

Oracle® Documaker

Unicode Reference Guide

12.5.0

Part number: E73730-01

April 2016

Copyright © 2009, 2016, Oracle and/or its affiliates. All rights reserved.

The Programs (which include both the software and documentation) contain proprietary information; they are provided under a license agreement containing restrictions on use and disclosure and are also protected by copyright, patent, and other intellectual and industrial property laws. Reverse engineering, disassembly, or decompilation of the Programs, except to the extent required to obtain interoperability with other independently created software or as specified by law, is prohibited.

The information contained in this document is subject to change without notice. If you find any problems in the documentation, please report them to us in writing. This document is not warranted to be error-free. Except as may be expressly permitted in your license agreement for these Programs, no part of these Programs may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose.

If the Programs are delivered to the United States Government or anyone licensing or using the Programs on behalf of the United States Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS

Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the Programs, including documentation and technical data, shall be subject to the licensing restrictions set forth in the applicable Oracle license agreement, and, to the extent applicable, the additional rights set forth in FAR 52.227-19, Commercial Computer Software--Restricted Rights (June 1987). Oracle

USA, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

The Programs are not intended for use in any nuclear, aviation, mass transit, medical, or other inherently dangerous applications. It shall be the licensee's responsibility to take all appropriate fail-safe, backup, redundancy and other measures to ensure the safe use of such applications if the Programs are used for such purposes, and we disclaim liability for any damages caused by such use of the Programs.

The Programs may provide links to Web sites and access to content, products, and services from third parties. Oracle is not responsible for the availability of, or any content provided on, third-party Web sites. You bear all risks associated with the use of such content. If you choose to purchase any products or services from a third party, the relationship is directly between you and the third party. Oracle is not responsible for: (a) the quality of third-party products or services; or (b) fulfilling any of the terms of the agreement with the third party, including delivery of products or services and warranty obligations related to purchased products or services. Oracle is not responsible for any loss or damage of any sort that you may incur from dealing with any third party. Oracle, JD Edwards, and PeopleSoft are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

THIRD PARTY SOFTWARE NOTICES

This product includes software developed by Apache Software Foundation (<http://www.apache.org/>).

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2000-2009 The Apache Software Foundation. All rights reserved.

Apache Commons Math Copyright 2001-2008 The Apache Software Foundation

This product includes software translated from the odex Fortran routine developed by E. Hairer and G. Wanner and distributed under the following license:

Copyright (c) 2004, Ernst Hairer

Apache License Version 2.0, January 2004 (<http://www.apache.org/licenses/LICENSE-2.0>)

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE VISIGOTH SOFTWARE SOCIETY OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache Commons Codec Copyright 2002-2009 The Apache Software Foundation
Copyright (C) 2002 Kevin Atkinson (kevina@gnu.org)

Apache Commons Pool
Copyright 2001-2011 The Apache Software Foundation

Apache Jakarta Commons Lang
Copyright 2001-2007 The Apache Software Foundation

Apache Jakarta Commons FileUpload
Copyright 2002-2006 The Apache Software Foundation

Apache Commons CLI
Copyright 2001-2009 The Apache Software Foundation

Apache Commons Collections
Copyright 2001-2008 The Apache Software Foundation

Apache Commons Logging
Copyright 2003-2013 The Apache Software Foundation

Barcode4J
Copyright 2002-2010 Jeremias Märki
Copyright 2005-2006 Dietmar Bürkle
Portions of this software were contributed under section 5 of the
Apache License. Contributors are listed under: (<http://barcode4j.sourceforge.net/contributors.html>)

Copyright 2002-2010 The Apache Software Foundation

This product includes software distributed via the Berkeley Software Distribution (BSD) and licensed for binary distribution under the Generic BSD license.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2009, Berkeley Software Distribution (BSD)

This product includes software developed by the JDOM Project (<http://www.jdom.org/>).

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE JDOM AUTHORS OR THE PROJECT CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (C) 2000-2004 Jason Hunter & Brett McLaughlin. All rights reserved.

This product includes software developed by the Massachusetts Institute of Technology (MIT).

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright © 2009 MIT

This product includes software developed by Jean-loup Gailly and Mark Adler. This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Copyright (c) 1995-2005 Jean-loup Gailly and Mark Adler

This software is based in part on the work of the Independent JPEG Group (<http://www.ijg.org/>).

This product includes software developed by the Dojo Foundation (<http://dojotoolkit.org>).

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER

CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2005-2009, The Dojo Foundation. All rights reserved.

This product includes software developed by W3C.

Copyright © 2009 World Wide Web Consortium, (Massachusetts Institute of Technology, Institut National de Recherche en Informatique et en Automatique, Keio University). All Rights Reserved. (<http://www.w3.org/Consortium/Legal/>)

This product includes software developed by Mathew R. Miller (<http://www.bluecreststudios.com>).

Copyright (c) 1999-2002 ComputerSmarts. All rights reserved.

This product includes software developed by Shaun Wilde and distributed via Code Project Open License (<http://www.codeproject.com>).

THIS WORK IS PROVIDED "AS IS", "WHERE IS" AND "AS AVAILABLE", WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OR GUARANTEES. YOU, THE USER, ASSUME ALL RISK IN ITS USE, INCLUDING COPYRIGHT INFRINGEMENT, PATENT INFRINGEMENT, SUITABILITY, ETC. AUTHOR EXPRESSLY DISCLAIMS ALL EXPRESS, IMPLIED OR STATUTORY WARRANTIES OR CONDITIONS, INCLUDING WITHOUT LIMITATION, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF TITLE OR NON-INFRINGEMENT, OR THAT THE WORK (OR ANY PORTION THEREOF) IS CORRECT, USEFUL, BUG-FREE OR FREE OF VIRUSES. YOU MUST PASS THIS DISCLAIMER ON WHENEVER YOU DISTRIBUTE THE WORK OR DERIVATIVE WORKS.

This product includes software developed by Chris Maunder and distributed via Code Project Open License (<http://www.codeproject.com>).

THIS WORK IS PROVIDED "AS IS", "WHERE IS" AND "AS AVAILABLE", WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OR GUARANTEES. YOU, THE USER, ASSUME ALL RISK IN ITS USE, INCLUDING COPYRIGHT INFRINGEMENT, PATENT INFRINGEMENT, SUITABILITY, ETC. AUTHOR EXPRESSLY DISCLAIMS ALL EXPRESS, IMPLIED OR STATUTORY WARRANTIES OR CONDITIONS, INCLUDING WITHOUT LIMITATION, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF TITLE OR NON-INFRINGEMENT, OR THAT THE WORK (OR ANY PORTION THEREOF) IS CORRECT, USEFUL, BUG-FREE OR FREE OF VIRUSES. YOU MUST PASS THIS DISCLAIMER ON WHENEVER YOU DISTRIBUTE THE WORK OR DERIVATIVE WORKS.

This product includes software developed by PJ Arends and distributed via Code Project Open License (<http://www.codeproject.com>).

THIS WORK IS PROVIDED "AS IS", "WHERE IS" AND "AS AVAILABLE", WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OR GUARANTEES. YOU, THE USER, ASSUME ALL RISK IN ITS USE, INCLUDING COPYRIGHT INFRINGEMENT, PATENT INFRINGEMENT, SUITABILITY, ETC. AUTHOR EXPRESSLY DISCLAIMS ALL EXPRESS, IMPLIED OR STATUTORY WARRANTIES OR CONDITIONS, INCLUDING WITHOUT LIMITATION, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF TITLE OR NON-INFRINGEMENT, OR THAT THE WORK (OR ANY PORTION THEREOF) IS CORRECT, USEFUL, BUG-FREE OR FREE OF VIRUSES. YOU MUST PASS THIS DISCLAIMER ON WHENEVER YOU DISTRIBUTE THE WORK OR DERIVATIVE WORKS.

This product includes software developed by Erwin Tratar. This source code and all accompanying material is copyright (c) 1998-1999 Erwin Tratar. All rights reserved.

THIS SOFTWARE IS PROVIDED "AS IS" WITHOUT EXPRESS OR IMPLIED WARRANTY. USE IT AT YOUR OWN RISK! THE AUTHOR ACCEPTS NO LIABILITY FOR ANY DAMAGE/LOSS OF BUSINESS THAT THIS PRODUCT MAY

CAUSE.

This product includes software developed by Sam Leffler of Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE

Copyright (c) 1988-1997 Sam Leffler
Copyright (c) 1991-1997 Silicon Graphics, Inc.

This product includes software developed by Guy Eric Schalnat, Andreas Dilger, Glenn Randers-Pehrson (current maintainer), and others. (<http://www.libpng.org>)

The PNG Reference Library is supplied "AS IS". The Contributing Authors and Group 42, Inc. disclaim all warranties, expressed or implied, including, without limitation, the warranties of merchantability and of fitness for any purpose. The Contributing Authors and Group 42, Inc. assume no liability for direct, indirect, incidental, special, exemplary, or consequential damages, which may result from the use of the PNG Reference Library, even if advised of the possibility of such damage.

This product includes software components distributed by the Cryptix Foundation.

THIS SOFTWARE IS PROVIDED BY THE CRYPTIX FOUNDATION LIMITED AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE CRYPTIX FOUNDATION LIMITED OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE

Copyright © 1995-2005 The Cryptix Foundation Limited. All rights reserved.

This product includes software components distributed by Sun Microsystems.

This software is provided "AS IS," without a warranty of any kind. ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE HEREBY EXCLUDED. SUN AND ITS LICENSORS SHALL NOT BE LIABLE FOR ANY DAMAGES SUFFERED BY LICENSEE AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE OR ITS DERIVATIVES. IN NO EVENT WILL SUN OR ITS LICENSORS BE LIABLE FOR ANY LOST REVENUE, PROFIT OR DATA, OR FOR DIRECT, INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF THE USE OF OR INABILITY TO USE SOFTWARE, EVEN IF SUN HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Copyright (c) 1998 Sun Microsystems, Inc. All Rights Reserved.

This product includes software components distributed by Dennis M. Sosnoski.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2003-2007 Dennis M. Sosnoski. All Rights Reserved

It also includes materials licensed under Apache 1.1 and the following XPP3 license

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2002 Extreme! Lab, Indiana University. All Rights Reserved

This product includes software components distributed by CodeProject. This software contains material that is © 1994-2005 The Ultimate Toolbox, all rights reserved.

This product includes software components distributed by Geir Landro.

Copyright © 2001-2003 Geir Landro (drop@destroydrop.com) JavaScript Tree - www.destroydrop.com/hjavadscripts/tree/version 0.96

This product includes software components distributed by the Hypersonic SQL Group.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE

Copyright © 1995-2000 by the Hypersonic SQL Group. All Rights Reserved

This product includes software components distributed by the International Business Machines Corporation and others.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 1995-2009 International Business Machines Corporation and others. All rights reserved.

This product includes software components distributed by the University of Coimbra.

University of Coimbra distributes this software in the hope that it will be useful but DISCLAIMS ALL WARRANTIES WITH REGARD TO IT, including all implied warranties of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. In no event shall University of Coimbra be liable for any special, indirect or consequential damages (or any damages whatsoever) resulting from loss of use, data or profits, whether in an action of contract, negligence or other tortious action, arising out of or in connection with the use or performance of this software.

Copyright (c) 2000 University of Coimbra, Portugal. All Rights Reserved.

This product includes software components distributed by Steve Souza.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2002, Steve Souza (admin@jamonapi.com). All Rights Reserved.

This product includes software developed by the OpenSymphony Group (<http://www.opensymphony.com/>.)"

Copyright © 2001-2004 The OpenSymphony Group. All Rights Reserved.

PANTONE (R) Colors displayed in the software application or in the user documentation may not match PANTONE-identified standards. Consult current PANTONE Color Publications for accurate color. PANTONE(R) and other Pantone LLC trademarks are the property of Pantone LLC. (C) Pantone LLC, 2011.

