Mobile Application Development

Higher Diploma in Science in Computer Science

Produced by

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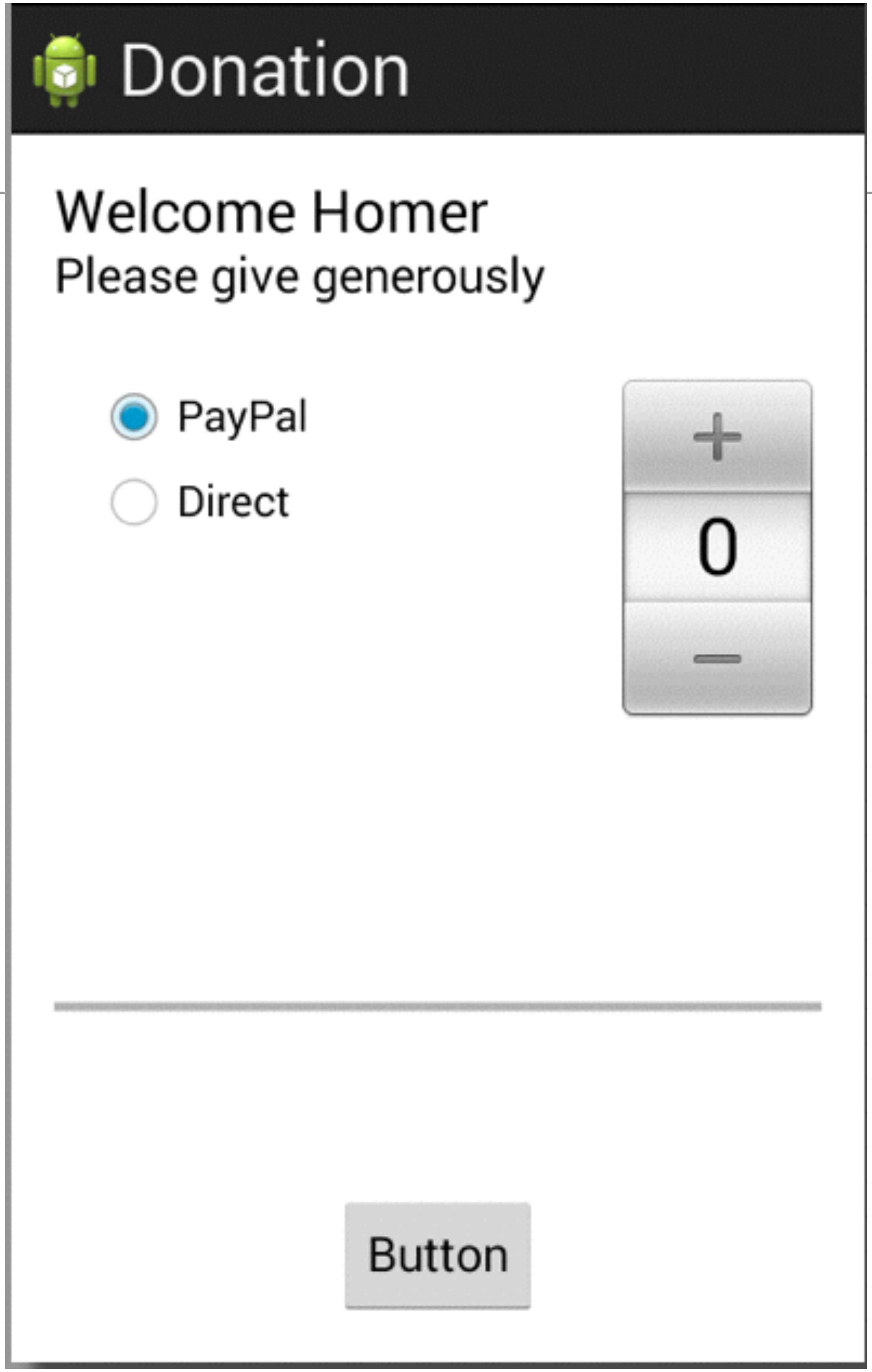
eLearning support unit

donation-android - v3

Donation Android v1



Donation

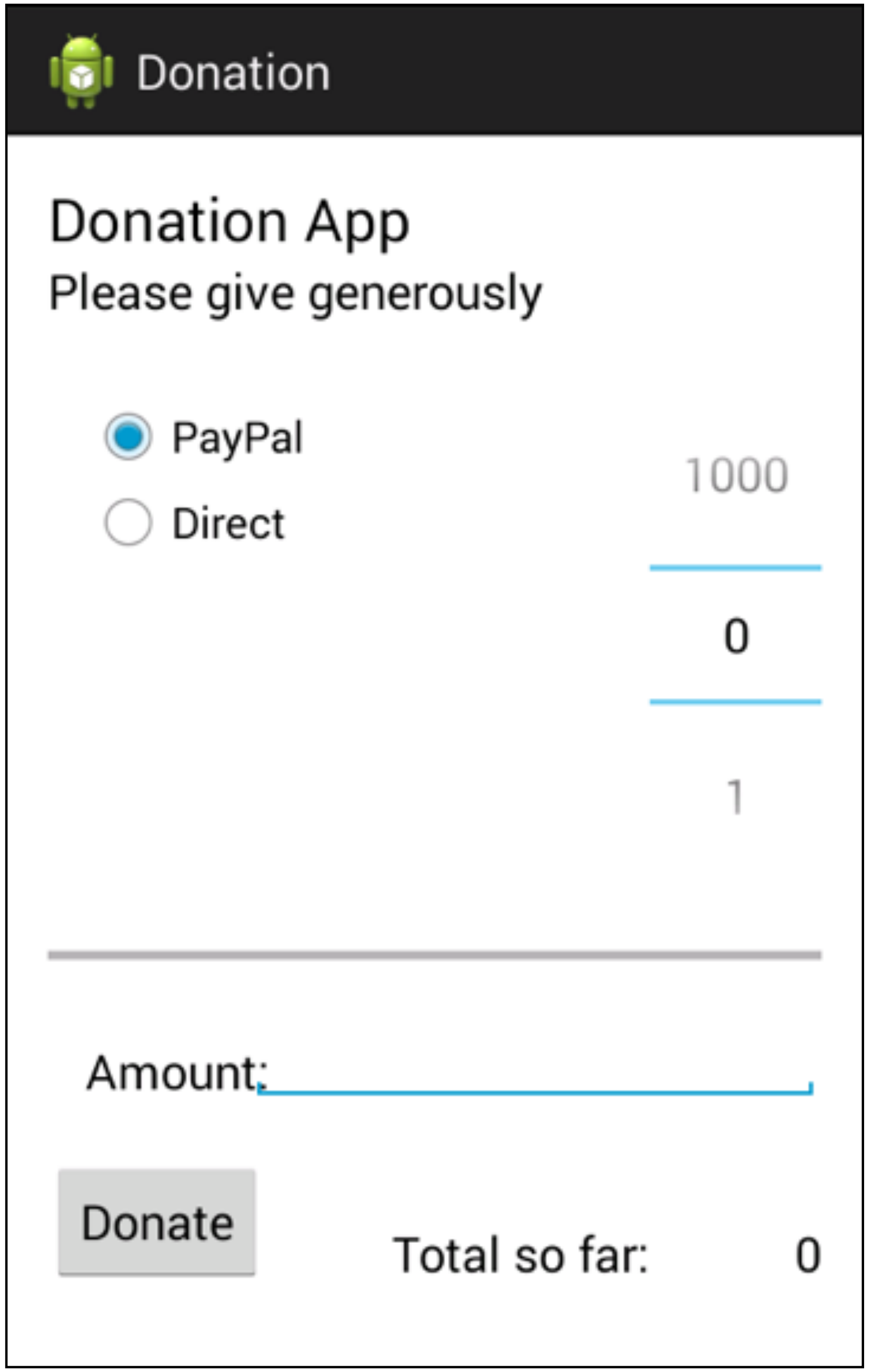
Welcome Homer

Please give generously

● PayPal

○ Direct

Donation Android v2



Donation

Donation App

Please give generously

● PayPal

○ Direct

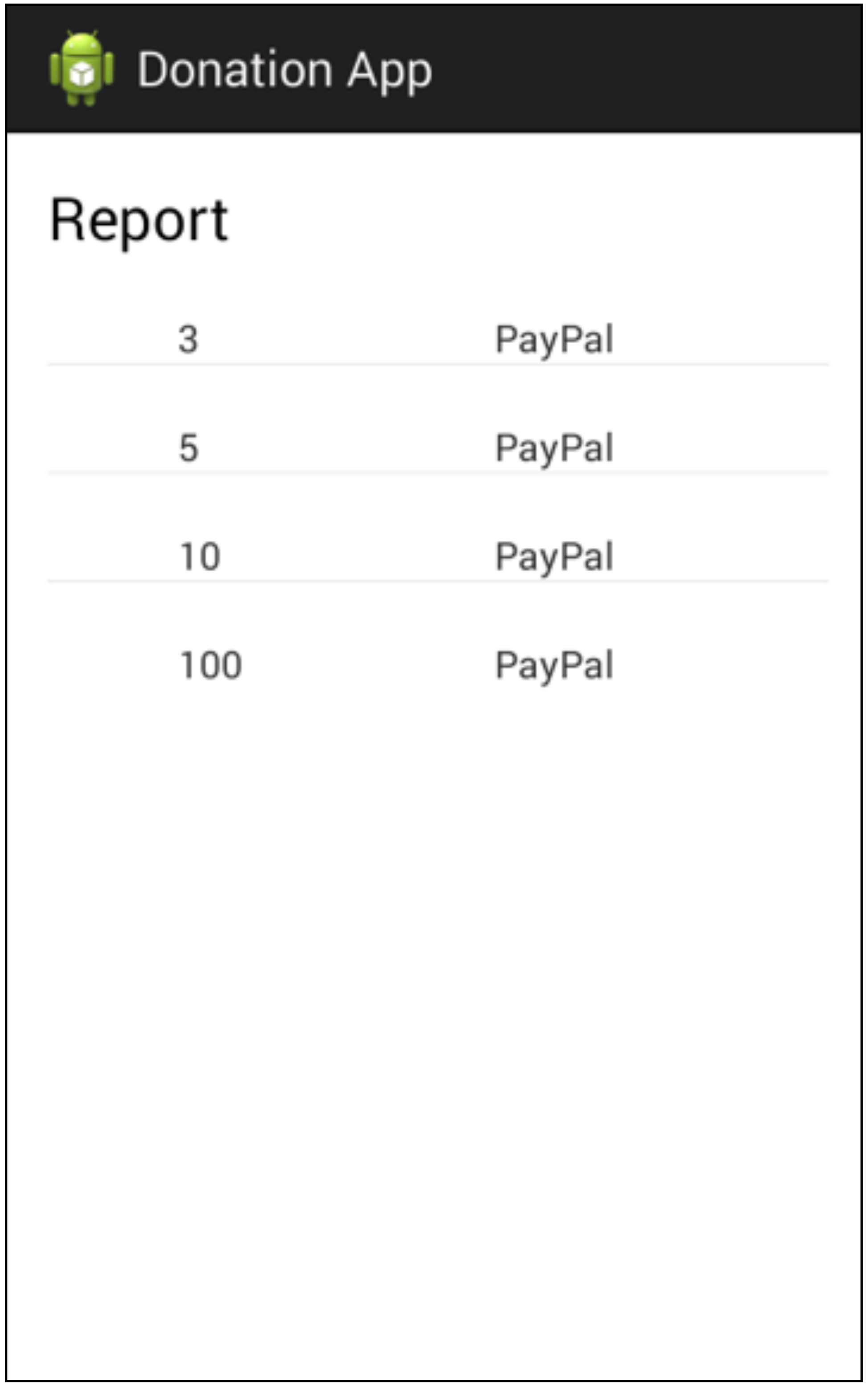
1000

0

1

Amount:

