



Scripting Apache OpenOffice

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Overview

- Overview of AOO
 - Very brief history
 - Bird eye's view of AOO's architecture
- Scripting AOO
- Nutshell examples
 - “swriter” (word processor), “scal” (spreadsheet), “sdraw” (drawing), “simpres” (presentation)
- Roundup
- Links



Overview, History, 1

- StarOffice
 - Originates in Germany
 - StarDivision, est. 1985
 - Portable C++ class library ("Star")
 - Allow creation of a portable integrated office suite
 - Goal: compatibility with MS Office, 1995
 - Allows to read and write MS Office file formats
 - 90'ies
 - OS/2, Windows
 - Slow hardware, small bandwidths !



Overview, History, 2

- StarOffice → OpenOffice
 - 1998 bought by Sun
 - StarOffice 5.1
 - OpenOffice.org 1.0 (2002)
 - 2010 bought by Oracle
 - Oracle OpenOffice
 - 2011 donated to ASF
 - Apache OpenOffice (AOO), incubating
 - First release of AOO 3.4 (May 2012)
 - 3.4.1 (August 2012)
 - October 2012: AOO graduates at ASF !



Bird Eye's View, 1

- Set of *services* that may contain *interfaces* with *attributes*, other *services*, *structs* and *properties*
- All common functionality of all types of documents is extracted and organized as a set of *interfaces* that define *methods* and possibly *attributes*
 - E.g. loading, saving, printing documents, ...
- *Services* are created and get managed by *service managers*



Bird Eye's View, 2

- Client-/Server-Architecture
 - Communication via TCP/IP
 - Employing distributable components (“UNO”)
 - Server can run on any computer in the world!
 - Operating systems of the server and the client are irrelevant for the purpose of communication!
 - Client may run on the same machine as the server
 - Default installation and configuration

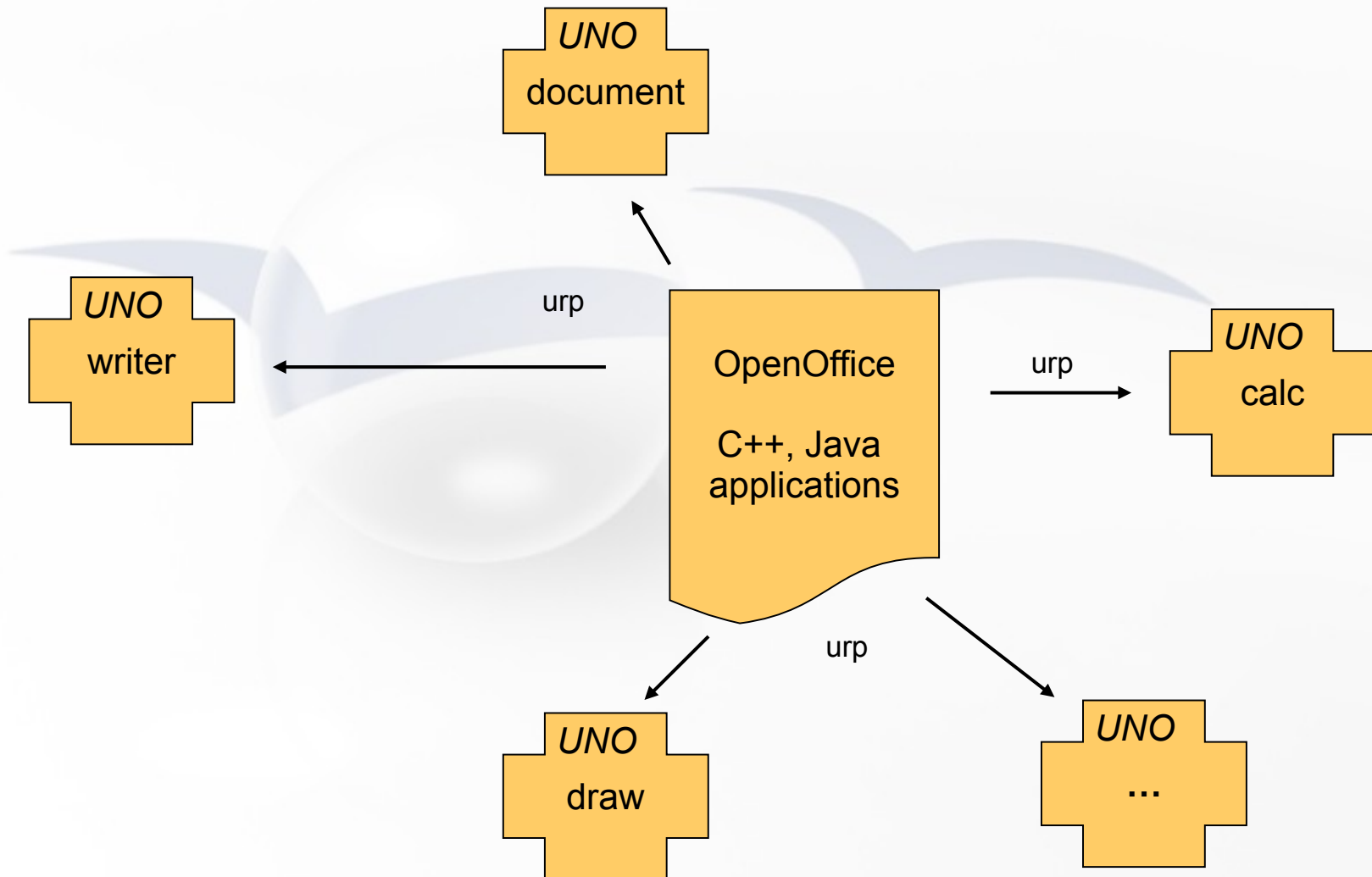


Bird Eye's View, 3

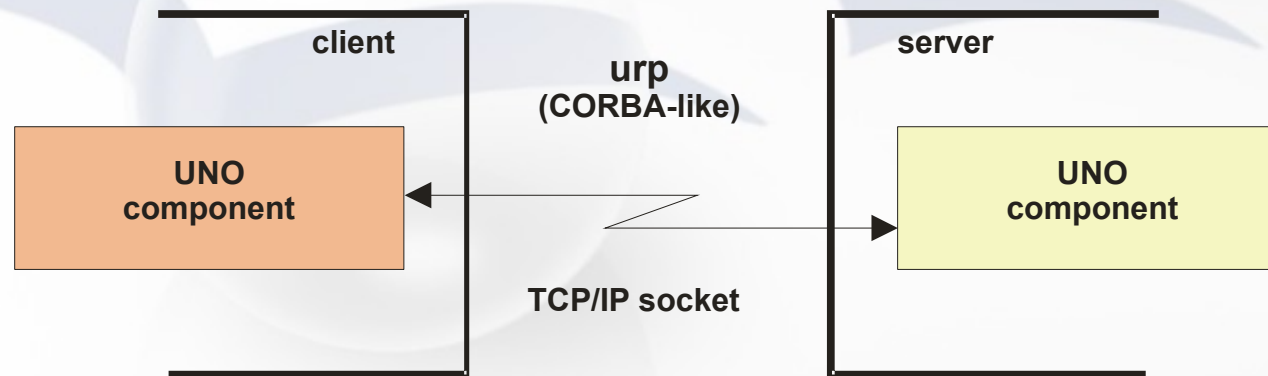
- “UNO”
 - **U**niversal **N**etwork **O**bjects
 - Distributable, interconnected infrastructure
 - All functionality is organized in the form of classes (“UNO classes”)
 - UNO classes (types) get defined in an IDL (Interface Description Language)
- “urp”
 - **U**NO remote **p**rotocol
 - CORBA-like



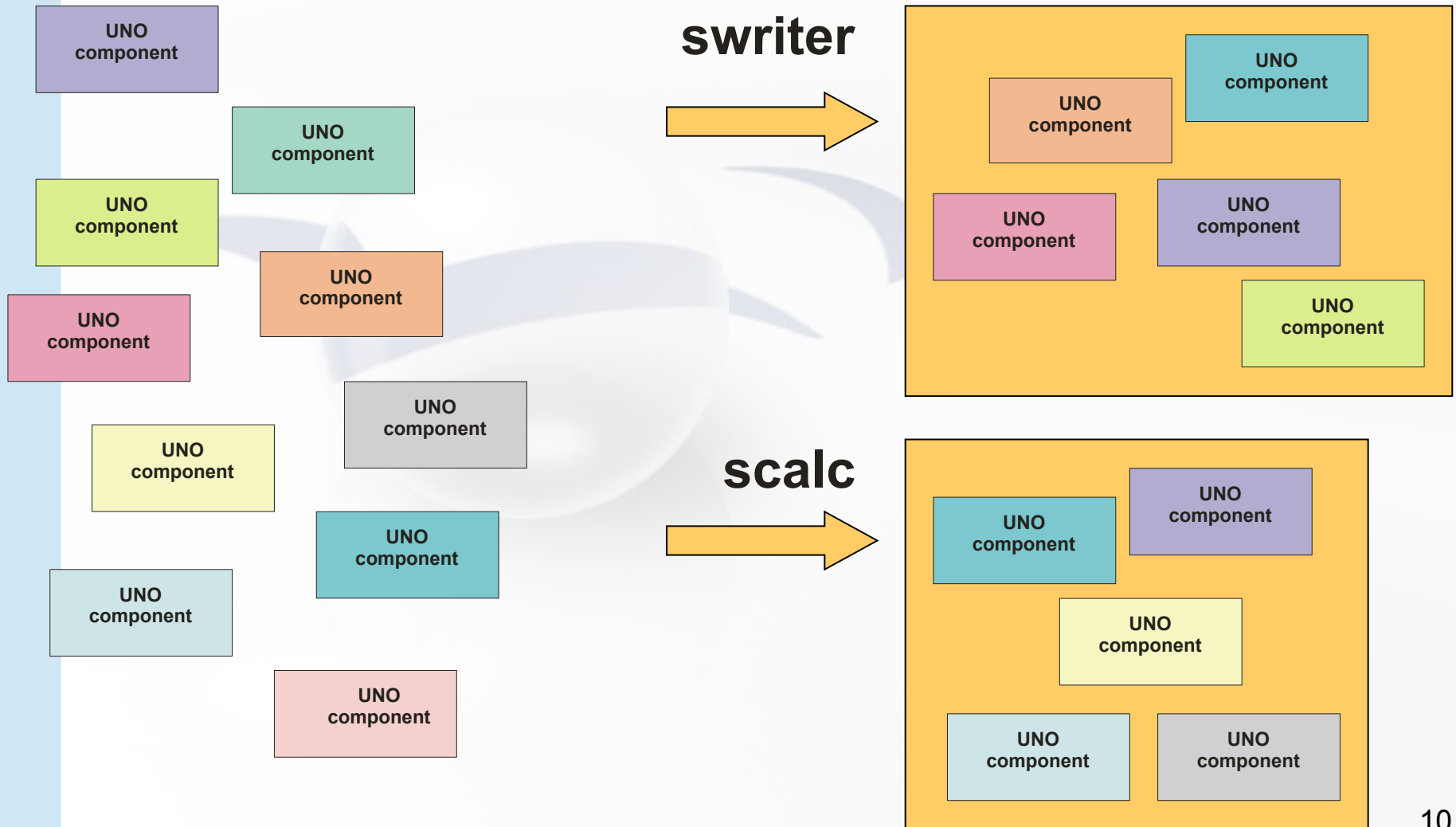
Bird Eye's View, 4



Bird Eye's View, 5



Bird Eye's View, 6



Bird Eye's View, 7

- “Service Managers” (a.k.a. “factories”)
 - Supplied by servers
 - Also cf. `XComponentContext.getServiceManager()`
 - Can be used to request/create *services*
 - Returned *service* allows access to a part of the "office" functionality, e.g.
 - `com.sun.star.frame.Desktop`
 - `com.sun.star.configuration.ConfigurationProvider`
 - `com.sun.star.sdb.DatabaseContext`



Bird Eye's View, 8

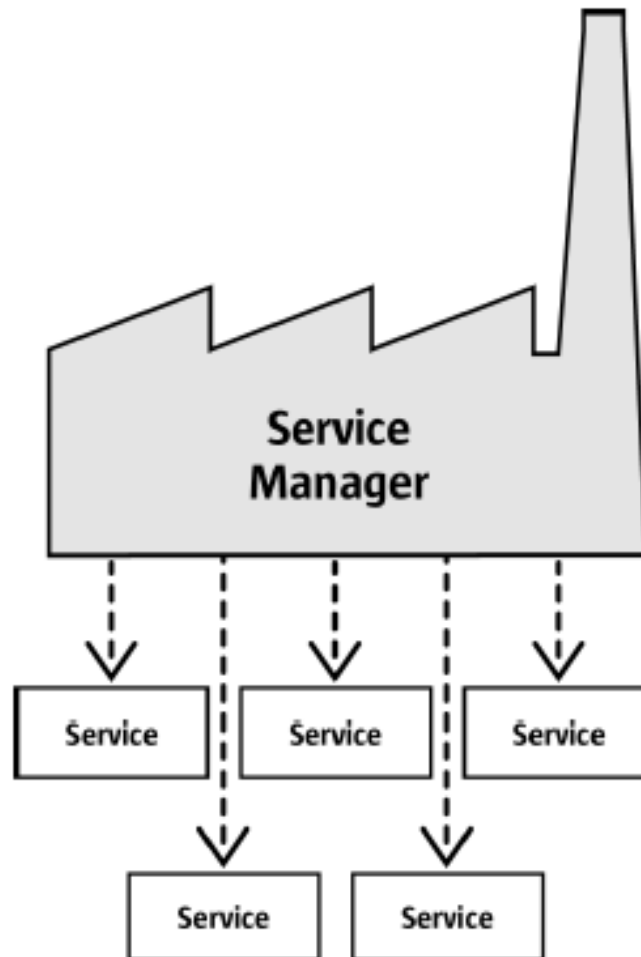


Illustration 2.1: Service manager



Bird Eye's View, 9

- “Services”
 - Can be comprehensive
 - May contain
 - “Interfaces” (group of *methods* and *attributes*)
 - Other “Services”
 - “properties” ([com.sun.star.beans.PropertyValue](#))
 - Depending on the desired task you need to query (request) the appropriate interface, e.g.
 - [com.sun.star.view.XPrintable](#)
 - [com.sun.star.frame.XStorable](#)
 - [com.sun.star.text.XTextDocument](#)



