Mobile Application Development

Higher Diploma in Science in Computer Science



Eamonn de Leastar (edeleastar@wit.ie)

Department of Computing, Maths & Physics Waterford Institute of Technology

http://www.wit.ie

http://elearning.wit.ie



Waterford Institute of Technology INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE



donation-android - v3

Donation Android v1



Donation Android v2

onation	
Donation App Please give generously	
 PayPal Direct 	1000
	0
	1
Amount <u>:</u>	
Donate Total so far:	0

onation App		
Report		
3	PayPal	
5	PayPal	
10	PayPal	
100	PayPal	

- 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 PayPal 3 5 PayPal 10 PayPal PayPal 100

Exercise 1 Solution

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

 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 <u>:</u>	
Donate Total so far:	0

Exercise 2 Solution

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

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

 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.



💼 Donation App

PayPal

PayPal

PayPal

PayPal

Report

3

5

10

100

Exercise 3 Solution

 Introduce a new string constant into strings.xml:

Then a new menu
 report.xml

<menu xmlns:android="http://schemas.android.com/apk/res/android"></menu>	>
<item< th=""><th></th></item<>	
android:id="@+id/action_settings"	
android:orderInCategory="100"	
android:showAsAction="never"	
android:title="@string/menuSettings"/>	
<item< td=""><td></td></item<>	
android:id="@+id/menuDonate"	
android:orderInCategory="100"	
android:showAsAction="never"	
android:title="@string/menuDonate"/>	

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

Exercise 3 Solution

• The report activity will then need two new methods:

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

Exercise 4 Solution

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

welcome_layout.xml

xml version="1.0" encoding="utf-8"? <relativelayout android:id="@+id/RelativeLayout" android:layout_height="match_parent" android:layout_width="match_parent" android:orientation="vertical" xmlns:android="http://schemas.android.com/apk/</th><th>onation App</th></tr><tr><td><pre>res/android"><td></td></relativelayout>	
<pre><button android:id="@+id/welcomeLogin" android:layout_alignparenttop="true" android:layout_centerhorizontal="true" android:layout_height="wrap_content" android:layout_margintop="102dp" android:layout_width="wrap_content" android:text="@string/welcomeLogin"></button></pre>	Login Sign up
<pre><button android:id="@+id/welcomeSignup" android:layout_centerhorizontal="true" android:layout_centervertical="true" android:layout_height="wrap_content" android:layout_width="wrap_content" android:text="@string/welcomeSignup"></button></pre>	

AndroidManifext.xml

Exercise 4 Solution

xml version="1.0" encoding="utf-8"?	
<manifest <="" th="" xmlns:android="http://schemas.android.com/apk/res/android"><th></th></manifest>	
package="app.donation"	
android:versionCode="1"	
android:versionName="1.0" >	
<uses-sdk< td=""><td></td></uses-sdk<>	
android:minSdkversion="1/"	
android:targetSdkVersion="1/" />	
<application< td=""><td></td></application<>	
android:name="app.main.DonationApp"	
android:allowBackup="true"	
android:icon="@drawable/ic_launcher"	
android:label="@string/app_name"	
android:theme="@style/AppTheme" >	public class Welcome extends Activity
<activity android:name="app.activities.Welcome" android:label="@string/donateTitle" > <intent-filter> <action android:name="android.intent.action.MAIN"></action> <category android:name="android.intent.category.LAUNCHER"></category> </intent-filter> <activity android:name="app.activities.Donate"</activity </activity 	<pre>{ @Override public void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity_welcome); } }</pre>
android:label="@string/app_name" >	
<td></td>	
<a clivity<br="">android:name="ann activities Benort"	
android:label="@string/donateTitle" >	