Pantone LLC is the copyright owner of color data and/or software which are licensed to Oracle to distribute for use only in combination with Oracle Documaker. PANTONE Color Data and/or Software shall not be copied onto another disk or into memory unless part of the execution of Oracle Documaker.

This product includes software developed by Dave Gamble and distributed via SourceForge.net (<http://sourceforge.net/projects/cjson/>)

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2009 Dave Gamble

This product includes software developed by the Zxing Project.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2013 Zxing Project (<https://github.com/zxing/zxing>)

This product includes software developed by the Wintertree software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

The Sentry Spelling-Checker Engine Copyright (c) 1993 Wintertree (<https://wintertree-software.com/dev/ssce/windows/index.html>)

Freemarker Copyright (c) 2003 The Visigoth Software Society. All rights reserved.

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE VISIGOTH SOFTWARE SOCIETY OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software consists of voluntary contributions made by many individuals on behalf of the Visigoth Software Society. For more information on the Visigoth Software Society, please see <http://www.visigoths.org/>

Copyright (c) 2000,2002,2003 INRIA, France Telecom (<http://asm.ow2.org/>) All rights reserved.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright© 2001-2016 ej-technologies GmbH (<https://www.ej-technologies.com/products/install4j/overview.html>) All rights reserved.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This component is distributed with the following third party components: (1) Third party components licensed under EPL v1.0; (2) JARGS (Stephen Purcell); JDOM (Brett McLaughlin & Jason Hunter); and (3) ORO (Apache Software Foundation). Please see EPL v1.0 and applicable components (#2072, 2686, 2074) for restrictions/requirements.

Copyright 2001-2005 (C) MetaStuff, Ltd.(<http://www.dom4j.org>) All Rights Reserved.

THIS SOFTWARE IS PROVIDED BY METASTUFF, LTD. AND CONTRIBUTORS "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL METASTUFF, LTD. OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Little CMS Copyright (c) 1998-2011 (<http://www.littlecms.com/>) All Rights Reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Marti Maria Saguer Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

Copyright (c) 2002-2007, Communications and Remote Sensing Laboratory, Universite catholique de Louvain (UCL), Belgium

Copyright (c) 2002-2007, Professor Benoit Macq

Copyright (c) 2001-2003, David Janssens

Copyright (c) 2002-2003, Yannick Verschuere

Copyright (c) 2003-2007, Francois-Olivier Devaux and Antonin Descampe

Copyright (c) 2005, Herve Drolon, FreeImage Team

All rights reserved.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2004-2013 QOS.ch (<http://www.qos.ch/shop/index>) All rights reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

The Code Project Open License (CPOL) 1.02

Copyright © CodeProject, 1999-2016 (<http://www.codeproject.com/info/cpol10.aspx>) All Rights Reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 1998, 1999, 2000 Thai Open Source Software Center Ltd and Clark Cooper

Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006 Expat maintainers (<http://expat.sourceforge.net/>)

All Rights Reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2002-2010 Atsuhiko Yamanaka, JCraft, Inc. (<http://www.jcraft.com/jsch/>) All rights reserved.

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL JCRAFT, INC. OR ANY CONTRIBUTORS TO THIS SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes software developed by Christian Bach and distributed via (<http://tablesorter.com/docs/>)

All rights reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2007 Christian Bach

This product includes software developed by Dmitry Baranovskiy and distributed via (<https://github.com/DmitryBaranovskiy>)

All rights reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright © 2008 Dmitry Baranovskiy.

This product includes software developed by John Resig and distributed via (<http://jquery.com/>) All rights reserved.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2011 John Resig

Copyright (c) Monotype Imaging, Inc (<http://www.monotype.com/>) All rights reserved.

Monotype®, Albany®, Andale®, Cumberland®, Thorndale®, MT®, WorldType® is a trademark of Monotype Imaging, Inc., registered in U.S. Patent and Trademark Office and certain other jurisdictions.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

CONTENTS

Preface	14
Audience	14
Documentation Accessibility	15
Accessibility of Links to External Web Sites in Documentation	15
TTY Access to Oracle Support Services	15
Related Documents	15
Conventions	15
 Overview	 17
 Enabling Languages	 20
Choosing Languages in Windows 7	20
Selecting the Input Language	23
 Setting Up Unicode Fonts	 25
Licensing Fonts	26
Changing the FXR in an Existing Workspace	27
Creating a new Workspace (without import) using Rel121j.fxr	29
Installing Fonts in Windows	35
 Creating Forms	 36
Adding Unicode Text	36
 Using Documaker Server	 40
Using Variable Fields	40
Mapping Data	41
Viewing UTF-8 Data	43
 Printing Unicode Data	 44
 Writing Custom Rules With UTF-8 Encoded XML	 47
 Frequently Asked Questions	 48
Why does text appear jumbled or change to question marks after you change the font ID?	48

Preface

Oracle Documaker is a powerful, adaptive enterprise document automation platform used worldwide to acquire, create, manage, and present structured, on-demand, and interactive customer communications. It is designed to put power in the hands of business users, giving them the flexibility to create interactive, dynamic documents on demand.

Spanning the entire business lifecycle, Oracle Documaker helps you manage customer communications enterprisewide—including document production, correspondence, and cross-selling campaigns—across all locations and lines of business. The industry-leading platform offers a cost-effective way to address the design, production, and multichannel distribution of a broad spectrum of customer-facing documents. With robust functionality and cutting-edge technical capabilities, it maximizes efficiencies, ensures compliance, and enhances customer service.

Oracle Documaker is based on open standards and integrates easily into today's service-oriented architecture environments. It integrates with any type of system across the enterprise. It can even be integrated with your self-service Web portal so stakeholders can get immediate access to up-to-date information. Oracle Documaker provides the agility and flexibility you need to roll out new products quickly and remain competitive.

Oracle offers proven tools and migration methods, along with experienced, highly trained technical personnel to ease conversions while maintaining the intelligence of your data. Leveraging Oracle Documaker as a single system can dramatically reduce costs. One insurance customer recouped the full cost of an Oracle Documaker implementation within nine months.

Business users can easily author content in Oracle Documaker Studio using Microsoft Word through a plug-in that leverages the power of Documaker Studio in the background. For even more capability, Oracle Documaker's intuitive, easy-to-use design tool, Documaker Studio, empowers business users to create powerful, persuasive content minimizing their reliance on IT, so you can produce dynamic, *intelligent* transactional documents that transmit data and content.

AUDIENCE

Unicode provides a way to enter content in any major language, by assigning a unique number to each character. This document provides an overview of how Documaker uses Unicode. It will be useful to those who want to understand how to use Unicode with your Documaker systems.

DOCUMENTATION ACCESSIBILITY

Accessibility of Links to External Web Sites in Documentation

This documentation may contain links to websites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these websites.

TTY Access to Oracle Support Services

Oracle provides dedicated Text Telephone (TTY) access to Oracle Support Services within the United States of America 24 hours a day, seven days a week. For TTY support, call 800.446.2398.

RELATED DOCUMENTS

For more information, refer to the following Oracle resources:

- Documaker Installation Guide
- Documaker Administration Guide
- Documaker Studio User Guide
- Printers Reference
- Fonts Reference
- Documaker Desktop Installation Guide
- Documaker Desktop Administration Guide
- Documaker Web Enabled Solutions Guide

CONVENTIONS

The following text conventions are used in this document:

Convention	Description
bold	Indicates information you enter.
<i>italic</i>	Indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Indicates commands, URLs, code in examples, and text that appears on the screen.

Chapter 1

Using Unicode

This document discusses how to use Unicode with Documaker and includes information on these topics:

- *Overview* on page 17
- *Enabling Languages* on page 20
- *Setting Up Unicode Fonts* on page 25
- *Creating Forms* on page 36
- *Using Documaker Server* on page 40
- *Printing Unicode Data* on page 44
- *Writing Custom Rules With UTF-8 Encoded XML* on page 47
- *Frequently Asked Questions* on page 48

OVERVIEW

What is Unicode?

Basically, computers understand only numbers. Through various encoding systems (code pages), computers can associate numbers with characters for the purposes of display, printing, and processing text. Originally, encoding systems mapped values in a single byte (values between 0 and 255). Such a system (known as a Single Byte Character Set or SBCS) can only address up to 256 characters. The European Union alone requires several different encodings to cover all its languages.

Far eastern languages (Japanese, Chinese, and so on) contain 1000s of characters – too many for a SBCS. As a result, encoding systems using a mixture of one and two byte values were developed. These encoding systems are known as Double Byte Character Sets (DBCS) but would more accurately be called Multibyte Character Sets (MBCS).

In all, there are literally hundreds of encoding systems. It is not surprising that these encoding systems conflict with one another. That is, the character that should be associated with a number (computers only understand numbers) changes depending on the encoding system.

Unicode was developed to provide a single encoding for all of the world's major languages. Unicode provides a unique number for every character. Industry leaders such as IBM, Microsoft, HP, Sun, Oracle, SAP, Sybase and many others have adopted the Unicode Standard. See the Unicode web site for more information on the Unicode Standard:

www.unicode.org

Related standards

XML (eXtensible Markup Language) is a markup language for interchange of structured data. The Unicode Standard is the reference character set for XML content.

UTF-8 (Unicode Transformation Format, 8-bit encoding form) is a format for writing Unicode data in text files (which are normally processed sequentially, one byte at a time). Unicode values (code points) are written as a sequence of one to four bytes. When writing Unicode data into Documaker text files (FAP files, and so on), the Unicode data will be written in UTF-8 format.

Implementing Unicode

Documaker version 10.2 implemented the first phase of Unicode support. This phase targets the ability to compose, print, and present documents for these Far Eastern languages: Chinese, Japanese, Korean, and Vietnamese and let you...

- Use the Unicode 3.0 character set (two-byte Unicode values)
- Compose FAP files containing Unicode text
- Run the Documaker batch process to assemble documents from FAP files and data that contain Unicode text (on a limited set of platforms)
- Print documents with Unicode (using a limited set of printers)

- Archive, retrieve, and view the documents, including thick-clients on Windows, and also PDF over the Internet

There are some limitations:

- All user interfaces, help, error messages, and documentation for tools and runtimes would still be single-byte ANSI characters, primarily in English.
- The target user is an English-speaking developer that needs to be able to create documents for languages other than English.
- Names of objects (field names, section names, and so on) will still be single-byte ANSI characters, primarily in English. This means you should not convert Unicode text to a field in Documaker Studio.
- Limited formatting or word-wrapping or other syntax (for example - justification) related functions for Unicode text in both editing text and mapping data into multiline text fields.
- No support for vertical writing style used in Japanese newspapers, magazines.
- No support for bi-directional languages (Arabic, Hebrew, and so on) for releases prior to 12.2 and higher. Note, this feature is not backward compatible, so if you generate resources containing text in these languages, they cannot be edited or used by development or runtime systems in a prior Documaker system.
- No support for Unicode data entry in Documaker Desktop.
- Methods supported for input of Unicode data in Documaker Studio data entry check/wip edit plug-in:
 - copy/paste
 - keyboard entry
- A Windows system is needed in order to develop and maintain Unicode forms.
- Production runtime platforms that support Unicode will be Windows and Unix platforms supported by Documaker.
- Printer support for Unicode forms will be through GDI (Windows print drivers), PCL (via PCL6 driver), PDF (via TrueType font support). Unicode support is not available for Metacode print driver.

Documaker version 12.2 and higher includes support for Complex Text Layout (CTL) languages such as Arabic, Hebrew, Thai, Devanagari, and Tamil. A Complex Text Layout (CTL) language is any language which stores text differently from how it is displayed.

Many CTL languages such as Arabic and Hebrew, use bidirectional script. Words and sentences are written from right to left. Some text, such as numbers and Roman-based words, are written from left to right.

