Developing Applications with Java

THIS CHAPTER PROVIDES INFORMATION NECESSARY FOR DEVELOPING WINDOWS APPLICATIONS IN JAVA WITH THE U.ARE.U SDK.

Pre-Requisites

This chapter assumes that you have a working knowledge of Java and that you know how to develop for Microsoft Windows machines.

System Requirements

Development System

- Microsoft Windows XP Professional or higher, 32-bit or 64-bit
- Microsoft Visual Studio 2008 or later
- Java SE 7 (JDK 7) or newer

Target Runtime Hardware (Windows machine)

The Windows-based machine that will run the application must be one of the following hardware platforms:

- Intel x86 architecture with CPU from 600MHz and at least 96MB of available RAM
- Intel x64 (x86-64) architecture with CPU from 600MHz and at least 96MB of available RAM

Function	x86	x64
Capture runtime (drivers + SDK layer) with fingerprint recognition	17 MB	16 MB

In addition, the machine must also have:

- a USB port

The SDK works on a variety of hardware and is intended to have a small footprint so that it can run even on minimal hardware. Less capable hardware will work, but response time may not be optimal.

Extra Installation Steps

After installing as described in Installing on the Development and Target Systems on page 5, you must do the following additional steps on both the development and target machines:

1 Copy the files in these two folders: `U.are.U SDK\Windows\Lib\Java` and `U.are.U SDK\Windows\Lib\<x86 or x64>` to the location of your choice.

2 Make sure that `dpuareu.jar` is in the classpath and `dpuareu_jni.dll` is accessible by JVM. For example:

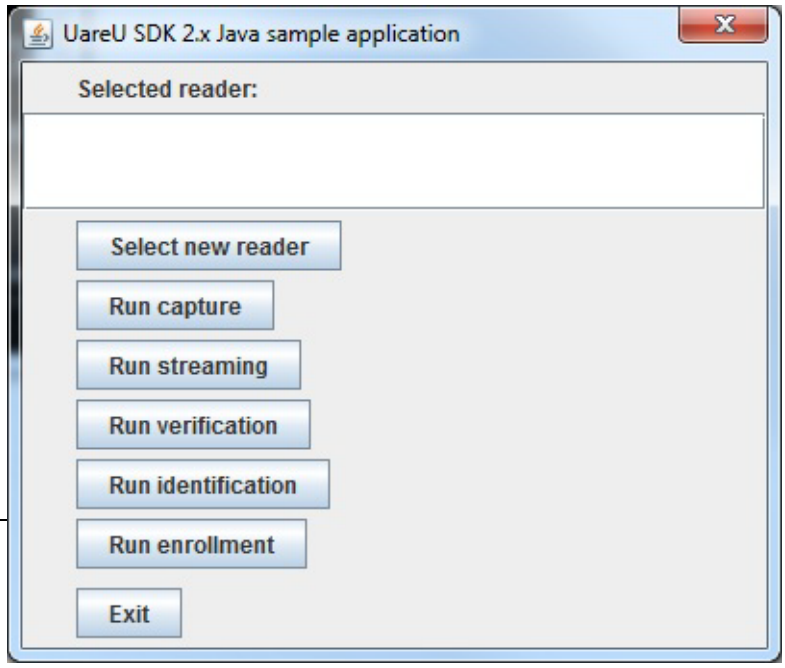
```
java.exe -classpath ".;C:\Program Files\DigitalPersona\U.areU SDK\Windows\Lib\Java\
dpuareu.jar" -Djava.library.path="C:\Program Files\DigitalPersona\U.areU SDK\Windows\
Lib\win32" UareUSampleJava
```

The Java Sample Application

The U.are.U SDK includes a sample application to demonstrate the features of the SDK when using the Java API. The sample application is located in the `Samples` folder. The compiled file, `UareUSampleJava.exe` can be downloaded to your machine for testing or you can compile it for yourself using the source files provided.

The application demonstrates the features of the SDK. When you launch the application, you see the main screen as shown below.
The sample program demonstrates:

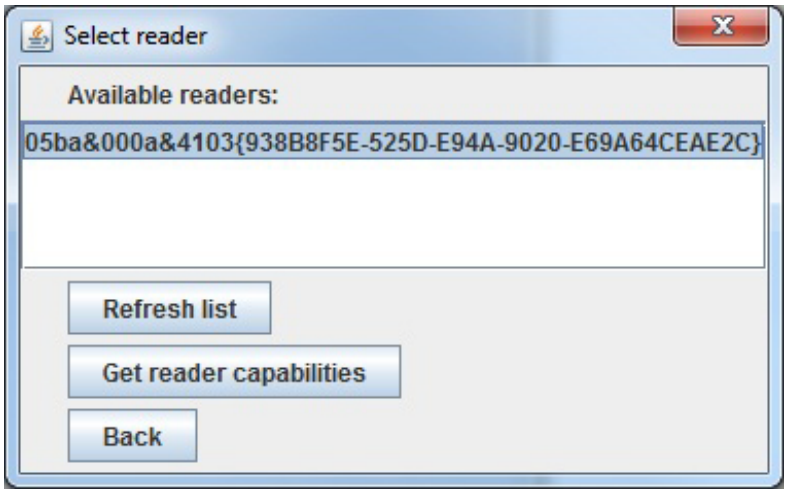
- How to enroll a finger
- How to identify a fingerprint
- How to verify a fingerprint
- The built-in control for enrollment
- The built-in control for identification
- How to use the streaming feature to display live fingerprint data on the screen



