475/575 In Class Lab
Broadcast Receiver – Service

This lab demonstrates how to create a broadcast receiver and service. Its purpose is to listen for texts that contain a key phrase. For testing you need to send text messages, typically from

Define Receiver

1. Determine what fires your receiver (Custom or System). If custom then you create the broadcast
    a. System
        i. Find SDK (In AS File- Project Structure) then go to 'Android SDK location and find broadcast_actions.txt. Choose one to respond to. For me C:\Users\Perkins\AppData\Local\Android\sdk\platforms\android-23\data
    b. Custom
        i. Define as in lecture "12_Services and Broadcast Receivers"
2. Determine BR lifespan
    a. Manifest defined (always active until uninstall)
    b. Dynamic defined (active only when app running)
3. Create receiver
    a. `public class myBroadcastReceiver extends BroadcastReceiver {}`
    b. Red squiggles appear under above, hover over and hit alt-enter and implement required methods.
    c. Set up a log in the onReceive method to verify its called

```
public void onReceive(Context context, Intent intent) {
    //start service here
    Log.e(TAG,"In Broadcast Receiver");
```

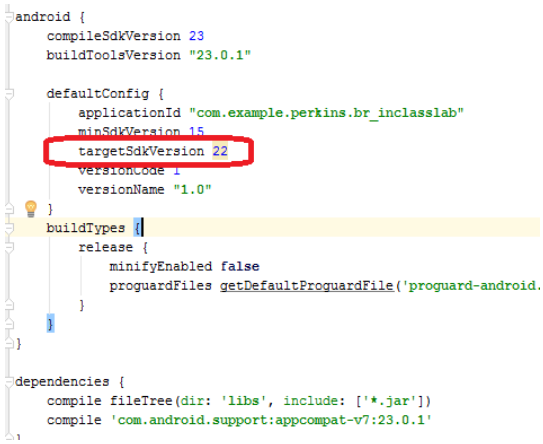
4. We want it to be always active so define it in manifest inside application tags

```
<receiver android:name=".MySMSreceiver" >
    <intent-filter android:priority="999" >
        <action android:name="android.provider.Telephony.SMS_RECEIVED" />
    </intent-filter>
</receiver>
```

5. And we also need some permissions to receive SMS messages

```
<uses-permission android:name="android.permission.RECEIVE_SMS" />
<uses-permission android:name="android.permission.READ_SMS" />
```

Android has a new permission model where you have to dynamicly ask users for dangerous permissions as of API 23. (We will cover this later)
For now we will circumvent it by ensuring that the targetSDKVersion Config field is set to 22 or below in the app version of build.gradle



Define Service

Create Service

1. `public class MyService extends Service{`
   a. Red squiggles appear under above, hover over and hit alt-enter and implement required methods.
2. Hover over MyService and hit ctrl-O and override onStartCommand

3. Set up a log in the onStartCommand method to verify that its called

```
public int onStartCommand(Intent intent, int flags, int startId) {

   Log.e(TAG,"In BRandServiceandSystemAction");

   //do work here, stop service when done
   stopSelf();
   return 0;
}
```

Register Service in manifest inside application tags

```
  <service android:name=".MyService">
</service>
```

Start the service from the Broadcast Receiver's onReceive method.

```
//start the service
Intent myIntent = new Intent(context, MyService.class);
context.startService(myIntent);
```

Test it,

send it a text from another phone number

Further- Now lets parse the text a bit, we can search on a word withen the text or a particular phone number, Here is a receiver that does that

```
public class myBroadcastReceiver extends BroadcastReceiver {

    private static final String TAG  = "myBroadcastReceiver";
    private static final CharSequence SECRETSTRING = "secret";

    @Override
    public void onReceive(Context context, Intent intent) {
        //start service here
        Log.e(TAG,"In Broadcast Receiver");

        doStuff(context, intent);

        //start the service
        Intent myIntent = new Intent(context, MyService.class);
        context.startService(myIntent);

    }


    void doStuff(Context context, Intent intent){
        //lets see whats inside
        Bundle extras = intent.getExtras();

        if ( extras != null )
    {
        //A PDU is a "protocol description unit", which is the industry format for an
SMS message. because SMSMessage reads/writes them you shouldn't need to dissect them.
        //A large message might be broken into many, which is why it is an array of
objects.
        Object[] smsextras = (Object[]) extras.get( "pdus" );

        for ( int i = 0; i < smsextras.length; i++ )
        {
            SmsMessage smsmsg = SmsMessage.createFromPdu((byte[])smsextras[i]);

            //see whats in the message
            String strMsgBody = smsmsg.getMessageBody().toString();

            //does it contain our string?
            if (strMsgBody.contains(SECRETSTRING)){
                Log.i(TAG, "contains secret string");

                //start the service
                Intent myIntent = new Intent(context, MyService.class);
                context.startService(myIntent);
            }
            else
                Log.i(TAG, "Does Not contain secret string");

            //can also do this by phone number
            //String strMsgSrc = smsmsg.getOriginatingAddress();
        }
    }
}
}
```