Total so far: 0



Donation App

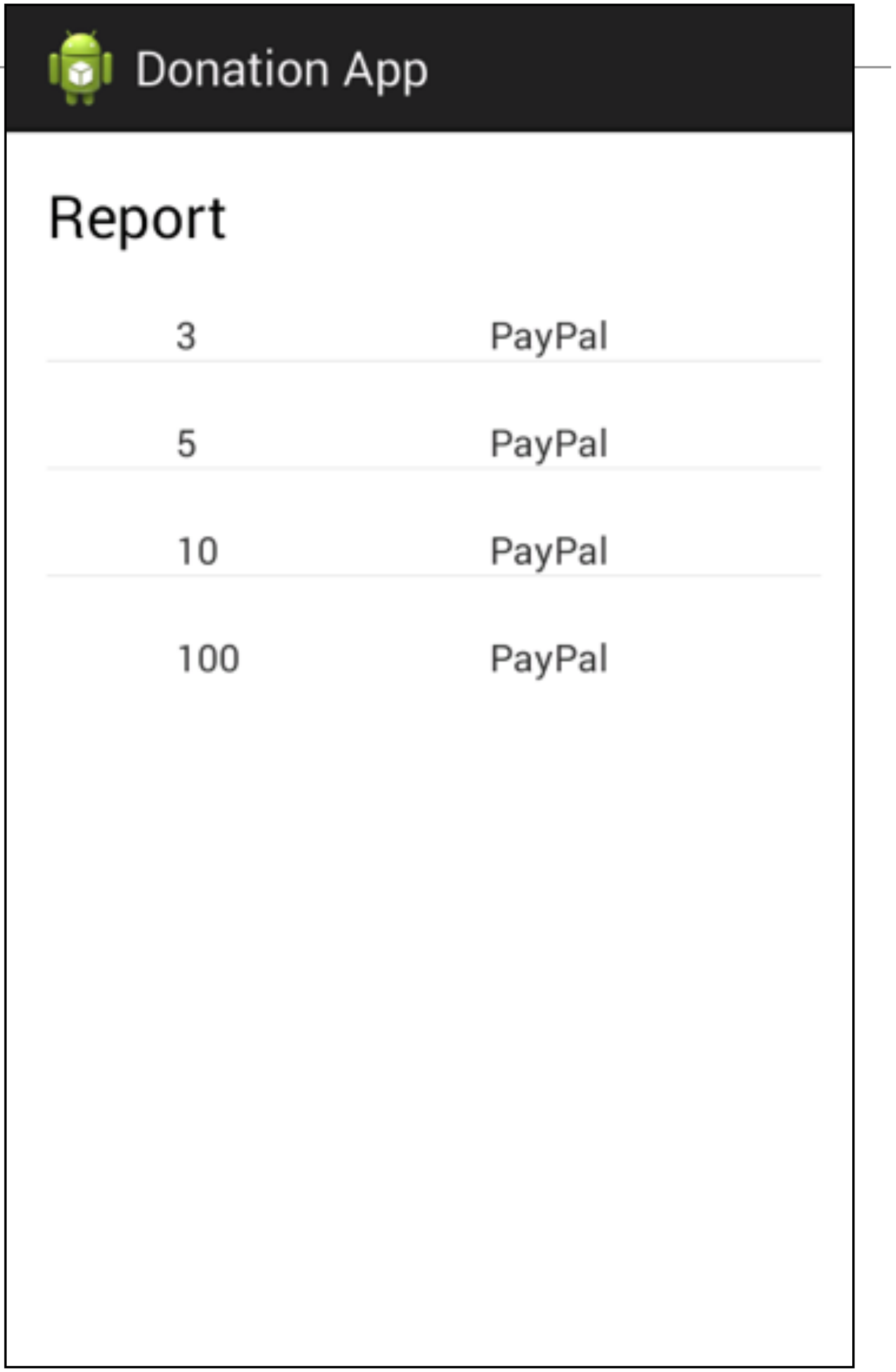
Report

3	PayPal
5	PayPal
10	PayPal
100	PayPal

Exercises 1

- Run the app and insert amounts of varying lengths (1, 222, 23, 2323). Note that the second column - payment method -may be displayed at different positions. If this happens, fix it.

- Hint: each row is laid out by a row_donate.xml layout. The easiest way to fix this would be to experiment with they layout, and have the text fields aligned with the edges and not with eachother.

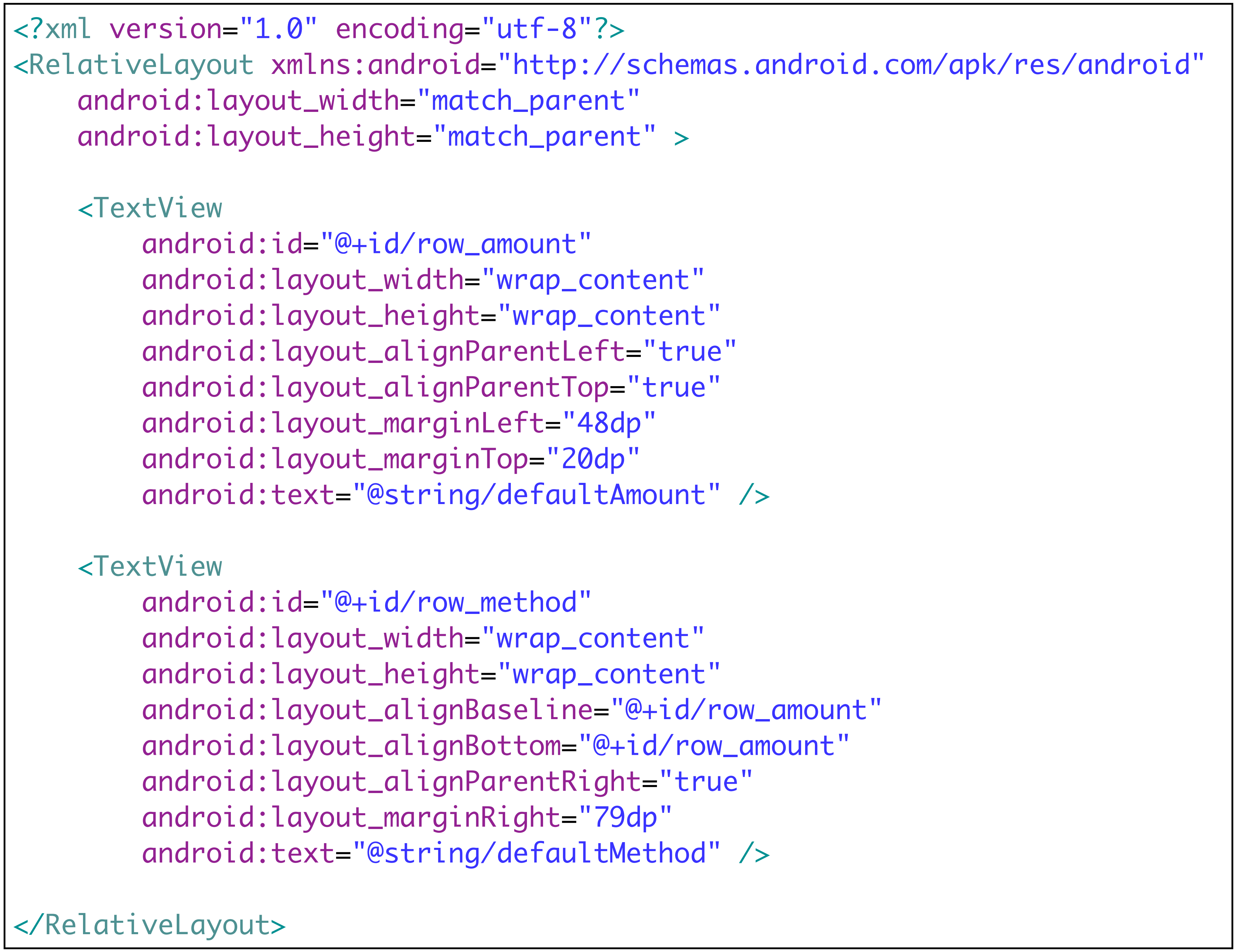


Donation App

Report

3	PayPal
5	PayPal
10	PayPal
100	PayPal

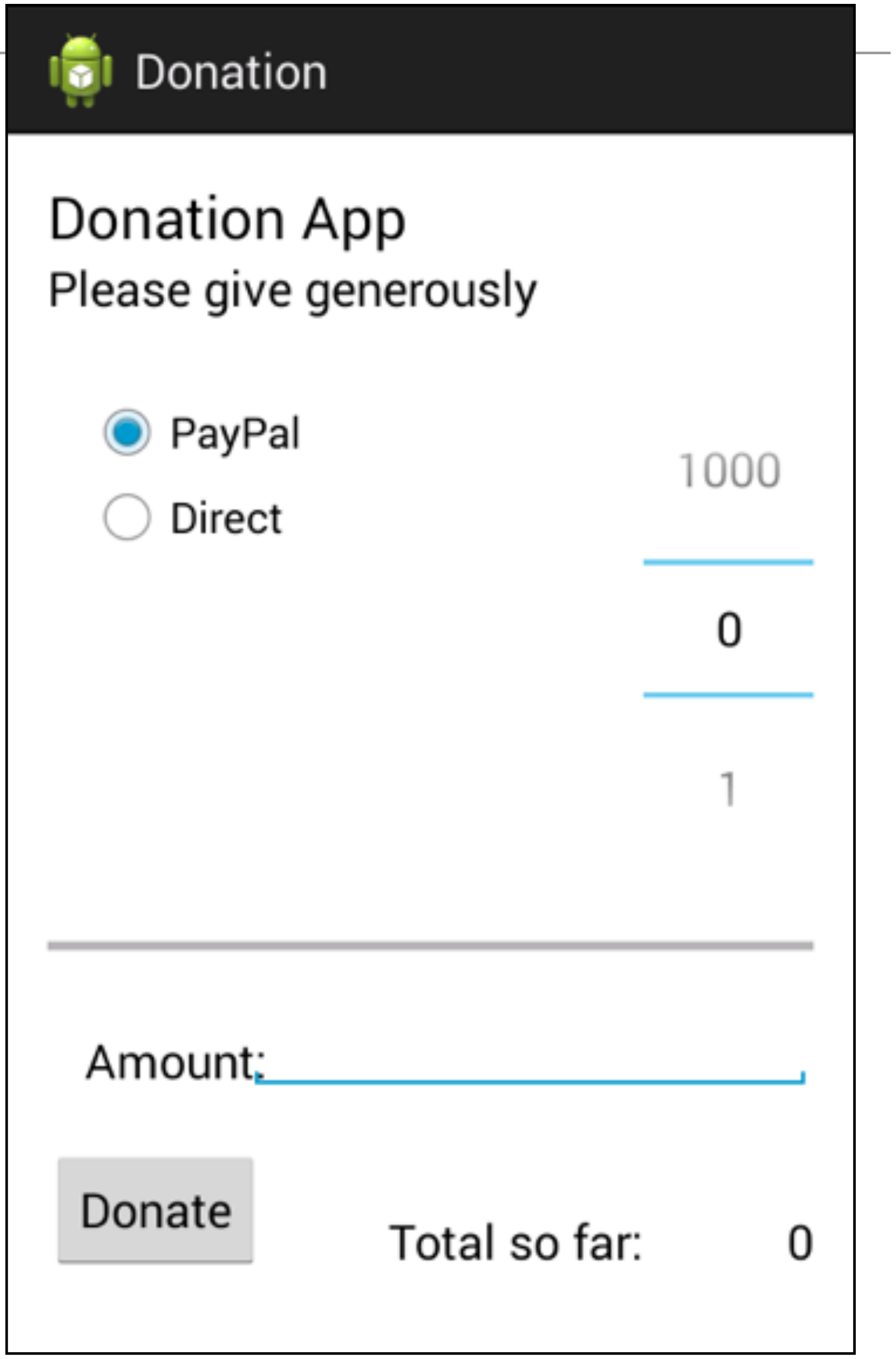
Exercise 1 Solution



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

    <TextView
        android:id="@+id/row_amount"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_marginLeft="48dp"
        android:layout_marginTop="20dp"
        android:text="@string/defaultAmount" />

    <TextView
        android:id="@+id/row_method"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/row_amount"
        android:layout_alignBottom="@+id/row_amount"
        android:layout_alignParentRight="true"
        android:layout_marginRight="79dp"
        android:text="@string/defaultMethod" />

