

The IntelliJ IDEA Plugin ooRexxPlugin 2.2 for Rexx and ooRexx 5.0

The 2023 International Rexx Symposium
Almere, The Netherlands
May 14th – May 17th 2023

Overview

- IntelliJ Plugin
- ooRexx Plugin 2.2
- ooRexxDoc
- Roundup
- Links

IntelliJ (by JetBrains)

- IDEA
 - Integrated Development Environment Application
 - Professional software development environment for e.g.
 - C++, Groovy, Java, JavaScript, Kotlin, PHP, Python, Ruby, Rust, Scala, ...
- Available for all major operating systems
 - Apple, Linux, Windows
- Free community edition
 - Professional edition free for academia (faculty, students)
- Open plugin architecture
- Download URL (as of 2023-05-11)
<https://www.jetbrains.com/idea/download>

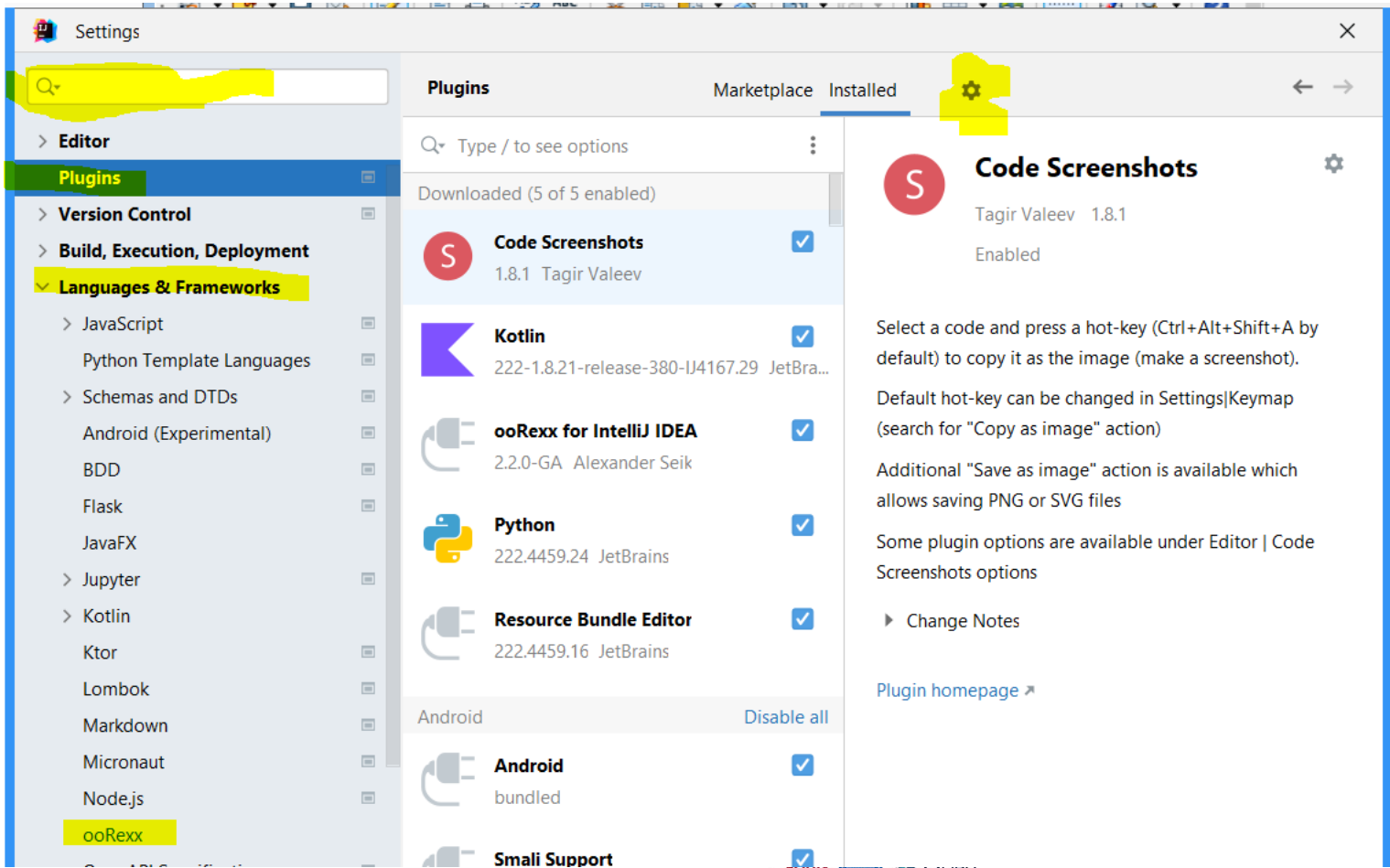
ooRexxPlugin 2.2

- IntelliJ plugin by Alexander Seik
- Introduced at Rexx Symposium 2017
- Adds full ooRexx support to IntelliJ
 - Syntax checking, syntax highlighting, folding, ...
 - Allows for on-the fly ooRexxDoc creation (right mouse click on program to doc)
 - ooRexxDoc downloadable as a separate, standalone tool
 - Introduces auto completion!
 - Supports mainframe Rexx and Jean-Louis Faucher's "executor"
- Download URL and [README.txt](#)
<https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/>

ooRexxPlugin 2.2 Installation

- Download [ooRexxPlugin-2.2.0-GA.zip](#)
- IntelliJ → File → Settings ... → Plugins → Gear Icon → Click
 - Choose download directory and select [ooRexxPlugin-2.2.0-GA.zip](#) → Enter
 - Restart IntelliJ IDEA to make the ooRexx plugin active

ooRexxPlugin 2.2 Installation (Windows Screenshot)



ooRexxPlugin 2.2 Configuration

- IntelliJ → File → Settings ...
 - Enter ooRexx in the search field on the upper left hand side

Check for mainframe Rexx & executor

The screenshot shows the IntelliJ IDEA Settings dialog. The search field at the top left contains 'ooRexx'. The left sidebar shows the 'Languages & Frameworks' section expanded, with 'ooRexx' selected. The main panel displays the configuration for 'ooRexx' under 'Languages & Frameworks'. The 'Allow special characters (@, #, €, \$). Requires restart.' checkbox is checked. The 'Enable executor parsing (https://github.com/jlfaucher/executor)' checkbox is unchecked. The 'Auto Completion Casing. Requires restart.' dropdown menu is set to 'Camel Case'. A callout bubble points to the 'Enable executor parsing' checkbox with the text 'Check for mainframe Rexx & executor'.