Bird Eye's View, 10

- An example
 - Two services with seven interfaces
 - "OfficeDocument"
 - Four interfaces
 - "TextDocument"
 - Three interfaces

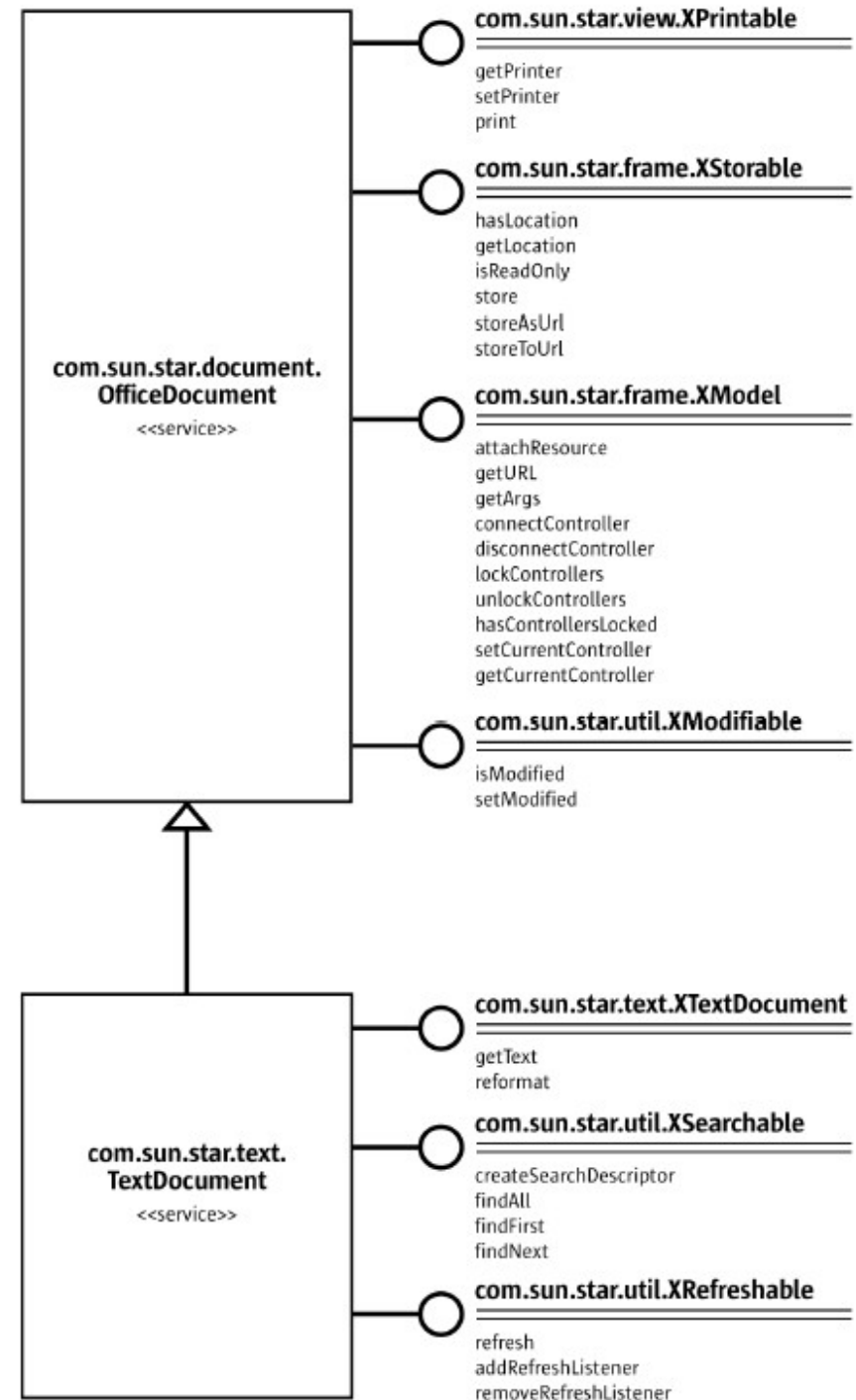


Illustration 2.3: Text Document



Scripting AOO

Programming Languages

- Programming languages
 - C++ (*queryInterface*)
 - Java (*queryInterface*)
 - Basic (implicit *queryInterface*)
 - Python (implicit *queryInterface*)
- Java-based scripting framework
 - BeanShell (*queryInterface*)
 - JavaScript (*queryInterface*)
 - ooRexx (*queryInterface*)
 - ...



Scripting AOO

Basic UNO Datatypes

Basic UNO Datatype	Java Datatype
UNO_ANY	com.sun.star.uno.Any or java.lang.Object
UNO_VOID	void
UNO_BOOLEAN	boolean
UNO_BYTE (8-bit)	byte
UNO_CHAR (16-bit)	char
UNO_SHORT (16-bit)	short
UNO_UNSIGNED_SHORT (16-bit)	short
UNO_LONG (32-bit)	int
UNO_UNSIGNED_LONG (32-bit)	int
UNO_HYPER (64-bit)	long
UNO_UNSIGNED_HYPER (64-bit)	long
UNO_FLOAT	float
UNO_DOUBLE	double



Scripting AOO

UNO Types/Classes, 1

- IDL
 - Interface description language
 - Text based definition of UNO types
 - Can be reflected at runtime
- UNO Types/Classes (in alphabetical order)
 - UNO Constants, members:
 - Fields, usually of the same UNO datatype
 - UNO Enum, members:
 - Fields are always of type UNO_LONG (32-Bit integers)



Scripting AOO

UNO Types/Classes, 2

- UNO Types/Classes (continued)
 - UNO Exception, members:
 - Fields of any datatype
 - UNO Interface, members:
 - UNO Methods
 - UNO Attributes
 - UNO Module, members:
 - Any UNO Type/Class
 - Name of the module(s) are denoted in the fully qualified name of an UNO type, e.g.
 - **`com.sun.star.beans.PropertyValue`**



Scripting AOO

UNO Types/Classes, 3

- UNO Types/Classes (continued)
 - UNO Service, members:
 - UNO Interfaces
 - UNO Services
 - UNO Properties ([com.sun.star.beans.PropertyValue](#))
 - Regarded as a set ([com.sun.star.beans.XPropertySet](#))
 - UNO_SINGLETON
 - UNO_STRUCT, members:
 - Fields only
 - UNO_TYPEDEF



Scripting AOO

Documentation, 1

- *Extremely* important
 - Wealth of services and interfaces
 - Created in pure German ;) engineering style
 - To miss the the forest for the trees!
- AOO API documentation
 - <http://www.openoffice.org/api/>
 - Developer's guide, API wiki, UNO wiki, extensions, examples, tutorials
 - <http://www.openoffice.org/api/docs/common/ref/com/sun/star/module-ix.html>
 - Extensive, HTML-linked API reference
 - Use its Index to locate services, interfaces, etc.



Module star - Mozilla Firefox

File Edit View History Bookmarks Tools Help OO.o

Module star Global Index A Global Index X

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Content for Apache OpenOffice version 3.4.

Overview Module Use Devguide **Index**

NESTED MODULES SERVICES SINGLETONS INTERFACES STRUCTS EXCEPTIONS ENUMS TYPEDEFS CONSTANT GROUPS

:: com :: sun ::

module star

Nested Modules

accessibility	UNO Accessibility API
animations	
auth	security and authenticates interfaces
awt	Java AWT-like user interface toolkit interface specifications for UNO.
beans	Java beans-like property access and introspection.
bridge	Interfaces for building bridges to other component models.
chart	Charting diagram interfaces.
chart2	New implementation of Charting diagram interfaces. This module contains only a rather small public API. In addition there is a private API in the chart2 project.

DEVELOPER'S GUIDE
Content Table
IDL reference

API
Module structure

SDK
Examples
Java UNO Reference
C++ UNO Reference
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MISCELLANEOUS
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Overview Module Use Devguide Index

Global Index A

ABCDEFGHIJKLMNOPQRSTUVWXYZ_

A - constant in constants group ::com::sun::star::awt: [.Key](#)
aArgs - field in struct ::com::sun::star::frame: [.DispatchStatement](#)
abbreviateString() - function in interface ::com::sun::star::util: [.XStringAbbreviation](#)
ABBREVIATION - constant in constants group ::com::sun::star::linguistic2: [.ConversionPropertyType](#)
AbbrevName - field in struct ::com::sun::star::i18n: [.CalendarItem](#)
aBitmapMode - field in struct ::com::sun::star::chart2: [.FillBitmap](#)
ABORT - value in enum ::com::sun::star::ucb: [.IOErrorCode](#)
abort() - function in interface ::com::sun::star::ucb: [.XCommandProcessor](#)
Aborted - property in service ::com::sun::star::document: [.MediaDescriptor](#)
aborted() - function in interface ::com::sun::star::sheet: [.XRangeSelectionListener](#)
abortRangeSelection() - function in interface ::com::sun::star::sheet: [.XRangeSelection](#)
ABOVE - constant in constants group ::com::sun::star::awt: [.FontEmphasisMark](#)
AboveCenter - constant in constants group ::com::sun::star::awt: [.ImagePosition](#)
AboveLeft - constant in constants group ::com::sun::star::awt: [.ImagePosition](#)

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MISCELLANEOUS

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- Mailing List Rules

Content for Apache OpenOffice version 3.4.

Overview Module Use Devguide Index

Global Index X

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z _

- X** - field in struct ::com::sun::star::awt:: [Point](#)
- X** - constant in constants group ::com::sun::star::awt:: [PosSize](#)
- X** - field in struct ::com::sun::star::awt:: [Rectangle](#)
- X** - field in struct ::com::sun::star::geometry:: [IntegerPoint2D](#)
- X** - field in struct ::com::sun::star::awt:: [MouseEvent](#)
- X** - field in struct ::com::sun::star::geometry:: [RealPoint2D](#)
- X** - field in struct ::com::sun::star::awt:: [WindowEvent](#)
- X** - constant in constants group ::com::sun::star::awt:: [Key](#)
- X** - constant in constants group ::com::sun::star::awt:: [FontStrikeout](#)
- XAbortChannel** - interface ::com::sun::star::task:: [XAbortChannel](#)
- XAbstractView** - interface ::com::sun::star::xml::dom::views:: [XAbstractView](#)
- XAcceleratorConfiguration** - interface ::com::sun::star::ui:: [XAcceleratorConfiguration](#)
- XAcceptor** - interface ::com::sun::star::connection:: [XAcceptor](#)
- XAccessControlContext** - interface ::com::sun::star::security:: [XAccessControlContext](#)

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Scripting AOO Documentation, 2

- Codesnippets
 - <http://codesnippets.services.openoffice.org/index.xml>
 - Scripts in Basic, Java, ooRexx, Python
- ooRexx' “[UNO_API_info.rxo](#)”
 - Installed with BSF4ooRexx
 - Uses reflection and generates writer/pdf documents containing the documentation , linked to the official AOO API reference documentation!
 - Can be invoked via the dispatch interface from any programming language
 - Cf.: http://wi.wu.ac.at/rgf/rexx/misc/OOoCon/2010_Budapest/



Scripting AOO Documentation, 3

- WU Vienna
 - <http://wi.wu.ac.at/rgf/diplomarbeiten/>
 - Select **AOO**, **OOo**, **LibreOffice** and/or **UNO** in the keyword dropdown list
 - BSF4ooRexx samples
 - Mostly based on student's work
 - Thesis describe the frameworks and document the samples
 - Some samples installed with BSF4ooRexx in the subdirectory [bsf4oorex/samples/OOo](#)



Scripting AOO

Documentation, 4

- MRI extension
 - <http://extensions.services.openoffice.org/project/MRI>
 - Great AOO inspector written in Python
 - Code (snippet) support for Basic, Java, C++, C# CLI, Python
- AOO mailing lists
 - ooo-dev@incubator.apache.org
 - ooo-api@incubator.apache.org
 - Will be renamed, because AOO has graduated from the incubator!
 - Consult: http://www.openoffice.org/mail_list.html



Scripting AOO

Documentation, 5

- Results of analyzing the AOO Java archives
 - Types and Interfaces (AOO 3.4.1, summer 2012)

jar	Total Types	Interfaces	Share %
juh.jar	47	3	(6.4%)
ridl.jar	469	224	(47.8%)
jurt.jar	98	2	(2.0%)
unoil.jar	2 694	1 422	(52.8%)
Sum	3 308	1 651	(49.9%)



Scripting AOO

Querying an Interface

- *queryInterface()* examples
 - *sDispatchHelper*, a service of type *com.sun.star.frame.DispatchHelper*

- *queryInterface()* in Java

```
import com.sun.star.frame.XDispatchHelper;  
// ...  
XDispatchHelper xDispatchHelper=(XDispatchHelper)  
    UnoRuntime.queryInterface(XDispatchHelper.class, sDispatchHelper);
```

