Engineering Design for Embedded Systems: Assignment 5 (version 1)

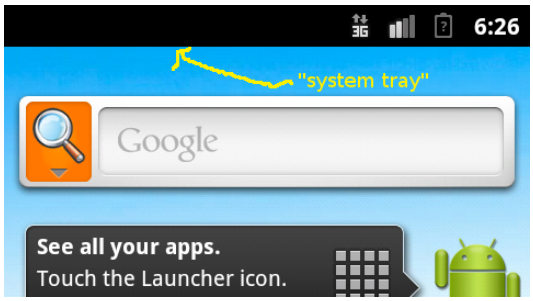
Suggested Completion Date: February 11, 2013

This assignment develops skills in information retrieval, version control, and with using Android Broadcast Receivers and Lists.

1 Searching the Internet

Perhaps the most useful skill you can have is that of learning to find information on the Internet. I'll post an answer to this question next week. I'm going to be a bit vague to make it more challenging to answer this question, but you don't know what things are called in real life either.

The top of an Android screen contains something like a Windows system tray:



1. (relatively easy:) figure out how to add something to that tray from within your application.
2. (rather harder:) figure out how to programmatically navigate the contents of that tray and remove contents your app didn't add—I suspect this is possible, but I don't know for sure[1].

2 Version Control

Next, I'd like you to get some more practice in using version control systems. This will work best if you're working with your lab partners, or if you have multiple computers to work on.

Create scratch directory. First, let's make sure that you don't mess up your lab submission directories on the Subversion repository. One group member should create a `a5` directory inside your group repository. Other members should check it out.

[1] I installed an app on my phone which spams my tray; it would be great to write an app which kills such spam.

Share files. One member creates an Android Application Project, makes some changes, and checks it into the shared `a5` directory. Other members check it out.

Non-conflicting edits. Experiment with making conflicts that don't conflict. For instance, team member 1 can add a new method in the Main activity and share it with team member 2 (who needs to run an SVN update). Then team member 2 can add code to the method and commit it back to the repository, and have team member 1 integrate the changes. Try adding and deleting methods. Also try changing different methods at the same time and observe how Subversion smoothly integrates the changes.

Conflicting edits. Experiment with changing the same line of code and then resolving the conflict. Understand what a conflict is and how it works.

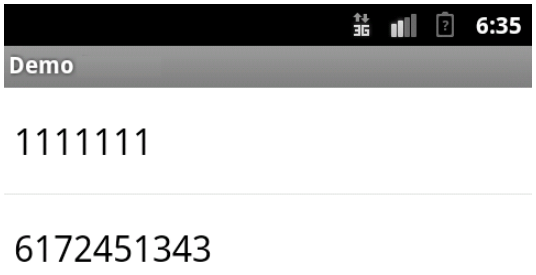
Reverting to an earlier version. Figure out how to do the following:

1. Person 1 makes a change, doesn't commit it, and wants to revert to the last committed version.
2. Person 1 makes a change, commits it, and then person 2 wants to "undo" that change.
3. Person 1 wants to temporarily test the version from 2 commits ago and then go back to the latest version. No changes to the repository.
4. Person 1 wants to put the repository back to the state it was in 2 commits ago. (The intermediate state will still be visible unless you manipulate the repository—beyond the scope of ECE155.)

3 Android: Broadcast Receivers and Lists

You don't quite know enough to make lists actually useful yet (they are usually used with databases). However, we can create a contrived example.

Your goal is to create a `ListView` which is automatically populated with the list of received phone calls. So, when you get a phone call, it shows up in the list in your app. When you click on a list entry, your app must load a Google search for the phone number.



For extra fun, add the `BroadcastReceiver` dynamically, like we did for the configuration changed receiver, rather than the phone state changed receiver. That will give you more opportunity to practice Android coding. Otherwise, everything else is directly from the lecture notes. You just have to combine three different ideas.