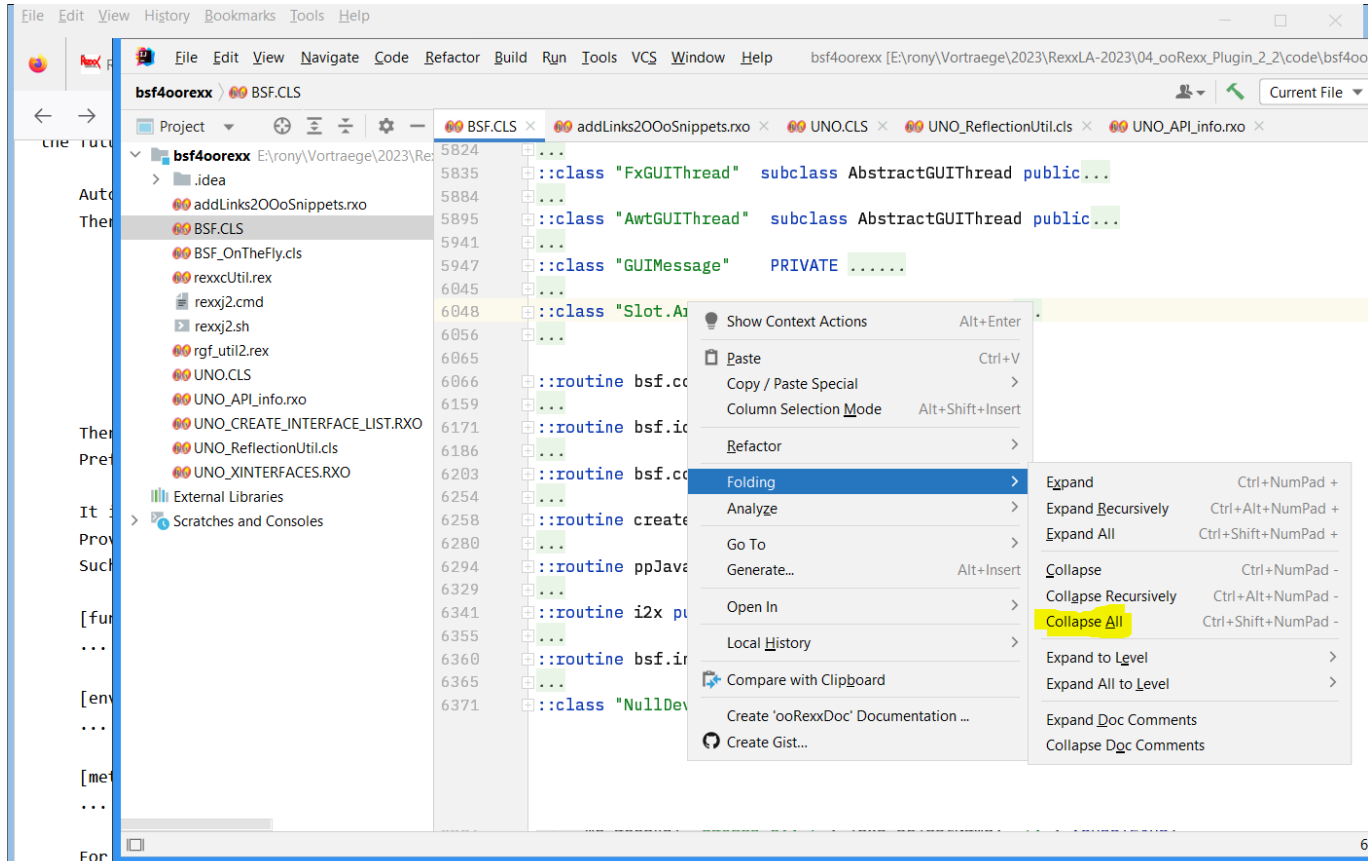
IntelliJ with oRexxPlugin: BSF.CLS, 1

```
6280  /** This routine takes a Rexx condition object, extracts the Java exception object and
6281  creates the chain of the Java exceptions such that Rexx programmers can easily
6282  learn about it. Each Java exception's object name gets shown together with the
6283  its string exception. If the optional second argument is <code>.true</code> then
6284  the stack trace of the source of the Java exception chain gets returned as well.
6285
6286  @param co Rexx condition object (cf. <code>condition("object")</code> in the reference manual)
6287  @param bStackTrace optional, defaults to <code>.false</code>; if set to <code>.true</code>
6288  then the stack trace of the source of the Java exception chain gets returned
6289  @return string containing the Java exception chain or an empty string, if there cannot
6290  be a a Java exception object found
6291  @since 2020-08-12
6292  @author Rony G. Flatscher
6293
6294  */
6295  ::routine ppJavaExceptionChain public| -- "pretty print" the list of the Java exception chain, return it as a string
6296  use strict arg co, bStackTrace=.false
6297
6298  jexc=co-Additional-at(2) -- get Java Exception object
6299  if \jexc-isA(.bsf) then return "" -- not a Java object
6300
6301  mb=.MutableBuffer-new
6302
6303  mb-append("/"-copies(39), " Environment: [", .bsf4rex-*.display.version, "]", .endOfLine)
6304  mb-append(.endOfLine, "showing Java exception chain (trigger exception at bottom) ...", .endOfLine, .endOfLine)
6305  i=0
6306  eyecatcher="-"-copies(7)
6307  do while jexc-isA(.bsf) -- loop over Java exception chain
6308  i+=1
6309  mb-append(eyecatcher, "> (Java exception # ", i, ")")
6309  mb-append(" caused by: [" . jexc-objectName . "]: " . .endOfLine)
```

No errors!