- *queryInterface()* in JavaScript

```
importClass(Packages.com.sun.star.frame.XDispatchHelper);  
// ...  
xDispatchHelper = UnoRuntime.queryInterface(XDispatchHelper, sDispatchHelper);
```

- *queryInterface()* in ooRexx

```
xDispatchHelper=sDispatchHelper~com.sun.star.frame.XDispatchHelper  
-- or simpler:  
xDispatchHelper=sDispatchHelper~XDispatchHelper
```



Scripting AOO

- Two kinds of scripting (programming)
 - **Stand-alone**
 - Need to bootstrap OpenOffice in order to initialize the AOO environment to interact with
 - Full control about addressing different AOO servers, if needed
 - Dispatched by AOO (“macro”)
 - AOO supplies a script context that allows access to the initialized AOO environment (*getDesktop*, *GetComponentContext*) and to the document (*getDocument*) for which the dispatch occurred



Scripting AOO Bootstrapping in Java

```
// import ...
XComponentContext xLocalContext =
com.sun.star.comp.helper.Bootstrap.createInitialComponentContext(null);
// initial serviceManager
XMultiComponentFactory xLocalServiceManager = xLocalContext.getServiceManager();
// create a URL resolver
Object urlResolver = xLocalServiceManager.createInstanceWithContext(
    "com.sun.star.bridge.UnoUrlResolver", xLocalContext);
// query for the XUnoUrlResolver interface
XUnoUrlResolver xUrlResolver = (XUnoUrlResolver)
UnoRuntime.queryInterface(XUnoUrlResolver.class, urlResolver);
// Import the object
Object rInitialObject = xUrlResolver.resolve(
    "uno:socket,host=localhost,port=8100;urp;StarOffice.ServiceManager");
// test whether we got a reference to the remote ServiceManager
if (null != rInitialObject) {
    System.out.println("initial object successfully retrieved");
} else {
    System.out.println("given initial-object name unknown at server side");
}

... cut ...
```



Scripting AOO

Bootstrapping in ooRexx

```
url="uno:socket,host=localhost,port=8100;urp;StarOffice.ServiceManager"
rInitialObject=uno.connect(url)

if rInitialObject=.nil then
  say "initial object successfully retrieved"
else
  say "given initial-object name unknown at server side"
-- ... cut ...

::requires UNO.CLS -- get UNO support
```



Scripting AOO

Creating/Loading Documents

scal
swriter
simpres
sdraw

```
xDesktop=uno.createDesktop() -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader -- get XComponentLoader interface

uri="private:factory/swriter" -- new swriter document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

-- ... now do whatever you want or need to do ...

::requires UNO.CLS -- get UNO support
```

"file:///c:/docs/aFile.odt"
"http://www.RexxLA.org/aFile.ods"
"ftp://www.OpenOffice.org/aFile.odp"



Nutshell examples

Word Processor (“swriter”), 1

– 3 Services

GenericTextDocument (com.sun.star.text.*GenericTextDocument*),
OfficeDocument (com.sun.star.document.*OfficeDocument*), TextDocument
(com.sun.star.text.*TextDocument*)

– 35 Interfaces (unqualified)

XBookmarksSupplier, XChapterNumberingSupplier,
XDocumentEventBroadcaster, XDocumentIndexesSupplier,
XDocumentInfoSupplier, XDocumentPropertiesSupplier, XEmbeddedScripts,
XEndnotesSupplier, XEventBroadcaster, XEventsSupplier, XFootnotesSupplier,
XLineNumberingSupplier, XModel, XModifiable, XMultiServiceFactory,
XNumberFormatsSupplier, XPagePrintable, XPrintJobBroadcaster, XPrintable,
XPropertySet, XReferenceMarksSupplier, XRefreshable, XReplaceable,
XSearchable, XStorable, XStyleFamiliesSupplier, [XTextDocument](#),
XTextEmbeddedObjectsSupplier, XTextFieldsSupplier, XTextFramesSupplier,
XTextGraphicObjectsSupplier, XTextSectionsSupplier, XTextTablesSupplier,
XUndoManagerSupplier, XViewDataSupplier



Nutshell examples

Word Processor (“swriter”), 2

- 37 Properties

ApplyFormDesignMode, ApplyWorkaroundForB6375613, AutomaticControlFocus, BasicLibraries, BuildId, CharFontCharSet, CharFontCharSetAsian, CharFontCharSetComplex, CharFontFamily, CharFontFamilyAsian, CharFontFamilyComplex, CharFontName, CharFontNameAsian, CharFontNameComplex, CharFontPitch, CharFontPitchAsian, CharFontPitchComplex, CharFontStyleName, CharFontStyleNameAsian, CharFontStyleNameComplex, CharLocale, **CharacterCount**, DialogLibraries, ForbiddenCharacters, HasValidSignatures, HideFieldTips, IndexAutoMarkFileURL, LockUpdates, ParagraphCount, RecordChanges, RedlineDisplayType, RedlineProtectionKey, RuntimeUID, ShowChanges, TwoDigitYear, WordCount, WordSeparator



Nutshell examples

Word Processor (“swriter”), 3

- Interface `com.sun.star.text.XTextDocument`
 - Get access to the text object representing the text of the entire document using `getText()`
 - Returns `XText`, which is derived from `XSimpleText`, which is derived from `XRangeText`, hence the methods of all three interfaces are available!
- Concept of “cursors”, e.g.
 - Paragraphs, Sentences, Words, Characters
- Possible to also insert tables, fields, pictures, drawings, ...



Nutshell examples

Word Processor, Example 1, 1

- Example 1
 - Create a word processor document
 - Add text “**Hello, ApacheCon Europe 2012!**”
 - Closing the word processor document manually will cause the “Save”-dialog to appear



Nutshell examples

Word Processor, Example 1, 2

```
xDesktop=uno.createDesktop()      -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader     -- get XComponentLoader interface

uri="private:factory/swriter"     -- new swriter document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

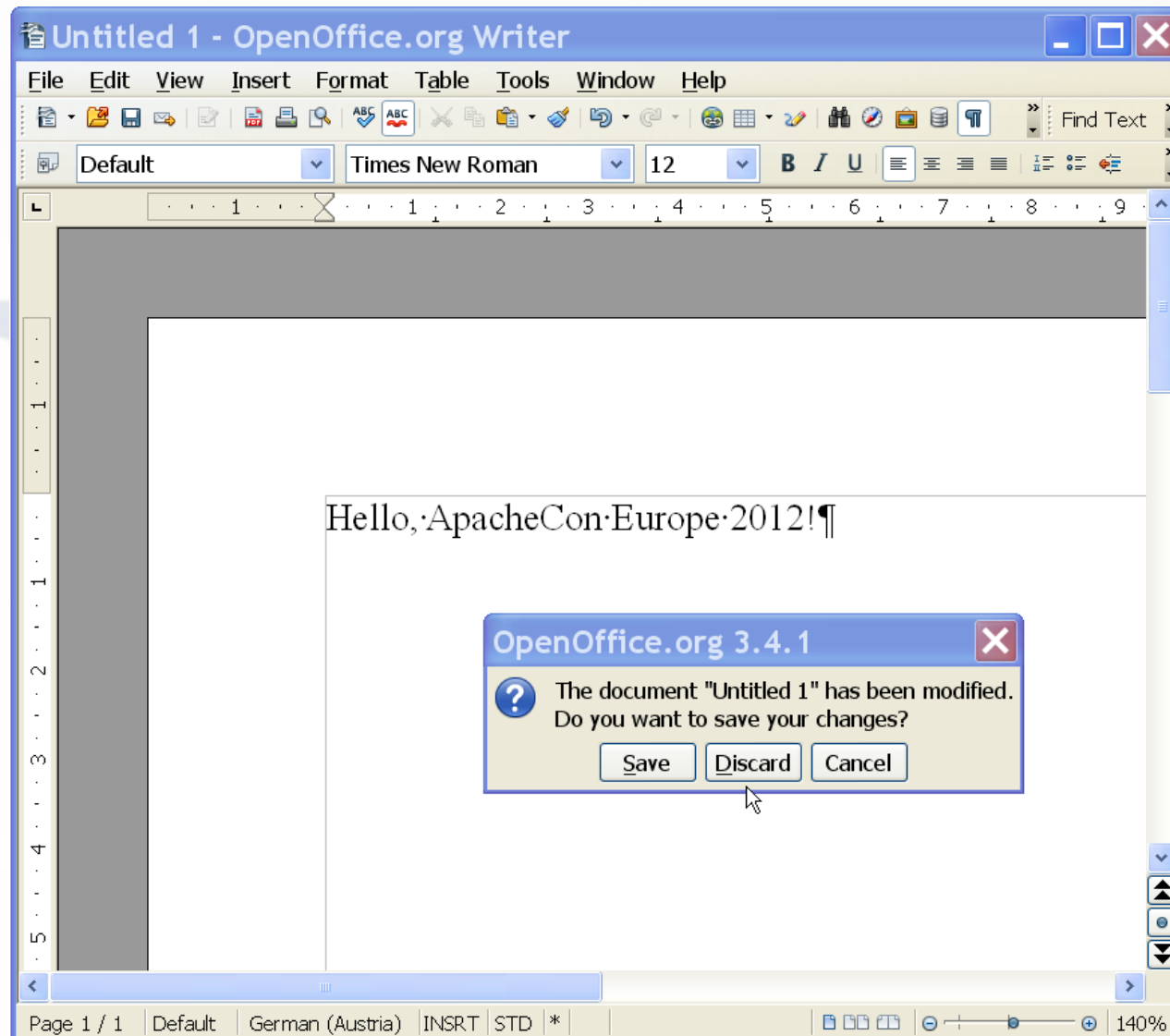
xText=doc~XTextDocument~getText  -- get text object
xText~setString("Hello, ApacheCon Europe 2012!")

::requires UNO.CLS                -- get UNO support
```



Nutshell examples

Word Processor, Example 1, 3



Nutshell examples

Word Processor, Example 2, 1

- Example 2
 - Create a word processor document
 - Add text “**Hello, ApacheCon Europe 2012!**”
 - Change state of document to “unmodified”
 - Leftover document can be closed without a save dialog
 - Using interface `com.sun.star.util.XModifiable`
 - Sleep five seconds, then close document
 - Using interface `com.sun.star.util.XCloseable`



Nutshell examples

Word Processor, Example 2, 2

```
xDesktop=uno.createDesktop()      -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader     -- get XComponentLoader interface

uri="private:factory/swriter"     -- new swriter document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

xText=doc~XTextDocument~getText  -- get text object
xText~setString("Hello, ApacheCon Europe 2012!")

doc~XModifiable~setModified(.false) -- set document to unmodified
call SysSleep 5                  -- sleep 5 seconds
doc~XCloseable~close(.false)     -- close document (window)

::requires UNO.CLS               -- get UNO support
```



Nutshell examples

Word Processor, Example 3, 1

- Example 3
 - Create a word processor document
 - Add text “**Hello, ApacheCon Europe 2012!**”
 - Access and show property **CharacterCount**
 - Change state of document to “unmodified”
 - Leftover document can be closed without a save dialog
 - Using interface `com.sun.star.util.XModifiable`
 - Sleep five seconds, then close document
 - Using interface `com.sun.star.util.XCloseable`



Nutshell examples

Word Processor, Example 3, 2

```
xDesktop=uno.createDesktop()      -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader     -- get XComponentLoader interface

uri="private:factory/swriter"     -- new swriter document
doc=xcl~loadComponentFromURL(uri,"_blank",0,.uno~noProps)

xText=doc~XTextDocument~getText  -- get text object
xText~setString("Hello, ApacheCon Europe 2012!")

xprops=doc~XPropertySet          -- get access to the properties
say "character count:" xprops~getPropertyValue("CharacterCount")

doc~XModifiable~setModified(.false) -- set document to unmodified
call SysSleep 5                  -- sleep 5 seconds
doc~XCloseable~close(.false)    -- close document (window)

::requires UNO.CLS               -- get UNO support
```

```
E:\rony\Vortraege\2012\201211-ASF-Europe\code>rexx swriter3.rxo
character count: 29
```



Nutshell examples

Word Processor, Example 4, 1

- Example 4
 - Create a word processor document
 - Add text “Hello, ApacheCon Europe 2012!”
 - Replace “ApacheCon” with “Apache Conference”
 - Change the color to red
 - Change the font name to “DejaVus Sans Mono”



Nutshell examples

Word Processor, Example 4, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/swriter"          -- new swriter document
doc=xcl~loadComponentFromURL(uri,"_blank",0,.uno~noProps)

xText=doc~XTextDocument~getText       -- get text object
xText~setString("Hello, ApacheCon Europe 2012!")

