Ministry of Education of the Republic of Moldova
Technical University of Moldova
Department of Applied Informatics

Report

Laboratory Work Nr.4
on Event-Driven Programming

Windows Timer. Animation.

Performed by Metei Vasile
Supervised by Coslet Mihai

April 16, 2018

Laboratory Work Nr.4

Laboratory Work Requirements:

Mandatory Objectives:

- Create an animation base on Windows timer which involves at least 5 different drawn objects

Objectives With Points:

- (2pt) Increase and decrease animation speed using mouse wheel
- (2pt) Solve flickering problem
- Add animated objects which interact with each other(2-6pt), ex:
  - Few balls which have different velocity and moving angles. In order to get max points, add balls with mouse, make balls change color on interaction and any other things that will show your engineering spirit
  - Any other interesting and reach in animation application
- (Math.floor(+35% for task with interacting objects)) Animate a Nyan Cat that leaves a rainbow tail

Laboratory Work Implementation

Tasks and Points

Mandatory Objectives:

- Create an animation base on Windows timer which involves at least 5 different drawn objects

Objectives With Points:

- (2pt) Increase and decrease animation speed using mouse wheel
- (2pt) Solve flickering problem
- Add animated objects which interact with each other(2-6pt), ex:
  - Few balls which have different velocity and moving angles. In order to get max points, add balls with mouse, make balls change color on interaction and any other things that will show your engineering spirit
  - Any other interesting and reach in animation application
- (Math.floor(+35% for task with interacting objects)) Animate a Nyan Cat that leaves a rainbow tail

Total Points: All Mandatory Points + All Bonus Points + Early Submission

Laboratory Work Analysis

First thing I want to mention here is that this laboratory work was performed in C language.

As you will run the application a Windows Form will show up. There will be 2 buttons: Resume and Pause, a Text Label and a Picture Box.

In order to start the animation is necessary to click somewhere in Client Zone. A mouse click creates a ball. Performing more clicks you can create more objects. Now when the ball is created it is drawn and starts to move inside the Client Zone. Also the Picture Box, where a Nyan Cat is represented starts its motion when the mouse click is performed.

The displacement is controlled by a function which checks if there is any collision. There are several types of collisions. Whenever a collision is detected something visible happen, for example: when the ball will hit the bottom margin of the client zone, the background color of the window will change. Another collision will be when the ball will hit the right margin of the client zone. In this case the color of the ball will change and a sound will be reproduced. There is a collision that performs an invisible task: when the nyan cat leaves the client zone, it is destroyed.

The above mentioned buttons deal with timer. The "Pause" button will stop the timer or will disable it while "Resume" button will enable it back.

Another functionality performed here is animation speed. It can be increased or decreased using the mouse wheel. I implemented 3 level of speed for my application: Low, Medium and High. The current speed will be shown in the text label in the top-right corner. When the low speed is chosen the timer interval is set to a larger integer, when the high speed is choose the timer interval becomes a smaller integer.

As developing this laboratory the flickering problem was met. In order to solve it I used double-buffer and set it to true.

Screens

Below will find attached some screen of my application within an appropriate caption, in order to have a better understanding about how the application works.

Figure 1: Windows Form which will show up at the begining of the program

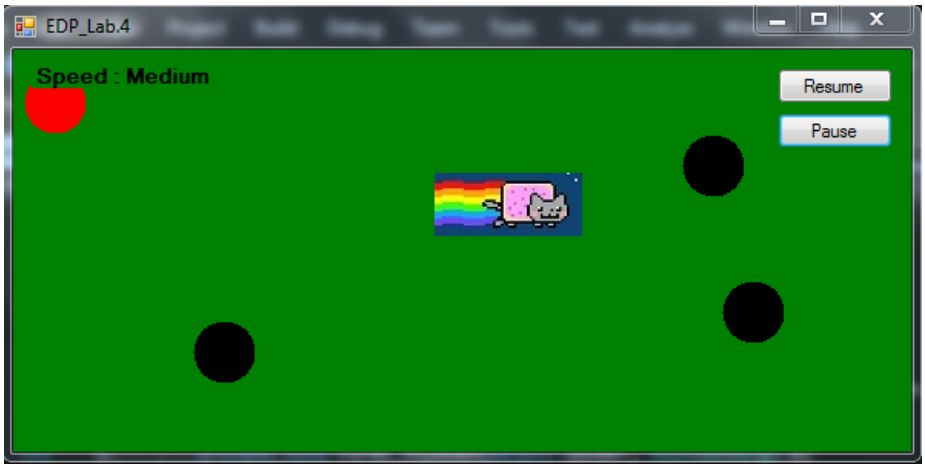

Figure 2: Nyan cat moving together with 4 balls at a medium speed. The Pause button was pressed.

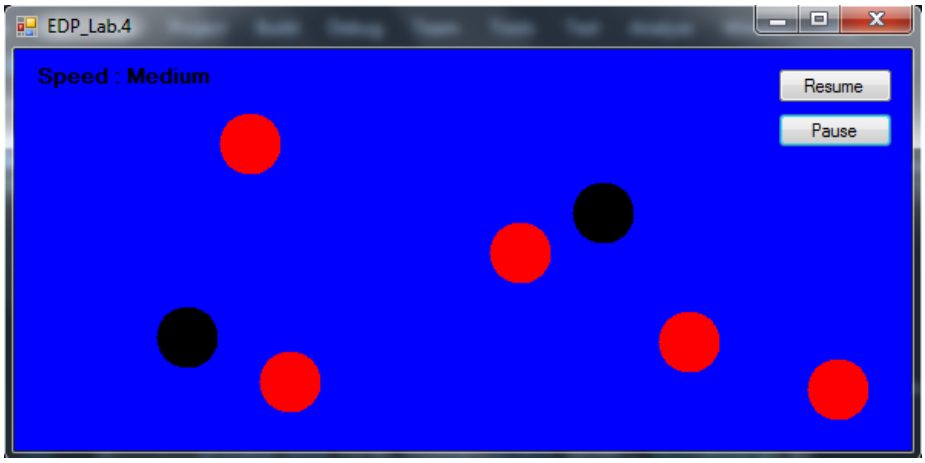

Figure 3: The Nyan Cat leaved the Client Zone. Some more balls were created.

Conclusion

This laboratory work introduced me to a new way of implementation a Windows Application using C language. I have discovered the full power of IDE.

Also Windows Timer was studied during this laboratory work. Using timer I created animations. Beside animations timers can be used in many other domains.

The application developed in this laboratory work helped me to understand how events of the mouse whell are handled.