</RelativeLayout>
```

Exercise 2

- When a donation is accepted, set the amount on screen to 0 (in both picker and text field).



Donation

Donation App

Please give generously

● PayPal

○ Direct

1000

0

1

Amount:

Donate

Total so far: 0

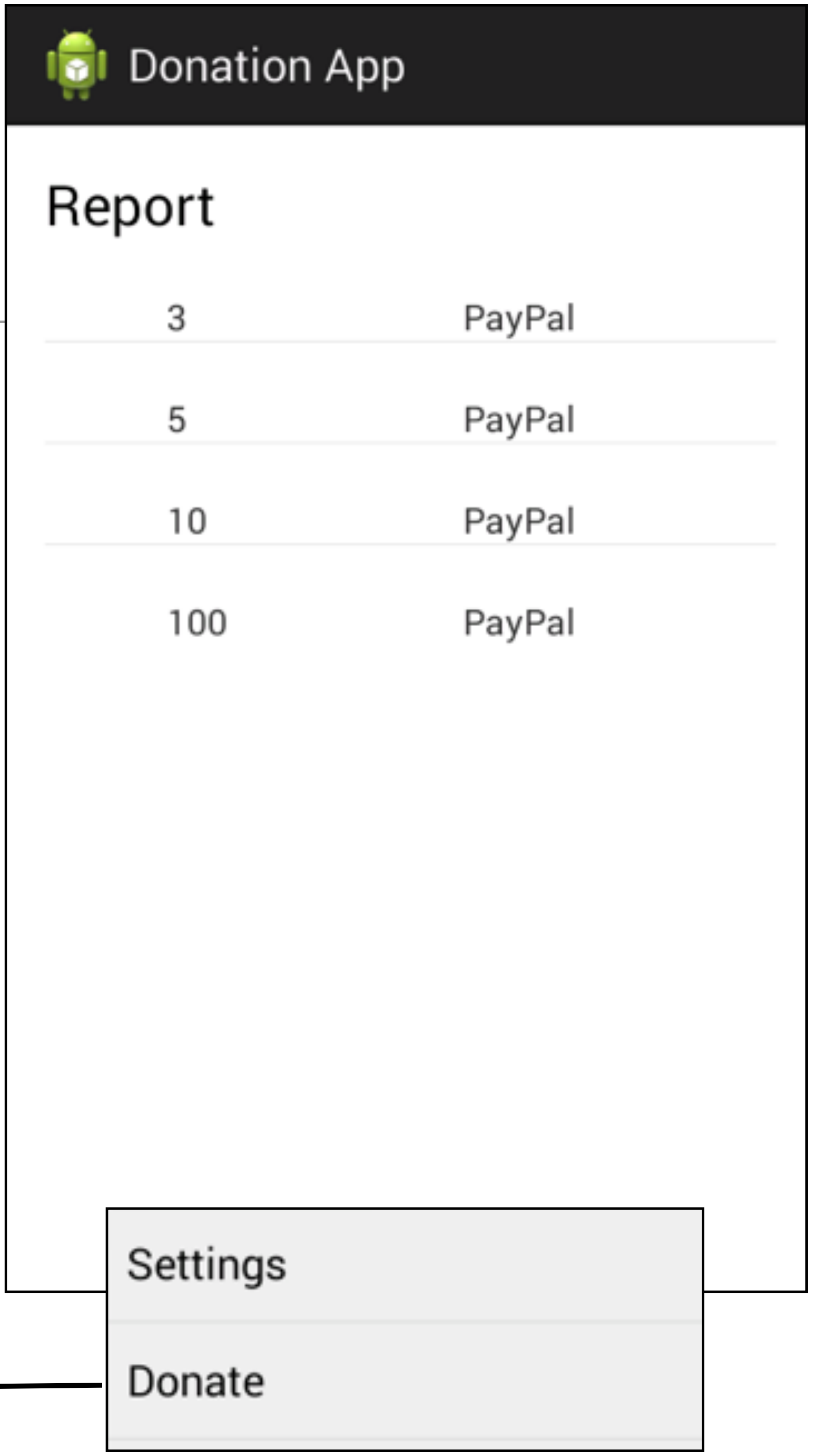
Exercise 2 Solution

- Add these two lines at the end of Donate.donateButton()

```
    amountText.setText("");
    amountPicker.setValue(0);
```

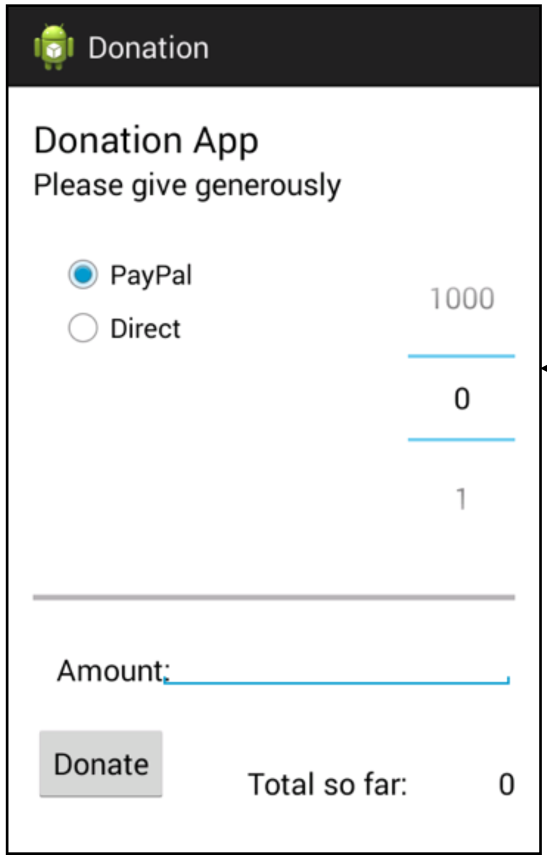
Exercise 3

- When you navigate from the Donate activity to reports, there will be no menu available. Bring in a menu, with two options 'Settings' and 'Donate' - Donate should bring you back to the donate screen.



Report

3	PayPal
5	PayPal
10	PayPal
100	PayPal



Donation App
Please give generously

● PayPal
○ Direct

Total so far: 0

Exercise 3 Solution

- Introduce a new string constant into strings.xml:

```
    <string name="menuDonate">Donate</string>
```

- Then a new menu - report.xml

```
<menu xmlns:android="http://schemas.android.com/apk/res/android" >

    <item
        android:id="@+id/action_settings"
        android:orderInCategory="100"
        android:showAsAction="never"
        android:title="@string/menuSettings"/>

    <item
        android:id="@+id/menuDonate"
        android:orderInCategory="100"
        android:showAsAction="never"
        android:title="@string/menuDonate"/>

</menu>
```

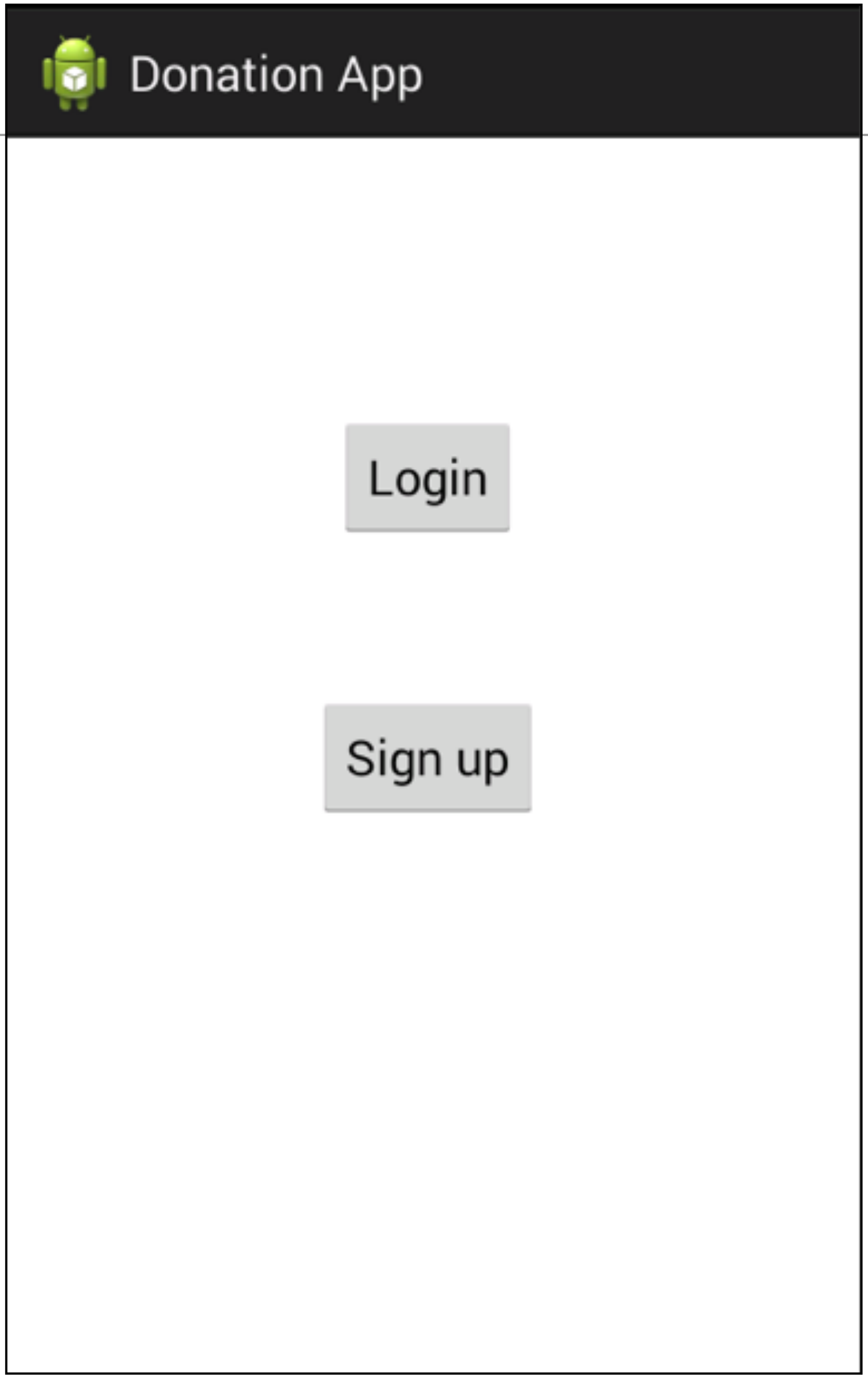
Exercise 3 Solution

- The report activity will then need two new methods:

```java
public class Report extends Activity
{
  private ListView    listView;
  private DonationApp app;

  @Override
  public boolean onCreateOptionsMenu(Menu menu)
  {
    getMenuInflater().inflate(R.menu.report, menu);
    return true;
  }