Some CTL languages are context dependent. In Arabic, characters can be modified depending on the preceding and following characters. Written Thai uses character clusters, a collection of syllabic elements denoting consonants, vowels, and tonal values.

CTL languages require complex transformations to properly display or print characters. The fundamental characteristics of CTL languages are:

- Bidirectional text--Arabic and Hebrew are written right to left, but numbers and Roman-based characters are written left to right.
- Contextual analysis--each Arabic character has up to four display representations. The representation glyph depends on its position in the text.
- Ligatures--combinations of two or more Arabic characters can form a different, single character.
- Diacritics--diacritical marks placed above, below, or inside vowels and consonants modify their tonal value.
- Character clusters--syllables and cells, especially in Thai, are composed of several alphabetic elements, including vowels, consonants, diacritics, and tone marks.
- Number and date formats--some Arabic countries use Hindi digits rather than Arabic digits, and the Islamic calendar rather than the Western calendar.

Note There are no rules or Document Automation Language (DAL) functions in Documaker to specifically support additional number and date formats for Hindi digits or the Islamic calendar.

Eventually, Oracle Insurance plans to create fully internationalized versions of the products. This involves translating the user interface, online help, error messages, and documentation, for tools and runtimes.

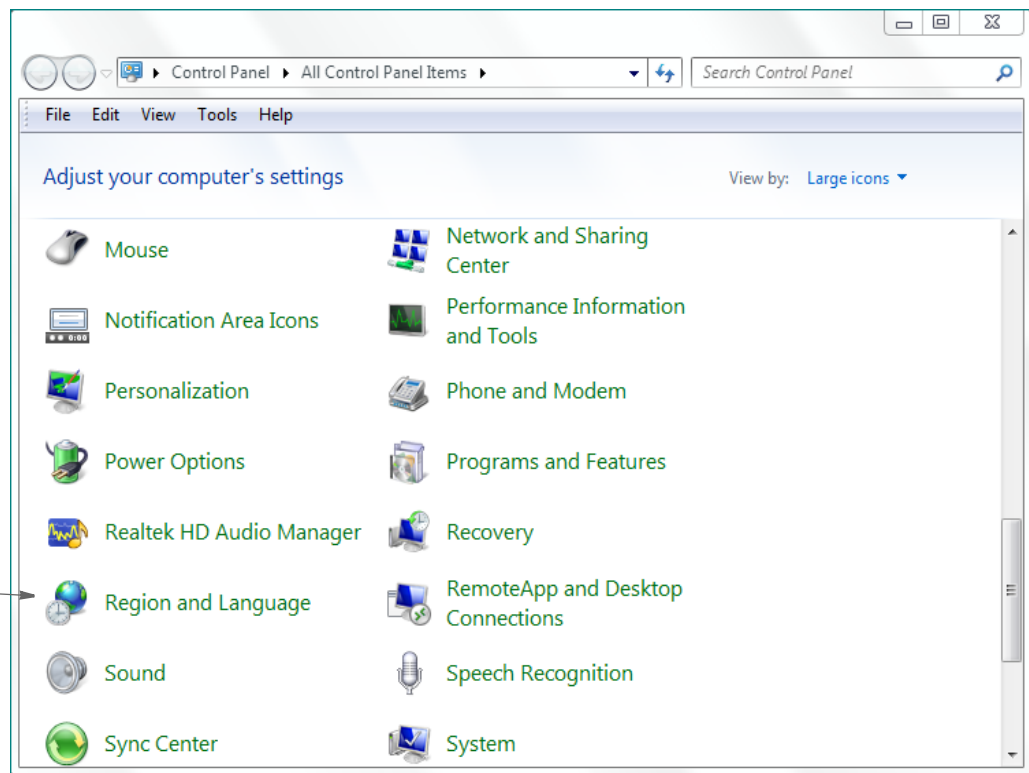
Experience shows that having the runtime version translated is probably more critical than having the development tools translated. Therefore, translation focus will be on the runtime system before the design tools.

ENABLING LANGUAGES

The Documaker Studio and Docucreate tools require Windows to develop Unicode forms. To type characters in the languages you will be using on forms, you may need to enable these languages in Windows.

To enable additional languages in Windows, open the Windows Control Panel and double-click on the Region and Language icon (the name and the icon of the option may vary depending on the version of Windows you are using).

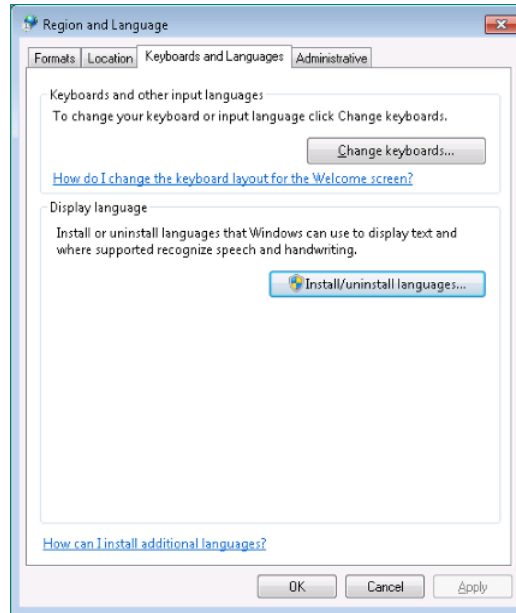
For instance, in Windows 7, double-click here



The remaining steps differ slightly, depending on which version of Windows you use.

Choosing Languages in Windows 7

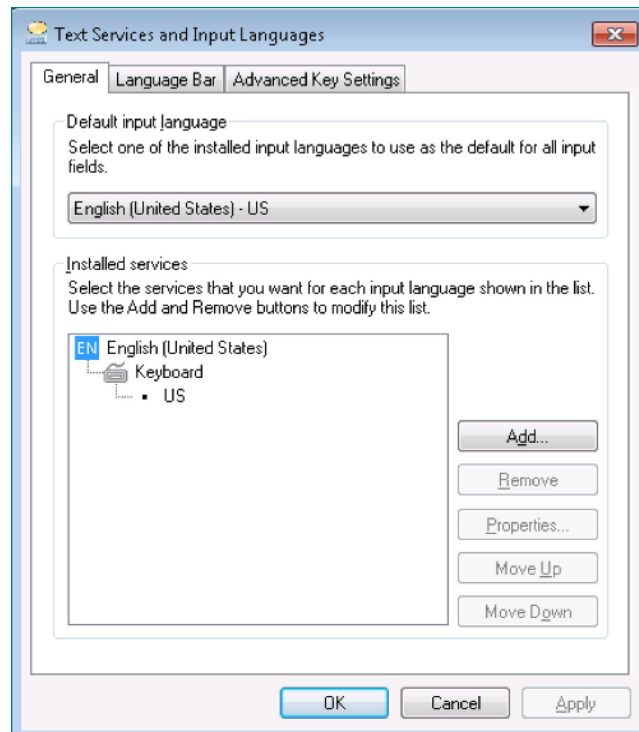
In Windows 7, the Regional and Language Options window appears as shown below. Click the Keyboards and Languages tab. Click on the Install/uninstall languages button to install additional languages.



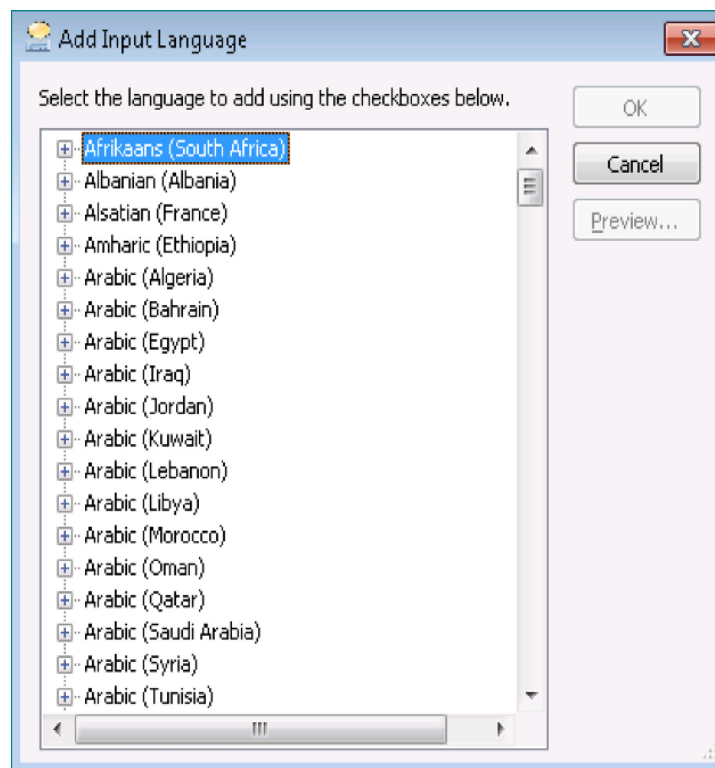
In Windows 7, you can download languages in two ways:

- Using Windows Update. If you're running an Ultimate or Enterprise edition of Windows, you can download available language packs by using Windows Update. Language packs installed using Windows Update provide a fully translated version of Windows dialog boxes, menu items, and help content.
- You can download Language Interface Packs (LIPs) from the Microsoft Download Center. To install a LIP, you will need to have the required parent language installed on your PC.

After installing additional languages, return to the Regional and Language Options window, click on the Keyboards and Languages tab and then click the Change keyboards button to view or change the languages and methods you can use to enter text.

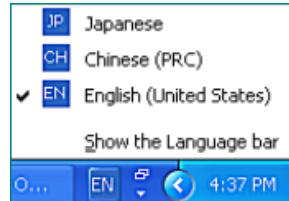


Click Add to add additional languages you want to input. Then select the input language and the keyboard layout/IME (input method editor) you want to use.



SELECTING THE INPUT LANGUAGE

Once you have selected the input languages you want to use, you should test the new input languages in a simple environment such as Microsoft Word. On the task bar, you should see a small icon with the letters, *EN* (assuming your original language for Windows was English), or you may see an icon for a typewriter. If you click on the *EN* or typewriter icon, you will see a list of the input languages now available in Windows.



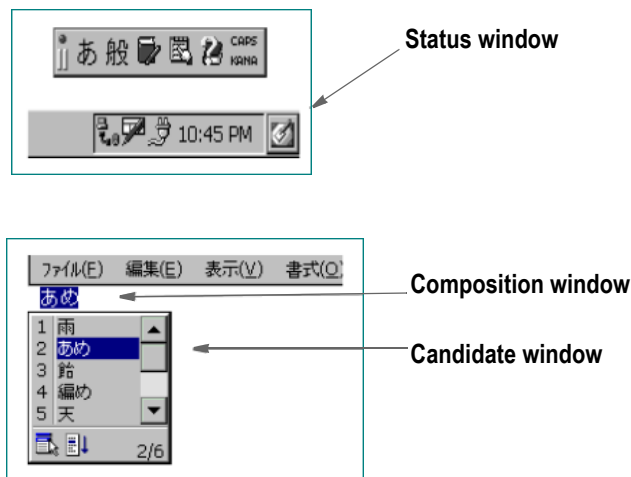
You can change input languages by clicking on the input language icon and using the mouse to select the new input language from the list provided. Alternatively, you can change the current input language by pressing and holding the Alt key and then pressing and releasing the Shift key until the desired input language is selected.

Once you have selected a new input language, you should be able to enter characters in the new input language. With some input languages, you can just use the keyboard as you normally would for English. For example, suppose you had installed and selected Russian as the current input language. If you typed the letters *ABC* on an English style keyboard, you would see these characters:

ФИС

Some input languages (like Japanese and Chinese) use an input method editor (IME) to type characters. The basic operation of an IME is as follows.

