Lab Assignment #3

Due Date: Week 7

Purpose: The purpose of this lab assignment is to:

1. Develop Android Apps that contain Graphics and Animations
2. Practice the use of frame-by-frame animations
3. Practice the use of tweened animations

References: Textbook, ppt slides, class examples, and Android documentation (https://developer.android.com/guide/topics/graphics/overview.html, <http://developer.android.com/reference/android/view/KeyEvent.html>, https://material.io/icons/#ic\_keyboard\_arrow\_down). This material provides the necessary information that you need to complete the exercises.

Be sure to read the following general instructions carefully:

- This assignment must be completed individually by all the students.

- You will have to **demonstrate your solution in a scheduled lab session** and upload the solution on eCentennial through the **dropbox** link.

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Start a new Android Application and name it according to rules given in lab assignment 1.

The main activity of this application uses a ListView control to allow users to select an exercise for demonstration as shown in picture below.

**Exercise 1**

Create an activity that allows the user to draw continuous horizontal or vertical lines, starting from a given position, using up, down, left, and right **keys of Android keypad** as well as **image buttons in UI**, as shown in the picture below. Use a Canvas object to implement the drawings.

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Allow the user to choose *colors* and the *thickness* of lines. Allow the user to *clear* the drawings and *restart*. Use code from CanvasPaint example from lecture 5 examples.

The image buttons for arrow keys are provided on eCentennial.

(4 marks)

**Exercise 2**

In this exercise you will develop a frame-by-frame animation. Create a series of pictures that differ slightly from each other. Your animation should be original, relate to things that you like or express an idea of yours. Allow the user to start and stop the animation. You may use code from FramedAnimation example of lecture 6.

(3 marks)

**Exercise 3**

In this exercise you will create a tweened animation similar to TweenActivity from Lecture 6 examples (AnimationsExample). Create an application to simulate an earth view. Display a png image of the earth and the moon image slightly above the earth image. Apply the necessary transformations (*rotate*, *scale*, *translate*) to make the moon revolve nicely around the earth. Define tweening transformations as XML resource files. Allow the user to start and stop the animation.

(3 marks)

**Evaluation:**

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| **Functionalities**:  All three exercises (all working, proper naming of activities, variables, and methods. Provide comments).  Provide explanation when asked during the demonstration of the app. | 50% |
| **Event Handling** (proper event handlers) | 25% |
| **UI friendliness** (proper layout, controls, styles, themes, graphics, images) | 15% |
| **Declaring resources** in proper resource files | 5% |
| **Innovative features** | 5% |
| **Total** | **100%** |