Grow with Google Challenge Scholarship
Lesson 7 Notes

Edit Text Preference Constraints - Setting an acceptable range

To limit the acceptable values between 0 (non inclusive) and 3 (inclusive) we opted to use a `PreferenceChangeListener` - this is not the same as a `SharedPreferenceChangeListener`. The differences are:

- `SharedPreferenceChangeListener` is triggered after any value is saved to the SharedPreferences file.
- `PreferenceChangeListener` is triggered before a value is saved to the SharedPreferences file. Because of this, it can prevent an invalid update to a preference. `PreferenceChangeListeners` are also attached to a single preference.

Generally the flow goes like this:

1. User updates a preference.
2. `PreferenceChangeListener` triggered for that preference.
3. The new value is saved to the SharedPreference file.
4. `onSharedPreferenceChanged` listeners are triggered.

Otherwise they act very similarly. In your activity you implement the `Preference.OnPreferenceChangeListener`, override the `onPreferenceChange(Preference preference, Object newValue)`. The `onPreferenceChange` method will return either true or false, depending on whether the preference should actually be saved.

Okay, so let's take a look at the code.

Step 1: Implement the OnPreferenceChangeListener:

```
public class SettingsFragment extends PreferenceFragmentCompat implements OnSharedPre
ferenceChangeListener, Preference.OnPreferenceChangeListener
```

Step 2: Attach the listener to the size preference in onCreatePreferences

```
@Override

public void onCreatePreferences(Bundle bundle, String s) {

         /* Other preference setup code code */

        //...

        Preference preference = findPreference(getString(R.string.pref_size_key));
```

```
        preference.setOnPreferenceChangeListener(this);

}
```

