

# CONTENTS

## INTRODUCTION

xv

## CHAPTER 1: ANDROID FUNDAMENTALS

1

<b>Recipe 1.1</b>	<b>Linking Activities</b>	<b>1</b>
Solution		2
<b>Recipe 1.2</b>	<b>Passing Data between Activities</b>	<b>5</b>
Solution		6
<b>Recipe 1.3</b>	<b>Passing Objects between Activities</b>	<b>11</b>
Solution		11
<b>Recipe 1.4</b>	<b>Sending and Receiving Broadcasts</b>	<b>13</b>
Solution		14
<b>Recipe 1.5</b>	<b>Assigning Priorities to Broadcast Receivers</b>	<b>18</b>
Solution		19
<b>Recipe 1.6</b>	<b>Auto-Launching Your Application at Boot Time</b>	<b>21</b>
Solution		21
<b>Recipe 1.7</b>	<b>Calling Built-In Apps</b>	<b>22</b>
Solution		23
<b>Recipe 1.8</b>	<b>Making Your Application Callable by Others</b>	<b>32</b>
Solution		32

## CHAPTER 2: USING VIEWS TO DESIGN THE USER INTERFACE

39

<b>Recipe 2.1</b>	<b>Using Buttons</b>	<b>40</b>
Solution		40
<b>Recipe 2.2</b>	<b>Using Image Buttons</b>	<b>44</b>
Solution		44
<b>Recipe 2.3</b>	<b>Using Radio Buttons</b>	<b>46</b>
Solution		46
<b>Recipe 2.4</b>	<b>Using CheckBoxes</b>	<b>49</b>
Solution		50
<b>Recipe 2.5</b>	<b>Implementing a Star Rating System</b>	<b>52</b>
Solution		52
<b>Recipe 2.6</b>	<b>Using AutoCompleteTextView</b>	<b>55</b>
Solution		55
<b>Recipe 2.7</b>	<b>Displaying Web Pages</b>	<b>57</b>
Solution		58

<b>Recipe 2.8</b>	<b>Using the TimePicker</b>	<b>62</b>
Solution		62
<b>Recipe 2.9</b>	<b>Using the DatePicker</b>	<b>64</b>
Solution		65
<b>Recipe 2.10</b>	<b>Using LinearLayout for View Positioning</b>	<b>66</b>
Solution		67
<b>Recipe 2.11</b>	<b>Using RelativeLayout for View Positioning</b>	<b>72</b>
Solution		72
<b>Recipe 2.12</b>	<b>Using FrameLayout for View Positioning</b>	<b>74</b>
Solution		74
<b>Recipe 2.13</b>	<b>Using TableLayout for View Positioning</b>	<b>77</b>
Solution		77
<b>Recipe 2.14</b>	<b>Using the ScrollView</b>	<b>79</b>
Solution		79
<b>Recipe 2.15</b>	<b>Displaying Context and Options Menus</b>	<b>83</b>
Solution		83
<b>Recipe 2.16</b>	<b>Displaying Dialogs</b>	<b>90</b>
Solution		91
<b>Recipe 2.17</b>	<b>Implementing Paging</b>	<b>98</b>
Solution		98
<b>CHAPTER 3: DISPLAYING LISTS OF ITEMS AND IMAGES</b>		<b>105</b>
<b>Recipe 3.1</b>	<b>Displaying a List of Items Using the ListView</b>	<b>106</b>
Solution		106
<b>Recipe 3.2</b>	<b>Customizing the ListView</b>	<b>108</b>
Solution		108
<b>Recipe 3.3</b>	<b>Displaying Multiple ListViews</b>	<b>111</b>
Solution		111
<b>Recipe 3.4</b>	<b>Creating Custom ListViews</b>	<b>114</b>
Solution		115
<b>Recipe 3.5</b>	<b>Further Customizing Each Row with Additional TextViews</b>	<b>117</b>
Solution Part One: Adding Additional TextViews		118
Solution Part Two: Recycling Each Row		122
<b>Recipe 3.6</b>	<b>Displaying a List of Items Using the Spinner View</b>	<b>125</b>
Solution		126
<b>Recipe 3.7</b>	<b>Displaying a List of Images</b>	<b>128</b>
Solution		129
<b>Recipe 3.8</b>	<b>Animating the Changing of Images Using the ImageSwitcher</b>	<b>133</b>
Solution		133