<pre><?xml version="1.0" encoding="utf-8"?> <relativel <="" avout="" th="" xmlns:android="http://</pre></th><th></th></tr><tr><th>schemas.android.com/apk/res/android"><th>public class Welcome extends Activity</th></relativel></pre>	public class Welcome extends Activity
android:id="@+id/RelativeLayout"	
android:layout_height="match_parent"	@UVerride wublic woid an(masta(Dundle covedInstance(tate))
android:orientation="vertical" >	{
Rutton	<pre>super.onCreate(savedInstanceState);</pre>
android:id="@+id/welcomeLogin"	<pre>setContentView(R.layout.activity_welcome);</pre>
android:layout_width="wrap_content"	}
android:layout_height="wrap_content"	
android:layout_alignParentTop="true"	public void loginPressed (View view)
android:layout_centerHorizontal="true"	{
android:layout_marginTop="102dp"	startActivity (new Intent(this, Login.class));
android:onclick="LoginPressed"	}
and old. Lext= @string/welcomelogin />	
<button< td=""><td>public void signupPressed (View view)</td></button<>	public void signupPressed (View view)
android:id="@+id/welcomeSignup"	
android:layout_width="wrap_content"	startActivity (new Intent(this, Signup.class));
android:layout_height="wrap_content"	
android:layout_centerHorizontal="true"	\ <u>}</u>
android:Layout_centerVertical="true"	
android:text="@string/welcomeSignup" />	
and ora, cere esti thy wereomestynup />	

- 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

First name Last Name Email Password	Sign up f	or the Donation App
First name Last Name Email Password	En	ter details below
Last Name Email Password	First name	
Email Password	Last Name	
Password	Email	
	Password	

Exercise 5 Solution

⊖ ○ O New	
Select a wizard Create an Android Activity	
<pre>Wizards: //ype filter text // Ceneral // Ceneral // Ceneral // Ceneral // Android Activity // Android Application Project // Android Con Set // Android Object // Android Object // Android Project from Existing Code // Android Sample Project // Android Test Project // Android Test Project // Android XML File // Template Development Wizard // C/C++</pre>	New Activity Select which template to use Blank Activity Fullscreen Activity Login Activity Master/Detail Flow Settings Activity
Cancel Finish	Blank Activity Creates a new blank activity, with an action bar and optional navigational elements such as tabs or horizontal swipe.
	Seck Next > Cancel Finish

000

New Activity

Blank Activity

Creates a new blank activity, with an action bar and optional navigational elements such as tabs or horizontal swipe.



Project:	donation-android 4	00	New Activity	
Activity Name 0 Layout Name 0 Title 0	Signup activity_signup Signup	Preview Optionally review pending changes		<u>(</u>)
0	Launcher Activity	Changes to be performed	ndroid	• 令 ①
Hierarchical Parent Navigation Type The name of the ac	Optional . None :	 strings.xml - donation-android/res signup.xml - donation-android/res activity_signup.xml - donation-android/res Signup.java - donation-android/sres Not overwriting android-support-v 	s/values s/menu droid/res/layout c/app/donation v4.jar because the files are identical	
		AndroidManifest.xml		A <u>∕</u> A <u>∕</u> A <u>∕</u> A
	< Back Next	Original Source <pre></pre>	Refactored Source :name="a android:na android:la ivities.l g/donate ivities.l g/donate 	<pre>ame="app.activiti abel="@string/app ame="app.activiti abel="@string/dom ame="app.donation abel="@string/tite</pre>
		?	< Back Next > Can	cel Finish

android Manifest 🔄 activity_signup.xml 🔀						
🖸 🔹 🔲 Nexus One 🔹 🗗 🔹 🛧 AppTheme 🔹 🕞	Signup 🔻 🌖 🕇 🚎 18 🗸			Pa Outline	Structure ===	: •
Donation	V			Ab signupTitle Ab signupSubt	: (TextView) – "Sign up for the l itle (TextView) – "Enter details EditText)	Don beli
			. 😑 🔿 😑 🛛 R	esource Chooser	r	
Sign up for the Dor	nation App		Choose a string resource	2		
			• Project Resources			
	1 and		System Resources			
Enter details be	low					
	Request Focus		uonaternite			
	Edit Taxt	- E2	error_field_required error_incorrect_passwor	d		
🕂 First name	Edit ID	\7 #R	error_invalid_email	-		
	Edit Hint		error_invalid_password			
	InputType	•	initialAmount			4
	SingleLine	• •	login_progress_signing_	in]
	Lavout Width	•	menuReport			
		_	menuSettings			
			prompt_email			
			prompt_password			
			reportTitle			
			signapinistname			
			New String			
			@string/signupFirstnam	e		
-			Resolved Value: First nar	me		
			Clear	Cancel	ОК	
						-