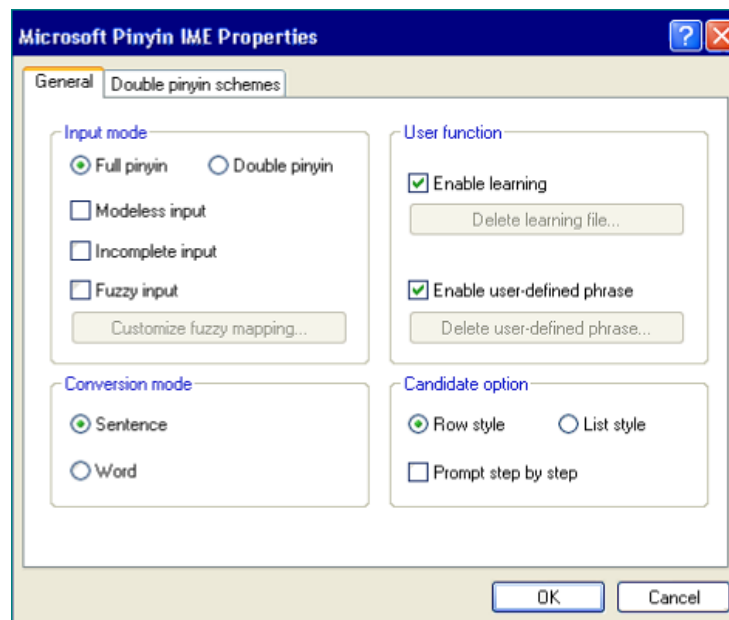
The IME user interface (UI) consists of a Status window, a default Composition window, a Candidate window, and a Guideline window. The appearance varies based on the IME you use.



As you type, characters are built into a composition string. The string appears in the default Composition window. The way you indicate the appropriate characters to use differs, depending on the IME. You can configure how the IME works by right clicking on the EN or typewriter button and selecting Settings.



Highlight the IME you want to configure and click Properties. The Properties window varies based on the IME you use.



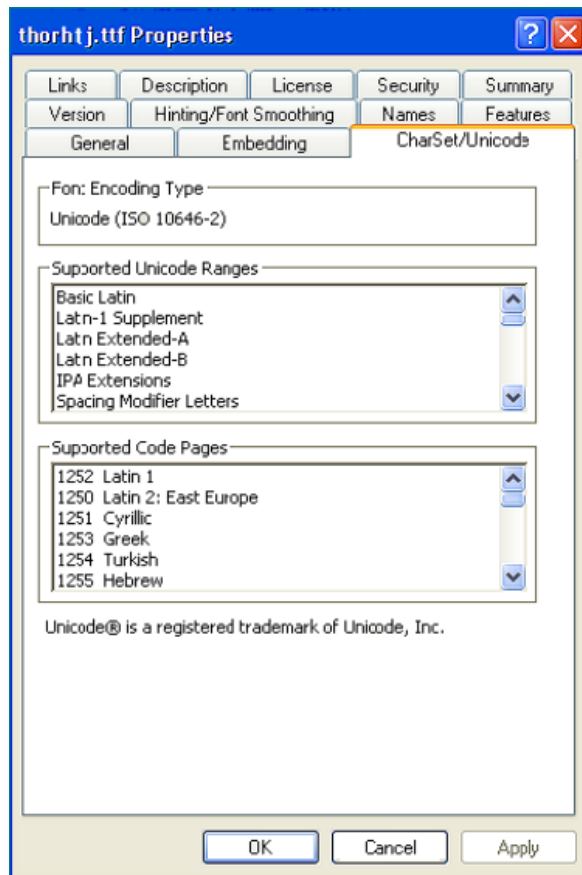
SETTING UP UNICODE FONTS

Most TrueType fonts contain Unicode encoding information. The other types of encoding formats for TrueType fonts are Symbol (used for fonts with graphic symbols), ShiftJIS (Japanese Industrial Standard), Big5 (used in Taiwan and Hong Kong and associated with traditional characters), PRC (used in Singapore and mainland China and associated with simplified characters), Wansung (Korean), and Johab (Korean). Claims of Unicode conformance in a font can be misleading when there is no common understanding about the number of languages supported.

Documaker supports TrueType fonts with Unicode encoding information. One way to determine the Unicode encoding information and languages supported for a TrueType font is to use Microsoft's Font Properties Extension utility. To find this utility, use the Search option at this web site to search for the Font Properties Extension utility:

www.microsoft.com

Once installed, you can right click on a TrueType font to get a properties window such as the following:



LICENSING FONTS

Documaker includes Unicode TrueType fonts in Albany and Andale Duospace fonts. These fonts can be accessed from the [Oracle Software Delivery Cloud](#). See [Documaker Installation Guide](#) for more details on how to locate the correct installation. To incorporate the Unicode fonts, choose the right font set and associated font cross reference file (FXR) that will support the output you need to product. Documaker offers Unicode fonts in Albany and Andale Duospace fonts for Japanese, Simplified Chinese, Traditional Chinese, and Korean languages.

Typeface	Language	File name
Albany WT J	Japanese	ALBANWTJ.TTF
Albany WT K	Korean	ALBANWTK.TTF
Albany WT S	Simplified Chinese	ALBANWTS.TTF
Albany WT T	Traditional Chinese	ALBANWTT.TTF
Andale Duospace WT J	Japanese	ADUOJ.TTF
Andale Duospace WT J Bold	Japanese	ADUOJB.TTF
Andale Duospace WT K	Korean	ADUOK.TTF
Andale Duospace WT K Bold	Korean	ADUOKB.TTF
Andale Duospace WT S	Simplified Chinese	ADUOSC.TTF
Andale Duospace WT S Bold	Simplified Chinese	ADUOSCB.TTF
Andale Duospace WT T	Traditional Chinese	ADUOTC.TTF
Andale Duospace WT T Bold	Traditional Chinese	ADUOTCB.TTF

The reason for different TrueType fonts that target the Japanese, Simplified Chinese, Traditional Chinese, and Korean languages is that the same character is represented using different shaped glyphs. For example,

Simplified Chinese	Traditional Chinese	Japanese	Korean
与	與	与	與
今	今	今	今
全	全	全	全
才	才	才	才

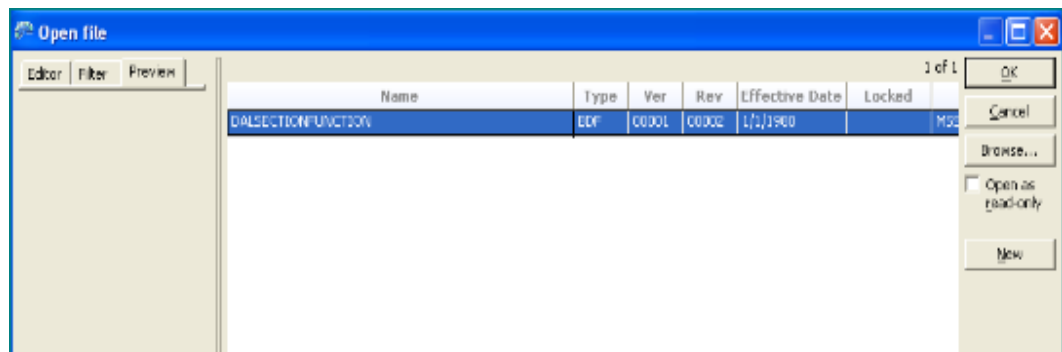
Typically, using the rel121j.fxr and the Japanese font set would support most languages. However, since the shapes of the characters used for certain languages are unique you may need to use one of the other provided fonts/font cross reference files. Once you have selected the desired font set, add these to the Documaker Studio workspace by following these steps:

Changing the FXR in an Existing Workspace

These steps need to be performed by a user with System Administrator rights to the workspace or a user who has permission to access Business Application Definition Manager.

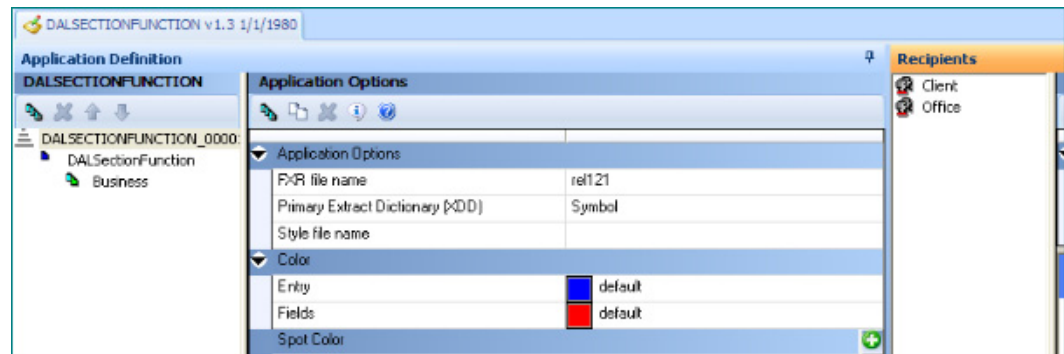
Prerequisites:

- Assumes you have installed Documaker Studio and Documaker JAPAC fonts.
 - Assumes you have an existing Documaker Studio workspace.
1. Copy rel121j.fxr from location where you installed the JAPAC fonts to the \deflib\directory of your Documaker Studio workspace.
 2. Start Documaker Studio.
 3. Click on the button in the upper left corner to display the File menu.
 4. Select Open Workspace.
 5. Browse to the location of your workspace.
 6. Double click on the XXX.DXM file in the root directory of the workspace (where XXX represents the workspace name)
 7. Workspace is opened and the workspace name is displayed in the title bar and the output area.
 8. Check the Business Application Definition file out of the library.
 9. Double click on the Definition icon in the Application tab, the Open file dialog displays



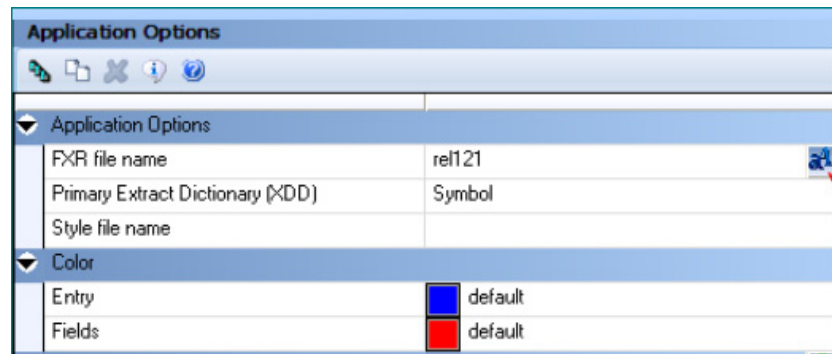
10. The BDF file should be selected\highlighted.
11. Click OK.
12. The BDF file is checked out of the library.

13. Application Options panel is as below.



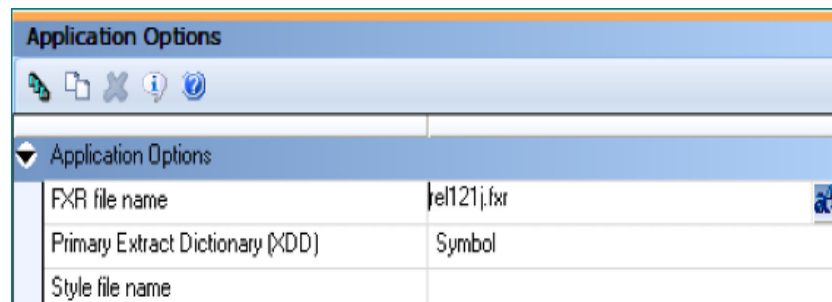
14. Click on the field to right of the label FXR file name.