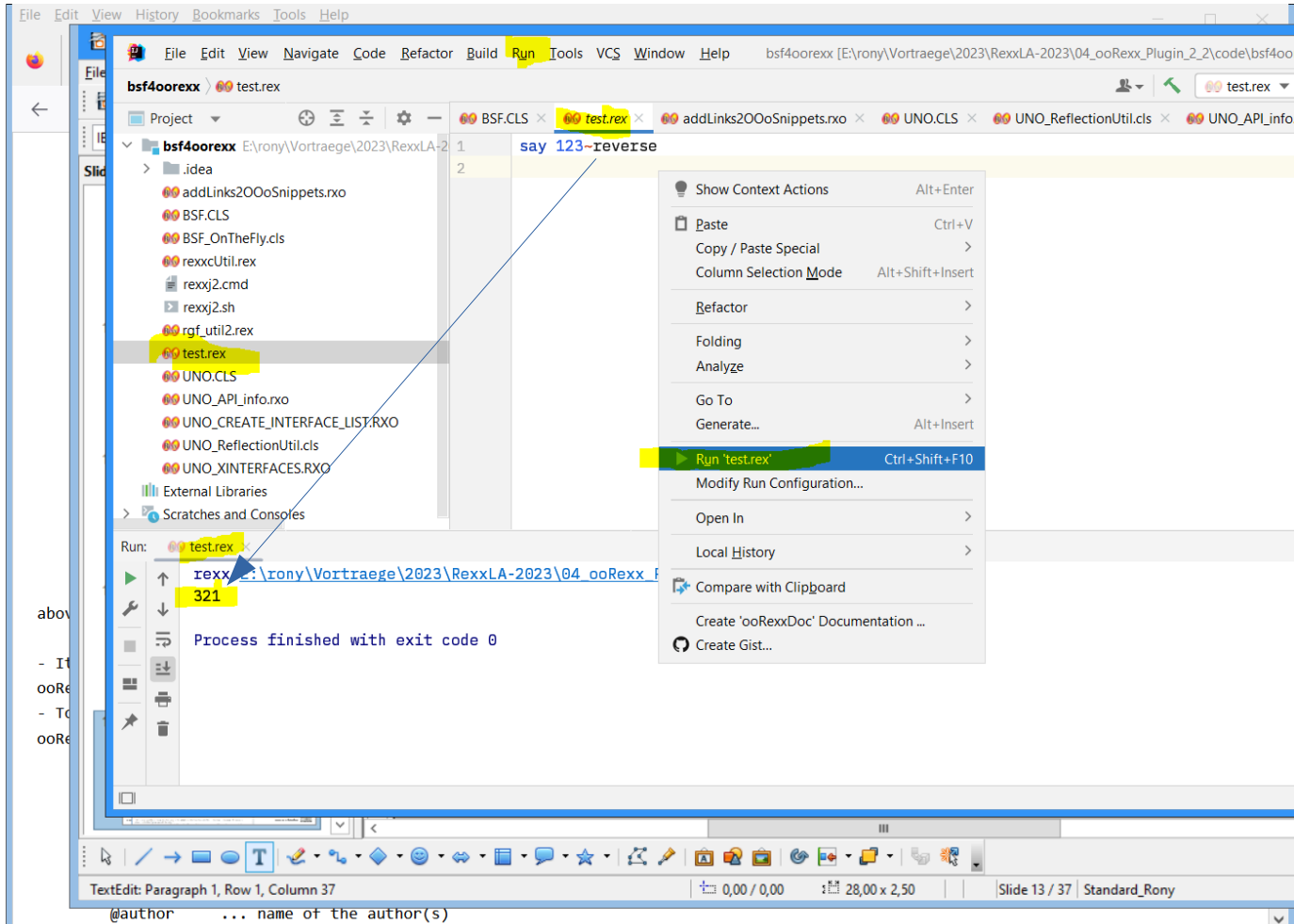
TODO-items

IntelliJ with oRexxPlugin: **BSF.CLS**, 2 (Collapsed)



above.

IntelliJ with oRexxPlugin: Running from IDEA



ooRexxPlugin 2.2, Auto Completion, 1

- Three categories of auto completion names
 - Public functions (routines)
 - Environment symbols
 - Methods
- Possible to extend auto completion list
 - Create the subdirectory `IntelliJ/ooRexxPlugin` in your home directory
 - `%USERPROFILE%\IntelliJ\ooRexxPlugin` (Windows) or `"$HOME/IntelliJ/ooRexxPlugin"` (Unix)
 - Text file with list of names organized in sections with the header lines
 - `"[functions]", "[environment symbols]", "[methods]"`
 - Copy text file to `"IntelliJ/ooRexxPlugin"` in your home directory
 - Restart IntelliJ

ooRexxPlugin 2.2, Auto Completion, 2

- Simple program to create such name completion files
`extractNamesFromRexxPackages.rex < program.rex > program.rex.txt`
 - Copy `program.rex.txt` to `IntelliJ/ooRexxPlugin` in your home directory
 - Restart IntelliJ
- Zip archive `rgfNames.zip`
 - `IntelliJ/ooRexxPlugin/BSF.CLS.txt`
 - `IntelliJ/ooRexxPlugin/CLR.CLS.txt`
 - `IntelliJ/ooRexxPlugin/rgf_util2.rex.txt`
 - `IntelliJ/ooRexxPlugin/UNO.CLS.txt`
 - `IntelliJ/ooRexxPlugin/dbus.cls.txt`

ooRexxPlugin 2.2, Auto Completion, 3

The screenshot shows an IDE window titled 'bsf4ooress' with a project named 'test.rex'. The main editor displays the following code:

```
1 say 123-reverse  
2 a=someObject-trunc
```

An auto-completion popup is visible over the 'trunc' command, listing the following suggestions:

- run - Method
- runLater - Method - BSF.CLS
- runLaterLatest - Method - BSF.CLS
- runLaterLatestPush - Method - BSF.CLS
- runLaterPush - Method - BSF.CLS
- .true - Environment
- TRUNC - Function
- trunc - Method

Below the editor, the 'Run' console shows the execution of the Rexx script:

```
Run: test.rex x  
↑ rex: E:\rony\Vortraege\2023\RexxLA-2023\04 ooRexx_Plugin_2_2\code\bsf4ooress\test.rex  
321  
Process finished with exit code 0
```

The IDE interface includes a menu bar (File, Edit, View, Navigate, Code, Refactor, Build, Run, Tools, VCS, Window, Help), a toolbar, and a sidebar with a project tree. The status bar at the bottom indicates 'Slide 14 / 38 | Standard_Rony'.

ooRexxPlugin 2.2, Auto Completion, 4

The screenshot shows an IDE window with the following elements:

- Project Explorer:** Shows a project named 'bsf4ooorex' with various files and folders, including 'addLinks2OOoSnippets.rxo', 'BSF.CLS', 'BSF_OnTheFly.cls', 'rexccUtil.rex', 'rexj2.cmd', 'rexj2.sh', 'rgf_util2.rex', 'test.rex', 'UNO.CLS', 'UNO_API_info.rxo', 'UNO_CREATE_INTERFACE_LIST.RXO', 'UNO_ReflectionUtil.cls', and 'UNO_XINTERFACES.RXO'.
- Editor:** Contains the code:

```
1 say 123~reverse
2 a=someObject~mes
```
- Auto-completion popup:** Lists the following options:
 - MESSAGE - Keyword
 - message - Method - dbus.cls
 - message_worker - Method - dbus.cls
 - messageBox - Method - BSF.CLS
 - messageComplete - Method
 - messageLoop - Method - dbus.cls
 - messageName - Method
 - .Message - Environment
 - .MessageComparator - Environment - rgf_util2.rex
 - .MessageNotification - Environment
 - .TimeSpan - Environment
- Run Console:** Shows the execution of 'irexx E:\rony\Vortraege\2023\RexxLA-2023\04 ooRexx_Plugin 2 2\code\bsf4ooorex\test.rex' resulting in the output '321' and 'Process finished with exit code 0'.

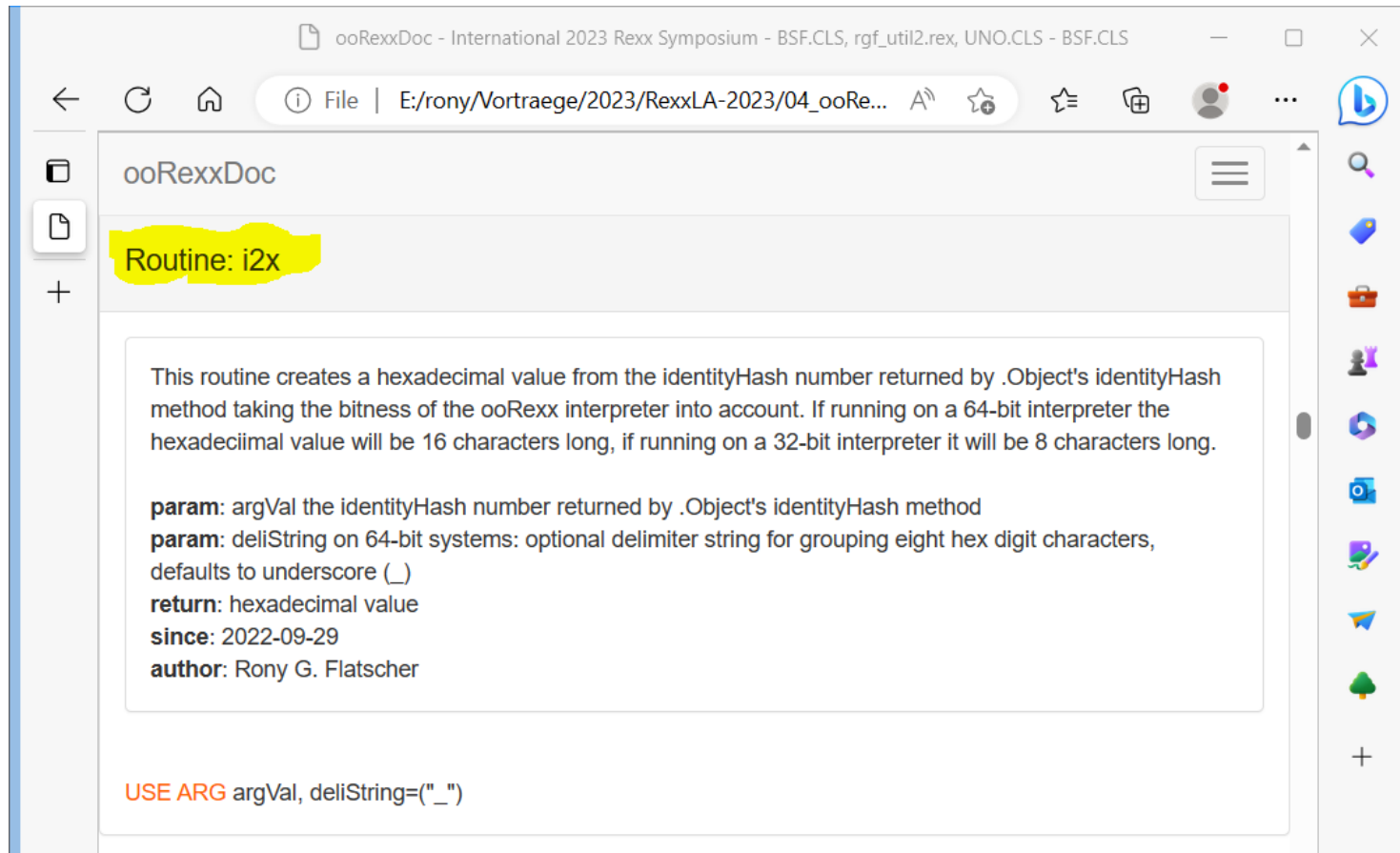
ooRexxDoc 2.2

- Modelled after JavaDoc
 - Creates HTML documentation from any Rexx, ooRexx and executor programs
 - Rexx programs may include ooRexxDoc annotations in ooRexxDoc block comments
 - Led in with `/**` (note the second asterisk)
 - Processes ooRexxDoc annotations in ooRexxDoc comments
 - `@author`, `@condition`, `@deprecated`, `@param`, `@return`, `@see`, `@since`, `@version`
 - Can be run from the command line
- Download ooRexxDoc-2.2.0-GA.zip, unblock and unzip
 - Usage information in file [USAGE.md](#)
- Download URL
 - <https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/>

IntelliJ ooRexxDoc, 1

```
6328
6329
6330 /** This routine creates a hexadecimal value from the identityHash number returned by .Object's
6331 identityHash method taking the bitness of the ooRexx interpreter into account.
6332 If running on a 64-bit interpreter the hexadecimal value will be 16 characters
6333 long, if running on a 32-bit interpreter it will be 8 characters long.
6334
6335 @param argVal the identityHash number returned by .Object's identityHash method
6336 @param deliString on 64-bit systems: optional delimiter string for grouping eight hex digit
6337 characters, defaults to underscore (_)
6338
6339 @return hexadecimal value
6340 @since 2022-09-29
6341 @author Rony G. Flatscher
6342
6343 ::routine i2x public -- "pointer" to hexadecimal string: convert identityHash value to hexadecimal string
6344 use strict arg argVal, deliString=("_")
6345
6346 iDigits=.rexxinfo-internalDigits -- get number of internal digits
6347 numeric digits iDigits
6348 val=argVal-d2x(iDigits) -- convert to a hexadecimal string
6349 len=(iDigits=9)~?(8,16) -- determine length of hexadecimal value
6350 hexval = val-right(len) -- extract the hex digits representing 32 or 64 bit value
6351 if iDigits=18, deliString<>" then -- insert delimiter into hexadecimal string
6352 | hexVal=hexVal-insert(deliString,8)
6353 return hexVal
6354
6355 /** Routine that makes sure that a RexxAndJava (RexxEngine) instance gets initialized
6356 * properly, even if the prolog code does not get executed (to be expected in future
```


