Developing Applications with JavaScript

THIS CHAPTER PROVIDES INFORMATION NECESSARY FOR DEVELOPING WEB APPLICATIONS USING JAVASCRIPT AND THE U.ARE.U SDK.

Pre-Requisites

This chapter assumes that you have a working knowledge of JavaScript and that you know how to develop for modern internet browsers.

System Requirements

Development System

- Microsoft Windows XP Professional or higher, 32-bit or 64-bit
- The U.are.U. SDK for Windows, version 3.0 or above
- An ECMAScript 6 compatible shim such as the open source es6-shim (https://github.com/paulmillr/es6-shim)
- One of the following web browsers
  - Google Chrome
  - Mozilla Firefox - If installed after the SDK, reboot before running the JavaScript sample application or any applications you develop using JavaScript and this SDK
  - Internet Explorer or Microsoft Edge - The included JavaScript sample application and any other applications you develop using JavaScript and this SDK must be hosted on either an Apache TomCat web server or Microsoft Web Server (IIS) in order to work correctly with the Internet Explorer or Microsoft Edge browsers.
- Your developed application must allow calls to the U.are.U SDK by allowing *https://localhost:* *wss://localhost:** in the connect-src policy directive of its Content Security Policy (CSP).

For specific supported browser versions, see the readme.txt file included with this SDK.

Target System

The included JavaScript sample application, and any web application created using JavaScript with the U.are.U. SDK for Windows, should run successfully on any system meeting the same minimum requirements stated above for the development system. Note that a USB port is also required in order to connect a fingerprint reader for capturing fingerprints.

Recommended minimum hardware for Windows machines is as follows.

- 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

Approximate file sizes are:

Function	x86	x64
Capture runtime (drivers + SDK layer) with fingerprint recognition	18 MB	17 MB

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 may work, but response time may be less than optimal.

Installation

Install the U.are.U SDK as described in the chapter *Installing on the Development and Target Systems* on page 5. The DigitalPersona Authentication Service is part of the Typical installation, and is required for JavaScript development.

1f using Internet Explorer or Microsoft Edge for development or testing, you will need access to either an Apache TomCat web server or a Microsoft Web Server (IIS).

Folder structure

The JavaScript sample application folder structure for development is as follows, located under the U.are.U SDK\Windows\Samples\UareUSampleWEB folder.

Name	Date modified	Type	Size
css	3/31/2016 12:29 AM	File folder	
images	3/31/2016 12:34 AM	File folder	
lib	3/31/2016 12:29 AM	File folder	
scripts	3/31/2016 12:29 AM	File folder	
app.css	3/30/2016 11:20 PM	Cascading Style S...	2 KB
app.js	3/31/2016 10:16 AM	JScript Script File	10 KB
index.html	3/30/2016 11:20 PM	Chrome HTML Do...	6 KB

The sample application can also be run from the index.html file located in the U.are.U SDK\Windows\Samples\Bin\WEB folder.

Starting the Javascript sample application

Chrome or Firefox - To start the sample application, simply double-click the provided *index.html* file, or drag and drop the file onto the browser icon.

Internet Explorer or *Microsoft Edge* - To start the sample application, upload the `Samples/UareUJavaScript` folder to an Apache TomCat web server or Microsoft Web Server (IIS).

Uploading to a Tomcat server

1 Copy the `content of the` U.are.U SDK\Windows\Samples\UareUSampleWEB folder to the Tomcat `webapps` folder.

2 Restart the Tomcat server.

3 Open Internet Explorer or Microsoft Edge and enter the following location in the address bar.

   `http://localhost:8080/sampleapplication/`

4 Note that 8080 is the default port for Tomcat, but your installation may vary.

Uploading to a Windows Web Server (IIS)

1 Open IIS Manager.

2 In the Connections pane, expand the Sites node.

3 Right-click the *Default Web Site* or other site where you want to create the application.

4 Select *Add Application*.

5 Provide any necessary configuration information and the *Physical Path* to the U.are.U SDK\Windows\Samples\UareUSampleWEB folder.

6 Restart the Web Server (IIS).

The JavaScript Sample Application

The U.are.U SDK includes a sample application to demonstrate the features of the SDK when using the JavaScript API. The sample application is located in the `Samples` folder.

The application demonstrates the following features of the SDK.