15. Click on the icon that displays in that field



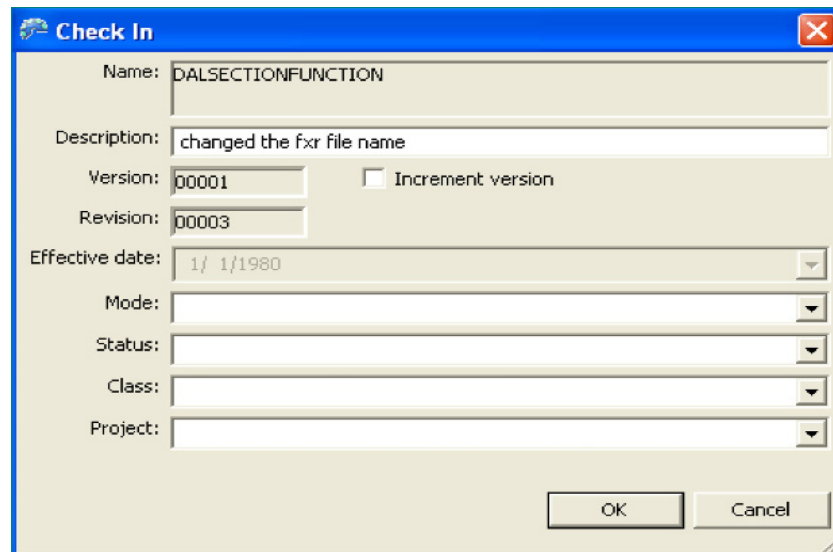
16. The Open dialog displays. Browse to the \deflib directory for this workspace and select the rel121j.fxr, click Open.

17. The FXR file name show should now show rel121j.fxr.



18. Click on the Documaker icon in the upper left corner to display the File menu.

19. Select Check In, the Check In dialog displays

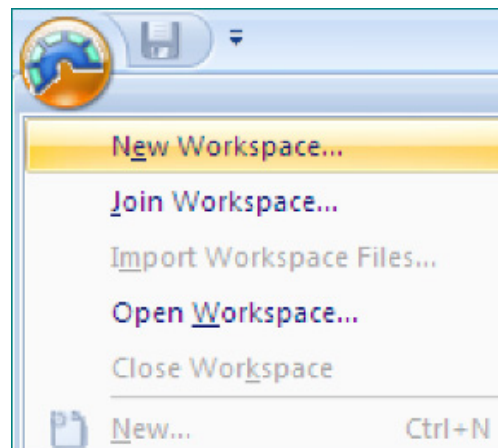


20. Click OK. The BDF is checked back into the library.

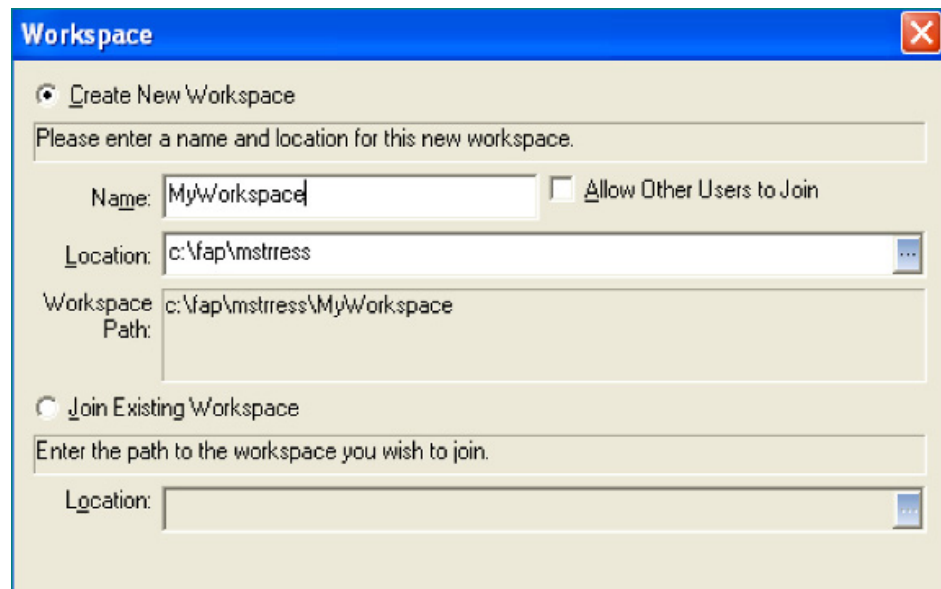
Creating a new Workspace (without import) using Rel121j.fxr

Prerequisites:

- Assumes you have installed Documaker Studio and Documaker JAPAC fonts.
1. Open Documaker Studio.
 2. Click on the Documaker Studio icon in the upper left corner to display the File menu, select New Workspace.



3. Enter a name for your new workspace, change the location as desired and click Next.



Workspace

☒ **Create New Workspace**

Please enter a name and location for this new workspace.

Name: ☐ Allow Other Users to Join

Location:

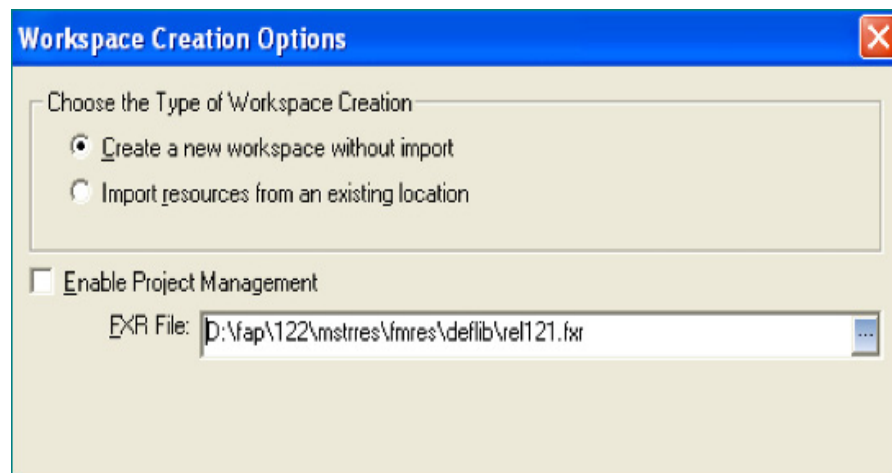
Workspace Path:

☐ **Join Existing Workspace**

Enter the path to the workspace you wish to join.

Location:

4. Select Create a new workspace without import; the FXR file defaults to rel121.fxr located in the FMRES\deflib directory. FMRES is automatically installed when you install Documaker Studio and should not be deleted since it contains resources used by Documaker Studio.



Workspace Creation Options

Choose the Type of Workspace Creation

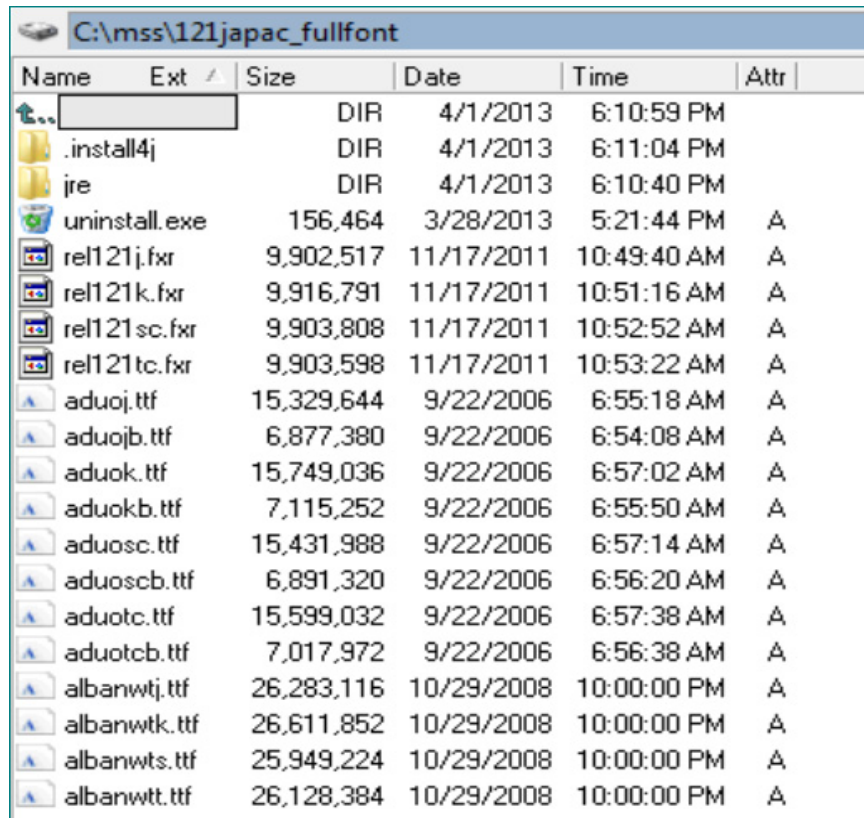
☒ Create a new workspace without import

☐ Import resources from an existing location

☐ Enable Project Management

FXR File:

5. Click on the ellipses in the FXR file option; the Open dialog displays; browse to where JAPAC fonts were installed.



6. Select rel121j.fxr.

Alternatively, you can license TrueType fonts from other vendors, as well as using the fonts supplied with the system. You can license fonts that support a only few languages or you can license fonts that support the entire Unicode 3.0 character set.

There are several legal issues to be aware of before converting fonts from other vendors. Font vendors generally copyright the fonts they create. You can legally convert fonts only if the font vendor grants permission.

The converted font is bound by the same copyright restrictions that apply to the original font. For example, if your license does not permit you to use the font on more than one computer at a time, then you are not permitted to use the converted font on more than one computer at a time. In addition, it may be a copyright violation to copy converted fonts to other platforms running on the same computer.

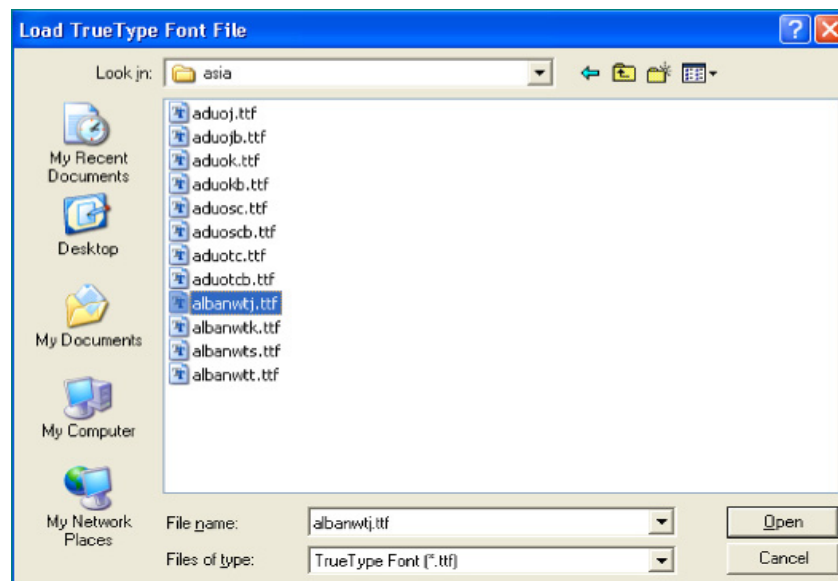
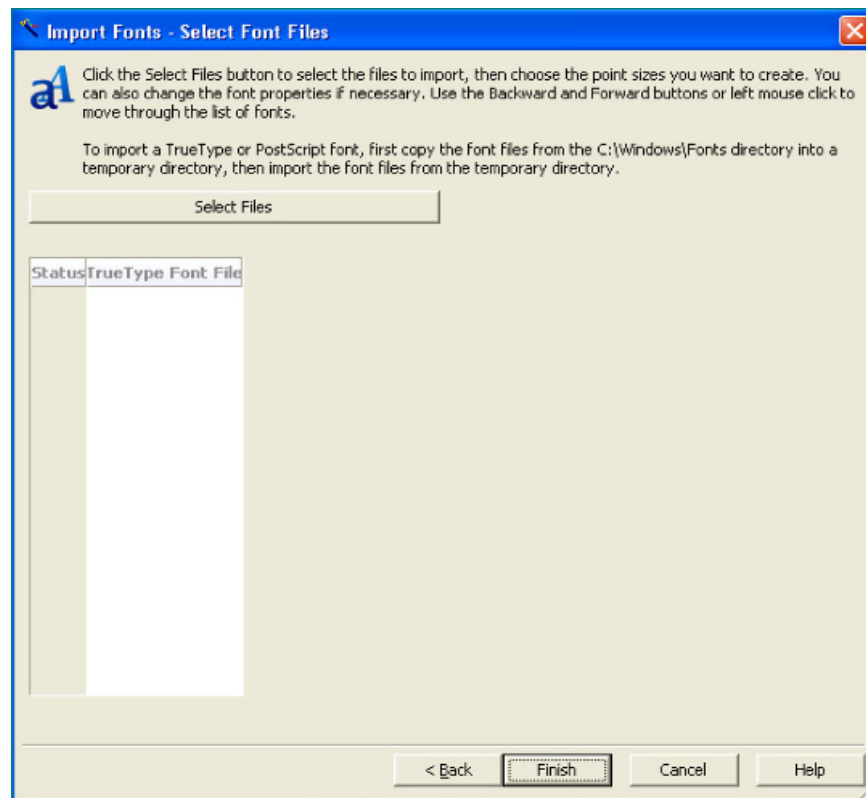
Generally, if you plan to use a TrueType font on more than one machine or plan on permanently installing the font on a printer, your license expressly must give you the right to do so.

