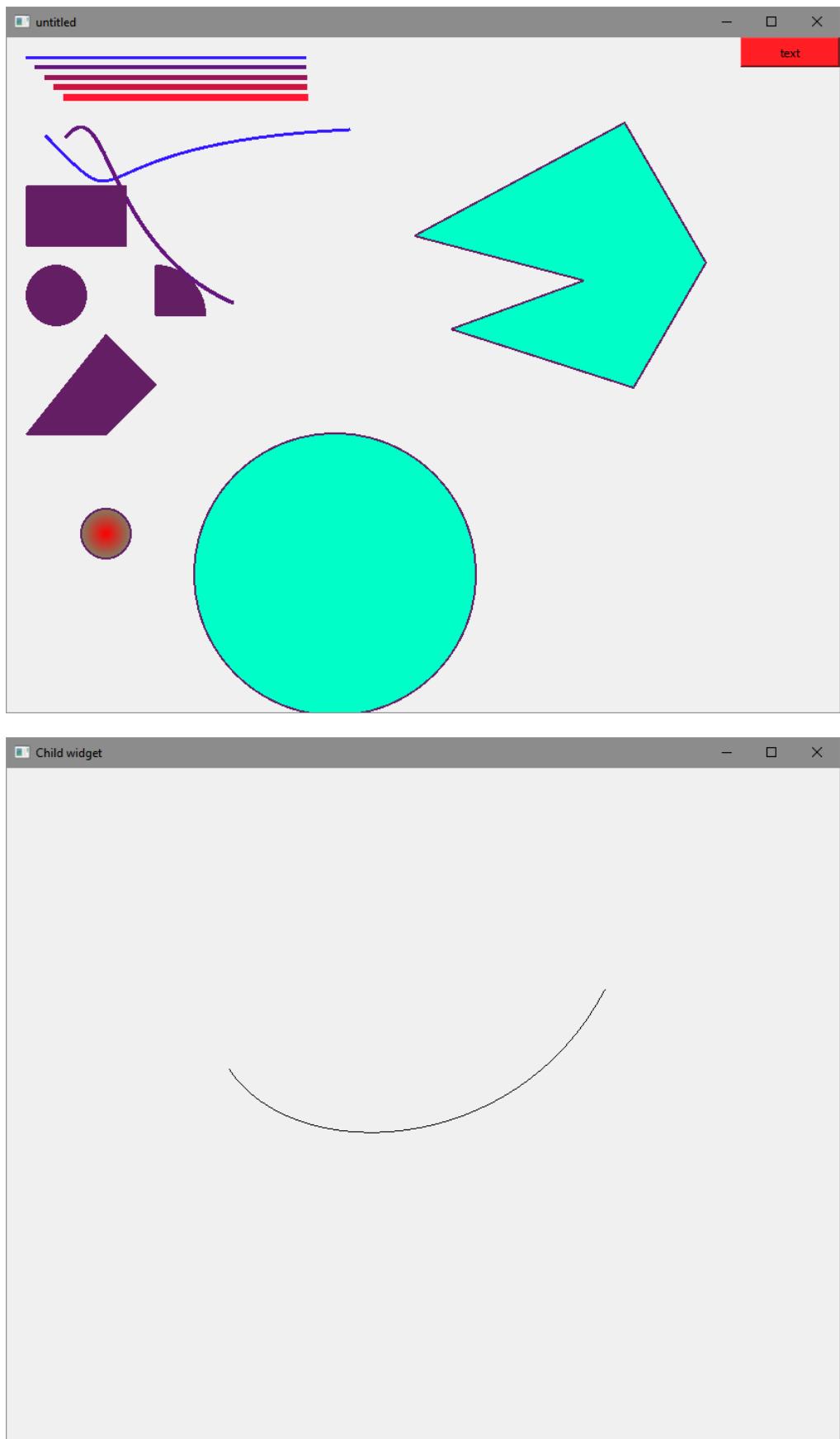


Figure 2.4– Bezier draw with mouse

## **Conclusions**

I learned how to change the behaviours of a window and how to change its properties ,to add mouse commands drawing in windows(lines,objects,bezier functions,bitmap).

## **References**

- 1 Qt Examples And Tutorials,<http://doc.qt.io/qt-5/qtexamplesandtutorials.html>
- 2 Google,<https://www.google.com>