    -- change second word
xTextCursor=xText~createTextCursor    -- character based cursor
xTextCursor~gotoStart(.false)         -- make sure we are at start

xWordCursor=xTextCursor~XWordCursor   -- get the XWordCursor interface
xWordCursor~gotoNextWord(.false)      -- XTextRange represents first word
xWordCursor~gotoNextWord(.true)       -- select second word, includes blank!
xWordCursor~setString("Apache Conference ") -- note trailing blank

    -- change color
red=box("int", "FF 00 00"x ~c2d)       -- color red (RGB color) as integer
xWordCursor~XPropertySet~setProperty("CharColor", red)

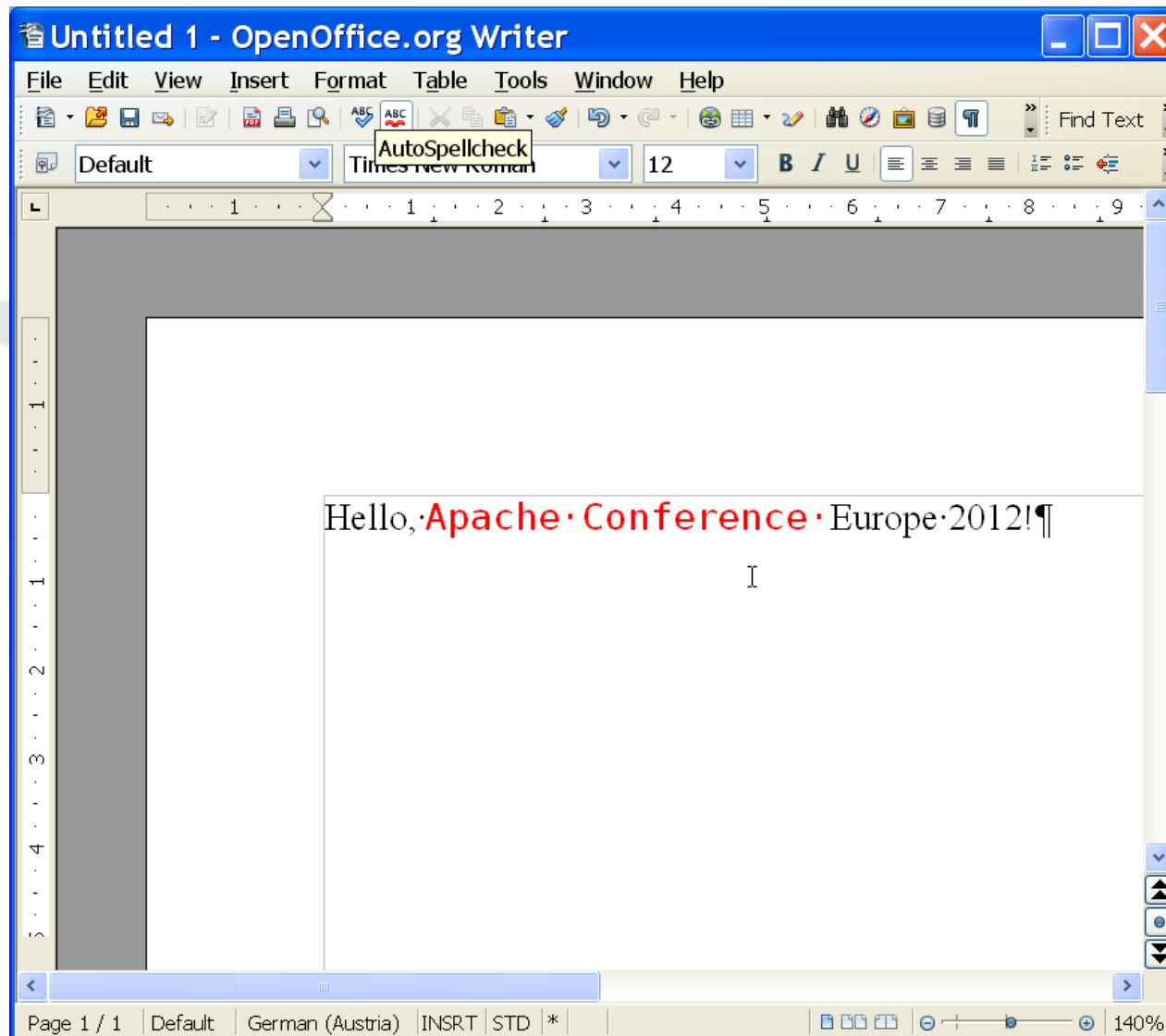
    -- change font
fontName="DejaVu Sans Mono"
xWordCursor~XPropertySet~setProperty("CharFontName", fontName)
say ppd(xWordCursor~uno.getDefinition)

::requires UNO.CLS -- get UNO support
```



Nutshell examples

Word Processor, Example 4, 3



Nutshell examples

Word Processor, Example 5, 1

- Example 5
 - Create a word processor document
 - Add text “**Hello, ApacheCon Europe 2012!**”
 - Demonstrate creating and styling paragraphs
 - Get access to the paragraph properties
 - Access `com.sun.star.text.ControlCharacter` constants
 - Access to `com.sun.star.style.ParagraphAdjust` enums
 - Demonstrate adjusting paragraphs to “**right**”, “**center**”, “**block**”, “**left**” using a string that contains the adjustment verb



Nutshell examples

Word Processor, Example 5, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/swriter"          -- new swriter document
doc=xcl~loadComponentFromURL(uri,"_blank",0,.uno~noProps)

xText=doc~XTextDocument~getText        -- get text object
xText~setString("Hello, ApacheCon Europe 2012!")

xTextCursor=xText~createTextCursor    -- create the character based cursor
-- make paragraph's properties accessible:
xParaProps=xTextCursor~XParagraphCursor~XPropertySet

ctlChars=.uno_constants~new("com.sun.star.text.ControlCharacter") -- UNO_CONSTANT
paraBreak=ctlChars~paragraph_break    -- get paragraph break constant

paraAdj =.uno_enum~new("com.sun.star.style.ParagraphAdjust")      -- UNO_ENUM

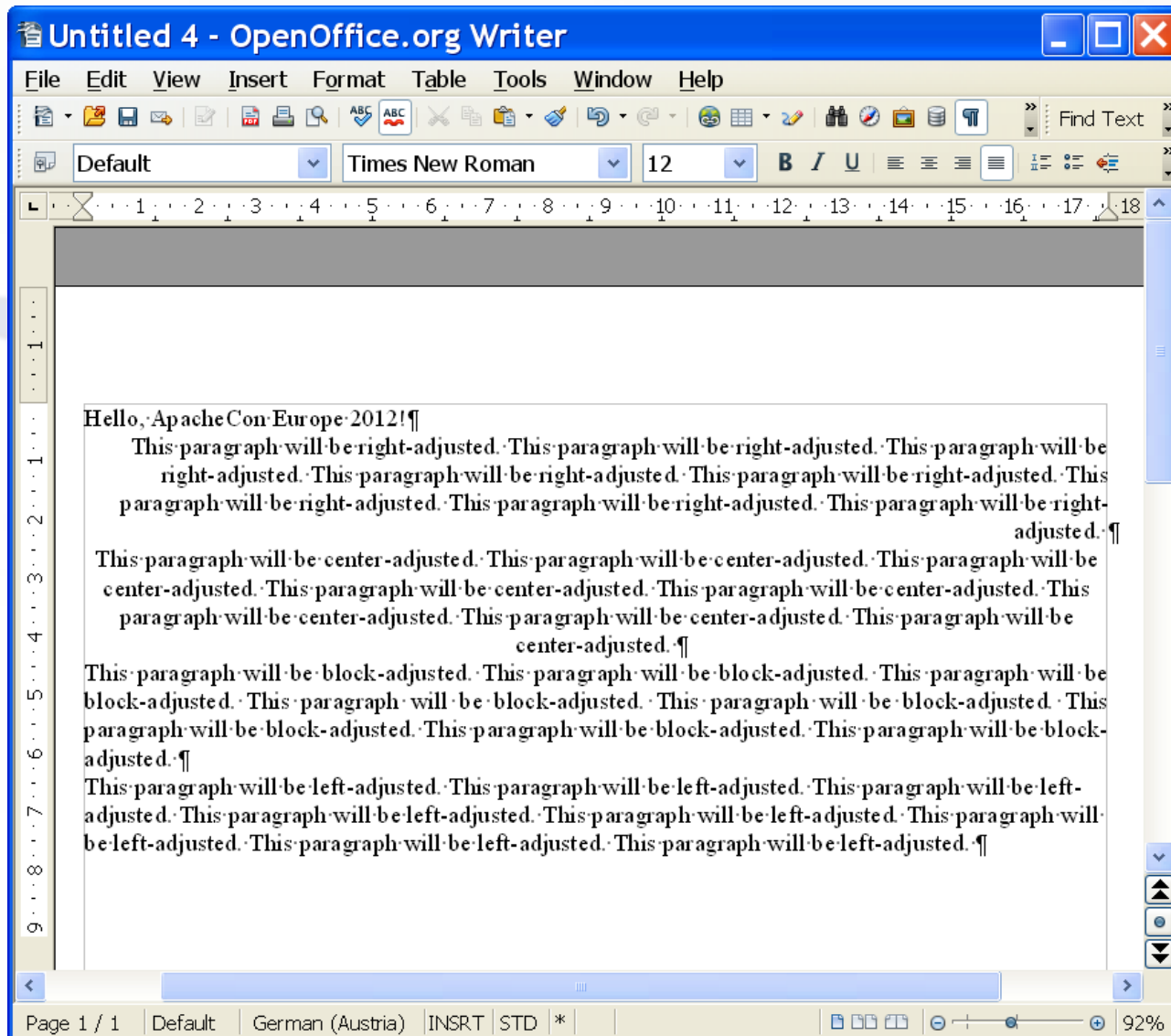
arr=.array~of("right", "center", "block", "left") -- adjustments
do adj over arr -- iterate over adjustments, create string, adjust
  xTextCursor~gotoEnd(.false) -- position at end
  xText~insertControlCharacter(xTextCursor, paraBreak, .false)
  string=("This paragraph will be" adj"-adjusted. ")~copies(8)
  xText~insertString(xTextCursor, string, .true)
  xParaProps~setProperty("ParaAdjust", paraAdj~send(adj))
end

::requires UNO.CLS -- get UNO support
```



Nutshell examples

Word Processor, Example 5, 3



Nutshell examples

Spreadsheet (“scalc”), 1

- 3 Services

OfficeDocument (com.sun.star.document.*OfficeDocument*),
SpreadsheetDocument (com.sun.star.sheet.*SpreadsheetDocument*),
SpreadsheetDocumentSettings
(com.sun.star.sheet.*SpreadsheetDocumentSettings*)

- 26 Interfaces (unqualified)

XActionLockable, XCalculatable, XConsolidatable, XDocumentAuditing,
XDocumentEventBroadcaster, XDocumentInfoSupplier,
XDocumentPropertiesSupplier, XDrawPagesSupplier, XEmbeddedScripts,
XEventBroadcaster, XEventsSupplier, XGoalSeek, XLinkTargetSupplier, XModel,
XModifiable, XMultiServiceFactory, XNumberFormatsSupplier,
XPrintJobBroadcaster, XPrintable, XPropertySet, XProtectable,
[XSpreadsheetDocument](#), XStorable, XStyleFamiliesSupplier,
XUndoManagerSupplier, XViewDataSupplier



Nutshell examples

Spreadsheet (“scalc”), 2

- 40 Properties

ApplyFormDesignMode, AreaLinks, AutomaticControlFocus, BasicLibraries, BuildId, CalcAsShown, CharLocale, CharLocaleAsian, CharLocaleComplex, CodeName, ColumnLabelRanges, DDELinks, DatabaseRanges, DefaultTabStop, DialogLibraries, ExternalDocLinks, ForbiddenCharacters, HasDrawPages, HasValidSignatures, IgnoreCase, IsAdjustHeightEnabled, IsChangeReadOnlyEnabled, IsExecuteLinkEnabled, IsIterationEnabled, IsLoaded, IsUndoEnabled, IterationCount, IterationEpsilon, LookUpLabels, MatchWholeCell, NamedRanges, NullDate, ReferenceDevice, RegularExpressions, RowLabelRanges, RuntimeUID, SheetLinks, SpellOnline, StandardDecimals, VBAGlobalConstantName



Nutshell examples

Spreadsheet (“scalc”), 3

- Interface `com.sun.star.sheet.XSpreadsheetDocument`
 - Get name access to the collection of `XSpreadsheets`
 - Numeric (0-based) access with `XIndexAccess`
- Concept of “table” consisting of a collection of *rows*, which each have *columns*
 - `XCellRange` (a tabular area of a spreadsheet)
 - Origin “0,0” represents upper left-hand corner
 - Offsets relative to upper left-hand corner



Nutshell examples

Spreadsheet (“scalc”), 4

- Addressing a cell
 - Numerically (0-based) representing offsets from origin
 - e.g. “0,1” (first column, second row)
 - `getCellByPosition(columnOffset,rowOffset)` returns a `XCell`
 - By name
 - a named range, or
 - column: a name, row: a 1-based number), e.g. “A2”
 - `getCellRangeByName(Name)` returns a `XCellRange`, then
 - `getCellByPosition(0,0)` returns a `XCell`
 - Possible to also insert charts, drawings, ...