IntelliJ ooRexxDoc, 2



ooRexxDoc - International 2023 Rexx Symposium - BSF.CLS, rgf_util2.rex, UNO.CLS - BSF.CLS

File | E:/rony/Vortraege/2023/RexxLA-2023/04_ooRe...

ooRexxDoc

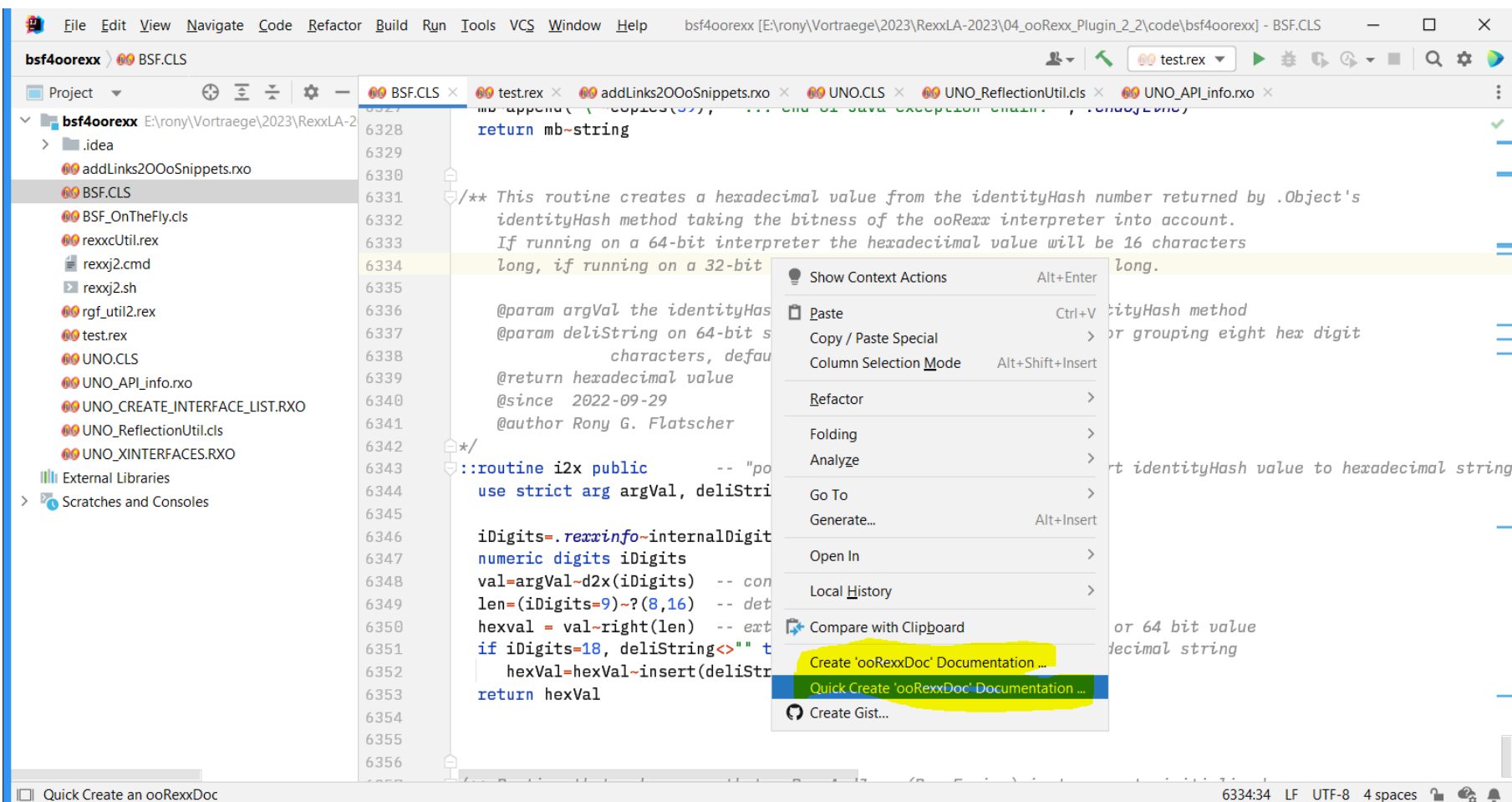
Routine: i2x

This routine creates a hexadecimal value from the identityHash number returned by .Object's identityHash method taking the bitness of the ooRexx interpreter into account. If running on a 64-bit interpreter the hexadecimal value will be 16 characters long, if running on a 32-bit interpreter it will be 8 characters long.

param: argVal the identityHash number returned by .Object's identityHash method
param: deliString on 64-bit systems: optional delimiter string for grouping eight hex digit characters, defaults to underscore (_)
return: hexadecimal value
since: 2022-09-29
author: Rony G. Flatscher

USE ARG argVal, deliString=("_")