If you want to add selected Unicode fonts to your current font set, then you can add Unicode-enabled fonts to a font cross-reference file via Font Manager.

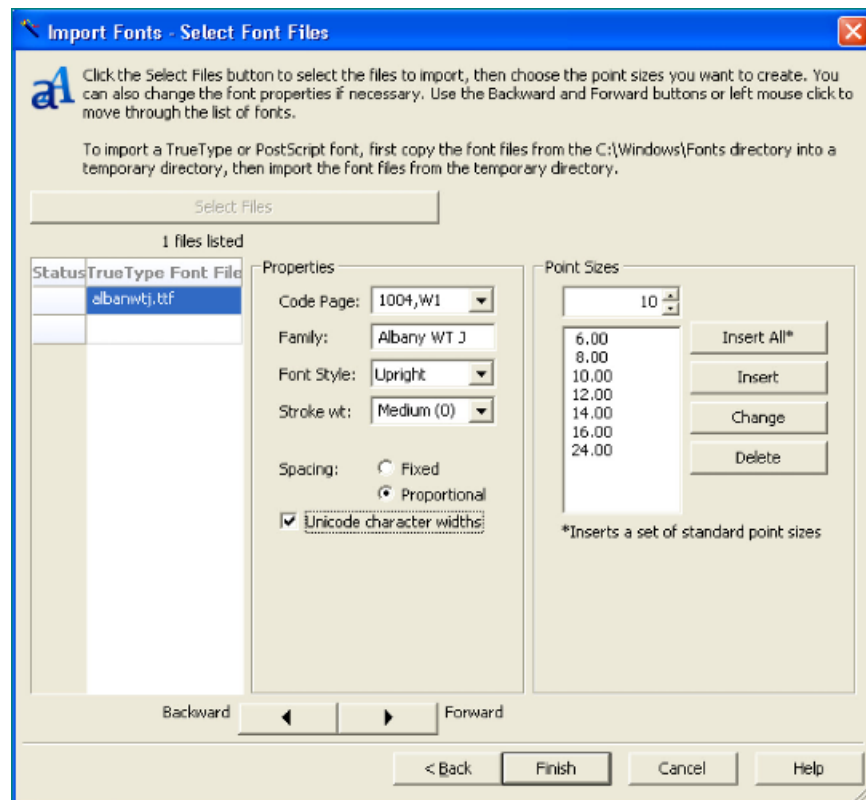
In this example, we will use the Studio Font Manager to create a new FXR file that will contain Unicode-enabled fonts. Note that you need access rights to Font Manager in order to create or modify an FXR. Right click on the Font Manager and select the New option to create a font cross-reference file. The Import Fonts wizard will begin as shown below. Select TrueType font as the Font Type to import and then click the Next button.



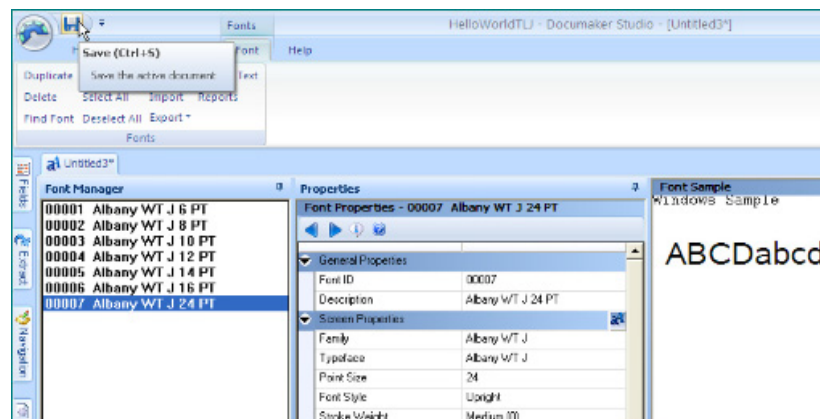
Click on the Select Files button to select the TrueType font(s) to import.



To enable Unicode support for this TrueType font, you must click the Unicode Character Widths field on the Import window. After you have added all of the point sizes you want to use for this TrueType font, click Finish.



After the system has inserted the point sizes you specified for this TrueType font into the font cross-reference, you will see the main font list window again. Click on the disk icon or select Save from the main menu to save your font cross-reference file.



After you have saved your FXR, you'd want to define it in the Application Definition file (*.BDF) in the workspace.

Installing Fonts in Windows

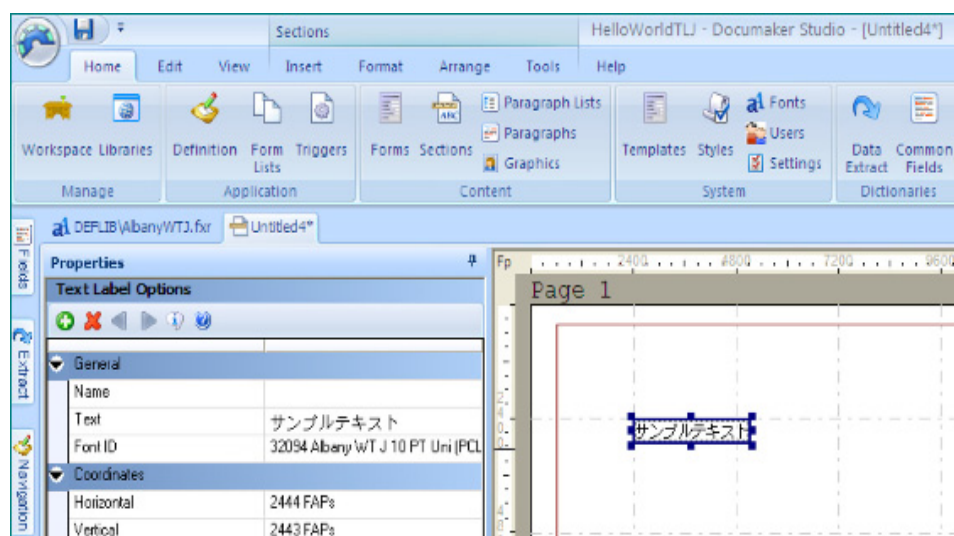
You must install the TrueType font into Windows before you can begin using the TrueType font to design forms. You can install fonts into Windows using the Fonts folder (located in the Control Panel). After opening the Fonts folder, select the File, Install New Font option. The Add Fonts window appears and asks for the drive and directory in which the new TrueType font files are located. When you finish selecting the fonts you want to install, click Ok to install them.

CREATING FORMS

ADDING UNICODE TEXT

After you have created a font cross-reference file that contains Unicode-enabled fonts and specified that font cross-reference in your master resource library. This should be defined in the BDF (requires access rights to BDF). Then, define it in the XRF setting in configuration group in INI.

Make sure the FXR has been copied to the \deflib directory in the workspace, then you are ready to begin creating forms with Unicode characters.



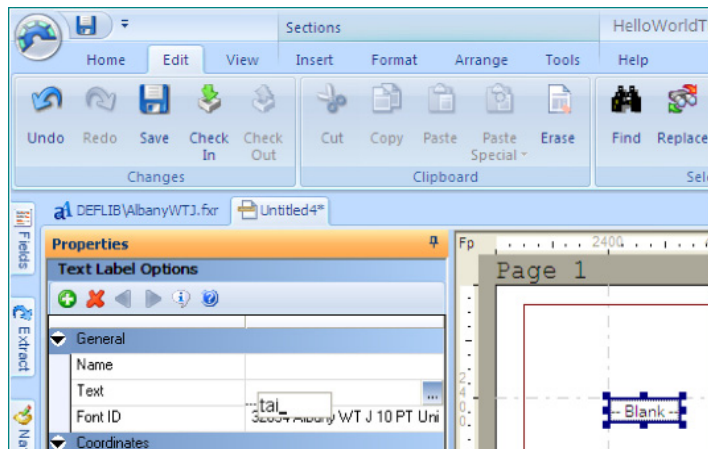
In Documaker Studio, insert a new text label as you normally would. The Text Label Properties window lets you enter Unicode characters.

If the font you have selected for this text label is Unicode-enabled then you will see the letters *Uni* in the font description after the point size.

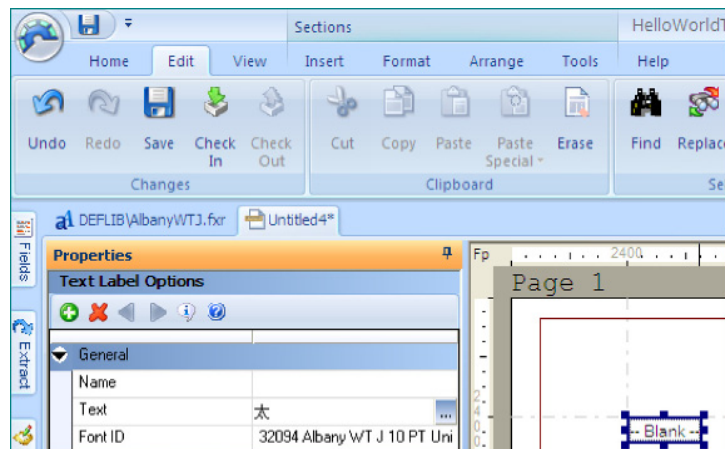
To enter Unicode text into the Text field, select the input method editor (IME) you want to use by clicking the EN icon on the task bar. After you have selected the IME to use, you can begin typing characters for that language. As you accept characters from the IME, they will appear in the Text Label Properties window.

The mechanics of each input method editor (IME) are different so you will need to learn the specifics of the IME you will use. Some input method editors let you type the letters that represent the pronunciation of the word you want to enter. You can also paste the desired text into the text label.

