Jason Esquivel
ECE 590
Lab 1 Report

Introduction

For the third lab we had the task to use a combination of an Activity and a Service or an Activity and a Broadcast to implement a Simple Timer. The Timer was to be implemented so that it ran in the background and send the current time to the Activity to display. The Service would send an update every 5 seconds to the Activity.

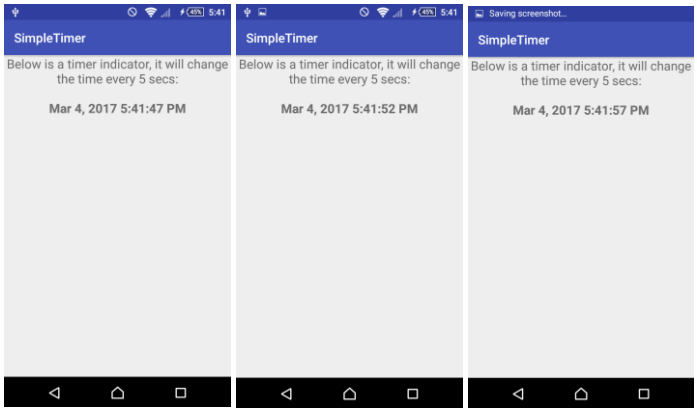
Main

The first part for this task was to implement the activity. Only 2 TextViews were needed for this implementation that was using RelativeLayout. The first TextView was just a label and the second TextView will hold the current time.

The second part was to setup the TimerService. I used the TimerTask class to setup the timer to run every 5 seconds where the abstract function run was set up to create a time message holding the current time as a string and using sendBroadcast to send the Intent.

The third part was to setup the MainActivity. Initially the setContentView needed to be set up. Secondly starting the service using the startService fuction and using a new instantiation of Intent with the TimerService as a parameter of Intent. This would start our TimerService we needed. In order to use our TimerService we need to setup a Receiver to get that data. In this case BroadcastReceiver was setup to get the time data and update the TextView. The BroadcastReceiver need to be registered using registerReceiver function and the BroadcastReceiver and an instance of IntentFilter looking for our time message. In the onPause method of the activity, unregistering the receiver was necessary when the activity is not in focus. In the onStop() method stopping the service is necessary using the stopService() method.

Lastly the AndroidManifest file needed to be modified to include the service.Below is a sequence of snapshots showing the time getting updated.



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This youtube link shows will have a demo capture in video. https://youtu.be/QaEvLDysM_4

Discussion and Conclusion

This was a initially a very frustrating task. Getting my head around how Service works took me a while. Once the Service was setup I using the logcat to see what message the service was send producing. The second task that took me longer to figure out was setting up the receiver. Looking back now this was a simple task and a very important one that I will take and use in any future projects.

Appendix A: Code

MainActivity.java

```
package com.hw4.jasonesquivel.simpletimer;

import android.content.*;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

import android.util.*;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    private String msg = "Activity Main : ";
    private BroadcastReceiver mReceiver;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Intent intent = new Intent(this, TimerService.class);
        startService(intent);
        Log.i(msg, "Started Service");

    }
    /** Called when the activity is about to become visible. */
    @Override
    protected void onStart() {
        super.onStart();
        Log.i(msg, "The onStart() event");
    }

    /** Called when the activity has become visible. */
    @Override
    protected void onResume() {
        super.onResume();
        Log.i(msg, "The onResume() event");

        IntentFilter intentFilter = new IntentFilter("timerFilter");
        mReceiver = new BroadcastReceiver(){
```

```
            @Override
            public void onReceive(Context context, Intent intent) {
                //extract our message from intent
                String msg_for_me = intent.getStringExtra("time");
                //log our message value
                Log.i(msg, msg_for_me);
                TextView textView = (TextView)findViewById(R.id.time);
                textView.setText(msg_for_me);

            }
        };
        //registering our receiver
        this.registerReceiver(mReceiver, intentFilter);
    }

    /** Called when another activity is taking focus. */
    @Override
    protected void onPause() {
        super.onPause();
        Log.i(msg, "The onPause() event");
        this.unregisterReceiver(mReceiver);
    }

    /** Called when the activity is no longer visible. */
    @Override
    protected void onStop() {
        Intent intent = new Intent(this, TimerService.class);
        stopService(intent);
        Log.i("Main", "Started Service");
        super.onStop();
        Log.i(msg, "The onStop() event");
    }

    /** Called just before the activity is destroyed. */
    @Override
    public void onDestroy() {
        super.onDestroy();
        Log.i(msg, "The onDestroy() event");
    }

}
```

TimerService.java

```
package com.hw4.jasonesquivel.simpletimer;

import android.app.Service;
import android.os.IBinder;
import android.content.Intent;
import android.util.Log;

import java.text.DateFormat;
import java.util.*;

/**
 * Created by Jason Esquivel on 3/3/2017.
 */

public class TimerService extends Service {
    private static Timer timer = new Timer();
```

```
    @Override
    public IBinder onBind(Intent intent){
        return null;
    }
    @Override
    public int onStartCommand(Intent intent, int flags, int startId){
        timer.scheduleAtFixedRate(new sendTimeTask(), 0, 5000);
        return START_STICKY;
    }
    private class sendTimeTask extends TimerTask
    {
        public void run()
        {
            Intent i = new Intent("timerFilter");
            String time = DateFormat.getDateTimeInstance().format(new Date());
            i.putExtra("time",time);
            sendBroadcast(i);
            Log.i("TimerService", time);
        }
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.hw4.jasonesquivel.simpletimer.MainActivity">

    <TextView
        android:id="@+id/label"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Below is a timer indicator, it will change the time every 5
secs:"
        android:textSize="20dp"
        android:textAlignment="center"/>
    <TextView
        android:id="@+id/time"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/label"
        android:paddingTop="20dp"
        android:textSize="20dp"
        android:textAlignment="center"
        android:textStyle="bold"
        android:text="temp"/>

</RelativeLayout>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    package="com.hw4.jasonesquivel.simpletimer">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <service android:name=".TimerService"/>

    </application>

</manifest>
```