Nutshell examples

Spreadsheet, Example 1, 1

- Example 1
 - Create a spreadsheet document
 - Add text “**Hello, ApacheCon Europe 2012!**” to A1
 - Demonstrate how to store a document



Nutshell examples

Spreadsheet, Example 1, 2

```
xDesktop=uno.createDesktop()          -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader         -- get XComponentLoader interface

uri="private:factory/scalc"           -- new scalc document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

xSheets=doc~XSpreadSheetDocument~getSheets~XIndexAccess
xSheet =xSheets~getByIndex(0)~XSpreadSheet  -- get first spreadsheet
                                           -- add entry to "A1"
xSheet~getCellByPosition(0,0)~setFormula("Hello, ApacheCon Europe 2012!")

storeURL=directory()"/scalcl.ods"     -- save document in local directory
storeURL=uno.convertToUrl(storeURL)    -- change path to URL-style
doc~XStorable~storeAsURL(storeURL, .UNO~noProps) -- save document

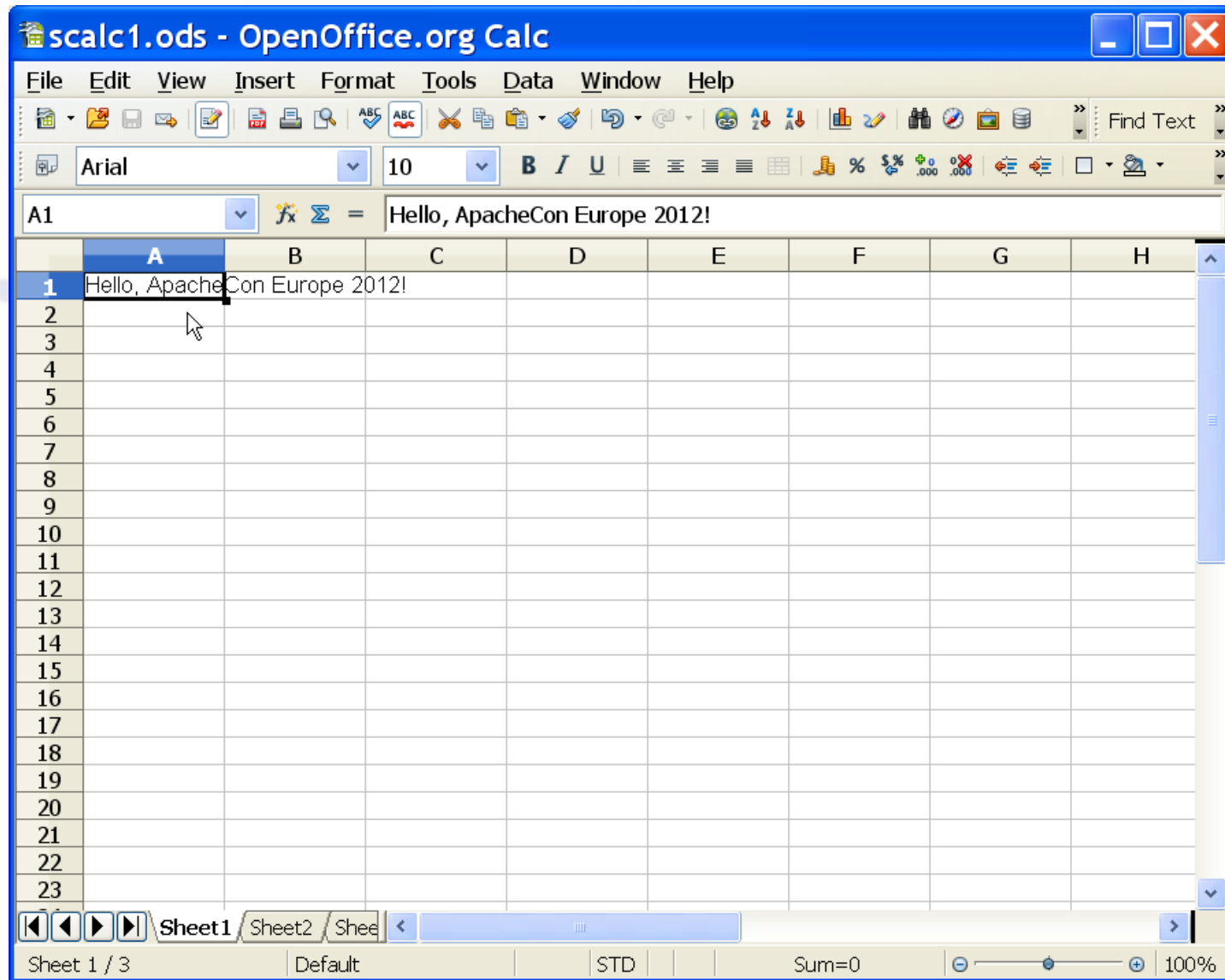
doc~XCloseable~close(.false)         -- close document (window)

::requires UNO.CLS                    -- get UNO support
```



Nutshell examples

Spreadsheet, Example 1, 3



The screenshot shows the OpenOffice.org Calc application window titled "scalc1.ods - OpenOffice.org Calc". The interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Data, Window, Help), a toolbar with various icons, and a formatting toolbar with options for font (Arial), size (10), bold (B), italic (I), underline (U), and alignment. The spreadsheet grid has columns A through H and rows 1 through 23. Cell A1 is selected and contains the text "Hello, ApacheCon Europe 2012!". The status bar at the bottom shows "Sheet 1 / 3", "Default", "STD", "Sum=0", and "100%".

	A	B	C	D	E	F	G	H
1	Hello, ApacheCon Europe 2012!							
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								

Nutshell examples

Spreadsheet, Example 2, 1

- Example 2
 - Create a spreadsheet document
 - Add text “**Hello, ApacheCon Europe 2012!**” to A1
 - Demonstrate how to change the height of table rows



Nutshell examples

Spreadsheet, Example 2, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/scalc"            -- new scalc document
doc=xcl~loadComponentFromURL(uri,"_blank",0,.uno~noProps)

xSheets=doc~XSpreadSheetDocument~getSheets~XIndexAccess
xSheet =xSheets~getByIndex(0)~XSpreadSheet -- get first spreadsheet
                                           -- add entry to "A1"
xSheet~getCellByPosition(0,0)~setFormula("Hello, ApacheCon Europe 2012!")

xRows=xSheet~XColumnRowRange~getRows-- get XTableRows

do i=1 to 5                             -- 0-based, hence lines # 2 through # 6
  xRow=xRows~getByIndex(i)               -- fetch XRow
  props=xRow~XPropertySet                -- get access to its properties
  oldHeight=props~getPropertyValue("Height") -- get current value
  newHeight=oldHeight+i*250              -- increase by i*0.250 cm
  props~setProperty("Height", box("int",newHeight)) -- set new Height
  text="oldHeight="oldHeight", newHeight="newHeight -- create info text
  xSheet~getCellByPosition(0,i)~setFormula(text) -- set cell to info text
end

::requires UNO.CLS                       -- get UNO support
```



Nutshell examples

Spreadsheet, Example 2, 3

The screenshot shows the OpenOffice.org Calc application window titled "Untitled 1 - OpenOffice.org Calc". The spreadsheet has a grid with columns A through H and rows 1 through 14. The formula bar shows the formula "Hello, ApacheCon Europe 2012!" in cell A1. The spreadsheet content is as follows:

	A	B	C	D	E	F	G	H
1	Hello, ApacheCon Europe 2012!							
2	oldHeight=432, newHeight=682							
3	oldHeight=432, newHeight=932							
4	oldHeight=432, newHeight=1182							
5	oldHeight=432, newHeight=1432							
6	oldHeight=432, newHeight=1682							
7								
8								
9								
10								
11								
12								
13								
14								

The status bar at the bottom shows "Sheet 1 / 3", "Default", "STD *", "Sum=0", and "100%".

Nutshell examples

Spreadsheet, Example 3, 1

- Example 3
 - Create a spreadsheet document
 - Add text “**Hello, ApacheCon Europe 2012!**” to A1
 - Demonstrate how to change the width of table columns



Nutshell examples

Spreadsheet, Example 3, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/scalc"            -- new scalc document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

xSheets=doc~XSpreadSheetDocument~getSheets~XIndexAccess
xSheet =xSheets~getByIndex(0)~XSpreadSheet -- get first spreadsheet
                                           -- add entry to "A1"
xSheet~getCellByPosition(0,0)~setFormula("Hello, ApacheCon Europe 2012!")

xCols=xSheet~XColumnRowRange~getColumns-- get XTableColumns

do i=1 to 5                             -- 0-based, hence columns # 2 (B) through # 6 (F)
  xCol=xCols~getByIndex(i)              -- fetch xCol
  props=xCol~XPropertySet               -- get access to its properties
  oldWidth=props~getPropertyValue("Width") -- get current value
  newWidth=oldWidth-i*250                -- decrease by i*0.250 cm
  props~setProperty("Width", box("int", newWidth)) -- set new Width
  text="oldWidth="oldWidth", newWidth="newWidth -- create info text
  xSheet~getCellByPosition(i,i)~setFormula(text) -- set cell to info text
end

::requires UNO.CLS                       -- get UNO support
```



Nutshell examples

Spreadsheet, Example 3, 3

The screenshot shows the OpenOffice.org Calc application window titled "Untitled 2 - OpenOffice.org Calc". The spreadsheet contains the following data:

	A	B	C	D	E	F	G	H	I	J
1	Hello, ApacheCon Europe 2012!									
2		oldWidth=2267, newWidth=2017								
3			oldWidth=2267, newWidth=1767							
4				oldWidth=2267, newWidth=1517						
5					oldWidth=2267, newWidth=1267					
6						oldWidth=2267, newWidth=1017				
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										

The status bar at the bottom shows "Sheet 1 / 3", "Default", "INSRT STD *", "Sum=0", and "100%".

Nutshell examples

Spreadsheet, Example 4, 1

- Example 4
 - Create a spreadsheet document
 - Add text and a date
 - Demonstrate how to format individual cells and a cell range



Nutshell examples

Spreadsheet, Example 4, 2

```
xDesktop=uno.createDesktop()          -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader         -- get XComponentLoader interface

uri="private:factory/scalc"           -- new scalc document
doc=xcl~loadComponentFromURL(uri,"_blank",0,.uno~noProps)

xSheets=doc~XSpreadSheetDocument~getSheets~XIndexAccess
xSheet =xSheets~getByIndex(0)~XSpreadSheet -- get first spreadsheet

call uno.setCell xSheet, 0, 0, "Name:" -- cell "A1"
call uno.setCell xSheet, "B1", "John Doe" -- cell "B1"
call uno.setCell xSheet, "A2", "Date:" -- cell "A2"
call uno.setCell xSheet, 1, 1, "=TODAY()" -- cell "B2"
-- format individual cells
xCellA2=xSheet~getCellByPosition(1, 0) -- get access to cell "B1"
cbc=box("int", "CF E7 F5"x ~c2d) -- define a RGB color
xCellA2~XPropertySet~setProperty("CellBackColor", cbc) -- set color

xCellB1=xSheet~getCellByPosition(1, 1) -- get access to cell "B2"
cc=box("int", "c5 00 0b"x ~c2d) -- define a RGB color
props=xCellB1~XPropertySet
props~setProperty("CharColor", cc) -- set color
fontWeight=.uno_constants~new("com.sun.star.awt.FontWeight")
props~setProperty("CharWeight", fontWeight~semiBold)

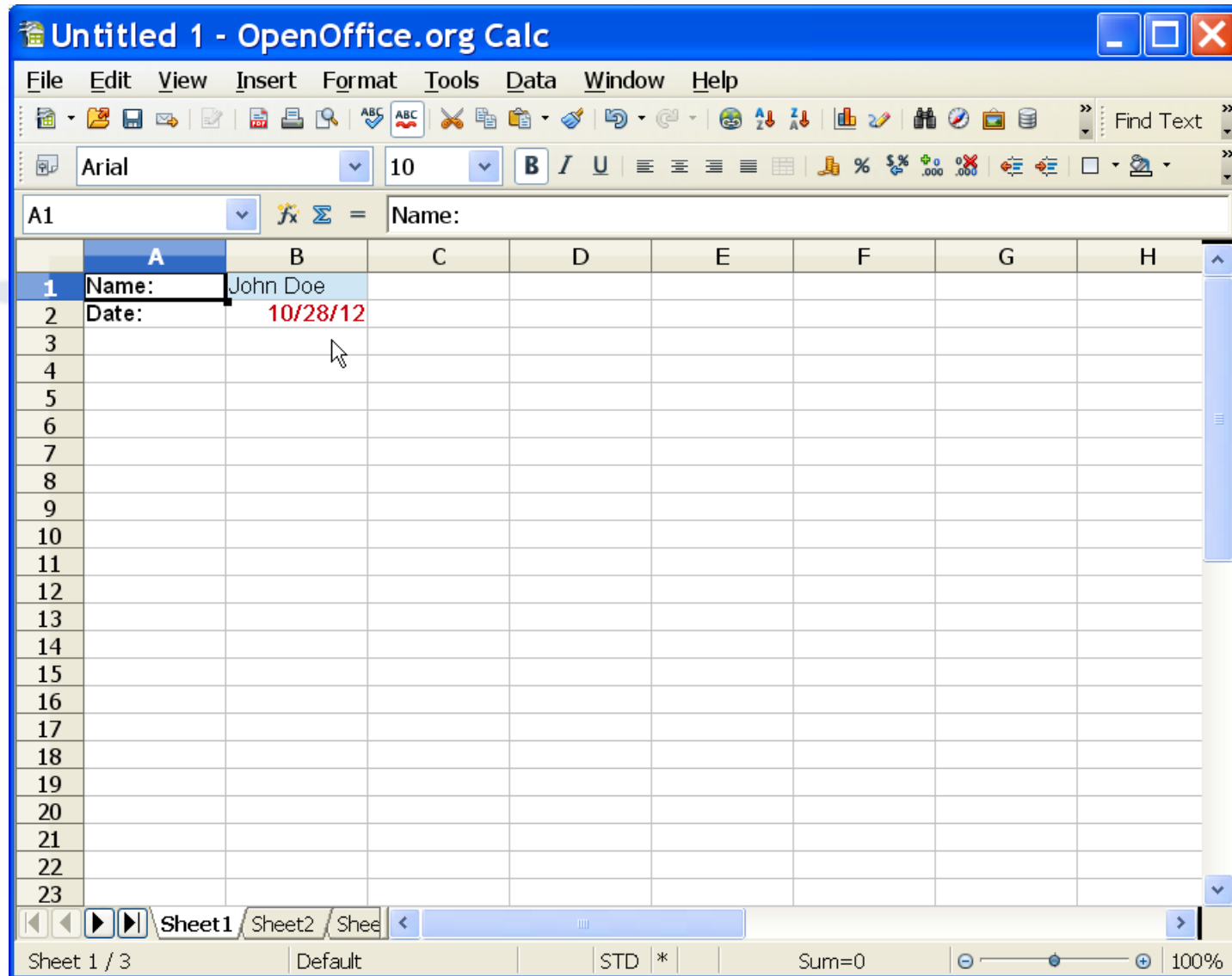
-- format using the properties of a XCellRange for "A1:A2"
props=xSheet~XCellRange~getCellRangeByName("A1:A2")~XPropertySet
props~setProperty("CharWeight", fontWeight~bold)

::requires UNO.CLS -- get UNO support
```



Nutshell examples

Spreadsheet, Example 4, 3



The screenshot shows the OpenOffice.org Calc application window titled "Untitled 1 - OpenOffice.org Calc". The interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Data, Window, Help), a toolbar with various icons, and a formatting toolbar. The spreadsheet grid is visible, with columns A through H and rows 1 through 23. The active cell is A1, which contains the text "Name:". Cell B1 contains "John Doe". Cell A2 contains "Date:", and cell B2 contains "10/28/12". The status bar at the bottom shows "Sheet 1 / 3", "Default", "STD *", "Sum=0", and "100%".