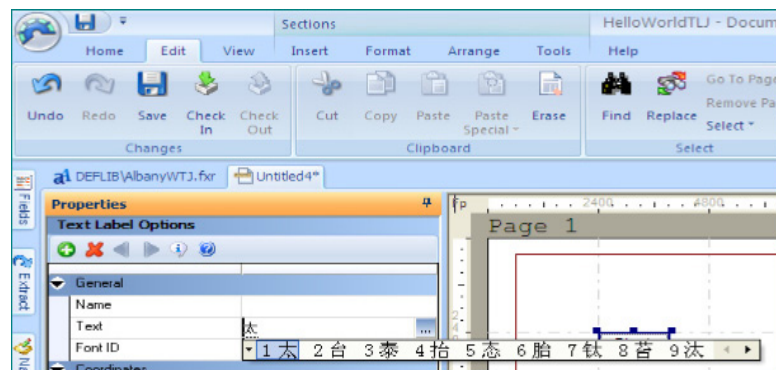
After enabling a Chinese IME, you would begin by typing the letters *tai*. The composition window might appear as follows:



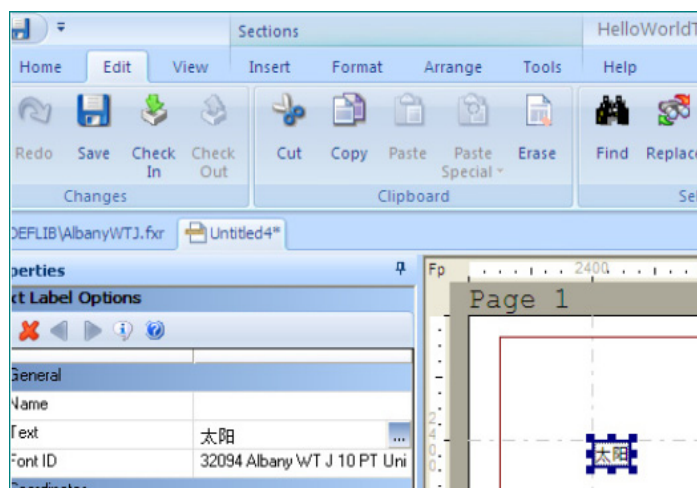
When you press the Spacebar, the letters in composition window disappear and the first character appears in the Text field.



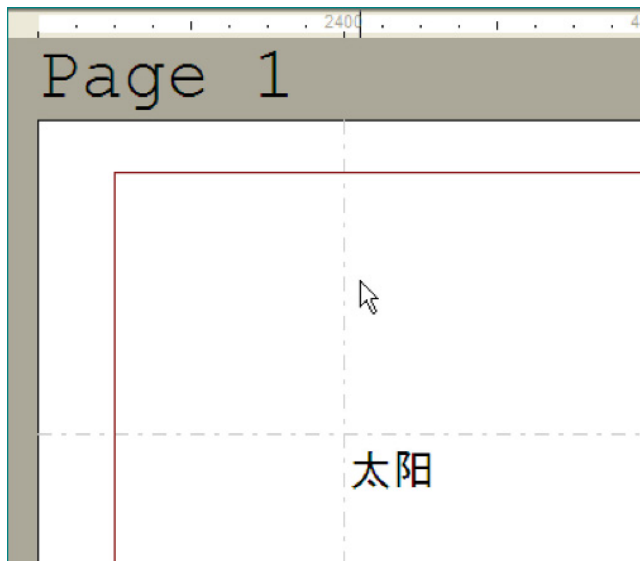
The character displayed is just the first choice of a list of candidate characters that sound similar to *tai*. Some IMEs show you this list of candidate characters immediately and some require you to mouse click on the initial character.



Once you have selected the character you want to use, press the Spacebar to finalize the selection. The display of the character and cursor will change slightly to indicate that the IME has completed the character.



After you finish typing the characters for the text label, click Ok and the characters appear on the form.



Similarly, you can create text areas with characters for the IME you have selected. As you accept characters from the IME, they appear in the text area.

When creating variable fields, you must select a font that is Unicode-enabled. When you have finished composing your form, it might look something like this:

Page 1

新卡保险股份有限公司
SAMPICO INSURANCE COMPANY LIMITED OF CHINA

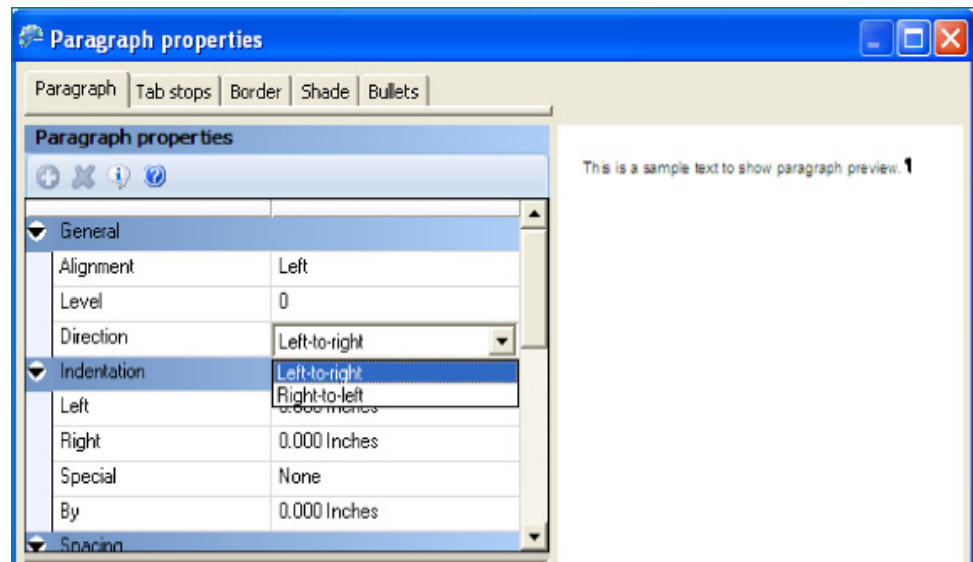
机动车辆保险单 (正本) No: SEONUMBER

被保险人: INSUREDNAME 保单号: POLICYNUM

兹中投保人向本公司投保机动车辆保险, 并同意按约定的保险费, 向保险人缴纳保险费, 保险人按照保险条款及有关规定承担赔偿责任。

号牌号码	AUTOLICEN	厂牌型号	AUTO	AUTONO
发动机号	AUTOVIN	车架号	AUTOBODYNO	
行驶区域	DRIVE	使用性质	USETYPE	保险期限
		保险期限	AUTOCC	从 年 月 日 至 年 月 日
保险价值		保险金额	费率 (%)	基本保险费
INSUREDVALUE	INSUREDAMOUNT	BASICPREMIUM	PREMI-SUBT	P
险 别		保险金额 (按险别)	费率 (按险别)	保险费小计
全车盗抢险	INSUREDAMOUNT	PREMI-R		PREMI #002
车上责任险	INSUREDAMOUNT	PREMI-R		PREMI #003
无过失责任险	INSUREDAMOUNT	PREMI-R		PREMI #004
车辆损失险	INSUREDAMOUNT	PREMI-R		PREMI #005
第三者责任险	INSUREDAMOUNT	PREMI-R		PREMI #006
车辆购置税	INSUREDAMOUNT	PREMI-R		PREMI #007

Text Area : After inserting a text area, select Format, Paragraph to access paragraph properties.



There are 2 direction options – Left to right and Right to Left. Use Right to Left for languages such as Arabic.

USING DOCUMAKER SERVER

Documaker Server uses resources you create using Studio to process information and forms. This processing includes merging external data onto forms, processing data according to rules you set up, creating print-ready files, archiving data and forms, and, if applicable, sending incomplete forms to Work In Progress (WIP) for completion by a user.

USING VARIABLE FIELDS

To enable a variable field for Unicode data, you must use a font ID that is Unicode-enabled. You can tell that a font ID is Unicode-enabled by looking at the characters displayed after the point size in the font description.

If you have also installed the Unicode font as a screen font, you will see a list of Unicode character ranges supported by the screen font. The list of Unicode character ranges is purely informational; selecting one of the entries has no effect. If you only see *ANSI* in the list, the screen font is not Unicode-enabled.

Note The variable field cannot be a multiline text field if the mapped data requires Unicode fonts.

MAPPING DATA

Encoding Standards

Here is a description of the encoding standards supported by the Documaker XML parser.

Use	When the XML document contains
US-ASCII	Only ASCII characters (code points 32-126). ASCII characters are the type-able characters found on a U.S. English keyboard.
ISO-8859-1	A subset of the characters in the Windows code page 1252 (ASCII characters at code points 32-126, plus additional characters at code points 160-255).
UTF-8	Any character supported by Unicode. Unicode 3.0 supports over 49,000 characters.

Note UTF-8 (Unicode Transformation Format, 8-bit encoding form) is a format for writing Unicode data in text files (which are normally processed sequentially, one byte at a time). UTF-8 data can be written into an extract file and subsequently used by Documaker. If no encoding is specified, then an encoding of ISO-8859-1 is assumed.

Once you select a font ID that is Unicode-enabled for a variable field, you can use the AnyToAny rule to have the system format the data when it maps it to a field. This rule uses the XDD (Extract Data Dictionary) format as the source format and whatever you specify as the target field format for the output.

Alternatively, you can use the Move_It rule to map the data into this field. The Move_It rule can move UTF-8 formatted data into a Unicode-enabled variable field.

Note When defining the length of text that you want to pull from the extract file, set the value to 3 times the number of characters to be displayed when the text will be either Japanese or Simplified Chinese. If the text will be a CTL language - Hindi, Urdu, Telugu for example, set the length to 5 times the number of characters to be displayed.

Each field using the Move_It rule to map UTF-8 formatting data into a Unicode-enabled variable field must have a mask of “8” to indicate that the extract data for this field is stored in the UTF-8 format. Here is how you specify the 8 mask (UTF-8) for a variable field in Studio:

Options	
Name	INSRNAME
Parent	INSRDNAME
Offset	101
Length	30
Rule	Move_It
Required	Not
Type	Alphanumeric
Locale	Neutral
Mask	8
Table Index Value	0
Overflow Multiplier	0
Overflow	Default
Conditional	No
Description	
Search Mask is an XPath	No
Data	1.CLIENT.NAME
Unique Identifier	1327530483

Note For information on using these print drivers, see the [Rules Reference](#).

In the preceding dialog, The INSRNAME field uses the Move_It rule and has a mask of 8 to indicate that the extract data is in UTF-8 format.

Now look at the extract file data to make sure this is correct. Note in the window above, the record for INSRNAME is identified by the text, *CLIENT.NAME* starting in column 1. The actual data to be used for INSRNAME is stored at Offset 101 for a length of 30. Here is an example of this record in an extract file:

CLIENT.NAME :å¬æ²»å,fæŠ

The colon (:) indicates column 100, the UTF-8 data follows the colon at column 101.

The UTF-8 data (å¬æ²»å,fæŠ) is not very readable in a regular text editor.

VIEWING UTF-8 DATA

One way to view this data is through the Internet Explorer. By loading the extract file in the browser, the example record in the extract file would appear as follows:

CLIENT.NAME: å--æ²»å fæ®Š

In other words, the UTF-8 data (å--æ²»å fæ®Š) can be interpreted as the following characters:

å--æ²»å fæ®Š

In many cases, the browser will automatically detect the UTF-8 data and display the UTF-8 data appropriately. If it does not, choose View, Encoding and select the Unicode (UTF-8) option.

Keep in mind, it is expected that the extract file that will contain the Unicode data is provided in UTF-8 encoding. While Documaker supports the following encodings: UTF-8, ISO-8859-1, and US-ASCII; only those XML files encoded in UTF-8 can be used for Unicode data processing. Here is an example of an XML header that specifies UTF-8 encoding:

```
<?xml version="1.0" encoding="UTF-8" ?>
```

When Documaker gets data from the extract file using either the ANY2ANY or the MOVE_IT rule, it retrieves the number of characters as indicated in the source field's length property. If the data to be mapped is Japanese or Simplified Chinese, set the length to a value three times the number of characters you want to retrieve from the extract file. If the data to be mapped is a Complex Text Layout (CTL) language such as Hindi, Hebrew and Telugu, set the length to a value five times the number of characters you want to retrieve from the extract file.

If your library resources are maintained with Image Editor instead of Documaker Studio, be sure to set the LoadCordFAP INI option to Yes in your runtime environment when using Unicode variable fields.

PRINTING UNICODE DATA

To print Unicode data, you must have printer fonts and printer drivers that support Unicode. Documaker has three printer drivers that support Unicode: GDI, PCL6, RTF, HTML, Bitmap, MPM and PDF (via TrueType fonts).

