# autoj - Automated Java Build System

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## 1 Introduction

Autoj is an automated build system for Java based on autoconf, make, bash and some other GNU tools. It generates a configure script, classpath.in, Makefile.in and run.in from configure.aj and Makefile.aj (optional). This documentation is intented for the autoj user which usually is a Java developer.

## 2 Requirements

Autoj requires at least the following software to be installed:

- A UNIX like environment (Cygwin on Windows) with standard tools like rm, mkdir, etc.
- GNU autoconf 2.13 or later
- GNU automake 1.4 or later
- GNU make 3.79.1 or later
- GNU bash 2.03 or later
- A version of the find utility
- A Java compiler with a javac or jikes command line front end

To make use of all autoj features you additionally need:

- run (with unqualified classes): GNU find 4.1 or later
- make lib: GNU wget 1.7 or later
- make jar: Versions of the tar and jar utilities
- make dist: A version of the tar utility and gzip 1.3.3 or later
- make javadoc: A Java 2 compliant version of the javadoc utility

Earlier versions may also work but have not been tested.

# 3 Files

## 3.1 configure.aj

Configure.aj is used to override autoj default values and to customize the configuration process. autoj uses the following variables and default values:

**PROJECT**

The name of the project. Default: unnamed

**SRCDIR**

Directory containing the main sources. Default: src

**TESTDIR**

Directory containing the unit test sources. Default: test

**BINDIR**

Directory autoj writes class and jar files to. Default: bin

**LIBDIR**

Directory containing project dependencies, usually .jar files. Default: lib

**LIBSFILE**

File listing the depencencies and their download locations. Default: libs

**LOCALDIR**

This directory is added to the CLASSPATH in addition to SRCDIR, TESTDIR and BINDIR. Used for config files, images and other stuff loaded by Java code. Default: local

**JAVADOCDIR**

Directory autoj writes the JavaDoc to. Default: javadoc

**MANIFESTFILE**

Name of the optional manifest file. Default: manifest

**TMPDIR**

Temporary directory used by various makefile targets. Default: tmp

The contents of the configure.aj file are inserted into autoj's configure.in file just before the AC_OUTPUT macros. Thus it can be used to further customize the configure process. Any statement which is valid in configure.in or configure.ac is valid in configure.aj, too.

## 3.2 Makefile.aj

This file is optional an can be used to add additional Makefile targets. The contents of Makefile.aj are appended to autoj's Makefile.in. This allows you to provide your own make rules, e.g. for compiling documentation. If Makefile.aj defines the variable CLEANFILES the

### 3.3 libs

The libs file lists the dependencies of a project and server locations they can be downloaded from. Each line can either contain a URL or a filename. A URL sets the download location for all following files until the next URL. Empty lines and lines starting with # are ignored. Example:

```
http://autoj.sourceforge.net/lib
httpunit-1.4.6.jar
junit-3.8.1.jar

ftp://ftp.devzone.ch/lib
log4j-1.2.7.jar
```

With this example the files junit-3.8.1.jar and log4j-1.2.7.jar are downloaded from http://autoj.sourceforge.net/lib and log4j-1.2.7.jar is downloaded from ftp://ftp.devzone.ch/lib. HTTP and FTP URLs are supported.

### 3.4 classpath

classpath is a helper script which is used by Makefile and run. It prints the path that must be appended to the *CLASSPATH* for this project. This path contains the *SRCDIR*, *TESTDIR*, *BINDIR* and *LOCALDIR* directories and all .jar files and directories in the *LIBDIR* directory. classpath works independent of the current working directory and can therefore be called from anywhere.

### 3.5 run

The run script can be used to run a project by specifying an unqualified or partially qualified class name. It automatically sets the appropriate *CLASSPATH*. run scans the *SRCDIR* and *TESTDIR* directories for .java files matching the specified class name. The first file found is taken and its package extracted. The package is used to build a fully qualified class name. If no matching file is found the given class name is passed to the virtual machine untouched. So the run script still runs without the source code if you use fully qualified class names. run works independent of the current working directory and can therefore be called from anywhere.

## 4 Directory structure

autoj determines what to do with a file by looking at its filename and the directory it is in.

## 5 Makefile targets

The Makefile generated by autoj contains the following default targets:

**clean**

Removes all intermediate and binary files. **Warning:** This version of autoj removes the entire *BINDIR* and *JAVADOCDIR* directories, including all its content. So pay attention not to put any source files in there.

**lib**

Synchronizes project dependencies. All files listed in *LIBSFILE* which are not present locally or which have a newer version available on the server are downloaded into the lib directory. Files in the *LIBDIR* directory which do not appear in the *LIBSFILE* file are removed.

**javadoc**

Creates the JavaDoc Documentation

**cvscheck**

Checks if the current cvs version can be compiled by checking it out into a subdirectory and trying to compile it.

**jar**

Creates a jar file of the project.

**dist**

Creates a source distribution tarball.

**libdist**

Creates a source distribution tarball including all dependencies (.jar files).

**bindist**

Creates a binary distribution tarball including all dependencies (.jar files).

Distribution tarballs are compressed with gzip using the best compression method available.

# 6 JFlex support

JFlex is a scanner generator for Java written in Java. The makefile autoj generates automatically compiles all .flex files it finds in the *SRCDIR* and the *TESTDIR* directories with JFlex. It assumes that the scanner class is named like the specification file with "Scanner" appended and that the .java file is placed in the same directory as the .flex file. E.g. if the specification is named Java.flex then the scanner source file should be named JavaScanner.java. The name of the scanner .java file must be known to autoj in order to threat it as intermediate file and to decide when to recompile the scanner. If the specification does not follow this rule the scanner source file will not be cleaned by "make clean" and the scanner will always be recompiled.

# 7 CUP support

CUP is a LALR parser generator for Java written in Java. The makefile autoj generates automatically compiles all .cup files it finds in the *SRCDIR* and the *TESTDIR* directories with CUP. It assumes that the parser class is named like the specification file with "Parser" and the symbols class or interface with "Symbols" appended and that the .java files are placed in the same directory as the .cup file. E.g. if the

specification is named Java.cup then the parser source file should be named JavaParser.java and the symbols source file should be named JavaSymbols.java. The name of the parser .java files must be known to autoj in order to threat them as intermediate files and to decide when to recompile the parser. If the specification does not follow this rule the parser source files will not be cleaned by "make clean" and the parser will always be recompiled.

# 8 Examples

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