	A	B	C	D	E	F	G	H
1	Name:	John Doe						
2	Date:	10/28/12						
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								

Nutshell examples

Spreadsheet, Example 5, 1

- Example 5
 - Create a spreadsheet document
 - Generate data for four quarters for 2011 and 2012
 - Format column headings
 - Format numbers
 - Create a chart from the generated data



Nutshell examples

Spreadsheet, Example 5, 2a

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/scalc"            -- new scalc document
doc=xcl~loadComponentFromURL(uri,"_blank",0,.uno~noProps)

xSheets=doc~XSpreadSheetDocument~getSheets~XIndexAccess
xSheet =xSheets~getByIndex(0)~XSpreadSheet  -- get first spreadsheet

call uno.setCell xSheet, "A1", "Quarter"
call uno.setCell xSheet, "B1", "2011"
call uno.setCell xSheet, "C1", "2012"
do i=1 to 4
    call uno.setCell xSheet, 0, i, "Q"i
    call uno.setCell xSheet, 1, i, random(0,5000)
    call uno.setCell xSheet, 2, i, random(0,5000)
end

props=xSheet~XCellRange~getCellRangeByName("A1:C1")~XPropertySet  -- column headings
fontWeight=.uno_constants~new("com.sun.star.awt.FontWeight")
props~setProperty("CharWeight", fontWeight~bold)

props=xSheet~XCellRange~getCellRangeByName("B2:C5")~XPropertySet  -- format numbers
props~setProperty("NumberFormat", 4) -- predefined style, format: "#,##0.00"

--> ... code to create a chart on next slide ...

::requires UNO.CLS                -- get UNO support
```



Nutshell examples

Spreadsheet, Example 5, 2b

--> ... continued from previous slide: create a chart ...

```
structRect = .bsf~new("com.sun.star.awt.Rectangle") -- position & size of chart
structRect~X      = 300          -- x-offset: 0.300 cm
structRect~Y      = 2250         -- y-offset: 2.250 cm
structRect~Width  = 16000        -- width: 16.000 cm
structRect~Height = 8000         -- height: 8.000 cm

xRange=xSheet~XCellRange ~getCellRangeByName("A1:C5") -- data to be used for chart
rangeAddr = xRange~XCellRangeAddressable~getRangeAddress
arrAddr=bsf.createArrayOf(rangeAddr~getClass, rangeAddr) -- create array

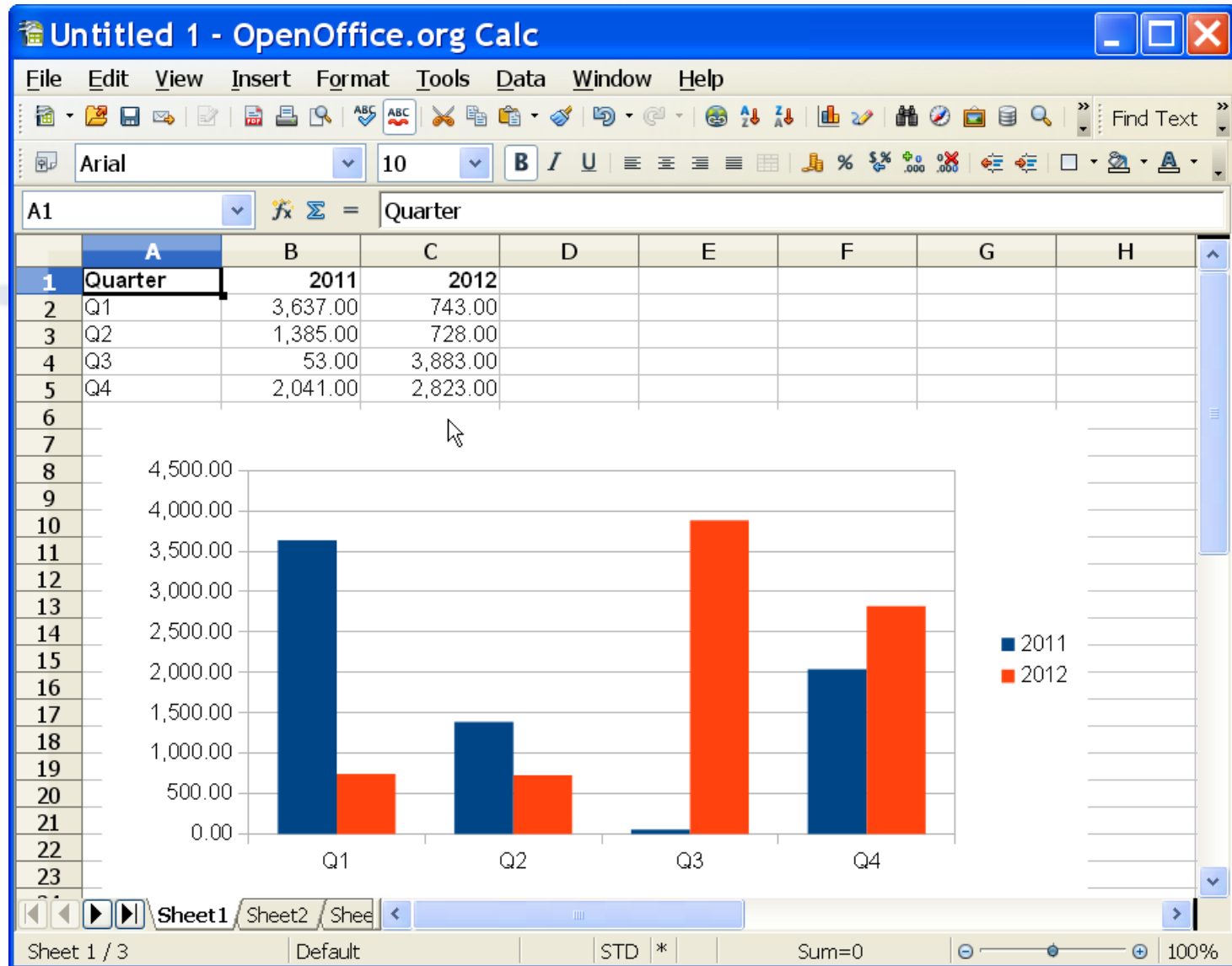
xTableCharts = xSheet~XTableChartsSupplier~getCharts -- get Chart collection & insert
xTableCharts~addNewByName("FirstChart", structRect, arrAddr, .true, .true)

::requires UNO.CLS -- get UNO support
```



Nutshell examples

Spreadsheet, Example 5, 3



Nutshell examples

Drawing (“sdraw”), 1

- 4 Services

DrawingDocument (com.sun.star.drawing.DrawingDocument),
DrawingDocumentFactory (com.sun.star.drawing.DrawingDocumentFactory),
GenericDrawingDocument (com.sun.star.drawing.GenericDrawingDocument),
OfficeDocument (com.sun.star.document.OfficeDocument)

- 20 Interfaces (unqualified)

XDocumentEventBroadcaster, XDocumentInfoSupplier,
XDocumentPropertiesSupplier, XDrawPageDuplicator, XDrawPagesSupplier,
XEmbeddedScripts, XEventBroadcaster, XEventsSupplier, XLayerSupplier,
XMasterPagesSupplier, XModel, XModifiable, XMultiServiceFactory,
XPrintJobBroadcaster, XPrintable, XPropertySet, XStorable,
XStyleFamiliesSupplier, XUndoManagerSupplier, XViewDataSupplier

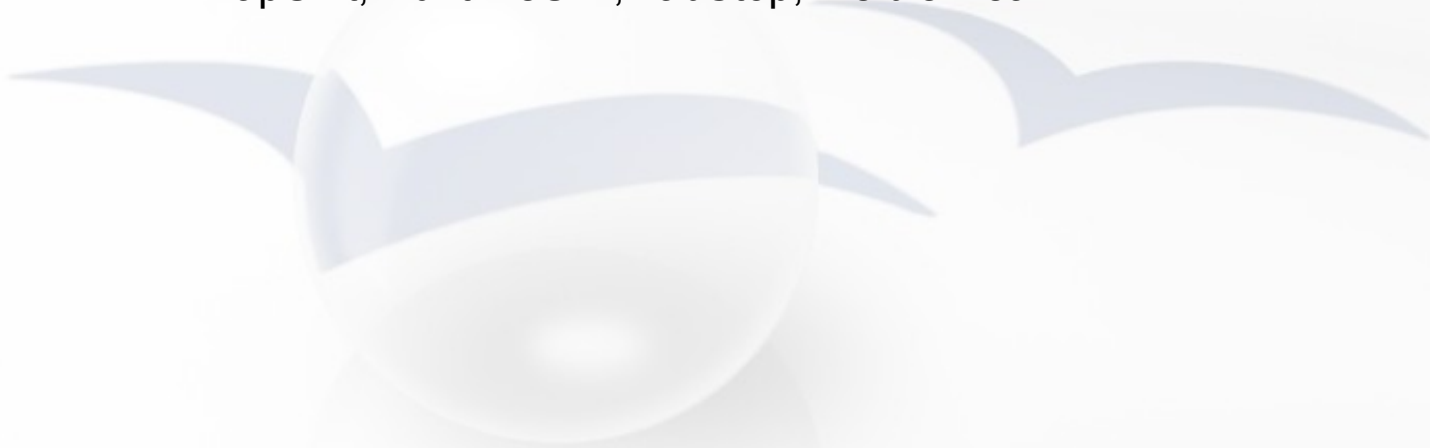


Nutshell examples

Drawing (“sdraw”), 2

- 12 Properties

ApplyFormDesignMode, AutomaticControlFocus, BasicLibraries, BuildId, CharLocale, DialogLibraries, ForbiddenCharacters, HasValidSignatures, MapUnit, RuntimeUID, TabStop, VisibleArea



Nutshell examples

Drawing (“sdraw”), 3

- A collection of draw pages
- Each draw page
 - Allows any kind of drawing
 - Allows animation effects to be applied
- The draw concepts are fully reused for presentation documents!



Nutshell examples

Drawing, Example 1, 1

- Example 1
 - Create a drawing document
 - Fetch the drawing component's service manager
 - Used to create shapes that can be stored with the document
 - Create and draw a rectangular shape, add it to the document
 - Set the shape's text to “**Hello, ApacheCon Europe 2012!**”
 - Break up the text such that it fits into the rectangle



Nutshell examples

Drawing, Example 1, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/sdraw"            -- new sdraw document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

xsf=doc~XMultiServiceFactory          -- get the service manager (factory)
-- get access to the first draw page
xDrawPage = doc~XDrawPagesSupplier~getDrawPages~getByIndex(0)~XDrawPage

-- create a Rectangle shape and determine its position and size, add it to the page
xShape=xsf~createInstance("com.sun.star.drawing.RectangleShape") ~XShape
xShape~setPosition(.bsf~new("com.sun.star.awt.Point", 3000, 3000))
xShape~setSize(.bsf~new("com.sun.star.awt.Size", 5000, 2500))
xDrawPage~add(xShape)                  -- add new shape to first draw page

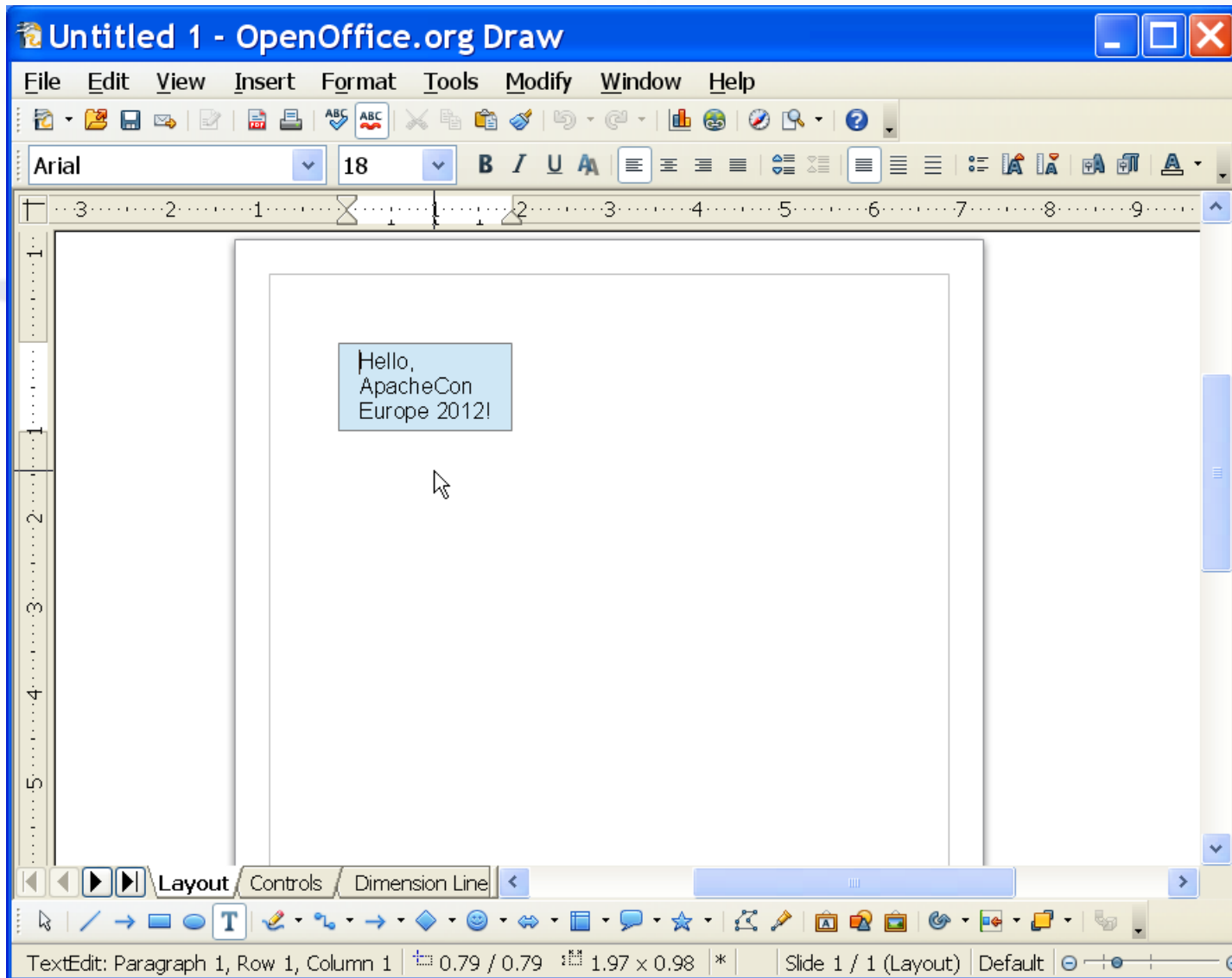
cr="0d"x                               -- ASCII carriage return char
xShape~XText~setString("Hello,"cr"ApacheCon"cr"Europe 2012!") -- now set string

::requires UNO.CLS                     -- get UNO support
```