Note For information on using these print drivers, see the [Output Management Guide](#).

GDI print driver

The GDI print driver allows you to use a Windows print driver for printing. There is nothing special you need to do to print Unicode using the GDI driver. Since our PostScript driver does not support Unicode yet and our PCL5 driver will not support Unicode, you can use the GDI driver to print to these types of printers.

PCL6 print driver

Documaker includes both the original PCL printer driver, PCLLIB, which supports PCL 5, 5c, and 5e and a new PCL printer driver, PXLLIB, which supports PCL 6.

PCL 6 is a newer version of the PCL language, not a superset of PCL 5. It is a completely different page description language (PDL). PCL 6 is a stack-based protocol (similar to PostScript) composed of attributes and operators that let you define paths, clip paths, pens, brushes, fonts, raster patterns, and so on. PCL 6 also supports 16-bit character codes, which makes it a better choice for supporting Unicode than PCL 5.

Oracle Insurance's PCL6 print driver will support Unicode data, the PCL5 driver will not.

Both the PCL5 and PCL6 print drivers use the PCL printer section of the FXR file. The PCL6 print driver supports PCL5 bitmap fonts and TrueType fonts. You can use PCL5 bitmap fonts for printing ASCII data (SBCS). However, to printing Unicode data, you must use TrueType fonts. To specify a TrueType font in the PCL printer section of the FXR, enter the name of the TrueType font in the Font File field.

The TrueType font must reside in the FontLib directory as specified in your master resource library (MRL).

You must define the necessary printer options for the GenPrint and other Documaker programs to produce PCL 6 output. These options specify PCL 6 output and are located in a PRTType:xxx control group, such as PRTType:PxL. Many of the PCL 5 and PCL 6 printer INI settings are the same.

The following INI options are different for PCL 6:

```
Module           = PXLW32
PrintFunc        = PXLPrint
DownloadFonts    = Yes (internal font selection is not supported)
```

These INI options are not supported for PCL 6:

- SendOverlays
- OverlayPath
- OverlayExt
- FitToWidth

- AdjLeftMargin
- StapleBin
- PJLCommentScript
- PJLCommentOn
- OutputBin
- HighlightColor
- Tray# (where # is 1,2,3, and so on)

Keep in mind...

- Because the PCL 6 driver supports PCL bitmap fonts, you can use existing MRLs. Just remember to change your INI options as discussed above.
- The PCL 5 driver does not support TrueType fonts.
- When printing with a TrueType font using the PCL 6 driver, only the characters used on the form are downloaded into the print stream. This reduces the size of print stream files, particularly if the TrueType font includes support for Asian languages.
- In comparison to the PCL 5 printer driver, the PCL 6 driver has these limitations:
 - No overlay support
 - No support for a separate downloadable font file which contains multiple PCL fonts
 - No internal printer font support
 - Less paper tray support, no INI options to specify which PCL commands to use
 - No INI options to specify PCL commands to output bin or staple bin
 - No highlight color support
 - No comment script support

PDF print driver

The PDF print driver supports Unicode data. Adobe Acrobat supports Unicode in version 4.0 and higher. We recommend you use version 5.0 or higher.

To create a PDF file containing Unicode data, you must specify a TrueType font to be embedded (downloaded) into the PDF file. You cannot use the internal Acrobat fonts or embed PostScript fonts when printing Unicode data; you must embed a TrueType font. The process for embedding a TrueType font into a PDF file is the same as it was before.

Note You may not be able to view archived data containing Complex Text Layout languages, if the archive is retrieved using Documaker releases prior to version 12.2 and higher.

The Unicode data in the NA file will be written out as UTF-8 data. To look at the UTF-8 data as Unicode characters, see *Viewing UTF-8 Data* on page 43.

For Documaker Studio, you could run Test Manager.

WRITING CUSTOM RULES WITH UTF-8 ENCODED XML

Memory representation

Use this information if you have to write Documaker or IDS code and you need to know how data is presented in memory on the XML tree.

- The data on XML tree is always stored in UTF-8 format. The Documaker rules or any other code has to do a conversion into the appropriate format, either Unicode or the ANSI character set, based on the destination format you need.
- The code that uses Oracle Insurance libraries to deal with the Unicode characters should be passing in the flag to create XML text (DXMFLAG_WIDECHAR). If this flag is passed in, the XML library converts the Unicode string into a UTF-8 encoded string.
- The code that needs to create XML text from already UTF-8 encoded string should use the DXMFLAG_UTF8 flag to create text. When this flag is used, no conversion occurs.
- The code that has to create text from an ANSI string should not set any flags. The CreateText API takes care of converting strings into a UTF-8 representation in memory.
- When getting text from XML library, the calling application should do its own conversion from UTF-8 into the appropriate format, either ANSI or Unicode.

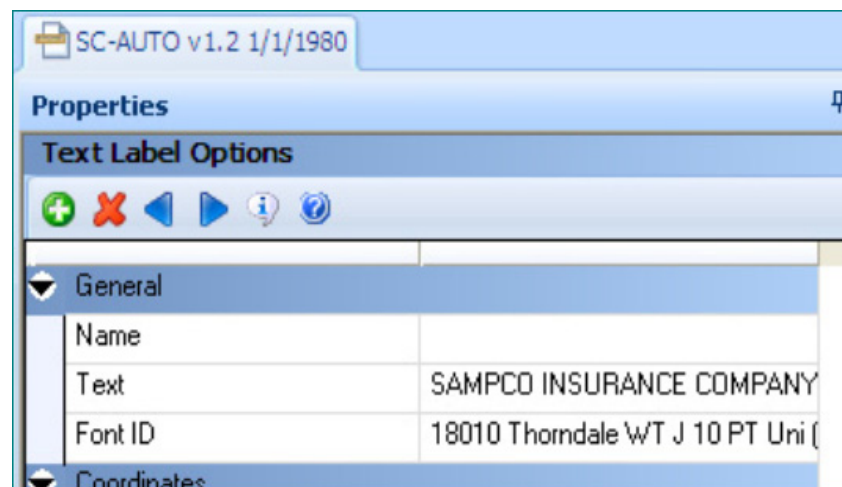
Oracle Insurance may add an API or a parameter to the existing API to help with this conversion, but for now you must handle the conversion. There are a couple of APIs in UTLLIB, UTLUtf8ToAnsi and Utf8ToUtf16, that convert a UTF-8 string into ANSI characters and Unicode characters.

FREQUENTLY ASKED QUESTIONS

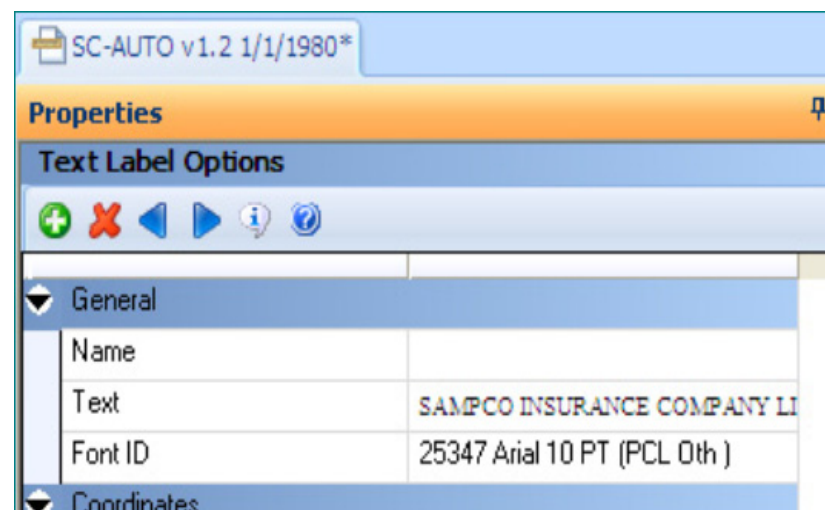
Why does text appear jumbled or change to question marks after you change the font ID?

When you create a text label with a Unicode-enabled font ID, the text label contains two-byte Unicode characters, even if the text is English. Font IDs that are not Unicode-enabled do not contain character width information for Unicode characters. Therefore, if you use the Edit, Font Change option in the Image Editor to change the font ID to a font ID that is not Unicode-enabled, the Unicode characters will have no width and will appear jumbled on top of one another.

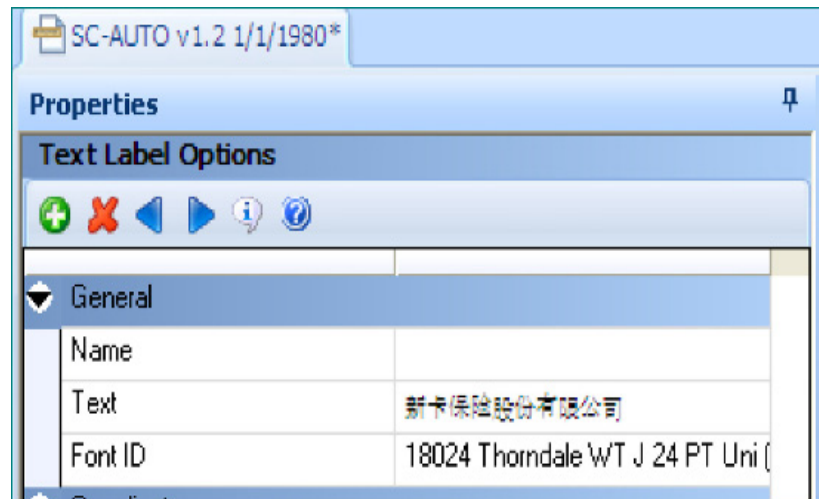
If you change the font ID from within the Text Label window to a font ID that is not Unicode-enabled, the system tries to convert the text from Unicode to normal ANSI characters. For example, the following text label starts out as Unicode text because it uses a Unicode enabled font ID:



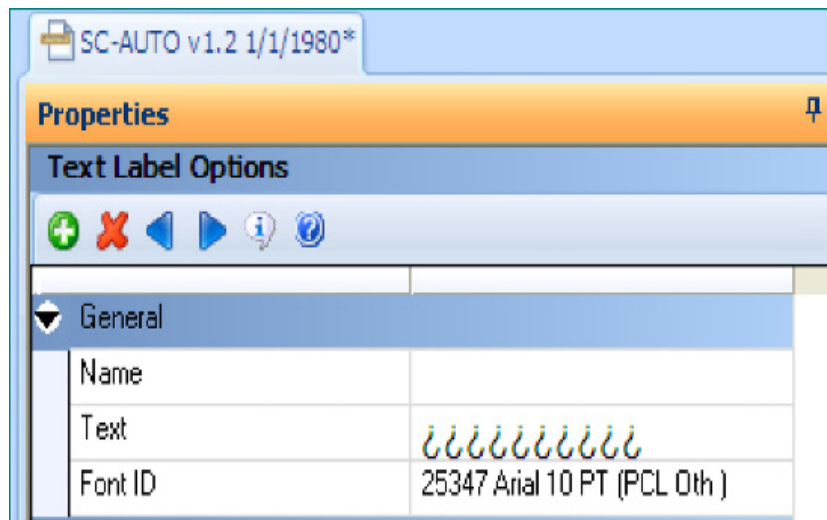
Now if you change the font ID to a normal (non-Unicode) font ID, the text is changed to ANSI characters (notice that the characters *Uni* do not appear in the font description and the list box only contains the word, *ANSI*):



However, if you tried this with a text label containing Chinese Unicode text, the text would be lost when switching to a non-Unicode font ID:



Watch what happens when you change the font ID to a normal font ID:



At this point, the Chinese text is lost unless you close the window. The system tried to convert the Unicode Chinese text to ANSI characters but of course, it could not. At this point, the text label actually consists of ANSI question marks:



Changing the font ID back to a Unicode-enabled font ID just results in Unicode question marks.