IntelliJ ooRexxDoc, 3



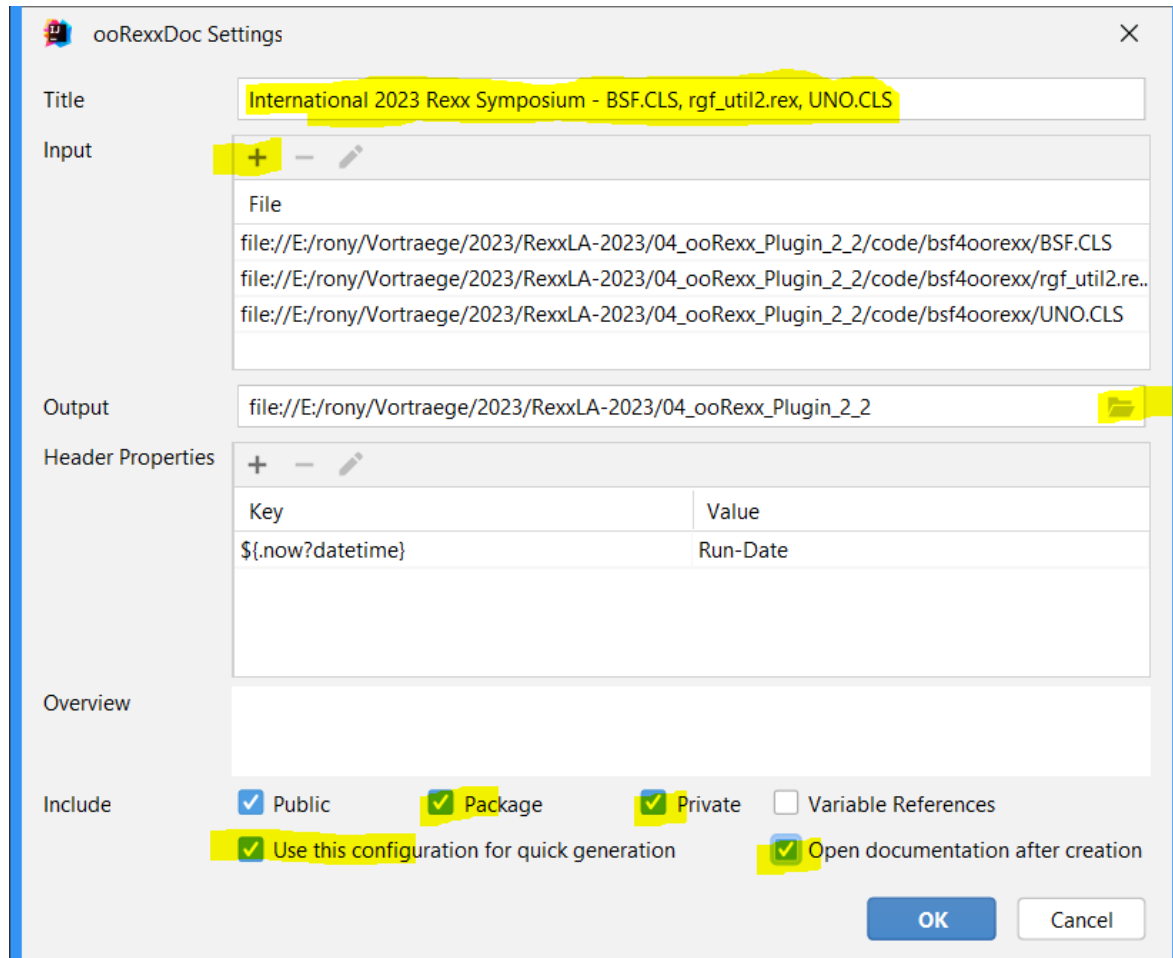
The screenshot shows the IntelliJ IDEA IDE with a project named 'bsf4ooress'. The main editor window displays ooRexx code for a routine named 'i2x'. The code includes comments and parameters for generating documentation. A context menu is open over the code, with two options highlighted in yellow:

- Create 'ooRexxDoc' Documentation ...
- Quick Create 'ooRexxDoc' Documentation ...

The code in the background includes the following comments and parameters:

```
6331 /** This routine creates a hexadecimal value from the identityHash number returned by .Object's  
6332 identityHash method taking the bitness of the ooRexx interpreter into account.  
6333 If running on a 64-bit interpreter the hexadecimal value will be 16 characters  
6334 long, if running on a 32-bit  
6335 long.  
6336 @param argVal the identityHash value  
6337 @param deliString on 64-bit systems the hexadecimal value will be 16 characters, default  
6338 characters, default 8 characters  
6339 @return hexadecimal value  
6340 @since 2022-09-29  
6341 @author Rony G. Flatscher  
6342 */  
6343 ::routine i2x public -- "po  
6344 use strict arg argVal, deliStri  
6345   
6346 iDigits=.rexxinfo-internalDigit  
6347 numeric digits iDigits  
6348 val=argVal-d2x(iDigits) -- con  
6349 len=(iDigits=9)~?(8,16) -- det  
6350 hexval = val-right(len) -- ext  
6351 if iDigits=18, deliString<>" t  
6352 hexVal=hexVal-insert(deliStr  
6353 return hexVal  
6354   
6355   
6356 
```

IntelliJ ooRexxDoc, 4



IntelliJ ooRexxDoc, 5a (Firefox)

File Edit View History Bookmarks Tools Help

ooRexxDoc - International 2023 Re... +

file:///E:/rony/Vortraege/2023/RexxLA- Search

ooRexxDoc Home BSF.CLS Search Run Date: May 11, 2023, 12:42:55 PM

Packages

- BSF.CLS
- rgf_util2.rex
- UNO.CLS

BSF.CLS Overview

- Routines [box](#) [box.strictArg](#) [bsf.compile](#) [bsf.contextClassLoader](#) [bsf.createArray](#) [bsf.createArrayOf](#) [bsf.createJavaArray](#) [bsf.createJavaArrayOf](#) [bsf.createProxyClass](#) [bsf.getConstant](#) [bsf.getConstantJSO](#) [bsf.getSlotDir](#) [bsf.getStaticValue](#) [bsf.getStaticValueJSO](#) [bsf.getStaticValueStrict](#) [bsf.getStaticValueStrictJSO](#) [bsf.haltThread](#) [bsf.iconv](#) [bsf.import](#) [bsf.importClass](#) [bsf.initRAJinstance](#) [bsf.isA](#) [bsf.JSOasUtf8string](#) [bsf.loadClass](#) [bsf.lookupBean](#) [bsf.pollEventText](#) [bsf.postEventText](#) [bsf.redirectTo](#) [bsf.stringToUtf8](#) [BSF.terminateRexxEngine](#) [bsf.unregisterBean](#) [bsf.utf8stringAsJSO](#) [bsf.utf8ToString](#) [bsf.version](#) [bsf.wrap](#) [bsf.wrapStaticFields](#) [create_display.version_entry](#) [escapeQuotes](#) [getAndSetPathTolcons](#) [i2x](#) [iif](#) [initialize.BSF.dir](#) [makeBSF4ooRexxLookLikeMacOSX](#) [parseJavaOptions](#) [pp](#) [ppJavaExceptionChain](#) [unbox](#) [unbox_ori](#) [xBSF](#) [xBsfCreateRexxProxy](#) [xBsfLoadJava](#) [xBsfRexxProxy](#) [xBsfUninit4.JavanBean](#)
- Floating Methods [newStrict](#)
- Classes
 - [AbstractGUIThread](#)
 - Attributes: [JavaGuiUtilityClz](#) [msgQueue](#) [runnable](#) [waitingToRun](#)
 - Methods: [init](#) [createGUIMessage](#) [invokeOnGuiThread](#) [isGuiThread](#) [process](#) [removeMessage](#) [run](#) [runLater](#) [runLaterLatest](#) [runLaterLatestPush](#) [runLaterPush](#) [setup](#)
 - [AwtGUIThread](#)
 - Attributes: [JavaGuiUtilityClz](#) [msgQueue](#) [runnable](#) [waitingToRun](#)
 - Methods: [init](#) [invokeOnGuiThread](#) [isGuiThread](#) [setup](#)
 - [BSF](#)

