

Lab Assignment #3

Due Date: *Week 6 (11.59 pm, Sunday)*

Marks/Weightage: 30/10%

Purpose: The purpose of this lab assignment is to:

- * Develop Android Apps that contain Graphics and Animations
- * Practice the use of frame-by-frame animations
- * Practice the use of tweened animations

References: Textbook, ppt slides, videos, class code 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 upload the completed assignment on eCentennial through the **assignment link under Assessments**.

Android Workspace/Project Naming rules:

You must name your Android Studio workspace and project according to the following rule: **yourfullname_COMP304SectionNumber_Labnumber_ExerciseNumber**.

Example: JohnSmith_COMP304Sec001_Lab3_Ex1 and each subsequent exercise should be added as JohnSmith_COMP304Sec001_Lab3_Ex2 and so on.

Submission rules:

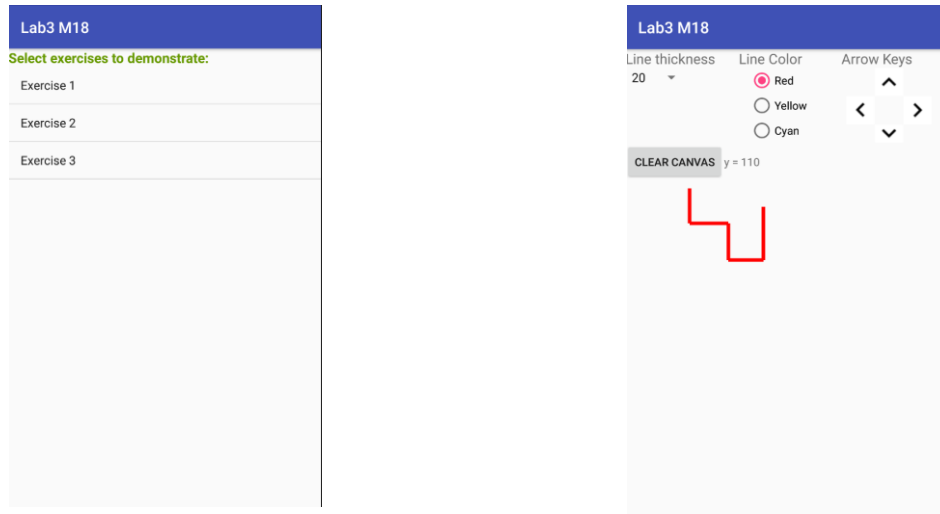
Submit your projects as **zip files** that are named according to the following rule: **yourfullname_COMP304SectionNumber_Labnumber_ExerciseNumber.zip**

Example: JohnSmith_COMP304Sec001_Lab3_Ex1.zip

Upload your zipped assignment using the assignment link in e-centennial.

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.



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.

[14 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.

[8 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.

[8 marks]

Evaluation/Rubric:

Functionalities: All three exercises (all working, proper naming of activities, variables, and methods. Provide comments).	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/effective way of coding	5%
Total	100%