PRODUCTS AND SERVICES REFERENCED HEREIN INCLUDING WITHOUT LIMITATION ANY OF THE FOLLOWING DAMAGES: DIRECT, CONSEQUENTIAL, EXEMPLARY, INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR AGGRAVATED DAMAGES, DAMAGES FOR LOSS OF PROFITS OR REVENUES, FAILURE TO REALIZE ANY EXPECTED SAVINGS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, LOSS OF BUSINESS OPPORTUNITY, OR CORRUPTION OR LOSS OF DATA, FAILURES TO TRANSMIT OR RECEIVE ANY DATA, PROBLEMS ASSOCIATED WITH ANY APPLICATIONS USED IN CONJUNCTION WITH RIM PRODUCTS OR SERVICES, DOWNTIME COSTS, LOSS OF THE USE OF RIM PRODUCTS OR SERVICES OR ANY PORTION THEREOF OR OF ANY AIRTIME SERVICES, COST OF SUBSTITUTE GOODS, COSTS OF COVER, FACILITIES OR SERVICES, COST OF CAPITAL, OR OTHER SIMILAR PECUNIARY LOSSES, WHETHER OR NOT SUCH DAMAGES WERE FORESEEN OR UNFORESEEN, AND EVEN IF RIM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW IN YOUR JURISDICTION, RIM SHALL HAVE NO OTHER OBLIGATION, DUTY, OR LIABILITY WHATSOEVER IN CONTRACT, TORT, OR OTHERWISE TO YOU INCLUDING ANY LIABILITY FOR NEGLIGENCE OR STRICT LIABILITY.

THE LIMITATIONS, EXCLUSIONS, AND DISCLAIMERS HEREIN SHALL APPLY: (A) IRRESPECTIVE OF THE NATURE OF THE CAUSE OF ACTION, DEMAND, OR ACTION BY YOU INCLUDING BUT NOT LIMITED TO BREACH OF CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR ANY OTHER LEGAL THEORY AND SHALL SURVIVE A FUNDAMENTAL BREACH OR BREACHES OR THE FAILURE OF THE ESSENTIAL PURPOSE OF THIS AGREEMENT OR OF ANY REMEDY CONTAINED HEREIN; AND (B) TO RIM AND ITS AFFILIATED COMPANIES, THEIR SUCCESSORS, ASSIGNS, AGENTS, SUPPLIERS (INCLUDING AIRTIME SERVICE PROVIDERS), AUTHORIZED RIM DISTRIBUTORS (ALSO INCLUDING AIRTIME SERVICE PROVIDERS) AND THEIR RESPECTIVE DIRECTORS, EMPLOYEES AND INDEPENDENT CONTRACTORS.

IN ADDITION TO THE LIMITATIONS AND EXCLUSIONS SET OUT ABOVE, IN NO EVENT SHALL ANY DIRECTOR, EMPLOYEE, AGENT, DISTRIBUTOR, SUPPLIER, INDEPENDENT CONTRACTOR OF RIM OR ANY AFFILIATES OF RIM HAVE ANY LIABILITY ARISING FROM OR RELATED TO THE DOCUMENTATION.

Prior to subscribing for, installing or using any Third Party Products and Services it is your responsibility to ensure that your airtime service provider has agreed to support all of their features. Some airtime service providers may not offer Internet browsing functionality with a subscription to BlackBerry® Internet Service. Check with your service provider for availability, roaming arrangements, service plans and features. Installation or use of Third Party Products and Services with RIM’s products and services may require one or more patent, trademark, copyright or other licenses in order to avoid infringement or violation of third party rights. You are solely responsible for determining whether to use, Third Party Products and Services and if any third party licenses are required to do so. If required you are responsible for acquiring them. You should not install or use Third Party Products and Services until all necessary licenses have been acquired. Any Third Party Products and Services that are provided with RIM’s products and services are provided as a convenience to you and are provided “AS IS” with no express or implied conditions, endorsements, guarantees, representations or warranties of any kind by RIM and RIM assumes no liability whatsoever, in relation thereto. Your use of Third Party Products and Services shall be governed by and subject to you agreeing to the terms of separate licenses and other agreements applicable thereto with third parties, except to the extent expressly covered by a license or other agreement with RIM.

Certain features outlined in this documentation require a minimum version of BlackBerry® Enterprise Server software, BlackBerry® Desktop Software, and/or BlackBerry® Device Software and may require additional development or Third Party Products and Services for access to corporate applications.

This product includes software developed by the Apache Software Foundation (http://www.apache.org/) and/or licensed pursuant to Apache License, Version 2.0 (http://www.apache.org/licenses/). For more information, see the NOTICE.txt file included with the software. Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

The terms of use of any RIM product or service are set out in a separate license or other agreement with RIM applicable thereto. NOTHING IN THIS DOCUMENTATION IS INTENDED TO SUPERSede ANY EXPRESS WRITTEN AGREEMENTs OR WARRANTIES PROVIDED BY RIM FOR PORTIONS OF ANY RIM PRODUCT OR SERVICE OTHER THAN THIS DOCUMENTATION.
Chapter 3: Develop a UI for BlackBerry smartphones

This chapter describes how to create an application that uses a custom UI manager. It describes how the manager lays out fields and manipulates the natural focus order. This chapter also describes how to create an application that displays a sequence of complex records in a grid with selectable rows. Additionally, this chapter provides information about how to manipulate a graphics context.
3.1 Introduction to User Interface managers

In this exercise, you will create an application that uses a custom UI manager. This manager lays out its fields on a diagonal and manipulates the natural focus order. You will create a custom UI component and use UI managers to control field layout and handle focus events.

1. Open `custom_manager_incomplete.zip`.
2. In the IDE, open the `custom_manager.jdw` workspace.
3. Open the `DiagonalApp.java` source file.
4. Open the `DiagonalManager.java` source file.
5. Implement `DiagonalManager`'s `getPreferredWidth` and `getPreferredHeight` methods so that they define the size of the manager.
6. Fill in the loop of `DiagonalManager`'s `sublayout` method to lay out and arrange each controlled field.
7. Complete `DiagonalManager`'s `nextFocus` method so that focus does not leave the manager.
8. Start the BlackBerry® MDS Simulator.
Notes
3.2 Display a list of complex records

In this exercise, you will create an application that displays a sequence of complex records in a grid with selectable rows. You will apply your understanding of managers to build a useful custom UI component. You will use a ListField and ListFieldCallback to show a sequence of selectable items. You will manipulate a graphics context. You will use BitmapField, NullField and DateField.

1. Open table_list_field_incomplete.zip.
2. In the IDE, open the table_list_field.jdw workspace.
3. Open the TableListApp.java source file.
4. Open the TableListField.java source file.
5. Create a row manager for each row that is to be the content of the TableListField.
6. Set the size and callback of the TableListField.
7. Implement getColumnStart to calculate the horizontal position at which a given column should begin.
8. When a TableRowManager is called upon to draw a row, transform and restore the graphics context before and after the call to paint, so that the row paints into the correct region.
9. Complete the sublayout, getPreferredWidth, and getPreferredHeight methods of the TableRowManager.
10. When the framework invokes the RENDERER callback to draw a row from a list, have the RENDERER delegate to the proper TableRowManager.
11. Within the TableListApp constructor, instantiate appropriate tableContent fields to represent the FAKE_DATA array.
12. Within the TableListApp constructor, create the table and add it to the screen.
13. Start the BlackBerry MDS Simulator.