IntelliJ ooRexxDoc, 5b (Edge)

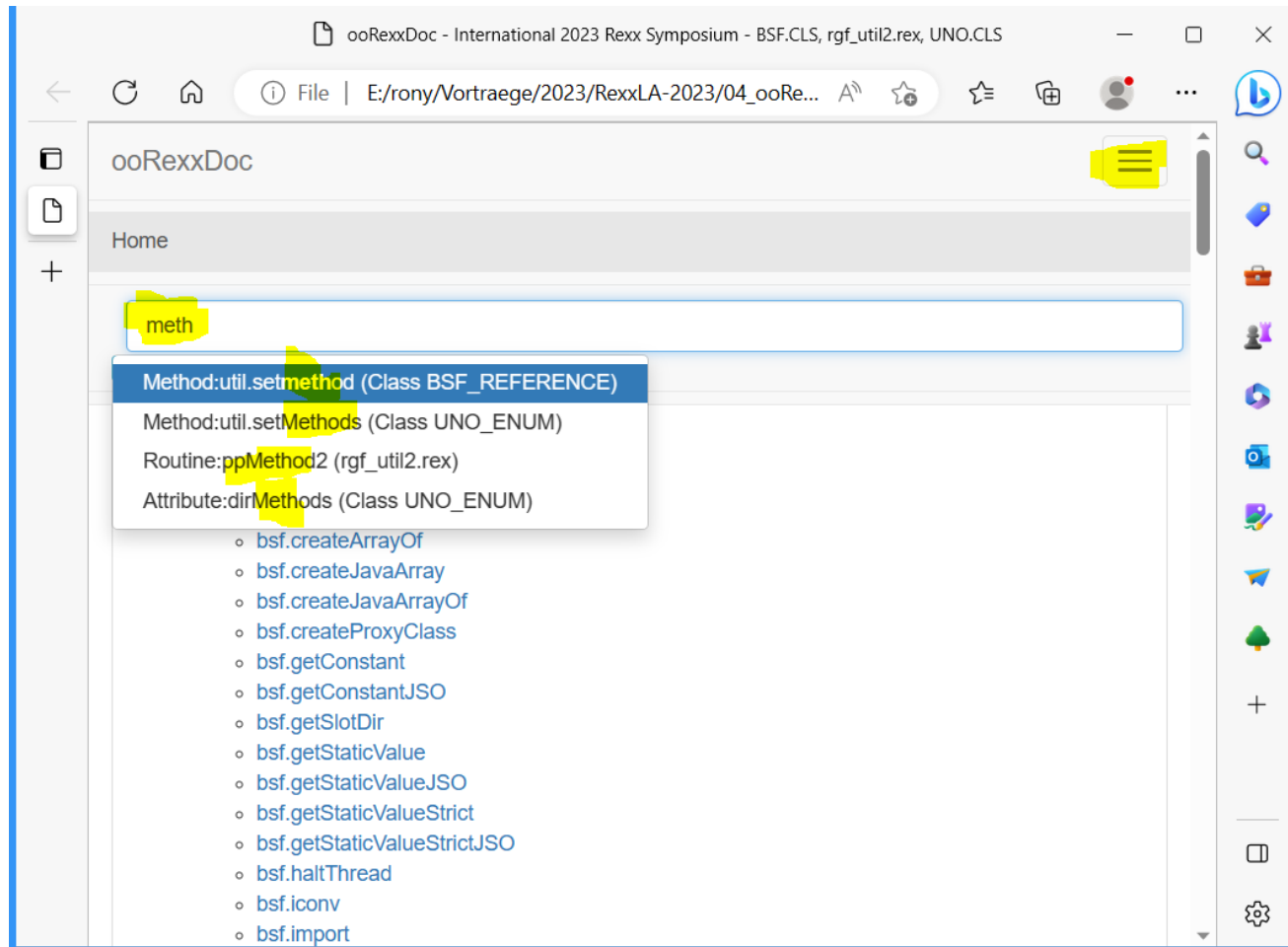
ooRexxDoc - International 2023 Rexx Symposium, ooRexxDoc BSF.CLS, UNO.CLS, rgf_util2.rex

File | E:/rony/Vortraege/2023/RexxLA-2023/04_ooRe...

ooRexxDoc

- BSF.CLS
 - Routines
 - box
 - box.strictArg
 - bsf.compile
 - bsf.contextClassLoader
 - bsf.createArray
 - bsf.createArrayOf
 - bsf.createJavaArray
 - bsf.createJavaArrayOf
 - bsf.createProxyClass
 - bsf.getConstant
 - bsf.getConstantJSO
 - bsf.getSlotDir
 - bsf.getStaticValue
 - bsf.getStaticValueJSO
 - bsf.getStaticValueStrict
 - bsf.getStaticValueStrictJSO
 - bsf.haltThread
 - bsf.iconv
 - bsf.import

IntelliJ ooRexxDoc, 6



IntelliJ ooRexxDoc, 7

The screenshot shows the IntelliJ ooRexxDoc interface. The browser address bar indicates the file path: `E:/rony/Vortraege/2023/RexxLA-2023/04_ooRe...`. The main content area displays the following information:

- Class:** BSF_REFERENCE (highlighted in yellow)
- Sub-Class:** BSF
- Attributes:** No Attributes
- Methods:**
 - `init` (with `USE ARG` and parameters `beanName, blncr=false`)
 - `util.setmethod` (highlighted in yellow)
- Constants:** No Constants

A "Back to Top" button is visible at the bottom right of the content area.