Nutshell examples

Drawing, Example 1, 3



Nutshell examples

Presentation (“simplpress”), 1

- 4 Services

DrawingDocumentFactory (com.sun.star.drawing.DrawingDocumentFactory),
GenericDrawingDocument (com.sun.star.drawing.GenericDrawingDocument),
OfficeDocument (com.sun.star.document.OfficeDocument),
PresentationDocument (com.sun.star.presentation.PresentationDocument)

- 23 Interfaces (unqualified)

XCustomPresentationSupplier, XDocumentEventBroadcaster,
XDocumentInfoSupplier, XDocumentPropertiesSupplier, XDrawPageDuplicator,
XDrawPagesSupplier, XEmbeddedScripts, XEventBroadcaster,
XEventsSupplier, XLayerSupplier, XLinkTargetSupplier, XMasterPagesSupplier,
XModel, XModifiable, XMultiServiceFactory, XPresentationSupplier,
XPrintJobBroadcaster, XPrintable, XPropertySet, XStorable,
XStyleFamiliesSupplier, XUndoManagerSupplier, XViewDataSupplier

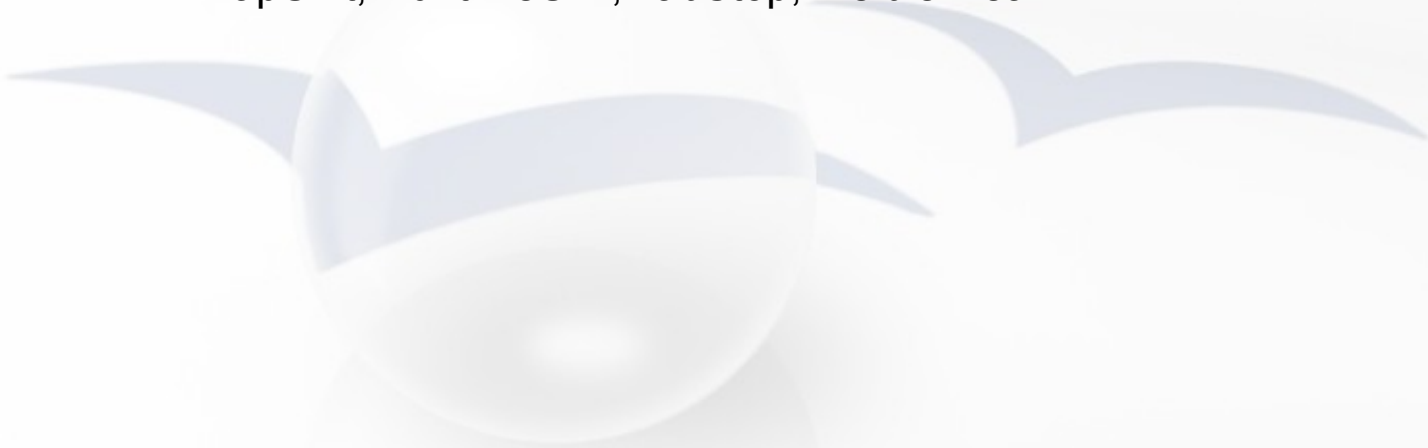


Nutshell examples

Presentation (“simpres”), 2

- 12 Properties

ApplyFormDesignMode, AutomaticControlFocus, BasicLibraries, BuildId, CharLocale, DialogLibraries, ForbiddenCharacters, HasValidSignatures, MapUnit, RuntimeUID, TabStop, VisibleArea



Nutshell examples

Presentation (“simplpress”), 3

- A collection of draw pages
- Each draw page
 - Allows any kind of drawing
 - Allows animation effects to be applied
- Concept of “Master Pages”
 - Allows definition of specific layouts
- Layouts for title, listings, charts, etc.
- Presentation mode



Nutshell examples

Presentation, Example 1, 1

- Example 1
 - Create a presentation document
 - Fetch its component's service manager
 - Used to create shapes that can be stored with the document
 - Create and draw a rectangular shape, add it to the document
 - Set the shape's text to “[Hello, ApacheCon Europe 2012!](#)”
 - Break up the text such that it fits into the rectangle
 - Except for URL, the same code as for “sdraw”!



Nutshell examples

Presentation, Example 1, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader          -- get XComponentLoader interface

uri="private:factory/simpres"          -- new simpres document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

xsf=doc~XMultiServiceFactory          -- get the service manager (factory)
-- get access to the first draw page
xDrawPage = doc~XDrawPagesSupplier~getDrawPages~getByIndex(0)~XDrawPage

-- create a Rectangle shape and determine its position and size
xShape=xsf~createInstance("com.sun.star.drawing.RectangleShape") ~XShape
xShape~setPosition(.bsf~new("com.sun.star.awt.Point", 3000, 3000))
xShape~setSize(.bsf~new("com.sun.star.awt.Size", 5000, 2500))

xDrawPage~add(xShape)                  -- add new shape to first draw page
cr="0d"x                               -- ASCII carriage return char
xShape~XText~setString("Hello,"cr"ApacheCon"cr"Europe 2012!") -- now set string

::requires UNO.CLS                     -- get UNO support
```



Nutshell examples

Presentation, Example 1, 3

The screenshot displays the OpenOffice.org Impress application window titled "Untitled 1 - OpenOffice.org Impress". The interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Slide Show, Window, Help) and a toolbar. Below the menu bar are tabs for "Normal", "Outline", "Notes", "Handout", and "Slide Sorter". The main slide area shows a presentation slide with a title box containing the text "Click to add title" and a text box containing the text "Click to add text". A small text box on the left side of the slide contains the text "Hello, ApacheCon Europe 2012!". The right sidebar is titled "Tasks" and contains several sections: "Master Pages", "Layouts", "Table Design", and "Custom Animation". The "Custom Animation" section is expanded, showing "Modify effect" with "Add...", "Change...", and "Remove" buttons, and "Effect" with "Start" and "Property" dropdown menus. The bottom status bar shows "Slide 1 / 1", "Default", and "41%".

Nutshell examples

Presentation, Example 2, 1

- Example 2
 - Create a presentation document
 - Create two pages with different layouts
 - One “Title Slide” page, layout number: 0
 - One “Title, Content” page, layout number: 1
 - Start the presentation at the end



Nutshell examples

Presentation, Example 2, 2

```
xDesktop=uno.createDesktop()           -- bootstrap & get access to XDesktop
xcl=xDesktop~XComponentLoader         -- get XComponentLoader interface

uri="private:factory/simpres"         -- new simpres document
doc=xcl~loadComponentFromURL(uri, "_blank", 0, .uno~noProps)

xDrawPages = doc~XDrawPagesSupplier~getDrawPages  -- get DrawPages

xDrawPage=xDrawPages~getByIndex(0)    -- get first (empty) page
xDrawPage~XPropertySet~setProperty("Layout", box("short",0)) -- "Title Slide"
xShapes=xDrawPage~XShapes            -- get access to its shapes
xShapes~getByIndex(0)~XText~setString("ApacheCon Europe 2012")
xShapes~getByIndex(1)~XText~setString("Scripting Apache OpenOffice")

xDrawPage=xDrawPages~insertNewByIndex(1)~getByIndex(1) -- insert at end, get access
xDrawPage~XPropertySet~setProperty("Layout", box("short",1)) -- "Title Content"
xShapes=xDrawPage~XShapes            -- get access to its shapes
xShapes~getByIndex(0)~XText~setString("Scripting Apache OpenOffice")

lf="0a"x                               -- define line-feed character
tab="09"x                              -- define tabulator character
str="First" lf"Second" lf tab "Second, 1" lf tab "Second, 2" lf"Third"
xShapes~getByIndex(1)~XText~setString(str)

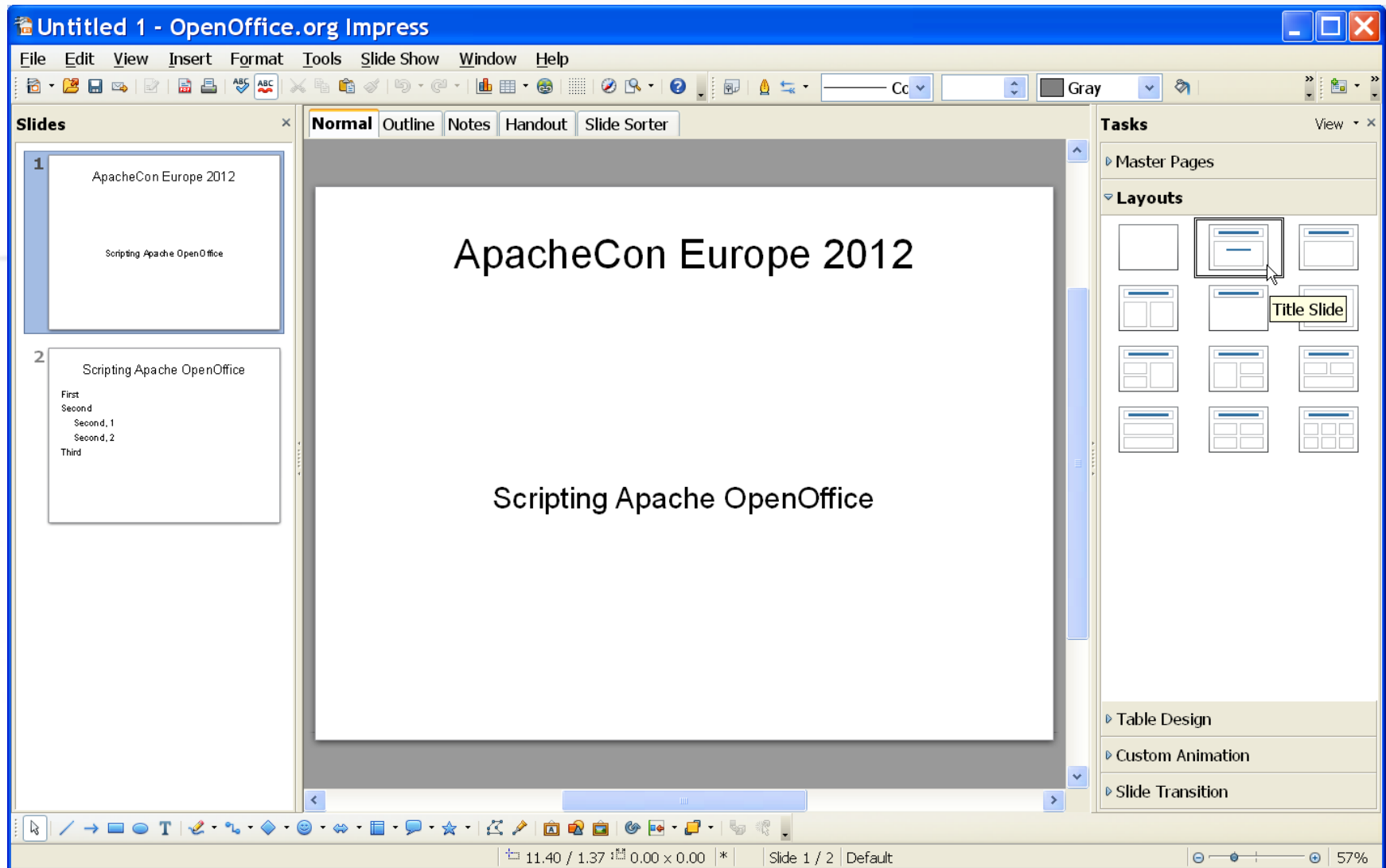
doc~XPresentationSupplier~getPresentation~bsf.dispatch("start") -- start presentation

