

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 intended 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 dependencies 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 and 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 treat 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 treat 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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