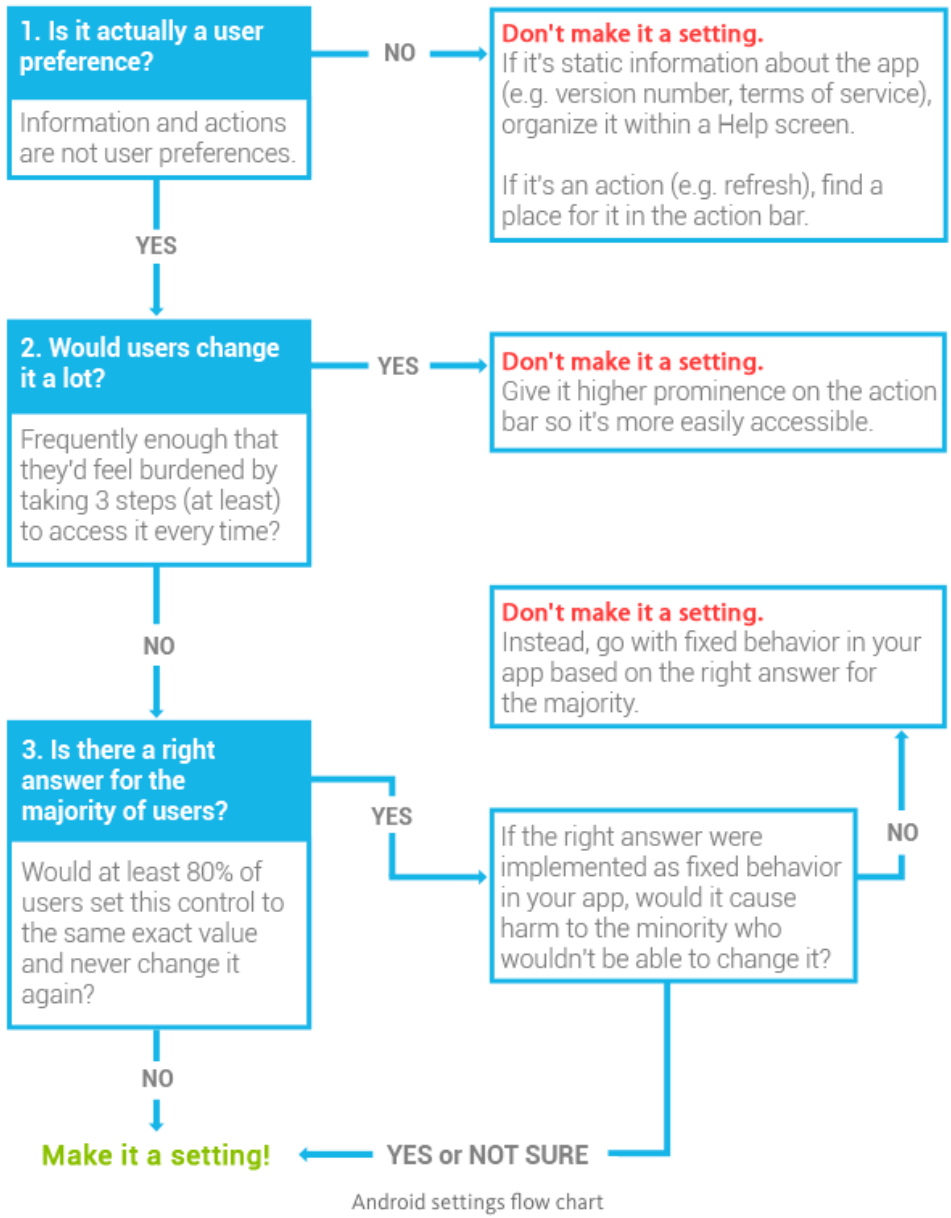
Step 3: Implement onPreferenceChange

This code will first try to convert the preference into a number and then checks that the number is between 0 and 3. If either of these fail, a toast will be show and false is returned. By returning false, the incorrect value is not saved to shared preferences.

```
public boolean onPreferenceChange(Preference preference, Object newValue) {

   Toast error = Toast.makeText(getContext(), "Please select a number between 0.1 and
3", Toast.LENGTH_SHORT);



   String sizeKey = getString(R.string.pref_size_key);

   if (preference.getKey().equals(sizeKey)) {

       String stringSize = (String) newValue;

       try {

           float size = Float.parseFloat(stringSize);

           if (size > 3 || size <= 0) {

               error.show();

               return false;

           }

       } catch (NumberFormatException nfe) {

           error.show();

           return false;

       }

   }

   return true;

}
```

Should it be a Setting?

Material Design Guidelines are the new standard for anything android, here's a link to the guidelines for how to create settings pages
Here's a handy flowchart to help you decide if something is worth being a settings or should you just decide for the user a default value for:

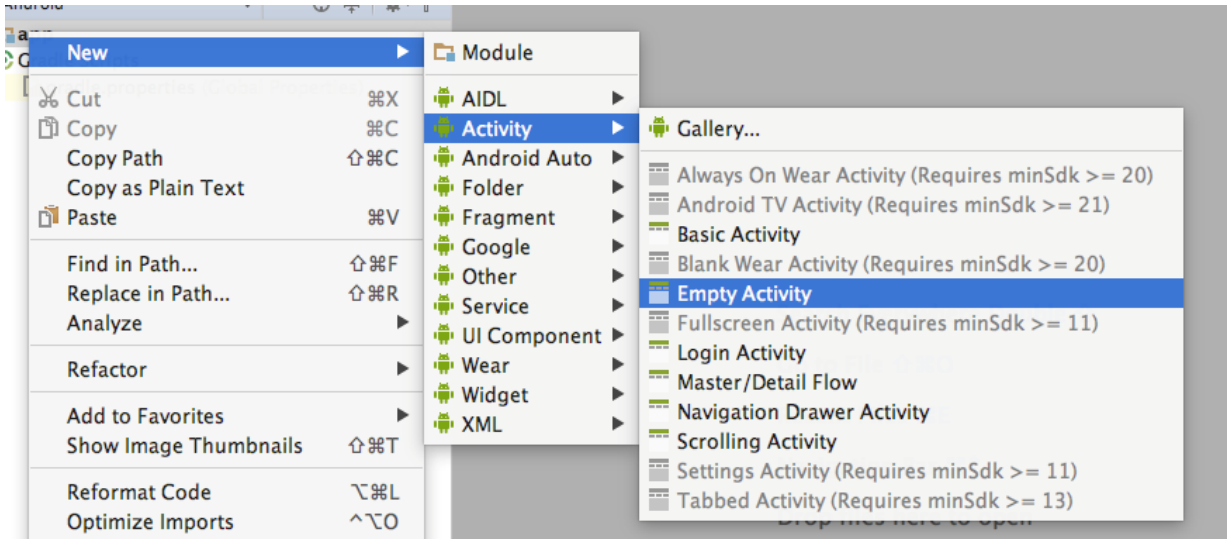


Android settings flow chart

Create the SettingsActivity in Sunshine Solution

Notes on Solution Code

First you should create the activity. That can be done by going to **New** > **Activity** > **Empty Activity** as seen below. It's important to use **Empty Activity** and not **Basic Activity** because Basic Activity actually contains some UI elements you don't want.



One you have the activity, you need to add menu items to open the activity. To do this, you'll add the xml for the menu item in **detail.xml** and **forecast.xml** in the menu folder. This makes the menu item appear, but doesn't make it do anything. To make it actually open the `SettingsActivity` you need to go to the `onOptionsItemSelected` in both `MainActivity` and `DetailActivity` and write an explicit intent to start the `SettingsActivity`:

```
        if (id == R.id.action_settings) {
            Intent startSettingsActivity = new Intent(this, SettingsActivity.class);
            startActivity(startSettingsActivity);
            return true;
        }
```

There are a few more small but important notes. Use `android:launchMode="singleTop"` to make sure that a new instance of `MainActivity` isn't spawned when you press the back button. Spawning a new instance of `MainActivity` is not memory efficient.
Then, in the actual `SettingsActivity` you should override the home button to act like the back button:

```
if (id == android.R.id.home) {
    onBackPressed();
}
```

and you should display home as up, to **allow up navigation**:

```
this.getSupportActionBar().setDisplayHomeAsUpEnabled(true);
```

Solution Code

Solution: [S06.01-Solution-LaunchSettingsActivity][Diff]