  @Override
  public boolean onOptionsItemSelected(MenuItem item)
  {
    switch (item.getItemId())
    {
      case R.id.menuDonate : startActivity (new Intent(this, Donate.class));
                             break;
    }
    return true;
  }
```

Exercise 4

- Introduce a new welcome screen - which should display a greeting + give the user 2 options (as simple buttons)
  - Signup
  - Login
- When Login is pressed, the app should take you directly to the Donate activity (for the moment).



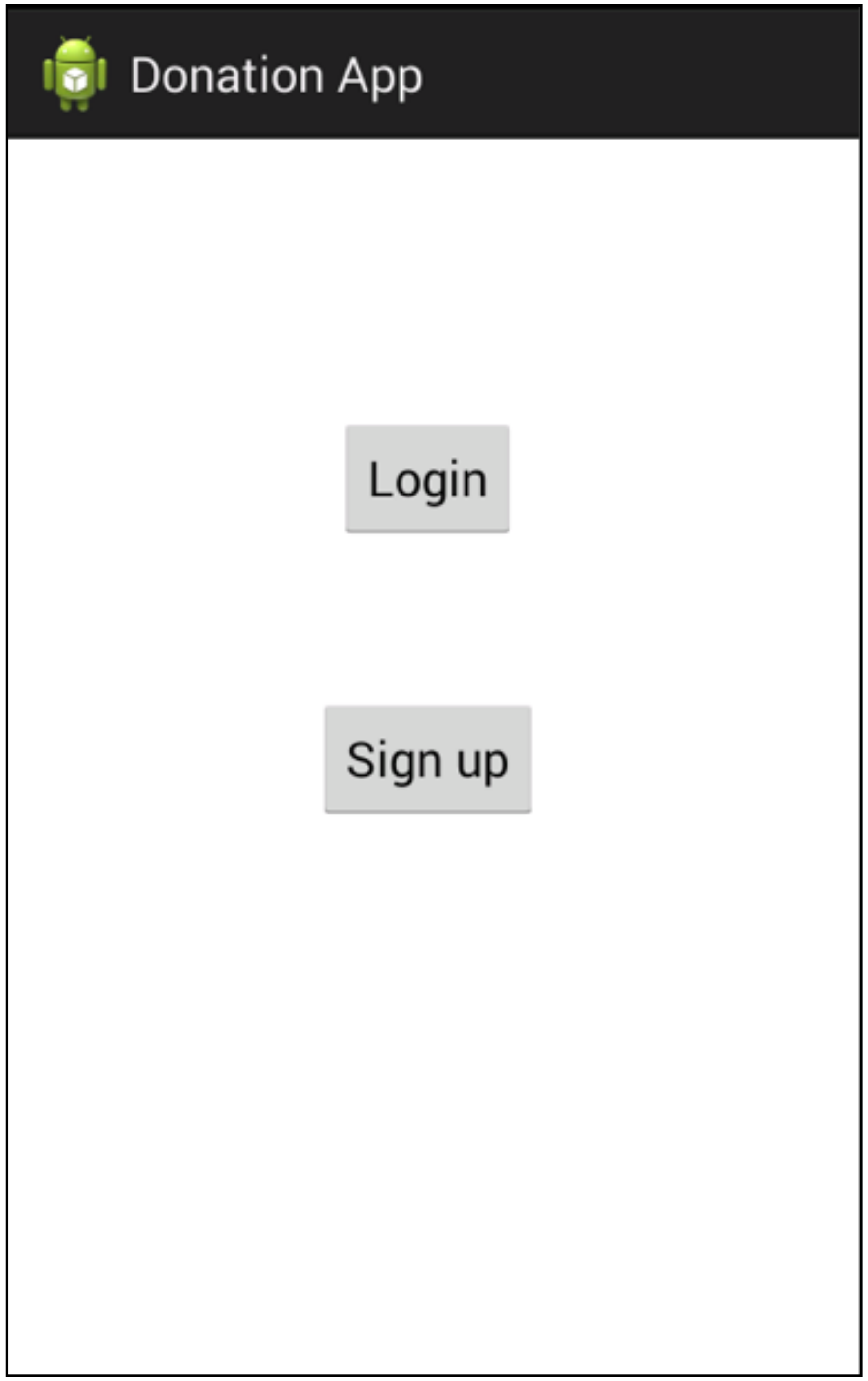
Exercise 4 Solution

- strings.xml

```
<string name="welcomeLogin">Login</string>
<string name="welcomeSignup">Sign up</string>
```

- welcome_layout.xml

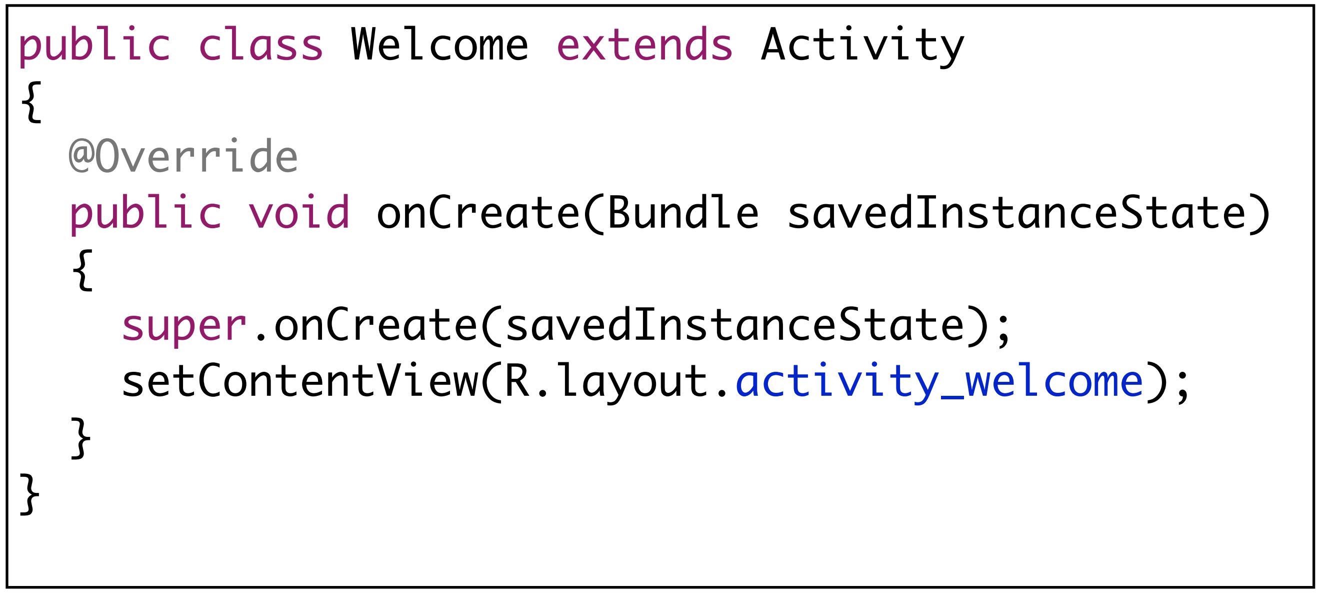
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/
res/android"
    android:id="@+id/RelativeLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <Button
        android:id="@+id/welcomeLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="102dp"
        android:text="@string/welcomeLogin" />

    <Button
        android:id="@+id/welcomeSignup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
       android:text="@string/welcomeSignup" />

</RelativeLayout>
```



Exercise 4 Solution

AndroidManifext.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="app.donation"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk
        android:minSdkVersion="17"
        android:targetSdkVersion="17" />

    <application
        android:name="app.main.DonationApp"
        android:allowBackup="true"
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" >

        <activity
            android:name="app.activities.Welcome"
            android:label="@string/donateTitle" >
           <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity
            android:name="app.activities.Donate"
            android:label="@string/app_name" >
        </activity>
        <activity
            android:name="app.activities.Report"
            android:label="@string/donateTitle" >
        </activity>
    </application>

</manifest>
```



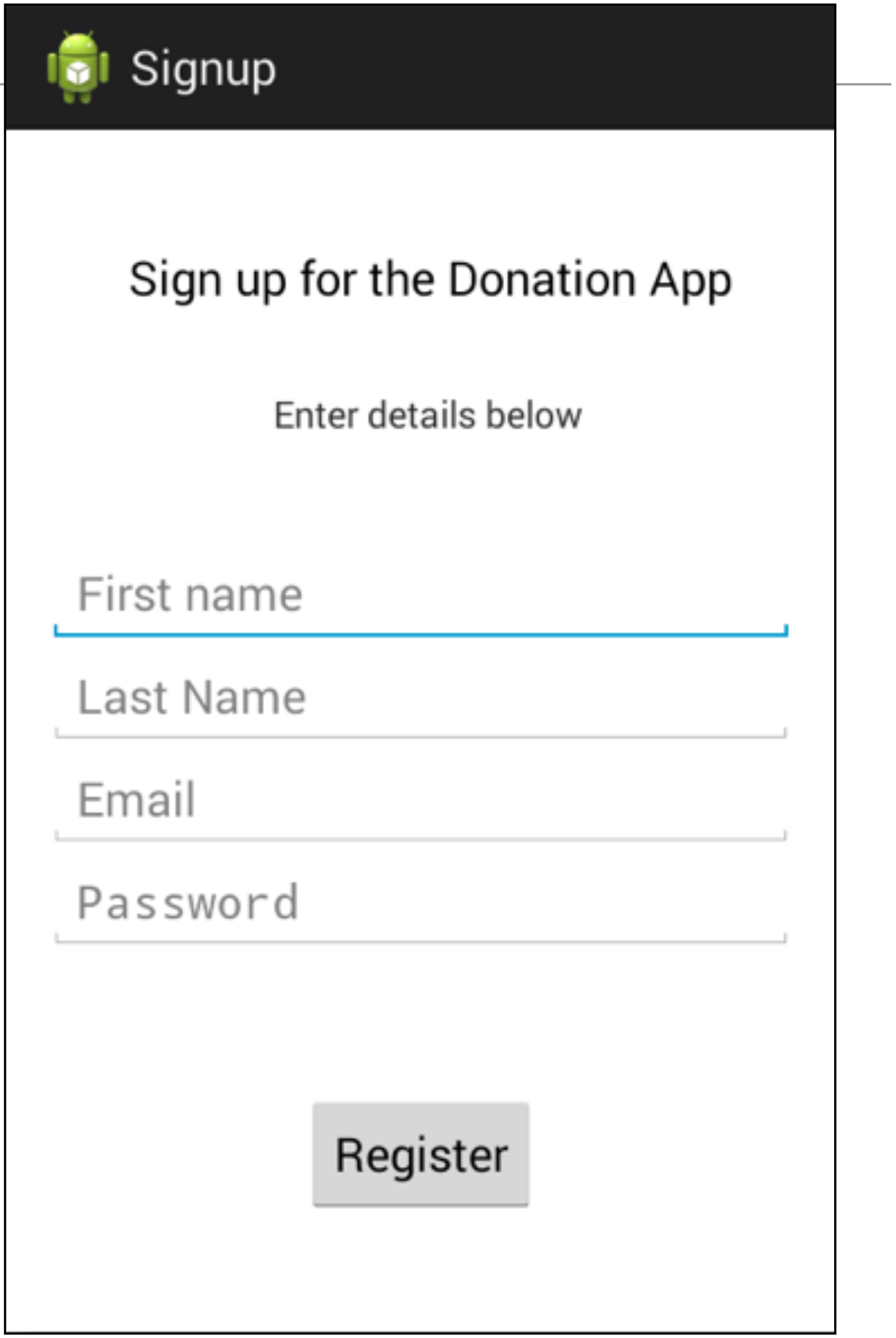
```
public class Welcome extends Activity
{
  @Override
  public void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_welcome);
  }
}
```

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://
schemas.android.com/apk/res/android"
    android:id="@+id/RelativeLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <Button
        android:id="@+id/welcomeLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="102dp"
        android:onClick="loginPressed"
        android:text="@string/welcomeLogin" />

    <Button
        android:id="@+id/welcomeSignup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:onClick="signupPressed"
        android:text="@string/welcomeSignup" />

</RelativeLayout>
```

```java
public class Welcome extends Activity
{
  @Override
  public void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_welcome);
  }

  public void loginPressed (View view)
  {
    startActivity (new Intent(this, Login.class));
  }

  public void signupPressed (View view)
  {
    startActivity (new Intent(this, Signup.class));
  }
}
```

Exercise 5

- Introduce a Signup Activity, which should present the user with:
  - First Name
  - Last Name
  - Email
  - Password
  - + 'Register' button.
- Pressing Register should take you directly to "Donate" activity



