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: Introduction to GPS and Wi-Fi technology on BlackBerry smartphones

This chapter explores GPS technology in BlackBerry® smartphone applications. Include GPS location information in your application using the Location API for Java® ME in the javax.microedition.location package (JSR 179).
3.1 View a sample GPS application

In this lab, you will download and run a sample BlackBerry smartphone GPS application that implements a travel calculator for tracking current location (using longitude, latitude, and altitude), direction, grade, and travel speed. The sample application displays the information nearly simultaneously and updates the information at intervals that constants in the application specify. The sample application also stores waypoints in persistent storage. These waypoints are recorded at intervals that constants in the application specify. The waypoints record the date and time they were taken, the distance travelled (using longitude, latitude, and altitude), and the average speed since the last waypoint.

1. Open 3.1_gpsdemo.zip to view the sample application.
2. Extract the zip file.
3. On the taskbar, click Start > Programs > Research In Motion > BlackBerry JDE 4.7.0 > JDE.
4. Open the workspace that you want to add the sample application to.
5. In the workspace tree, right-click the project that you want to add the sample application to.
6. Click Add project to <workspace directory>.
7. In the Add project to <workspace> dialog box, browse to the folder where you extracted the sample application, click the GPSDemo.jdp file, and then click Open.
8. In the workspace, expand the gpsdemo project.
10. In the GPSDemo.java file, replace the value of the constant _hostName with the name of the server that is running the server-side gpsdemo application.
11. In the workspace where you added the gpsdemo project, right-click gpsdemo.
12. Click Build project.
13. On the taskbar, click Start > Applications > Research in Motion > BlackBerry JDE 4.7.0 > Device Simulator.
15. Click the gpsdemo icon.
16. In the folder where you extracted the gpsdemo.zip file, double-click run.bat.
3.2 Create a location-based application

In this exercise, you will use the Location API (JSR 179) to write a location-based application for the BlackBerry platform. The application shows the user’s current location coordinates. It has three menu items: Get Single Fix gets the current location information and displays it, and Start Multiple Fix continues to get location data at fixed intervals until the user selects Stop Multiple Fix.

1. Create a Criteria object that specifies that LocationProvider cannot operate in a mode that might trigger carrier charges.
   
   a. In the code, go to the TODO step titled “Create a Criteria instance” in the method setupCriteria() and call the Criteria constructor to create an instance of the Criteria object named _criteria.
   
   b. Go to the TODO step titled “Set CostAllowed to false” in the method setupCriteria() and set the cost allowed property of the Criteria to False.

2. Create an instance of LocationProvider by writing a method called createLocationProvider(). Go to the TODO step titled “Get a LocationProvider instance and set it to _provider” in the method createLocationProvider() and use the static factory method of the LocationProvider class to get an instance of LocationProvider using the Criteria object named _criteria.

3. To implement LocationProvider reset logic, go to the TODO step titled “Implement LocationProvider reset logic” in the method resetProvider(). Write code to remove any LocationListener that is registered with the LocationProvider in question, reset the LocationProvider, and set the LocationProvider to null.

4. Use the following steps to get and display data for a single location fix data using the public method LocationProvider.getLocation(int timeout):
   
   a. To reset the LocationProvider, go to the TODO step titled “Reset the LocationProvider” in the method getSingleFix() and call the resetProvider() method.
   
   b. Go to the TODO step titled “Call setupCriteria() and createLocationProvider() in the method getSingleFix() and call setupCriteria() and createLocationProvider().
   
   c. To get a single location fix, go to the TODO step titled “Get single location fix” in the method getSingleFix() and call the getLocation() method of the LocationProvider object and store it in the Location variable named _location.
Chapter 3: Introduction to GPS and Wi-Fi technology on BlackBerry smartphones

5. Use the following steps to implement a LocationListener to facilitate location fixes at fixed intervals:

   a. Validate the Location object in the TODO step titled “Validate Location Object” in the method locationUpdated().

   b. To get QualifiedCoordinates, go to the TODO step titled “Get QualifiedCoordinates from location” in the method locationUpdated() and call the getQualifiedCoordinates() method of location.

   c. To display the coordinates for longitude, latitude, and altitude, go to the TODO step titled “Display coordinates” in the method locationUpdated() and use the log(String msg) method to display messages in an EditField on the screen.

6. Use the following steps to get multiple location data at fixed intervals using a LocationListener:

   a. Reset the LocationProvider by going to the TODO step titled “Reset the LocationProvider” in the method getMultipleFix() and calling the resetProvider() method.

   b. Go to the TODO step titled “Call setupCriteria() and createLocationProvider()” in the method getMultipleFix() and call setupCriteria() and createLocationProvider() to create Criteria and LocationProvider objects.

   c. To register LocationListener with a LocationProvider, go to the TODO step titled “Register LocationListener” in the method getMultipleFix() and register LocationListener with the LocationProvider by calling setLocationListener() method of _provider. This takes four arguments: use this for the LocationListener, 5 for the interval, −1 for timeout, and −1 for maxAge.