- Enumerate fingerprint readers
- Select a fingerprint reader to be used with fingerprint capture
- Get the characteristics of a fingerprint reader
- Start fingerprint capture using a selected fingerprint reader
- Stop fingerprint capture
- Receive captured fingerprints in the following formats: PNG image, WSQ, Intermediate and Raw.
- Receive activity notifications from the fingerprint reader
- Receive an indication of the quality of the fingerprint capture
- Monitor device connection and disconnection

Selecting a reader

When you launch the application, the appearance of the main screen will vary depending on whether a single fingerprint reader is connected to the computer, or whether multiple fingerprint readers are connected.
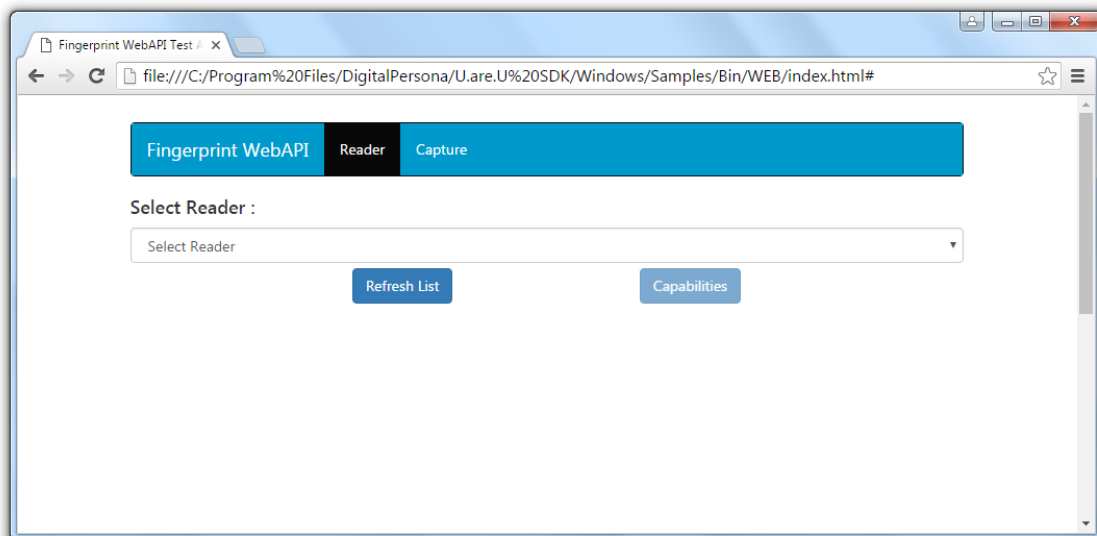
**With no fingerprint reader connected**
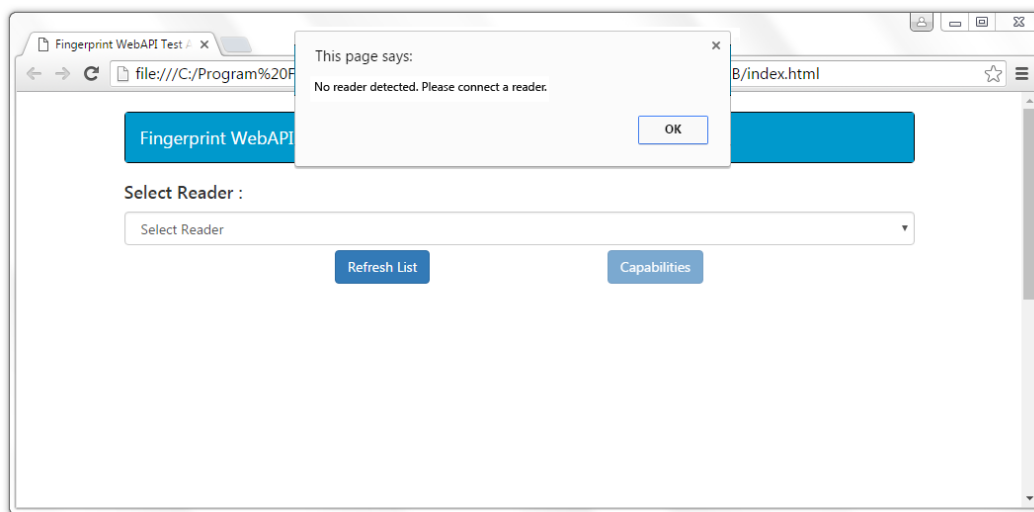
With a single fingerprint reader connected - The reader is automatically selected and the *Capture* tab is displayed.
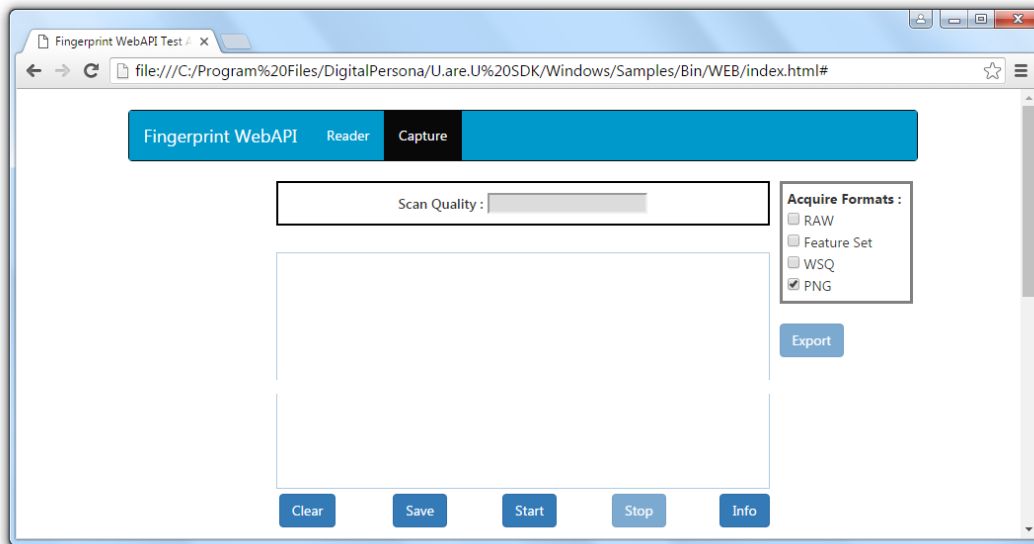
With multiple fingerprint readers connected - Select a fingerprint reader from the dropdown menu.