Signup

Sign up for the Donation App

Enter details below

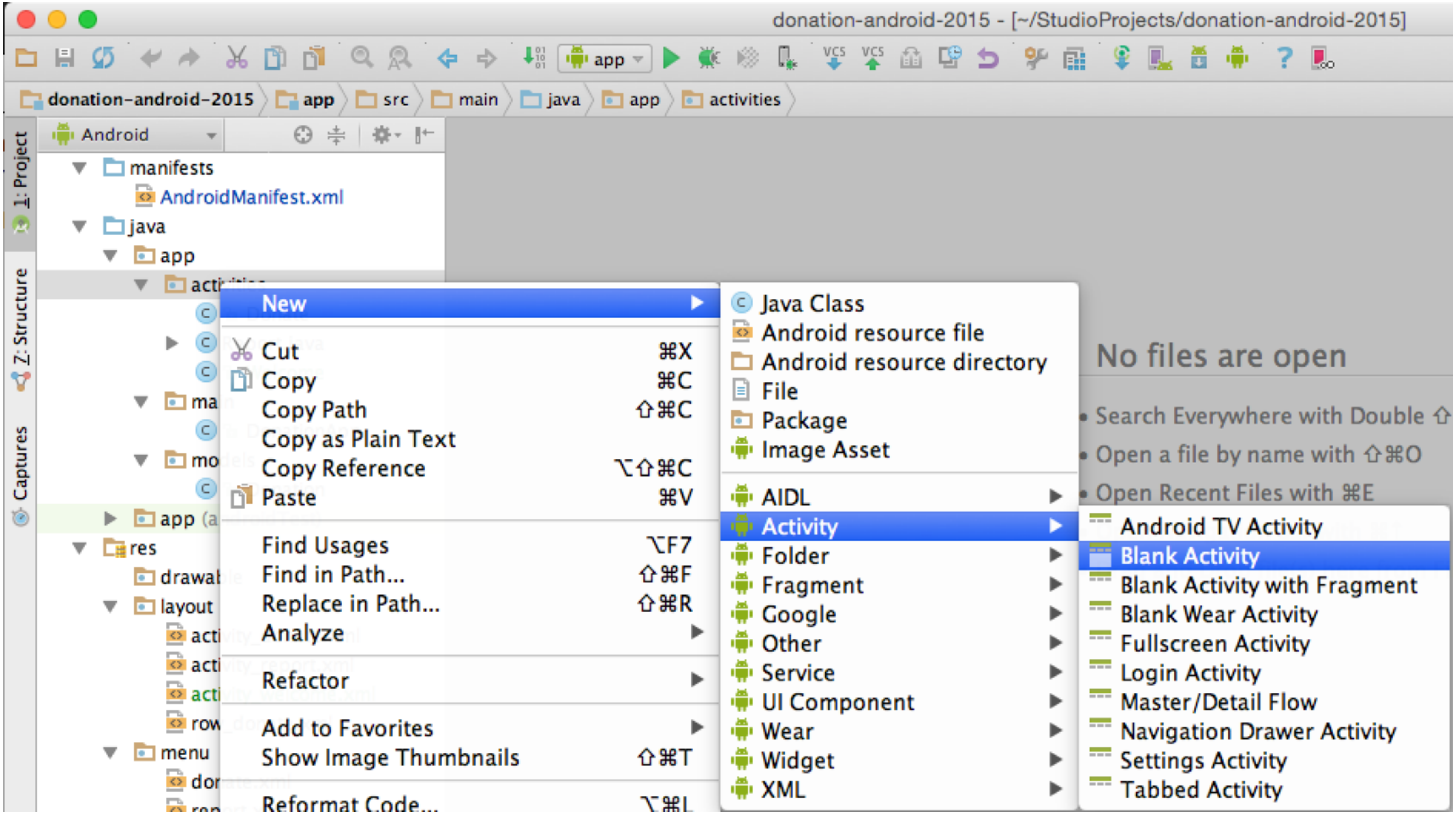
First name

Last Name

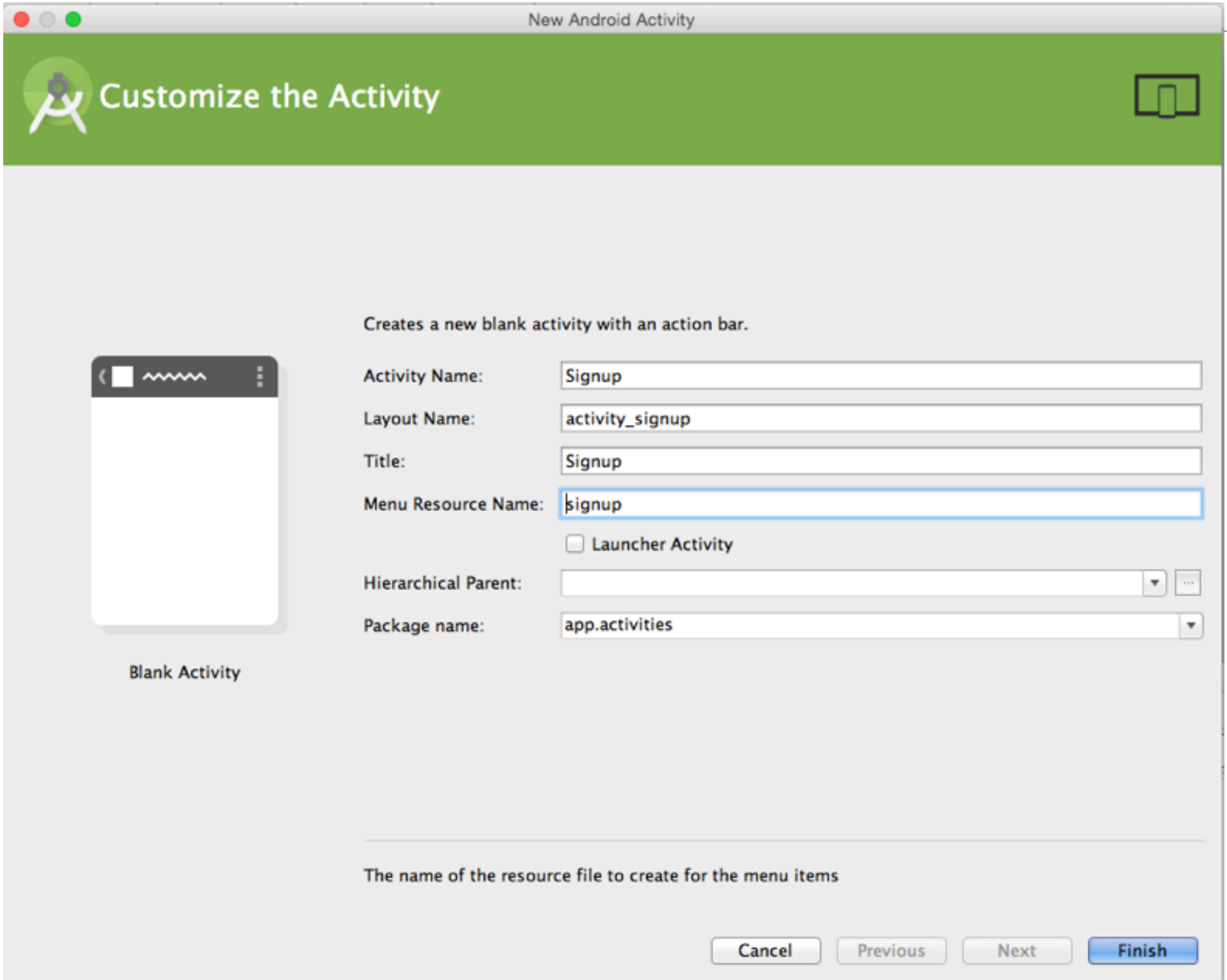
Email

Password

Exercise 5 Solution



Exercise 5 Solution



New Android Activity

Customize the Activity

Creates a new blank activity with an action bar.

Activity Name: Signup

Layout Name: activity_signup

Title: Signup

Menu Resource Name: signup

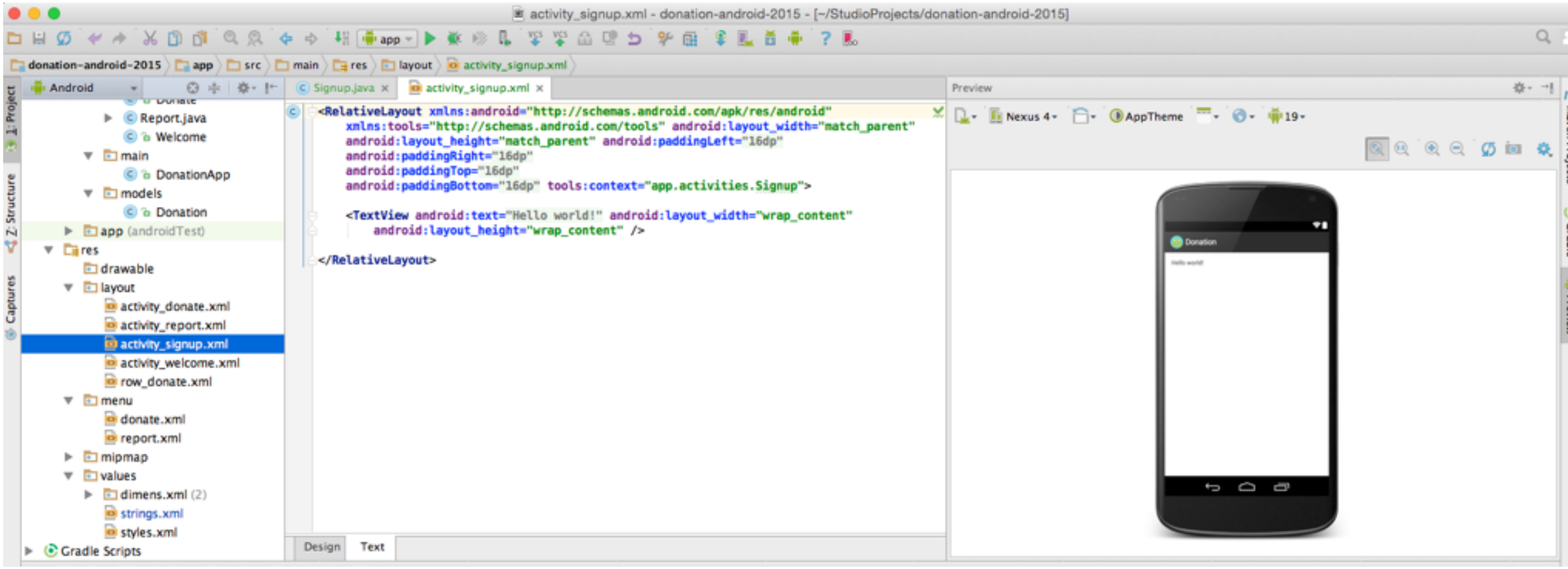
□ Launcher Activity

Hierarchical Parent:

Package name: app.activities

The name of the resource file to create for the menu items

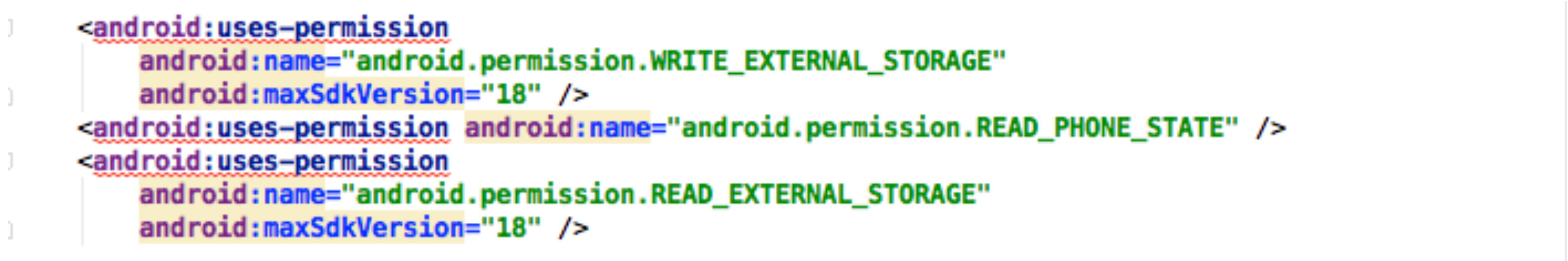
Exercise 5 Solution



```
<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" android:paddingLeft="16dp"
    android:paddingRight="16dp"
    android:paddingTop="16dp"
    android:paddingBottom="16dp" tools:context="app.activities.Signup">

    <TextView android:text="Hello world!" android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</RelativeLayout>
```

