

FACULTY OF COMPUTERS, INFORMATICS AND MICROELECTRONICS

TECHNICAL UNIVERSITY OF MOLDOVA

WINDOWS PROGRAMMING (ANDROID)

LABORATORY WORK #4

Windows Timer. Animation.

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Laboratory work #4

1 Purpose of the laboratory

Gain knowledge about basics of Working with Mouse, GDI Primitives, Bezier Curve.

2 Laboratory Work Requirements

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

- a) Create an animation based on Windows timer which involves at least 5 different drawn objects

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

- a) Realize the tasks from *Basic Level*.
- b) Increase and decrease animation speed using mouse wheel/from keyboard
- c) Solve flicking problem describe in your readme/report the way you had implemented this

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

- a) Realize the tasks from *Normal Level*.
- b) Add 2 animated objects which will interact with each other. Balls that have different velocity and moving angles. They should behave based on following rules:
 - 1) At the beginning you should have 3 balls of different colours of the same size
 - 2) On interaction with each other, if they are of the same class (circle, square), they should change their color and be multiplied.
 - 3) On interaction with the right and left wall (the margins of the window), they should be transformed into squares.
 - 4) On interaction with the top and bottom of the window - the figures should increase their velocity.
 - 5) Please, take into consideration that the user can increase and decrease animation speed using mouse wheel/from keyboard

– **for Bonus Point Tasks :**

- a) For the task above, add balls with mouse.

3 Laboratory work implementation

3.1 Tasks and Points

- a) Create an animation based on Windows timer which involves at least 5 different drawn objects
- b) Increase and decrease animation speed using mouse wheel/from keyboard