<b>Recipe 3.9</b>	<b>Displaying Images Using the GridView</b>	<b>138</b>
Solution		138
<b>Recipe 3.10</b>	<b>Building a Master-Detail User Interface</b>	<b>141</b>
Solution		143
<b>CHAPTER 4: TELEPHONY</b>		<b>151</b>
<b>Recipe 4.1</b>	<b>Calling from Your Application</b>	<b>151</b>
Solution		152
<b>Recipe 4.2</b>	<b>Monitoring the State of the Phone</b>	<b>153</b>
Solution		153
<b>Recipe 4.3</b>	<b>Monitoring Phone State in the Background</b>	<b>156</b>
Solution		156
<b>Recipe 4.4</b>	<b>Blocking Outgoing Calls</b>	<b>158</b>
Solution		159
<b>Recipe 4.5</b>	<b>Auto-Answering an Incoming Call</b>	<b>160</b>
Solution		160
<b>Recipe 4.6</b>	<b>Switching to Airplane Mode</b>	<b>163</b>
Solution		163
<b>Recipe 4.7</b>	<b>Getting the Phone Number, IMEI, and SIM Card ID</b>	<b>165</b>
Solution		166
<b>Recipe 4.8</b>	<b>Enabling Bluetooth</b>	<b>167</b>
Solution		167
<b>Recipe 4.9</b>	<b>Displaying the Call Log</b>	<b>173</b>
Solution		173
<b>CHAPTER 5: MESSAGING</b>		<b>175</b>
<b>Recipe 5.1</b>	<b>Sending SMS Messages Through the Built-in Messaging Application</b>	<b>175</b>
Solution		176
<b>Recipe 5.2</b>	<b>Sending SMS Messages Programmatically in Your Android Application</b>	<b>178</b>
Solution		178
<b>Recipe 5.3</b>	<b>Monitoring the Status of Sent SMS Messages Programmatically</b>	<b>179</b>
Solution		180
<b>Recipe 5.4</b>	<b>Monitoring Outgoing SMS Messages</b>	<b>183</b>
Solution		184
<b>Recipe 5.5</b>	<b>Intercepting Incoming SMS Messages</b>	<b>187</b>
Solution		187

<b>CHAPTER 6: NETWORK PROGRAMMING</b>	<b>191</b>
<b>Recipe 6.1 Connecting to Servers Using HTTP GET</b>	<b>191</b>
Solution	192
<b>Recipe 6.2 Connecting to Servers Using HTTP POST</b>	<b>195</b>
Solution	195
<b>Recipe 6.3 Downloading Binary Data Using HTTP</b>	<b>198</b>
Solution	199
<b>Recipe 6.4 Consuming XML Web Services</b>	<b>200</b>
Solution	201
<b>Recipe 6.5 Consuming JSON Web Services</b>	<b>204</b>
Solution	205
<b>Recipe 6.6 Getting the IP Address of the Device</b>	<b>210</b>
Solution	211
<b>Recipe 6.7 Creating a Socket Server</b>	<b>212</b>
Solution	212
<b>Recipe 6.8 Creating a Socket Client</b>	<b>218</b>
Solution	218
<b>Recipe 6.9 Checking for the Availability of Bluetooth</b>	<b>222</b>
Solution	222
<b>Recipe 6.10 Monitoring the State of Bluetooth</b>	<b>224</b>
Solution	225
<b>Recipe 6.11 Creating a Bluetooth Chat Application</b>	<b>226</b>
Solution	227
<b>CHAPTER 7: USING GOOGLE MAPS</b>	<b>243</b>
<b>Recipe 7.1 Displaying Google Maps</b>	<b>243</b>
Solution	244
<b>Recipe 7.2 Zooming in and out of Google Maps</b>	<b>250</b>
Solution	250
<b>Recipe 7.3 Changing Map Modes</b>	<b>253</b>
Solution	253
<b>Recipe 7.4 Navigating the Map to a Particular Location</b>	<b>256</b>
Solution	256
<b>Recipe 7.5 Adding Markers to the Map</b>	<b>258</b>
Solution	258
<b>Recipe 7.6 Finding a User-Friendly Address Using Reverse Geocoding, and Vice Versa</b>	<b>268</b>
Solution	268
<b>Recipe 7.7 Responding to Zooming and Panning</b>	<b>275</b>
Solution	275