Exercise 5 Solution

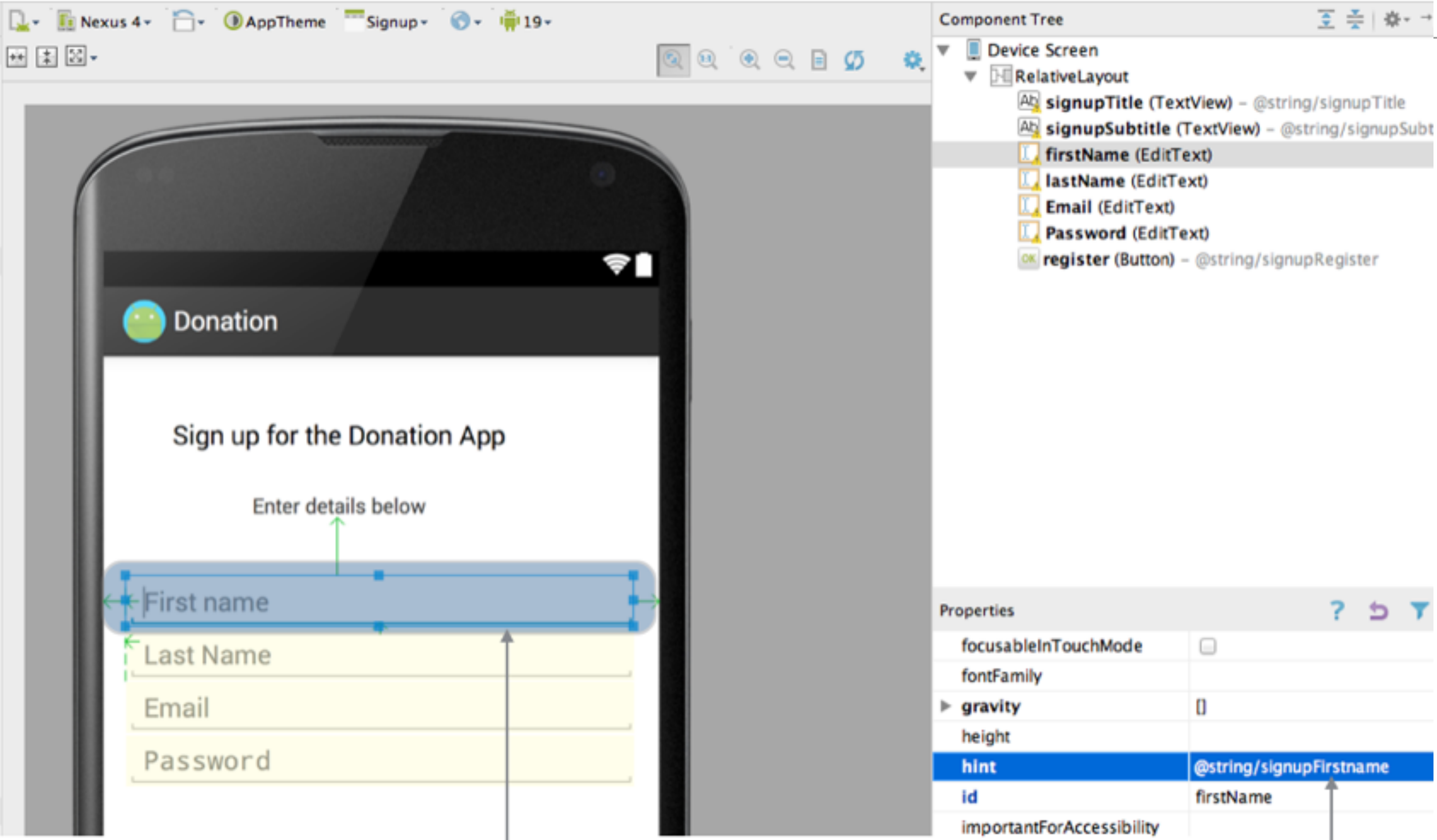
- Remove redundant wizard-generated nodes from AndroidManifest.xml



```
<android:uses-permission
    android:name="android.permission.WRITE_EXTERNAL_STORAGE"
    android:maxSdkVersion="18" />
<android:uses-permission android:name="android.permission.READ_PHONE_STATE" />
<android:uses-permission
    android:name="android.permission.READ_EXTERNAL_STORAGE"
    android:maxSdkVersion="18" />
```

Exercise 5 Solution

Add a hint (placeholder)



Component Tree

- Device Screen
  - RelativeLayout
    - signupTitle (TextView) - @string/signupTitle
    - signupSubtitle (TextView) - @string/signupSubt
    - firstName (EditText)
    - lastName (EditText)
    - Email (EditText)
    - Password (EditText)
    - register (Button) - @string/signupRegister

Properties

focusableInTouchMode	□
fontFamily	
gravity	[]
height	
hint	@string/signupFirstname
id	firstName
importantForAccessibility	

```
<string name="signupFirstname">First name</string>
```

Add hint in Properties

Exercise 5 Solution

strings.xml

```
<string name="title_activity_signup">Signup</string>
<string name="signupTitle">Sign up for the Donation App</string>
<string name="signupSubtitle">Enter details below</string>
<string name="signupFirstname">First name</string>
<string name="signupLastName">Last Name</string>
<string name="signupEmail">Email</string>
<string name="signupPassword">Password</string>
<string name="signupRegister">Register</string>
```

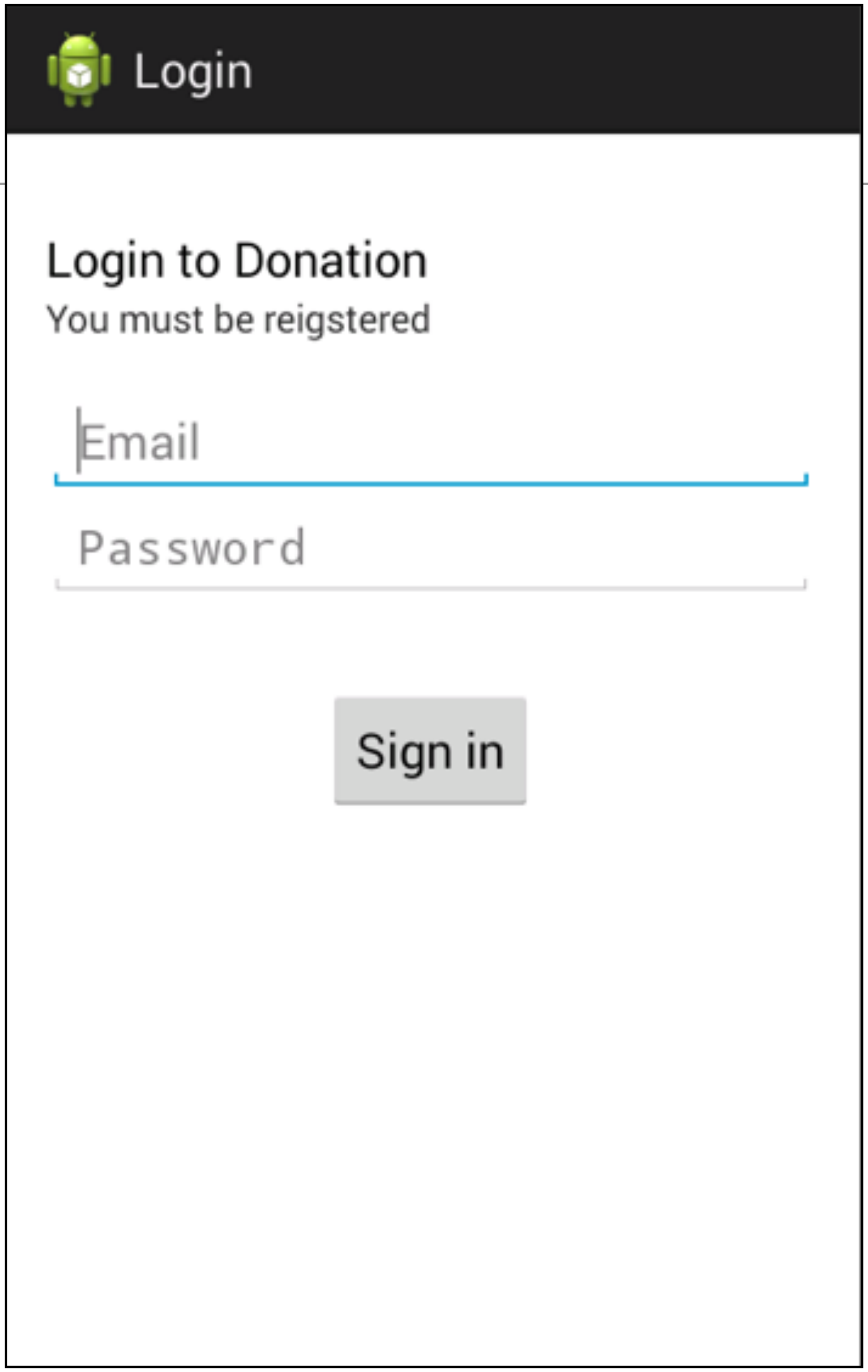
```
public class Signup extends Activity
{
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_signup);
  }

  public void registerPressed (View view)
  {
    startActivity (new Intent(this, Welcome.class));
  }
}
```

activity_signup.xml

```
<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"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".Signup" >

    <TextView
        android:id="@+id/signupTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_marginLeft="32dp"
        android:layout_marginTop="28dp"
        android:text="@string/signupTitle"
        android:textAppearance="?android:attr/textAppearanceMedium" />

    <TextView
        android:id="@+id/signupSubtitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/signupTitle"
        android:layout_below="@+id/signupTitle"
        android:layout_marginLeft="55dp"
        android:layout_marginTop="30dp"
        android:text="@string/signupSubtitle"
        android:textAppearance="?android:attr/textAppearanceSmall" />

    <EditText
        android:id="@+id/firstName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentRight="true"
        android:layout_below="@+id/signupSubtitle"
        android:layout_marginTop="40dp"
        android:ems="10"
        android:hint="@string/signupFirstname"
        android:inputType="textPersonName"/>

        <requestFocus />

    <EditText
        android:id="@+id/lastName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/firstName"
        android:layout_alignParentRight="true"
        android:layout_below="@+id/firstName"
        android:ems="10"
        android:hint="@string/signupLastName"
        android:inputType="textPersonName" >

    </EditText>

    <EditText
        android:id="@+id/Email"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/lastName"
        android:layout_alignParentRight="true"
        android:layout_below="@+id/lastName"
        android:ems="10"
        android:hint="@string/signupEmail"
        android:inputType="textEmailAddress" />

    <EditText
        android:id="@+id/Password"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/Email"
        android:layout_alignParentRight="true"
        android:layout_below="@+id/Email"
        android:ems="10"
        android:hint="@string/signupPassword"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/register"
        android:layout_width="wrap_content"
```

Exercise 6

- Introduce a Login activity, which should just look for
  - email
  - password
  - + a 'Sign in' button
- Pressing Login should take you directly to "Donate" activity.