IntelliJ ooRexxDoc, 8

ooRexxDoc - International 2023 Rexx Symposium, ooRexxDoc BSF.CLS, UNO.CLS, rgf_util2.rex - BSF...

File | E:/rony/Vortraege/2023/RexxLA-2023/04... | Search

Run-Date: May 11, 2023, 12:00:18 PM

ooRexxDoc Home BSF.CLS

Packages

- BSF.CLS
- rgf_util2.rex
- UNO.CLS

BSF.CLS Overview

- Routines `box` `box.strictArg` `bsf.compile` `bsf.contextClassLoader` `bsf.createArray` `bsf.createArrayOf` `bsf.createJavaArray` `bsf.createJavaArrayOf` `bsf.createProxyClass` `bsf.getConstant` `bsf.getConstantJSO` `bsf.getSlotDir` `bsf.getStaticValue` `bsf.getStaticValueJSO` `bsf.getStaticValueStrict` `bsf.getStaticValueStrictJSO` `bsf.haltThread` `bsf.iconv` `bsf.import` `bsf.importClass` `bsf.initRAJinstance` `bsf.isA` `bsf.JSOasUtf8string` `bsf.loadClass` `bsf.lookupBean` `bsf.pollEventText` `bsf.postEventText` `bsf.redirectTo` `bsf.stringToUtf8` `BSF.terminateRexxEngine` `bsf.unregisterBean` `bsf.utf8stringAsJSO` `bsf.utf8ToString` `bsf.version` `bsf.wrap` `bsf.wrapStaticFields` `create_display.version_entry` `escapeQuotes` `getAndSetPathToIcons` `i2x` `iif` `initialize.BSF.dir` `makeBSF4ooRexxLookLikeMacOSX` `parseJavaOptions` `pp` `pp.JavaExceptionChain` `unbox` `unbox_ori` `xBSF` `xBsfCreateRexxProxy` `xBsfLoadJava` `xBsfRexxProxy` `xBsfUninit4.JsBean`
- Floating Methods `newStrict`

IntelliJ ooRexxDoc, 9

ooRexxDoc - International 2023 Rexx Symposium - BSF.CLS, rgf_util2.rex, UNO.CLS - BSF.CLS

File | E:/rony/Vortraege/2023/RexxLA-2023/04_ooRe...

ooRexxDoc

Class: AwtGUIThread

Sub-Class: AbstractGUIThread

This class is meant to help ooRexx programmers to simplify interactions with the awt/swing GUI. If Rexx code is invoked by the GUI maintenance code, that Rexx code will already execute on the GUI thread (called "event dispatch thread" a.k.a. "awt thread") and can successfully interact with the GUI and the elements. However, if Rexx code on a non-GUI-thread wishes to interact with the GUI, this would hang the GUI (single threaded implementations are typical for GUIs). Rather, such an interaction must occur on the GUI thread.

The class methods `runLater` and `runLaterLatest` allow Rexx programmers to send Rexx messages later, when running in the GUI thread.

since: 2018-07-14

Attributes

- `JavaGuiUtilityClz` GETTER CLASS
- `msgQueue` GETTER CLASS
- `runnable` GETTER CLASS

Back to Top

IntelliJ ooRexxDoc, 10

The screenshot shows the IntelliJ ooRexxDoc interface. The browser address bar indicates the file path: `E:/rony/Vortraege/2023/RexxLA-2023/04_ooRe...`. The main content area displays the documentation for the `Class: AbstractGUIThread`.

This abstract class implements the protocol and common methods for the awt/swing and JavaFX utility classes that allow one to interact with the GUI objects on the awt/JavaFX thread.

If Rexx code is invoked by the GUI maintenance code in form of callbacks, that Rexx code will already execute on the GUI thread and can successfully interact with the GUI and the elements. However, if Rexx code on a non-GUI-thread wishes to interact with the GUI, this would hang the GUI (single threaded implementations are typical for GUIs). Rather, such an interaction must occur on the GUI thread.

The class methods `runLater` and `runLaterLatest` allow Rexx programmers to send Rexx messages later, when running in the GUI thread.

since: 2017-08-14

Attributes

- `JavaGuiUtilityClz` GETTER CLASS ABSTRACT
- `msgQueue` GETTER SETTER CLASS ABSTRACT
- `runnable` GETTER SETTER CLASS ABSTRACT
- `waitingToRun` GETTER SETTER CLASS ABSTRACT

A "Back to Top" button is visible at the bottom right of the documentation area.

Roundup

- ooRexxPlugin 2.2
 - Adds ooRexx, Rexx and executor support to JetBrains's IntelliJ IDEA
 - Makes IntelliJ IDEA features available for ooRexx, Rexx and executor programmers
 - Introduces ooRexx, Rexx and executor auto name completion
- ooRexxDoc
 - Creates ooRexxDoc documentation from Rexx, ooRexx and executor programs
 - Right mouse click in IntelliJ
 - Stand-alone version can also be invoked via the command line for software projects that need to create ooRexxDoc documentation

Links (As of 2023-05-11)

- [JetBrains' IntelliJ IDEA](https://www.jetbrains.com/idea/download): <https://www.jetbrains.com/idea/download>
- [ooRexxPlugin](https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/): <https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/>
- [ooRexxDoc](https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/): <https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/>
 - Completion add-ons
 - <https://sourceforge.net/projects/bsf4oorexx/files/Sandbox/aseik/ooRexxIDEA/GA/2.2.0/>
 - Since 2023-05-11: [extractNamesFromRexxPackages.rex](#) and [rgfNames.zip](#)
- [ooRexx 5.1](https://sourceforge.net/projects/oorexx/files/oorexx/5.1.0beta/): <https://sourceforge.net/projects/oorexx/files/oorexx/5.1.0beta/>
- [Java/OpenJDK with JavaFX](https://www Azul.com/downloads/?package=jdk#zulu) modules, e.g. <https://www.azul.com/downloads/?package=jdk#zulu>
- [BSF4ooRexx850](https://sourceforge.net/projects/bsf4oorexx/files/beta/20221004/): <https://sourceforge.net/projects/bsf4oorexx/files/beta/20221004/>
- [executor](https://github.com/jlfaucher/executor): <https://github.com/jlfaucher/executor>