CS180 Lab 11: Android 2: Local/Global Variables; Simple Concurrency

Sections from the textbook relevant for this lab: 13.4, 13.5, 13.6, 13.7

Lab for week: 12
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Learning Objectives

1. Accessing and using global and local variables.
2. Introduction to simple thread creation.

Objectives

- Setup files and directories.
- Create new thread.
- Update variables to create simple animation.

Files

Lab11.java

Setup

Make a new directory for Lab 8:

```
$ cd
$ cd cs180
$ mkdir lab11
$ cd lab11
$ /homes/jfrankl/pal
$ drjava Lab11.java &
```

Information

There are four variables with the Lab11.java file. The `x` and `y` variables hold the `x` and `y` positions of the blue ball on the Droid screen. The `width` and `height` variables hold the width and height of the Droid screen.

Exercise 11-1: Create Thread

Objective: Create a new thread that will update the position of the ball.

Steps:

1. Create a new class that extends the `Thread` class.
2. Create a `run`() method with no parameters and `void as the` return type**.**
3. Within the `run`() method create a loop that updates the `x` and `y` variables with their current value plus 2.
4. In this loop also use the `Thread.sleep (long milliseconds)` method to make the thread sleep for 40 milliseconds.
5. Within the `main()` method from the Lab11.java file create a new instance of the new class created and call the `start` method on that object.
6. Run the `pal` command to see the results of this exercise.

Exercise 11-2: Using the Accelerometer and Confining the Ball

Objective: Update the ball's position using the accelerometer while retaining the ball on the screen.

Steps:

1. Within the thread's loop that you created in Exercise 1, create two variables named `tx` and `ty` and assign the ball's current position to them.
2. Use the public static variables `x` and `y` within the `Accelerometer` class to update tx and ty .
3. When tx=>width, set it to 0. When tx<=0 then set it to width.
4. When ty=>width, set it to 0. When ty<=0 then set it to height.
5. Set x and y to tx and ty.
6. Run the `pal` command to see the results of this exercise.

Grading

Criteria	Percent
Update ball by 2 pixels per frame	40%
Update ball using the accelerometer	30%
Confining ball to screen	30%

Turn In

Show your TA your application for a grade. There will be nothing to turn in for this lab.

<End of lab 10>