<b>CHAPTER 8: LOCATION-BASED DATA SERVICES</b>	<b>279</b>
<b>Recipe 8.1</b> Obtaining Geographical Location Using GPS, Wi-Fi, or Cellular Networks	<b>280</b>
Solution	280
<b>Recipe 8.2</b> Choosing the Best Location Provider to Use	<b>284</b>
Solution	284
<b>Recipe 8.3</b> Monitoring a Location	<b>288</b>
Solution	288
<b>Recipe 8.4</b> Using a BroadcastReceiver to Obtain Locations	<b>289</b>
Solution	290
<b>Recipe 8.5</b> Location Data Logging	<b>293</b>
Solution	293
<b>CHAPTER 9: ACCESSING THE HARDWARE</b>	<b>301</b>
<b>Recipe 9.1</b> Capturing Pictures with the Camera	<b>301</b>
Solution	301
<b>Recipe 9.2</b> Detecting the Presence of Hardware Features	<b>304</b>
Solution	305
<b>Recipe 9.3</b> Checking Network State	<b>306</b>
Solution	306
<b>Recipe 9.4</b> Turning GPS On/Off	<b>308</b>
Solution	308
<b>Recipe 9.5</b> Capturing Hardware Buttons Programmatically	<b>310</b>
Solution	310
<b>Recipe 9.6</b> Switching on the Flashlight	<b>313</b>
Solution	314
<b>Recipe 9.7</b> Capturing Barcodes	<b>319</b>
Solution	320
<b>CHAPTER 10: PERSISTING DATA</b>	<b>325</b>
<b>Recipe 10.1</b> Saving and Loading User Preferences	<b>325</b>
Solution	326
<b>Recipe 10.2</b> Creating a Preference Screen	<b>328</b>
Solution	328
<b>Recipe 10.3</b> Saving Files to the Data Directory	<b>333</b>
Solution	333
<b>Recipe 10.4</b> Saving Files to the Cache Directory	<b>338</b>
Solution	338
<b>Recipe 10.5</b> Saving Files to External Storage	<b>340</b>
Solution	341

<b>Recipe 10.6</b>	<b>Attaching Files to Your Project</b>	<b>345</b>
	Solution	346
<b>Recipe 10.7</b>	<b>Creating and Using SQLite Databases Programmatically</b>	<b>347</b>
	Solution	348
<b>Recipe 10.8</b>	<b>Pre-creating the SQLite Databases</b>	<b>353</b>
	Solution	353
<b>CHAPTER 11: DEPLOYING YOUR ANDROID APPLICATIONS</b>		<b>357</b>
<hr/>		
<b>Recipe 11.1</b>	<b>Localizing Your Application</b>	<b>357</b>
	Solution	358
<b>Recipe 11.2</b>	<b>Exporting Your Application as an APK File</b>	<b>362</b>
	Solution	362
<b>Recipe 11.3</b>	<b>Deploying Your App Through E-mail</b>	<b>365</b>
	Solution	365
<b>Recipe 11.4</b>	<b>Deploying Your App Through the Web</b>	<b>367</b>
	Solution	368
<b>Recipe 11.5</b>	<b>Deploying Your App Through an SD Card</b>	<b>369</b>
	Solution	369
<b>Recipe 11.6</b>	<b>Specifying the Application Installation Location</b>	<b>370</b>
	Solution	371
<b>INDEX</b>		<b>373</b>