Selecting a Reader

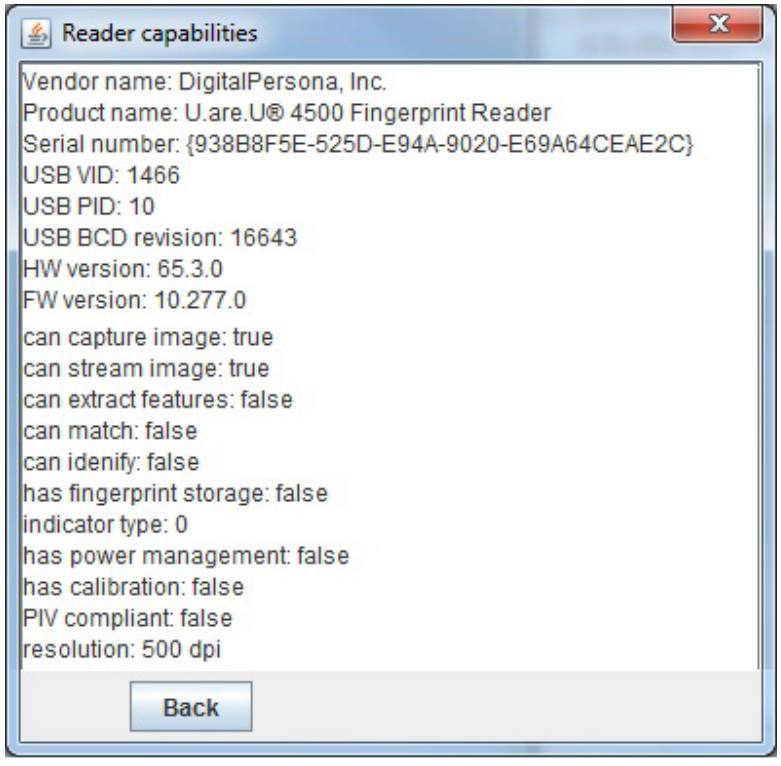
To choose the reader, click on the **Select new reader** button. You will see a list of available readers and you can choose the desired device, as shown below:

Simply clicking on a reader selects it.



To see the reader capabilities, click on the **Get reader capabilities** button.

The capabilities will be displayed, as shown in the image to the right.



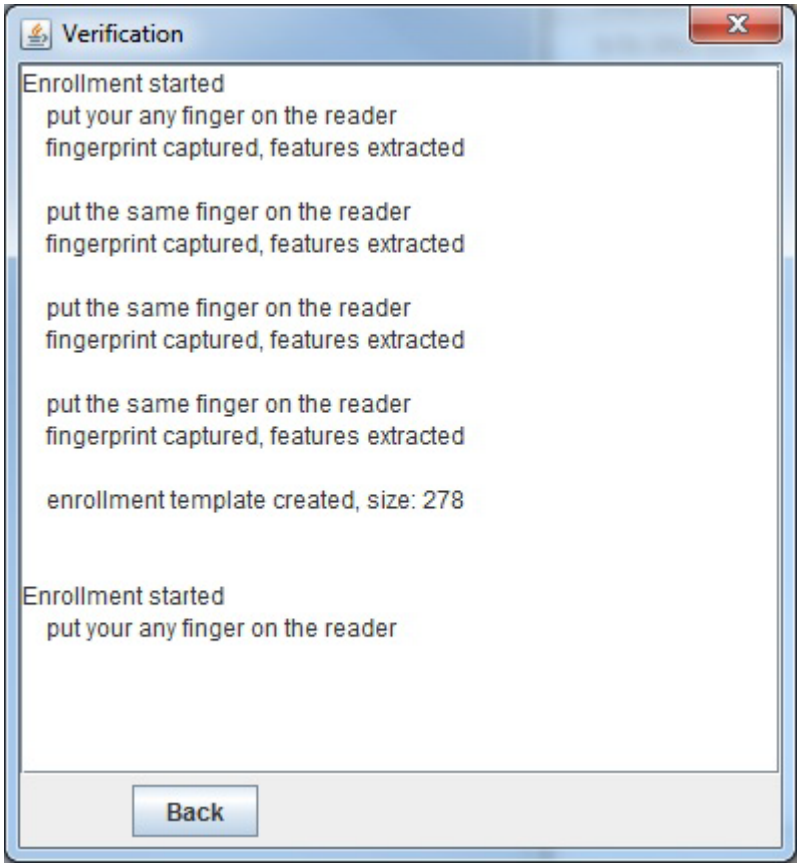
Click on the **Back** button to continue.