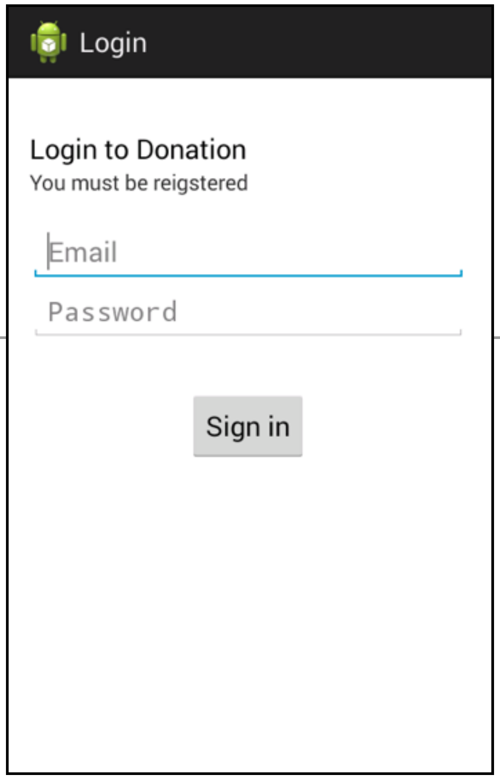

Login

Login to Donation

You must be reigstered

Exercise 6 Solution

```
<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"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".Login" >

    <TextView
        android:id="@+id/loginTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentTop="true"
        android:layout_marginTop="18dp"
        android:text="@string/loginTitle"
        android:textAppearance="?android:attr/textAppearanceMedium" />

    <TextView
        android:id="@+id/loginSubtitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/loginTitle"
        android:layout_alignParentRight="true"
        android:layout_below="@+id/loginTitle"
        android:text="@string/loginSubtitle"
        android:textAppearance="?android:attr/textAppearanceSmall" />

    <EditText
        android:id="@+id/loginEmail"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/loginSubtitle"
        android:layout_alignRight="@+id/loginSubtitle"
        android:layout_below="@+id/loginSubtitle"
        android:layout_marginTop="17dp"
        android:ems="10"
        android:hint="@string/loginEmail"
        android:inputType="textEmailAddress" >

        <requestFocus />
    </EditText>

    <EditText
        android:id="@+id/loginPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/loginEmail"
        android:layout_alignRight="@+id/loginEmail"
        android:layout_below="@+id/loginEmail"
        android:ems="10"
        android:hint="@string/loginPassword"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/login"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:onClick="signinPressed"
        android:text="@string/loginSignin" />

</RelativeLayout>
```



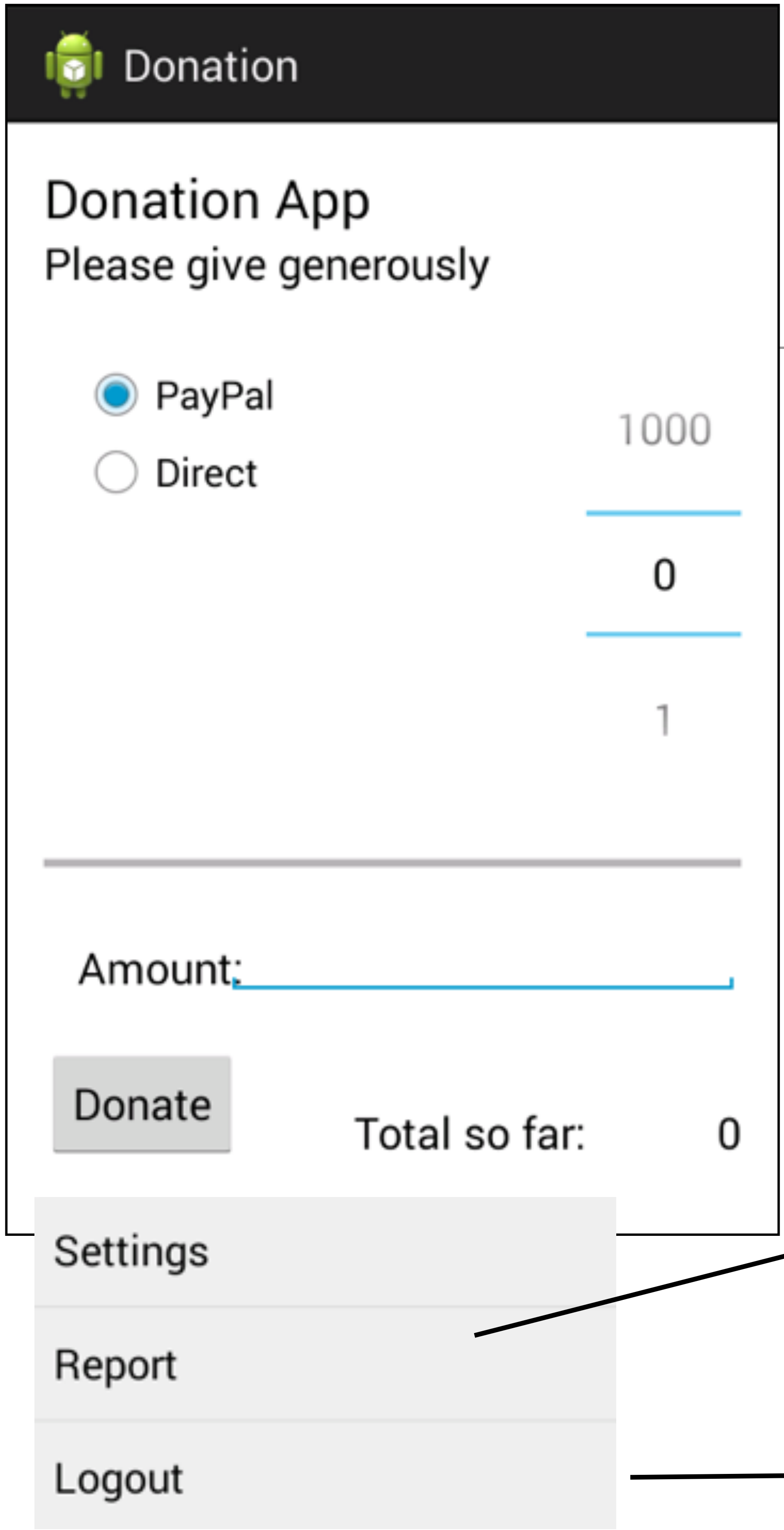
Login to Donation

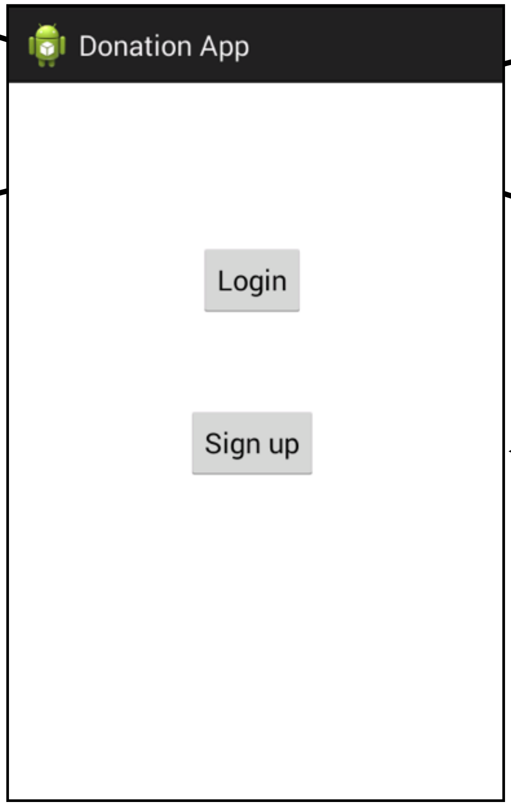
You must be reigstered

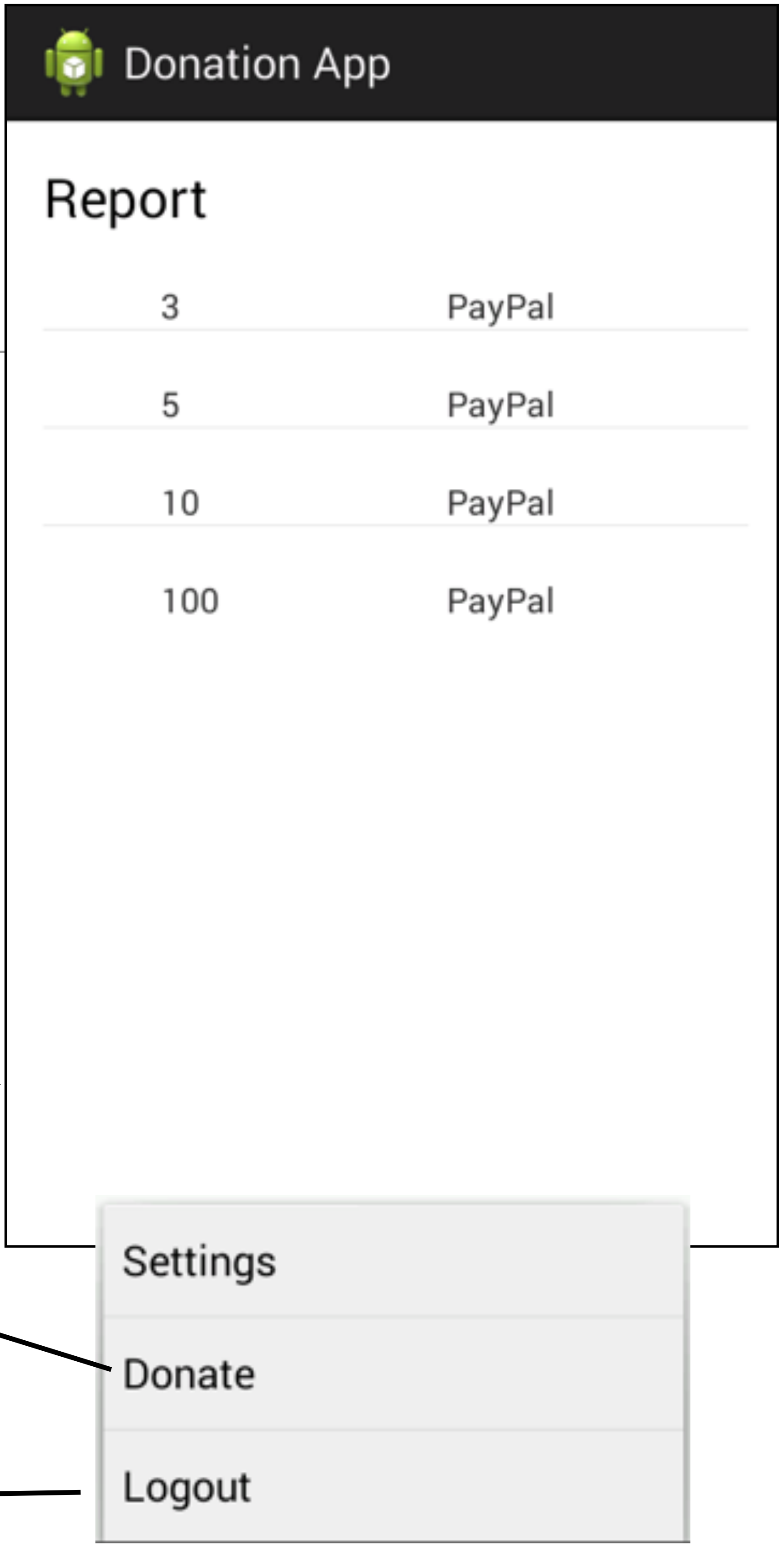
```
public class Login extends Activity
{
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_login);
  }

  public void signinPressed (View view)
  {
    startActivity (new Intent(this, Donate.class));
  }
}
```

Exercise 7

- Bring in a new menu option - 'logout'. It should take you to the welcome screen.







3	PayPal
5	PayPal
10	PayPal
100	PayPal

Exercise 7 Solution

strings.xml

```
<string name="menuLogout">Logout</string>
```

donate.xml

report.xml

```
<item
  android:id="@+id/menuLogout"
  android:orderInCategory="100"
  android:showAsAction="never"
  android:title="@string/menuLogout"/>
```

Donate

```
@Override
public boolean onOptionsItemSelected(MenuItem item)
{
  switch (item.getItemId())
  {
    case R.id.menuReport : startActivity (new Intent(this, Report.class));
                           break;
    case R.id.menuLogout : startActivity (new Intent(this, Welcome.class));
                           break;
  }
  return true;
}
```

Report

```
@Override
public boolean onOptionsItemSelected(MenuItem item)
{
  switch (item.getItemId())
  {
    case R.id.menuDonate : startActivity (new Intent(this, Donate.class));
                           break;
    case R.id.menuLogout : startActivity (new Intent(this, Welcome.class));
                           break;
  }
  return true;
}
```

Exercise 8

- Introduce a 'User' into the models package to represent the user in the usual way. Maintain a list of Users in the DonationApp object. Whenever anyone registers, then create a new User object in this list.

