Homework 3

We continue our play with temperature conversion. This time, each student is required to develop an Android application for converting temperature, either from Fahrenheit (°F) to Celsius (°C) or from Celsius (°C) to Fahrenheit (°F), using both Activity and Service components. The purpose of this home assignment is to make students be familiar with Bound Service.

The formulas for converting temperature between Fahrenheit scale and Celsius scale are as follows.

Fahrenheit to Celsius	$(°F - 32) \times {}^{5}/_{9} = °C$
Celsius to Fahrenheit	$(°C \times {}^{9}/_{5}) + 32 = °F$

Example: Convert 26° Celsius *(a nice warm day)* to Fahrenheit

First: 26° × 9/5 = 234/5 = 46.8
Then: 46.8 + 32 = **78.8° F**

Example: Convert 98.6° Fahrenheit *(normal body temperature)* to Celsius

First: 98.6° - 32 = 66.6
Then: 66.6 × 5/9 = 333/9 = **37° C**

In this assignment, you **must** use **Bound Service** to provide temperature conversion service. Here, we use temperature conversion to simulate a background service. Of course, computation for converting temperature from one scale to another is trivial. Therefore, you don't need to make the service as an individual thread in this assignment. However, in general, you should consider implementing a service in a separate thread from the main thread in which your activities lie.

To simplify this assignment, the bound service is a local service.

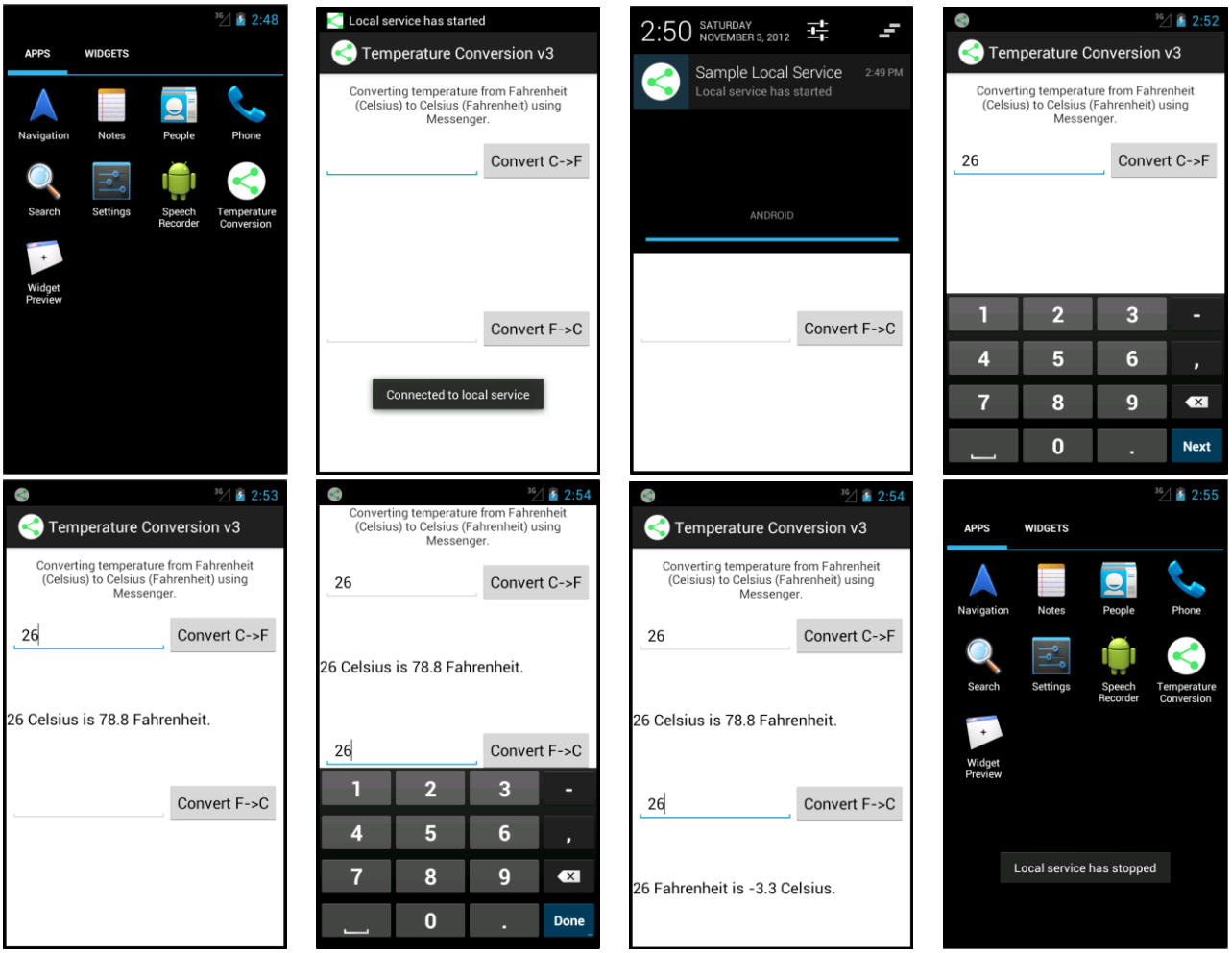
A sample app user interface is shown below. You may follow it or design your own nicer UI.

In the sample app, I use one activity for taking user input and display conversion results, and one bound service for doing temperature conversion. When your app is launched, both a toast message and a notification are expected to display on the screen. Since our app is very simple, the notification is not required to launch an activity once being clicked. In other words, you are not required to set an action for the notification.

For CPSC 4399 students: you can implement the service by either extending Binder class or using Messenger.
For CPSC 5399 students: you must implement the service by using Messenger.

You can earn up to 10 bonus points for this assignment if your app is implemented correctly, runs without problem, meets basic requirements (*using both activity (for UI) and bound service (for temperature conversion), showing both toast message and notification after launching the app, converting temperature correctly*), **AND**

- Your service is implemented as a remote service (in a different process) using Messenger.



Reference:

Slides “5 – Services.pdf” and “6 - Notifying the User.pdf” and the sample apps “LocalBoundService” and “RemoteBoundService” at https://github.com/mengjunxie/Android-Sample-Apps/.

Settings:

Use the following setting in your **app/build.gradle**.

- compileSdkVersion 22
- buildToolsVersion "22.0.1"
- minSdkVersion "15"
- targetSdkVersion "22"
- compile 'com.android.support:appcompat-v7:22.1.1'

Package name: edu.ualr.cpsc4399.{your_email_id}.hw3

- E.g.: My app package name is "edu.ualr.cpsc4399.mxxie.hw3".

Submission:

Compress the whole project directory into **a single .zip** file and name it as **{your_email_id}-hw3.zip**. Submit that zip file onto BlackBoard.

Due date and time:

This homework assignment will be due **3 PM, Nov. 14th (Monday)**.

Late submission and grading:

Refer to the syllabus for the homework assignment regulations.