Click on the **Back** button from the previous screen to return to the main screen.

Enrolling a Finger

Click on **Run enrollment** to begin enrolling a test subject.

You will see a series of prompts to scan fingers for enrollment, as shown below.



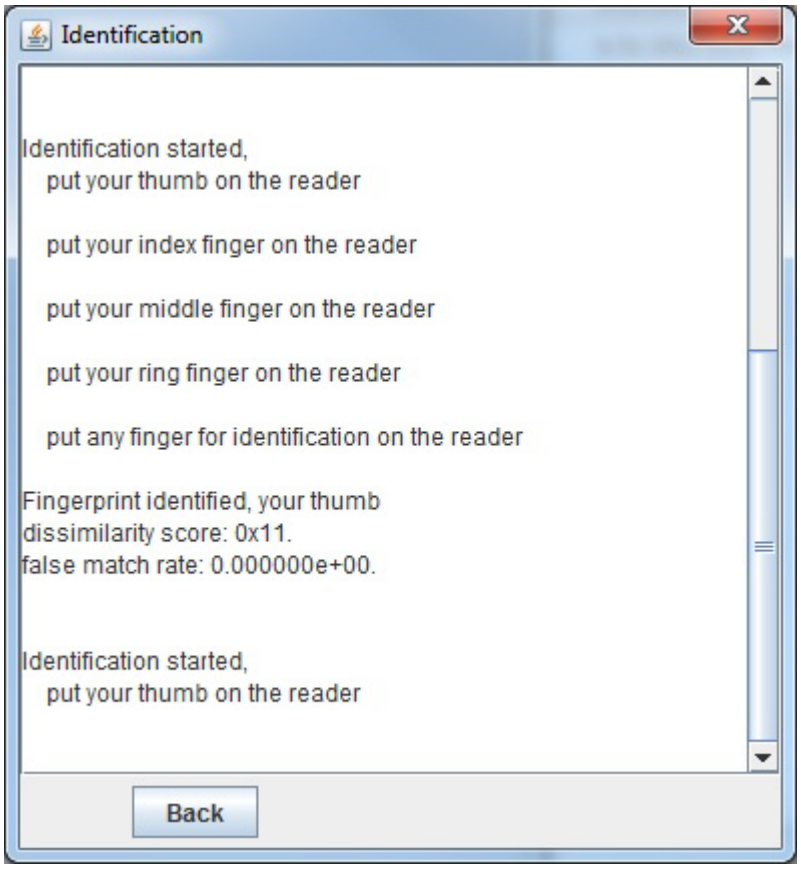
After the first finger is successfully scanned, you will be prompted to scan additional fingers until a sufficient number of high quality scans are complete. The number of fingers requested will vary depending on the image scans - the enrollment functions will continue to request scans until an acceptable enrollment record has been created.

When enrollment is complete, click **Back** to return to the main screen. (Note that enrollment FMDs that are created are not stored.)

Identifying a Fingerprint

To test the identification feature, click on the **Run identification** button. Recall that identification is a 1-to-many comparison where the application searches through all of the enrolled fingers to find a match. For this example, we do not have a stored database, so the sample application first prompts you to place a few fingers on the reader so that the application has some fingerprints to check against.