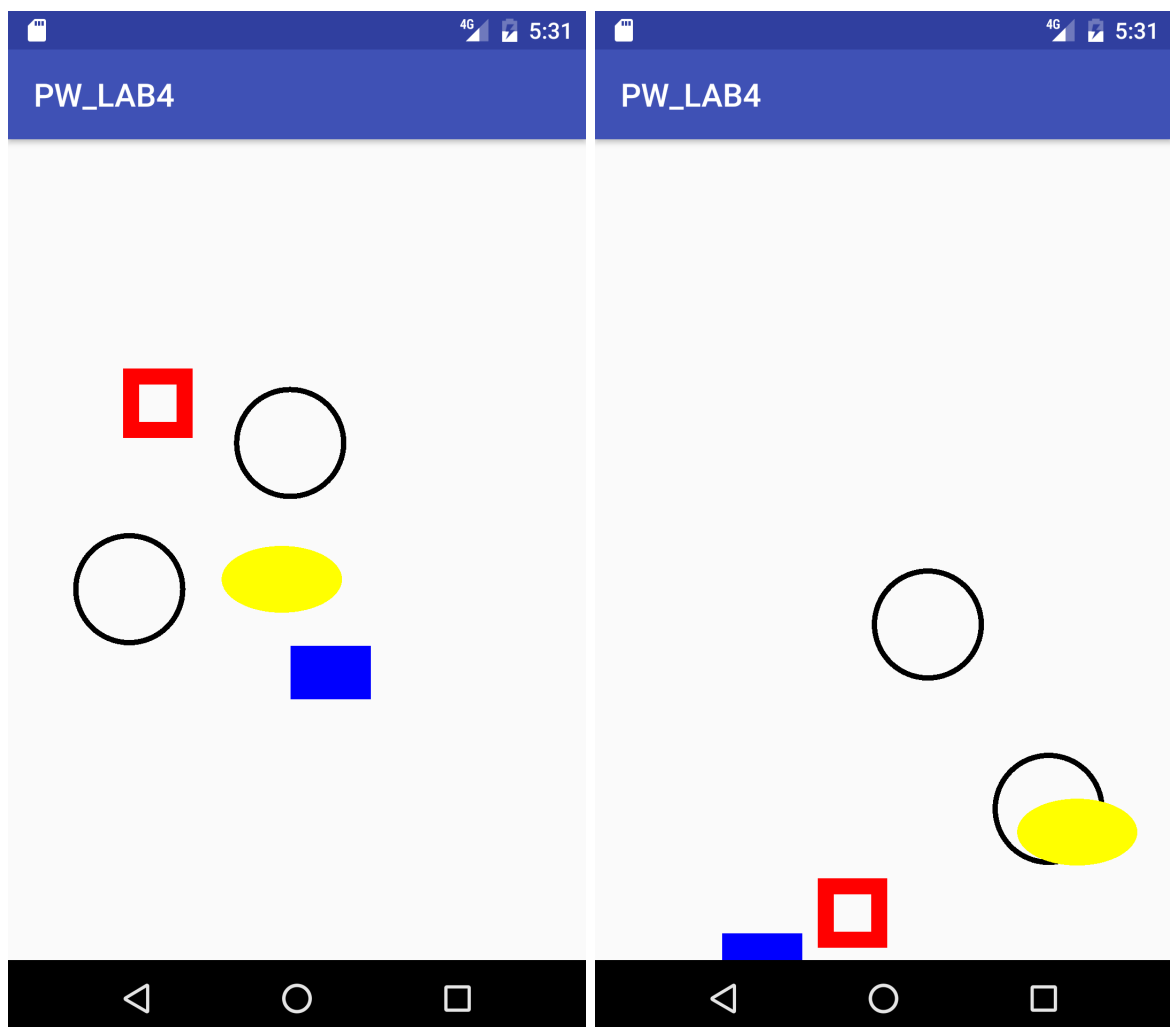
3.2 Laboratory work analysis

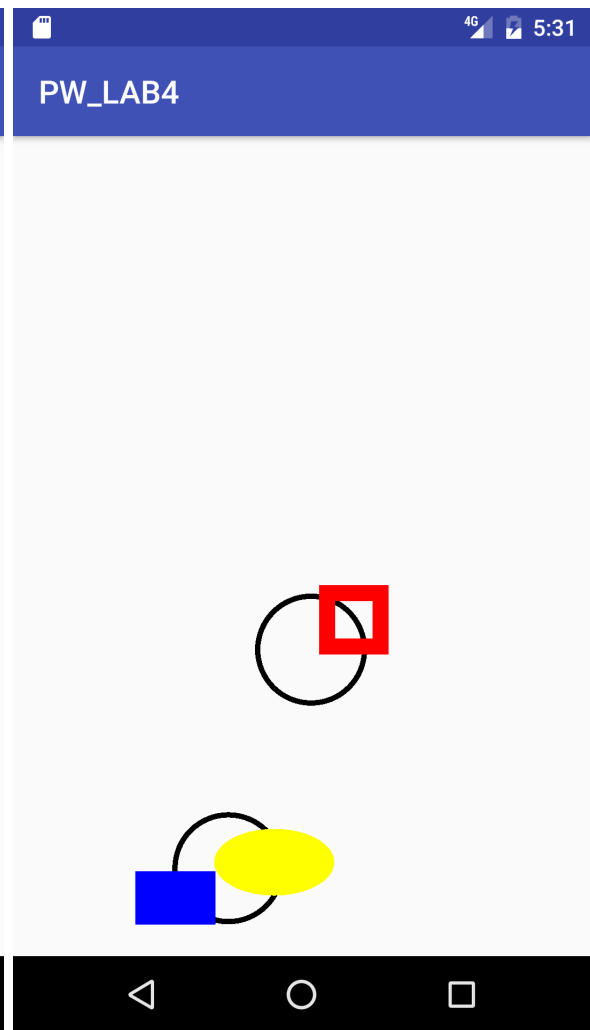
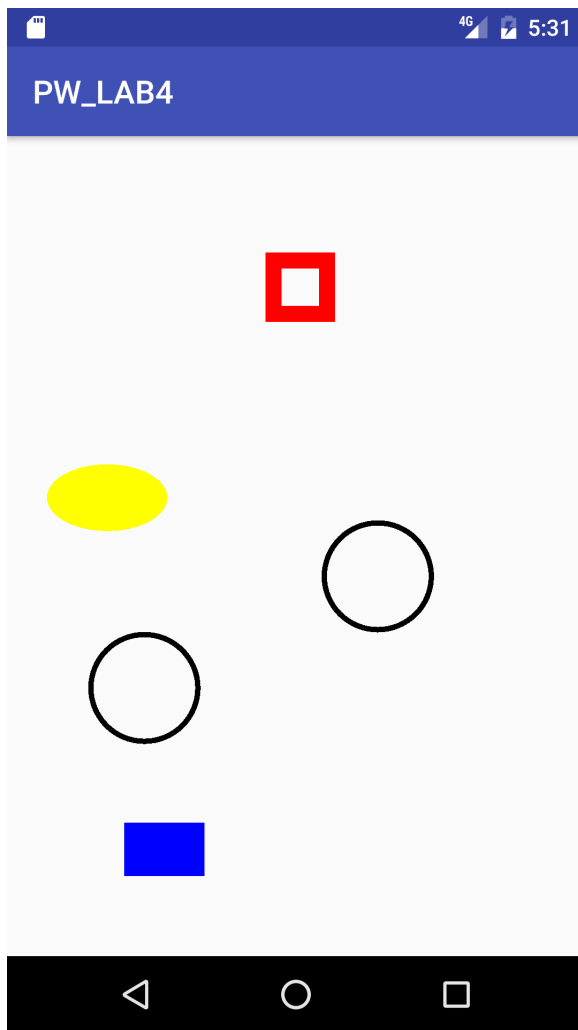
Link to my GitHub repository :