::requires UNO.CLS                    -- get UNO support
```



Nutshell examples

Presentation, Example 2, 3a



The screenshot displays the OpenOffice.org Impress application window titled "Untitled 1 - OpenOffice.org Impress". The interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Slide Show, Window, Help), a toolbar, and a status bar at the bottom. The main workspace shows a slide with the title "ApacheCon Europe 2012" and the subtitle "Scripting Apache OpenOffice". The slide sorter on the left shows two slides: Slide 1 (ApacheCon Europe 2012) and Slide 2 (Scripting Apache OpenOffice). The right sidebar contains the "Tasks" panel, which is currently showing the "Layouts" section. A mouse cursor is hovering over the "Title Slide" layout icon, which is highlighted with a tooltip. The status bar at the bottom indicates the current slide is "Slide 1 / 2" and the zoom level is "57%".



Nutshell examples Presentation, Example 2, 3b

The screenshot displays the OpenOffice Impress application window titled "Untitled 1 - OpenOffice.org Impress". The interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Slide Show, Window, Help), a toolbar, and a status bar at the bottom. The main workspace shows a slide with the following content:

Scripting Apache OpenOffice

First
Second
 Second, 1
 Second, 2
Third

The left sidebar shows a "Slides" panel with two slides. Slide 1 is titled "ApacheCon Europe 2012" and contains the text "Scripting Apache OpenOffice". Slide 2 is titled "Scripting Apache OpenOffice" and contains the text "First", "Second", "Second, 1", "Second, 2", and "Third". The right sidebar shows a "Tasks" panel with a "Layouts" section. A mouse cursor is hovering over a layout icon labeled "Title, Content". The status bar at the bottom indicates "Slide 2 / 2 | Default" and "57%".



Nutshell examples

Presentation, Example 3, 1

- Example 3
 - Create a presentation document
 - Create two pages with different layouts
 - One “Title Slide” page, layout number: 0
 - One “Title, Content” page, layout number: 1
 - Use AOO's impress outline levels!
 - Kudos to Christoph Jopp, who found the property to use!
 - Start the presentation at the end



Nutshell examples

Presentation, Example 3, 2

```
...
xText=xShapes~getByIndex(1)~XText    -- content's XText
call addItem xText, "First",          0 -- add string, determine level
call addItem xText, "Explored by many", 0
call addItem xText, "Kudos! go to",   1
call addItem xText, "Christoph Jopp!", 1
call addItem xText, "On 2012-11-07",  0, .false
...

::routine addItem                    -- adds string at the given (0-based outline) level
use arg xText, string, level, bNewParagraph=.true

xTR=xText~XTextRange~getEnd          -- get end, a XTextRange
xTR~XPropertySet~setProperty("NumberingLevel",level) -- set XTextRange level
xTR~setString(string)                -- set string

if bNewParagraph=.true then          -- add new paragraph
  xTR~getEnd~setString("\n")          -- add linefeed character -> new paragraph

::routine dumpItems                  -- show level and string from XText
use arg xText

enum=xText~XEnumerationAccess~createEnumeration -- enumerate paragraphs
do i=1 while enum~hasMoreElements
  xtr=enum~nextElement~XTextRange -- we need XTextRange's string & properties

  nl=xtr~XPropertySet~getPropertyValue("NumberingLevel")
  say "    item #" i": NumberingLevel="pp(nl) pp(xtr~getString)
end
```



Nutshell examples Presentation, Example 2, 3

The screenshot shows the OpenOffice Impress application window. The title bar reads "Untitled 1 - OpenOffice.org Impress". The main window contains a slide with the following content:

Scripting Apache OpenOffice

- First
- Explored by many
 - Kudos! go to
 - Christoph Jopp!
- On 2012-11-07

The left sidebar shows a "Slides" panel with two slides. Slide 1 is titled "ApacheCon Europe 2012" and contains the text "Scripting Apache OpenOffice". Slide 2 is titled "Scripting Apache OpenOffice" and contains the bulleted list shown on the main slide. The right sidebar shows the "Tasks" panel with options for "Master Pages", "Layouts", "Table Design", and "Custom Animation". The "Custom Animation" section is expanded, showing "Modify effect" options (Add..., Change..., Remove) and "Effect" settings (Start, Property, Speed). A note in the "Custom Animation" section reads: "First select the slide element and then click 'Add...'. to add an animation effect." The bottom status bar shows "Slide 2 / 2 Default" and a zoom level of "67%".



Nutshell examples

URE (UNO Runtime Environment)

- There are UNO types that can be used independently of the AOO GUI! E.g.
 - "com.sun.star.lang.Locale"
 - "com.sun.star.linguistic2.LinguServiceManager"
- Can therefore be used by/incorporated into any other application!
- Need to bootstrap and connect to the UNO runtime environment (URE)
 - Fetch its service manager
 - Instantiate services
 - Use services, request their interfaces



Nutshell examples

URE, Spellchecker Example, 1

- Example “Spellchecker”
 - Create a connection to URE
 - Get its service manager
 - Used to create the spellchecker service via `"com.sun.star.linguistic2.LinguServiceManager"`
 - Use all locales available to the spellchecker
 - In this example: some English locales
 - Spellcheck the word “thru” with the different English locales
 - If not correct, list the alternatives of the locale



Nutshell examples

URE, Spell Checker Example, 2

```
xContext = UNO.connect()           -- bootstrap and connect to URE
xSM = xContext~getServiceManager   -- get the service manager

serviceName="com.sun.star.linguistic2.LinguServiceManager"
lsm=xsm~createInstanceWithContext(serviceName, xContext) -- create the service
xSpellChecker = lsm~XLinguServiceManager~getSpellChecker -- get the spell checker
locales=xSpellChecker~XSupportedLocales~getLocales       -- get all supported locales

word="thru"                        -- word to spellcheck
do locale over locales             -- iterate over all available Locales
  str=locale~language/"locale~country"/"locale~variant "-> word:" pp(word)":"
  ok=xSpellChecker~isValid(word, locale, .UNO~noProps) -- check word
  if ok then str=str "correct"
    else str=str "NOT correct! Available alternatives:"
  say str

  if \ok then                      -- not correct, get & show alternatives
  do
    alternatives=xSpellChecker~spell(word, locale, .UNO~noProps)
    if alternatives <> .nil then
    do
      do a over alternatives~getAlternatives
        say "0909"x pp(a)
      end
    end
  end
end
end

::requires UNO.CLS                 -- get UNO support
```



Nutshell examples

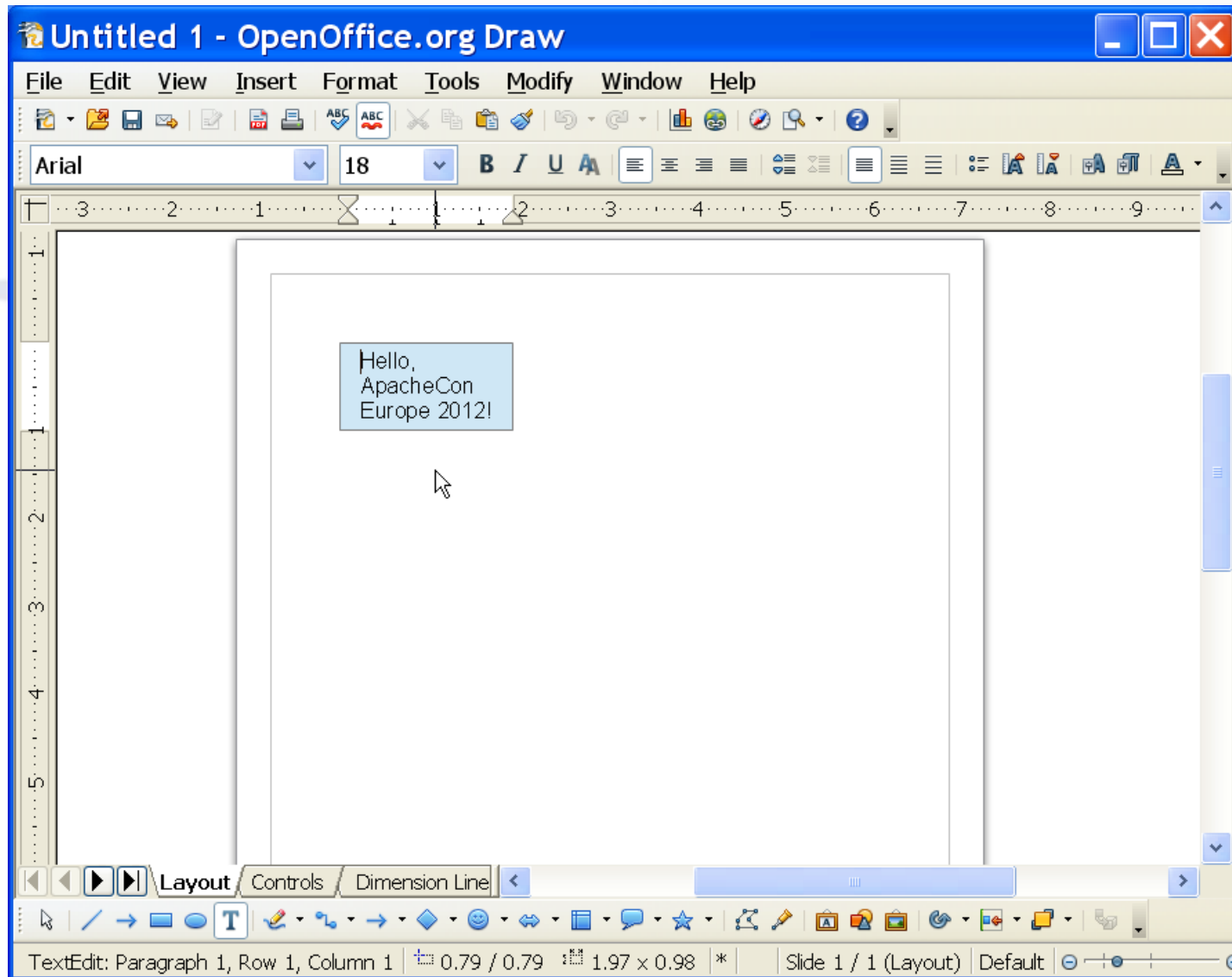
URE, Spell Checker Example, 3

```
E:\201211-ASF-Europe\vortrag\code>rexx spellcheck1.rxo
en/US/ -> word: [thru]: correct
en/GB/ -> word: [thru]: NOT correct! Available alternatives:
    [thrum]
    [thou]
    [thrush]
    [thrust]
    [Thur]
    [truth]
    [three]
    [threw]
en/AU/ -> word: [thru]: NOT correct! Available alternatives:
    [threw]
    [throe]
    [through]
    [thrum]
    [thou]
en/CA/ -> word: [thru]: correct
en/NZ/ -> word: [thru]: NOT correct! Available alternatives:
    [through]
    [thrum]
    [thou]
en/ZA/ -> word: [thru]: NOT correct! Available alternatives:
    [thrum]
    [thou]
    [thrush]
    [thrust]
    [Thur]
    [truth]
    [through]
    [three]
```



Nutshell examples

URE, Spell Checker Example, 3



Roundup

- UNO
- Very Powerful
 - Complex
 - Documentation, examples very important
- Creating, editing AOO documents
 - swriter, scalc, sdraw, simpres
- URE
- Need for many more nutshell examples in all programming languages!



Links to ooRexx/BSF4ooRexx

- ooRexx (as of 2012-11-03, version: 4.1.2)
 - An easy to learn and easy to use scripting language
 - Compatible to (“classic”) Rexx
 - Developed originally by IBM (“Object REXX”)
 - Source code was received by the non-for-profit SIG “Rexx Language Association (<http://www.RexxLA.org>)”
 - Opensourced as “Open Object Rexx (ooRexx)”
 - Home: <http://www.ooRexx.org>
 - Downloads: [https://sourceforge.net/projects/oorex/files/oorex/](https://sourceforge.net/projects/oorex/ files/oorex/)
 - Brief overview (since opensourcing a lot got added):
http://wi.wu.ac.at/rgf/rexx/misc/ecoop06/ECOOP2006_RDL_Workshop_Flatscher_Paper.pdf
 - Authoring a new book that introduces ooRexx



Links to ooRexx/BSF4ooRexx

- **BSF4ooRexx (with built-in AOO support)**
 - Allows to use all of Java from ooRexx as if it was an interpreted, typeless and caseless language!
 - “Camouflaging Java as ooRexx” (package “**BSF.CLS**”)
 - All Java classes and Java objects look like ooRexx' ones!
 - Includes specific AOO support (package “**UNO.CLS**”)
 - Developed since 2000 to allow the creation of platform independent Rexx and ooRexx scripts
 - Using Apache's “Bean Scripting Framework (BSF)”, cf. <http://commons.apache.org/bsf/>
 - Home: <https://sourceforge.net/projects/bsf4oorexx/>
 - Downloads: <https://sourceforge.net/projects/bsf4oorexx/files/GA/>