To see the reader capabilities, click the *Capabilities* button. The capabilities of the reader will be displayed, as shown in the image below. Click the *Close* button to continue.
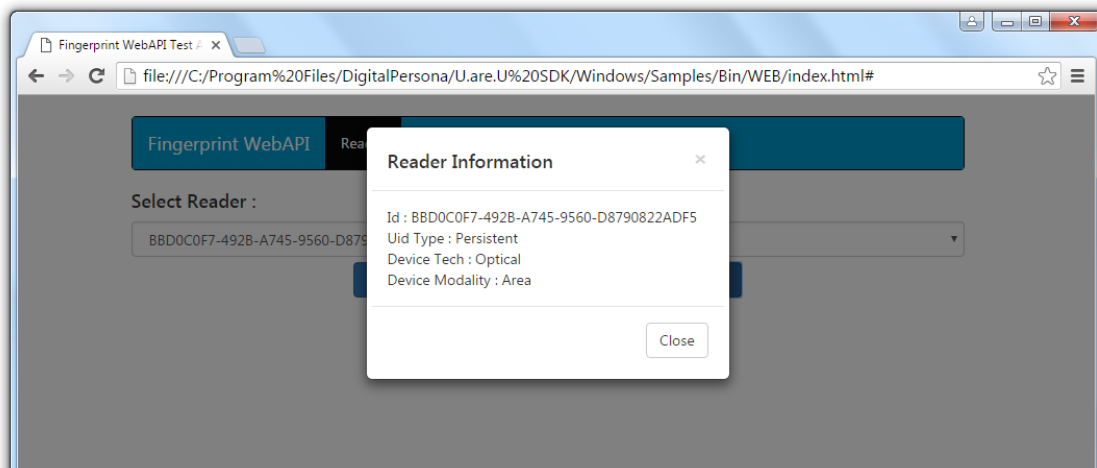
Capturing a fingerprint