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
```

ł

protected void onCreate(Bundle savedInstanceState) Ł super.onCreate(savedInstanceState); setContentView(R.layout.activity_signup); } public void registerPressed (View view) startActivity (new Intent(this, Welcome.class));

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"</pre> 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:lavout alianParentTop="true android:layout_marginLeft="32dp" android:layout_marginTop="28dp" android:text="@string/signupTitle" android:textAppearance="?android:attr/textAppearanceMedium" /> <TextView android:id="@+id/signupSubtitle" android:lavout 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="@strina/sianupSubtitle" 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" > activity_signup.xml </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

- 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	
Email	
Password	
Sign in	

<relativelayout <br="" 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" ></relativelayout>	Login to Donation You must be reigstered	Exercise 6 Solution
<textview< td=""><td></td><td></td></textview<>		
android:la="@+ia/loginiitle" android:layout_width="wrap_content"	Password	
<pre>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" /></pre>	Sign in	
<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" /></textview 		
<edittext android:id="@+id/loginEmail" android:layout_width="wrap_content" android:layout_height="wrap_content" android:layout_alignleft="@+id/loginSubtitle" android:layout_below="@+id/loginSubtitle" android:layout_below="@+id/loginSubtitle" android:layout_marginTop="17dp" android:ems="10" android:hint="@string/loginEmail" android:inputType="textEmailAddress" > <requestfocus></requestfocus> </edittext android:layout_width="wrap_content" android:layout_height="@reid/loginEmail" android:layout_height="@reid/loginEmail" android:layout_height="@reid/loginEmail" android:layout_height="@etid/loginEmail" android:layout_below="@+id/loginEmail" android:layout_below="@+id/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:layout_below="@etid/loginEmail" android:inputType="textPassword" />	<pre>public class Log { @Override protected void { super.onCred setContentVi } public void si { startActivit</pre>	<pre>gin extends Activity d onCreate(Bundle savedInstanceState) ate(savedInstanceState); iew(R.layout.activity_login); igninPressed (View view) ty (new Intent(this, Donate.class));</pre>
<button android:id="@+id/login" android:layout_width="wrap_content" android:layout_height="wrap_content" android:layout_centerHorizontal="true"</button 	}	

</RelativeLayout>

android:layout_centerVertical="true"
android:onClick="signinPressed"
android:text="@string/loginSignin" />



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"/></item
Donate	<pre>@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; }</pre>
Report	<pre>@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; }</pre>

 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

```
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;
                        totalDonated = 0;
  public int
 public List <User>
                                    = new ArrayList<User>();
                        users
  public List <Donation> donations
                                     = new ArrayList<Donation>();
  public void newUser(User user)
  {
   users.add(user);
  }
 //...
```

Exercise 8 Solution

```
Enter details below
public class Signup extends Activity
{
                                                                          First name
 @Override
 protected void onCreate(Bundle savedInstanceState)
                                                                          Last Name
  {
    super.onCreate(savedInstanceState);
                                                                          Email
    setContentView(R.layout.activity_signup);
                                                                          Password
  }
 public void registerPressed (View view)
  {
   TextView firstName = (TextView) findViewById(R.id.firstName);
                                                                                    Register
   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

 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;
                        totalDonated = 0;
 public int
 public List <User>
                              = new ArrayList<User>();
                        users
 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;
 }
 //...
```

```
同 Login
                                                                          Login to Donation
Exercise 9 Solution
                                                                          You must be reigstered
                                                                           Email
                                                                           Password
  public class Login extends Activity
   {
     @Override
                                                                                      Sign in
     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();
       }
     }
```





Except where otherwise noted, this content is licensed under a Creative Commons Attribution-NonCommercial 3.0 License.

For more information, please see http:// creativecommons.org/licenses/by-nc/3.0/



Waterford Institute of Technology INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