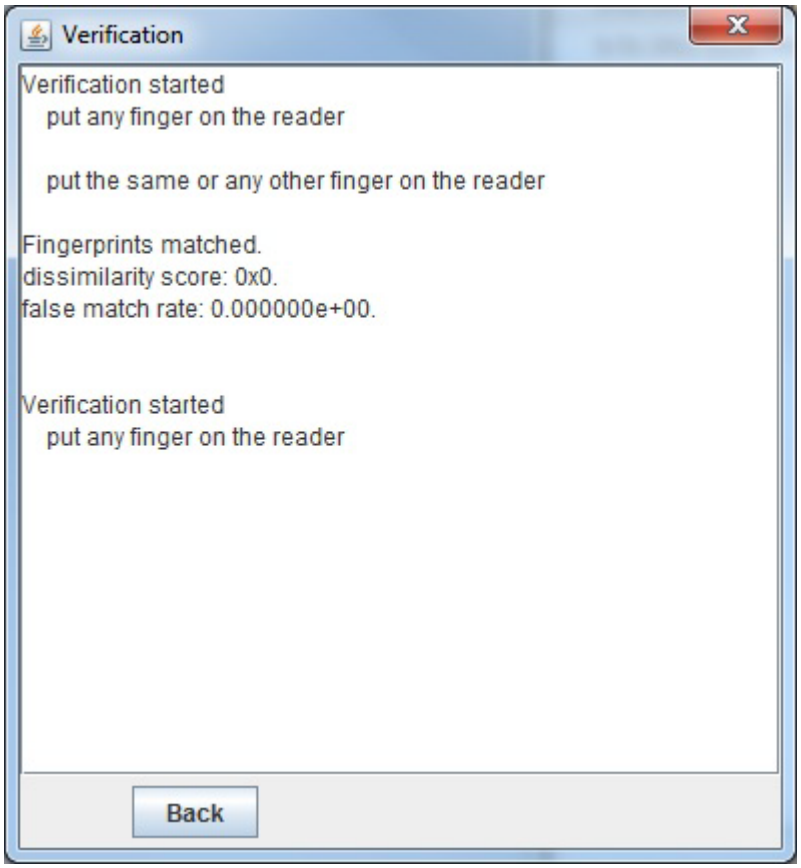
After the application scans four fingers, you will be prompted to place any finger on the reader to identify against the fingers that were just scanned. If you place a finger that was previously scanned on the reader, you will see that a match was found. In the screen image below, we successfully identified a user.



To exit identification mode, click on the **Back** button.

Verifying a Fingerprint

To test the verification feature, click on the **Run verification** button. Recall that verification is a 1-to-1 comparison where the application matches against a specified fingerprint. When you click the **Run verification** button, you will be prompted to place your finger on the reader. Then you will be prompted to place the same finger or another finger, to verify against the first finger. In the screen below, we have successfully verified a user.

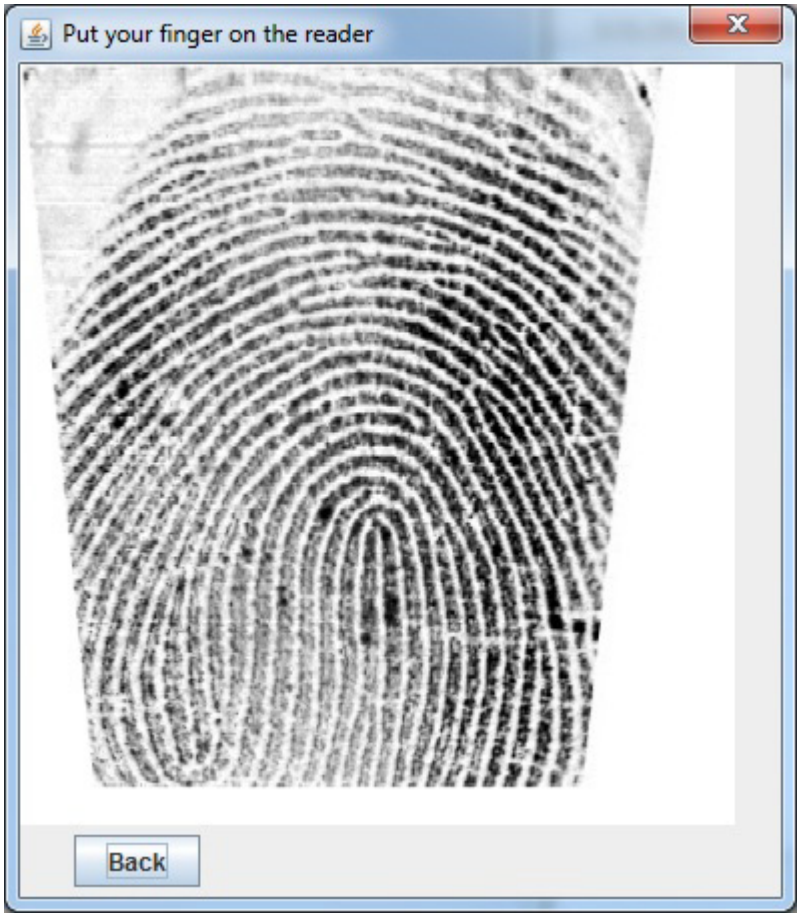


To exit identification mode, click on the **Back** button.

Using the Capture and Streaming Feature

The sample application also demonstrates the streaming feature (on fingerprint readers that support that feature). To test capturing or streaming, from the main window, click on the **Run capture** or **Run streaming** button.

This places the reader into capture/streaming mode and immediately the results are displayed in the window. For streaming mode, the window then becomes like a live window on the reader as it streams results. Placing a finger on the reader displays the streamed fingerprint, as shown below.



For streaming, removing the finger shows a blank stream.

To exit capture / streaming mode, click on **Back**.