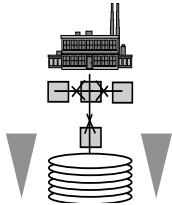# Automating (via) Java and Java Applications

WI: Vertiefendes Übungsprojekt II (PI+VO)
SoWi Bachelor: Vertiefungskurs IV
Diplomstudium: SBWL Vertiefungskurs V

(Block system from 2009-11-27 through 2010-01-29)

Inskr.-Nr. **0901**, Schulungsraum 2 (SCHR 2, UZA II)

LV-Leiter	Start	Time/Location
Flatscher	Friday, 2009-11-27	9:00-13:00 SCHR 2 (UZA II)

RELATING TO THE CURRICULUM

Diplomstudium, Spezielle BW „Wirtschaftsinformatik": Wahlpflichtvorlesung mit CP

Bakkalaureat „Wirtschaftsinformatik": „Vertiefendes Übungsprojekt II"

Bakkalaureat new: „Management Information Systems (MIS)": „VK IV"

Zudem: freies Wahlfach in den neuen Studienordnungen

BRIEF OVERVIEW

In this lecture an introduction to an **astonishingly simple** and **interesting possibility of automating (scripting/remote-controlling) Java**, **Java applications** and **applications** that supply programming **interfaces for Java** (e.g. ARIS, ImageMagick, jfreechart, OpenOffice, PDFBox, etc.) is given.

At the end of this class you will be able to understand all concepts and apply them with an arbitrary (script) programming language. This will empower you **to automate Java** as well as any other **Java application**. Because Java is by concept **open-platform**, Java (applications) can usually **execute on any hardware and operating system**! As a result, this class will enable you to create and deploy fully open-platform scripts (e.g. for the free "OpenOffice.org", a powerful open-platform end-user application, consisting of a word-processor, a spreadsheet, a database and a presentation module)!

You will apply this class' knowledge in the form of little hands-on homework examples that are tackled **in groups of two to three students**, such that **no one will be left on its own**. You will see and experience, **how easy** it is in effect to create such impressive scripts! And best of all, they will run unchanged on Linux, Mac OSX and Windows!

The acquired knowledge and first-hand experiences will create **problem-solving skills that will set you apart from any of your colleagues**. You will be able to create

automated solutions with end-user applications for the business departments you will be working for!

GOALS

In the course of this lecture **you will learn**

- the **fundamental concepts** of automating (scripting/remote-controlling) **Java**, **Java applications** and **applications with Java interfaces**, and **to apply them** on your own,

- the basics and the architecture of the simple, but powerful "Bean Scripting Framework (**BSF**)" from the Apache Software Foundation and the scripting framework introduced in **Java 6**,

- the **operating-system independent** automation (scripting) of the free and open-platform business application **OpenOffice.org** (word-processor, spreadsheet),

- to **systematically research the Internet** (e.g. newsgroups, search engines) about interesting additional possibilities of **automating** applications **via Java**,

- to apply the **very easy to learn** (free, open-platform and open-source) scripting language **ooRexx**, which makes interfacing with Java extremely easy as well,

- to read and understand all of the **Javadoc documentation** that is readily available for **Java** and Java applications.

ORGANISATION

This lecture is organised in form of a „block lecture" followed by presentations at the given instalments. On each date there will be two instalments delimited by a short intermission. The participants will get small assignments which they will solve in groups of two to three students.

Active participation (e.g. questions, discussions) is highly appreciated! ("Those who ask learn the most!")

PRELIMINARIES

- Studies in the field of „Bakkalaureat neu", specialised field of Business Administration „Management Information Systems (MIS)": this serves as "Vertiefungskurs 3"

- Studies in the field of „Wirtschaftsinformatik Bakkalaureat": this serves as "Vertiefendes Übungsprojekt 2"

- Any one of the outbound studies „Diplomstudium Speziellen Betriebswirtschaftslehre Wirtschaftsinformatik: this serves as a elective („Wahlfach")

LITERATUR

- Fosdick H.: Rexx – Programmer's Reference, Wiley Publishing, Indianapolis 2005.