Exercise 8 Solution

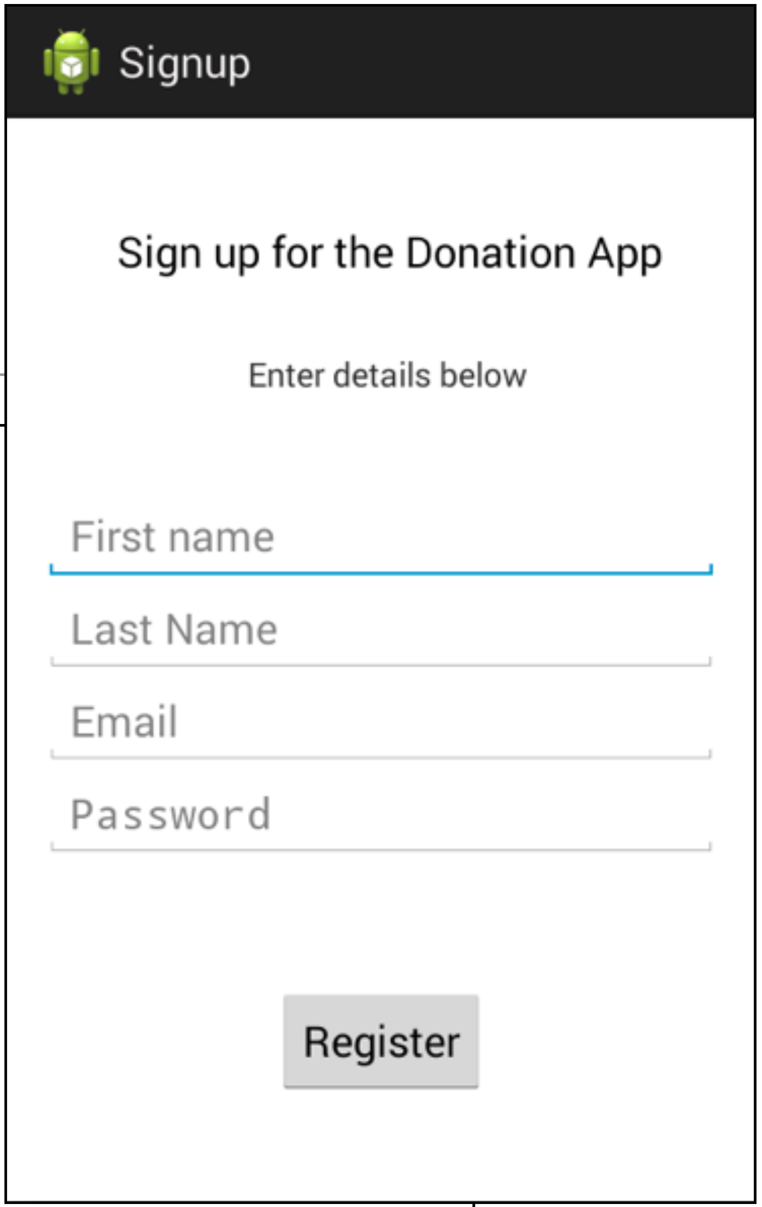
```java
public class User
{
  public String firstName;
  public String lastName;
  public String email;
  public String password;

  public User(String firstName, String lastName, String email, String password)
  {
    this.firstName = firstName;
    this.lastName = lastName;
    this.email = email;
    this.password = password;
  }
}
```

Exercise 8 Solution

```
public class DonationApp extends Application
{
  public final int       target       = 10000;
  public int             totalDonated = 0;

  public List <User>     users        = new ArrayList<User>();
  public List <Donation> donations    = new ArrayList<Donation>();

  public void newUser(User user)
  {
    users.add(user);
  }

  //…

}
```

Exercise 8 Solution

```
public class Signup extends Activity
{
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_signup);
  }

  public void registerPressed (View view)
  {
    TextView firstName = (TextView)  findViewById(R.id.firstName);
    TextView lastName  = (TextView)  findViewById(R.id.lastName);
    TextView email     = (TextView)  findViewById(R.id.Email);
    TextView password  = (TextView)  findViewById(R.id.Password);

    User user = new User (firstName.getText().toString(), lastName.getText().toString(),
                              email.getText().toString(), password.getText().toString());

    DonationApp app = (DonationApp) getApplication();
    app.newUser(user);

    startActivity (new Intent(this, Welcome.class));
  }
}
```


Signup

Sign up for the Donation App

Enter details below

Exercise 9

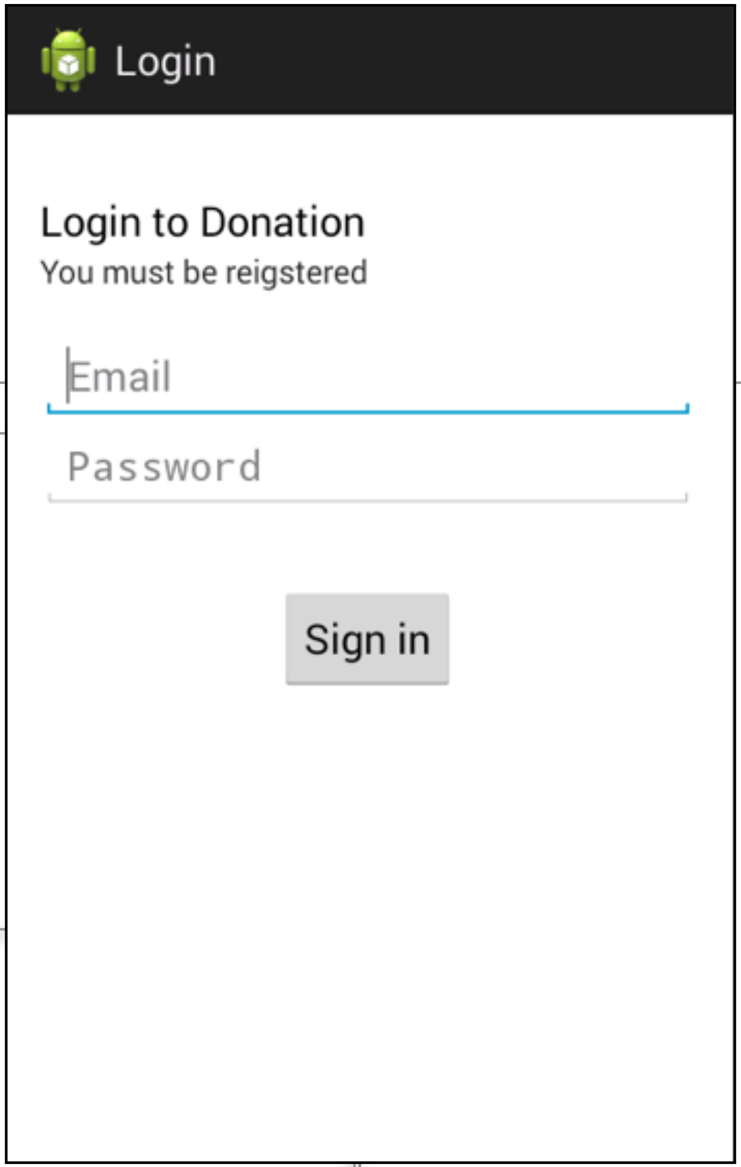
- Implement the Login activity, to now only let users in to Donate if they are registered (i.e. a matching email + password in the list of users maintained by DonationApp)

Exercise 9 Solution

```
public class DonationApp extends Application
{
  public final int       target       = 10000;
  public int             totalDonated = 0;

  public List <User>     users        = new ArrayList<User>();
  public List <Donation> donations    = new ArrayList<Donation>();

  public void newUser(User user)
  {
    users.add(user);
  }

  public boolean validUser (String email, String password)
  {
    for (User user : users)
    {
      if (user.email.equals(email) && user.password.equals(password))
      {
        return true;
      }
    }
    return false;
  }


  //…

}
```

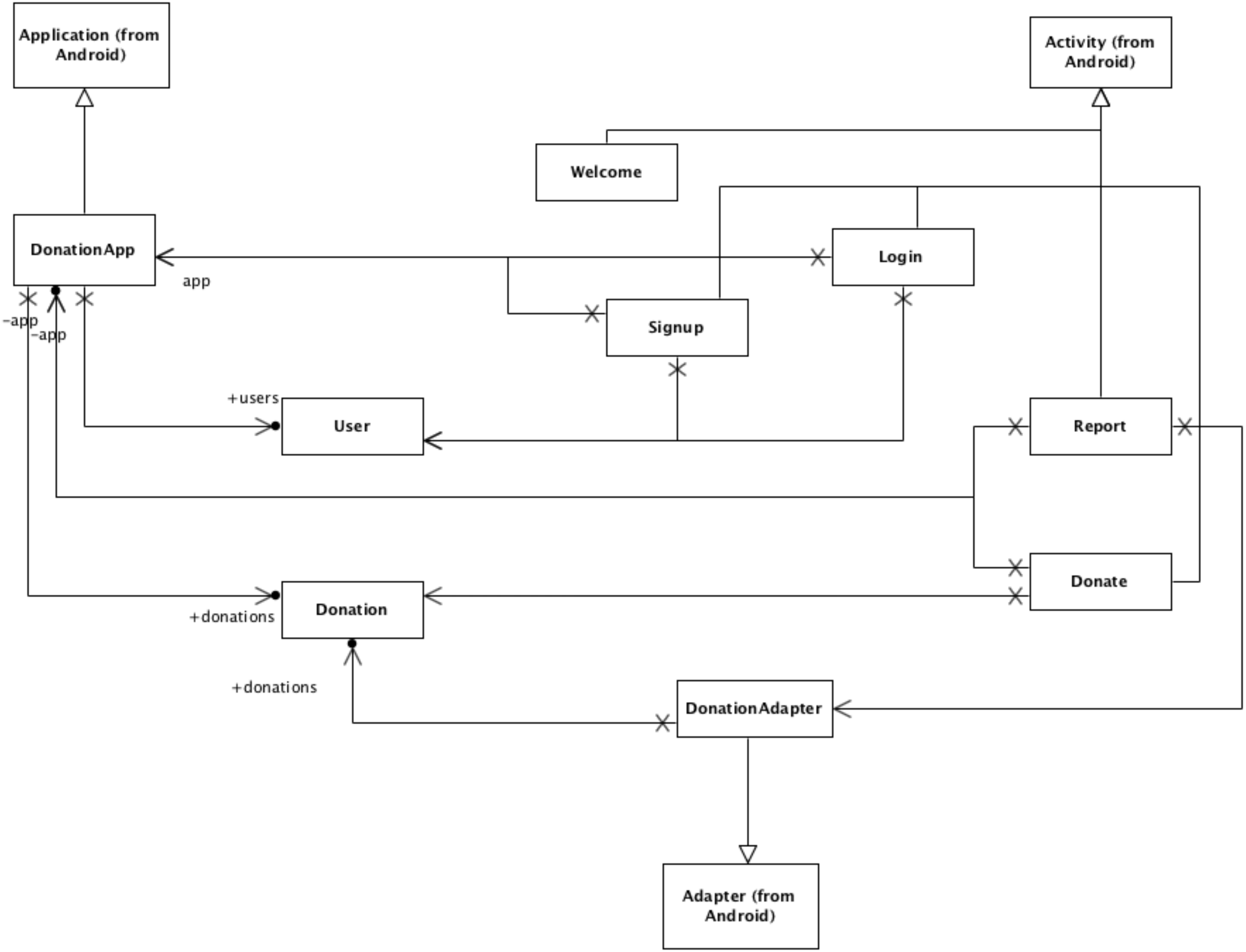
Exercise 9 Solution

```
public class Login extends Activity
{
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_login);
  }

  public void signinPressed (View view)
  {
    DonationApp app = (DonationApp) getApplication();

    TextView email     = (TextView)  findViewById(R.id.loginEmail);
    TextView password  = (TextView)  findViewById(R.id.loginPassword);

    if (app.validUser(email.getText().toString(), password.getText().toString()))
    {
      startActivity (new Intent(this, Donate.class));
    }
    else
    {
      Toast toast = Toast.makeText(this, "Invalid Credentials", Toast.LENGTH_SHORT);
      toast.show();
    }
  }
}
```



Login to Donation

You must be reigstered


Application (from Android)
Activity (from Android)
Welcome
DonationApp
app
Login
Signup
-app
-app
+users
User
Report
Donate
Donation
+donations
+donations
DonationAdapter
Adapter (from Android)