On the *Capture* tab, click *Start* to begin fingerprint capture. An image of the captured fingerprint will be displayed in the middle of the web page. The *Start* button will be dimmed and the *Stop* button will become active.
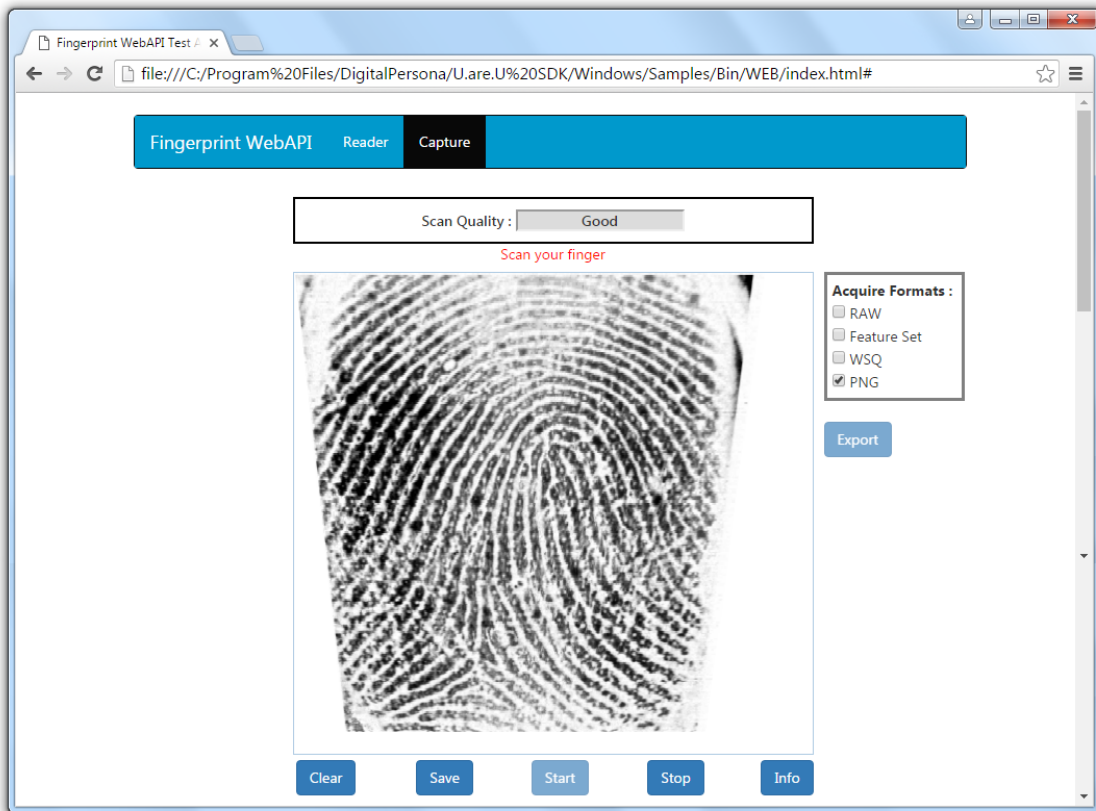
Place a finger on the reader to capture a fingerprint. Fingerprints can be captured until the *Stop* button is clicked. Indications of the Scan Quality will be displayed in the field below the Fingerprint WebAPI heading. Additional instructions or error messages will be displayed just below the Scan Quality area.

Saving a fingerprint thumbprint

After the first fingerprint is successfully captured, you can save a thumbnail of the fingerprint by clicking the *Save* button. Saved thumbnails are stored in the browser cache and displayed as smaller images below the row of buttons. This area will display up to five thumbnails at a time, and will then clear the area when the sixth image is saved.

Exporting fingerprint data

After a fingerprint is successfully captured, you can export the fingerprint data to your browser's default download folder, which in most cases will be the standard *Downloads* folder.

You can save the fingerprint data in one of the following file formats by selecting the format and clicking the *Export button*. Note that the *Export* button is not active until a fingerprint has been captured and is being displayed in the main fingerprint display area.

- **RAW** - Data format is a raw (unprocessed) biometric sample, also referred to as a Fingerprint Image in most biometric documentation.
- **Feature Set** - Data format is a partially processed (aka *Intermediate*) biometric sample, also referred to as a Feature Set in most biometric documentation.
- **WSQ** - Data format is a fully processed and compressed biometric sample, also referred to as a Fingerprint Template in most biometric documentation. To view this format, open the exported .wsq file in a WSQ viewer such as the free one available from Cognaxon.com.
- **PNG** - Data format is a .PNG image file. This is the default format if no other format has been selected.