- Hansen H.R., Neumann G.: Wirtschaftsinformatik I. 9. Auflage, UTB 802, Lucius & Lucius, Stuttgart 2005.

- Veneskey G.L., Trosky W., Urbaniak J.J.: Object Rexx by Example. Aviar, Pittsburgh 1996.

OVERVIEW OF DATES, BRIEF SYLLABUS

#	CONTENT	DATE
Introduction into Automating of Java and Java Applications		
1+2	Overview of Java and basic Java object-oriented concepts, the documentation of Java classes and its creation ("Javadoc", JDK), Nutshell example	2009-11-27 09:00-13:00 SCHR 2 (UZA II)
3+4	„Bean Scripting Framework" (BSF), „BSF4Rexx" as a bridge to and from Java; Java as a huge function library for ooRexx, nutshell examples	2009-12-04 09:00-13:00 SCHR 2 (UZA II)
5+6	Creating GUIs in Java, overview of "awt", introducing the concepts of "Component", "Event", event handling, nutshell example in Java and its transcription into ooRexx; assignments; outlook "swt" Socket applications, concepts, classes, employing Java arrays, nutshell examples.	2009-12-11 09:00-13:00 SCHR 2 (UZA II)
7+8	Introduction into the OpenOffice.org ("OOo") architecture, a platform independent client/server and socket based end-user application, Universal Network Objects (UNO), Java bridge, querying interfaces	2009-12-18 09:15-13:00 SCHR 2 (UZA II)
9+10	OpenOffice.org: automating "swriter" (word processor), "scalc" (spreadsheet), "sdraw" (drawing), and "simpress" (presentation) modules; creating and deploying macros; questions and answers Presentation of the planned mini-project (combining and remote-controlling at least three applications via Java)	2010-01-15 09:15-13:00 SCHR 2 (UZA II)
Mini-Project and Presentation		
11+12	Presentation of the concluding "mini project" Questions and answers, discussions	2010-01-22 09:15-13:00 SCHR 2 (UZA II)
OPT.	Optional session: query & answers, roundup	2010-01-29 09:15-13:00 SCHR 2 (UZA II)

URLs FOR BSF (BEAN SCRIPTING FRAMEWORK) AND BSF4REXX

"Rexx Language Association":

http://www.RexxLA.org/

ooRexx, Homepage:

http://www.ooRexx.org/download.html

OpenOffice.org („OOo"), Homepage:

http://www.OpenOffice.org/

Apache BSF (Bean Scripting Framework), Homepage:

http://jakarta.apache.org/bsf/index.html

BSF4Rexx:

http://wi.wu-wien.ac.at/rgf/rexx/bsf4rexx/current/

„vim" Editor (starting with version 7.1 it contains syntax highlighting for ooRexx)

http://www.vim.org/
ftp://ftp.vim.org/pub/vim/pc/gvim71.exe (Windows-Version)
http://www.vim.org/download.php#unix (Unix/Linux-Version)

Article about history and concepts of Rexx and Object Rexx (ECOOP 2006 Workshop)

http://prog.vub.ac.be/~wdmeuter/RDL06/Flatscher.pdf

MEANS OF COMMUNICATION

To improve the *lecture-related* communication a mailing list **aj2009w** will be created. To subscribe to this mailing list, you must enrol at the following WWW-page in the fall:

http://alice.wu.ac.at/mailman/listinfo/aj2009w

After subscribing you can send to `aj2009w@wi.wu.ac.at`, which will be received by the mailing list and redistributed to all subscribed members.

With the help of this mailing list you are able to ask and discuss lecture related issues with your colleagues, day and night (e.g. to exchange solutions or help each other).

MATERIALS FOR THE LECTURE

ooRexx and OOo are free available for multiple platforms. You can download the software from their respective homepages (http://www.ooRexx.org, and http://www.OpenOffice.org).

Foils fort his lecture:

http://wi.wu.ac.at/rgf/wu/lehre/autojava/material/foils/

Reference cards for BSF4Rexx and OpenOffice.org as PDF-files:

http://wi.wu.ac.at/rgf/rexx/bsf4rexx/current/