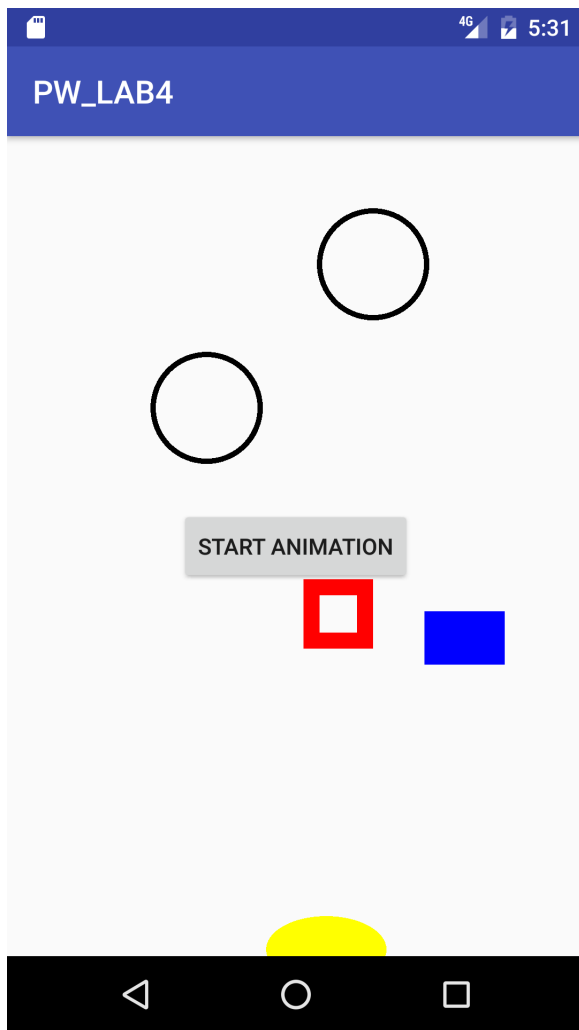
https://github.com/Tolea86/WP_ANDROID/tree/master/LAB_4/PW_LAB4

My application has following features : it has 1 view with 5 drawn objects in it and a button centered to the middle. Clicking on the button from center will make it disappear and will start the animation of the objects at the duration of 200 ms. Clicking on the screen will decrease the duration by 100 on every click. Clicking on back button from android will stop the animation at all, will make visible the center button and will reset duration to 200 ms.

3.3 Prove your work with screens







Conclusions

In this laboratory work we've studied Android Timer, we have developed an app with animation of custom objects. We have analyzed the Android timer and have developed a custom way to animate the objects on Android.

References

- 1 Android Developers Guide, *official page*, <https://developer.android.com/guide/index.html>
- 2 StackOverflow, *official page* , <http://stackoverflow.com/>
- 3 LaTeX Tutorial, *youtube page*, <https://www.youtube.com/watch?v=SoDv0qhyysQ>