1 Installing jGRASP

Among all of the jGRASP Tutorials, this one is expected to be the least read. Most users will download the jGRASP self-install file for their system, double-click the file, follow the instructions in the dialog, launch jGRASP, and be up and running. If you have successfully done this, you are ready to go on to the next chapter.

However, occasionally users need additional information when installing jGRASP and configuring it for their particular needs. This tutorial includes a description of the available *install* files, instructions for installing on Windows, Mac OS X, and Linux/UNIX, information on compilers, instructions for setting the system *path* and Java *classpath*, a description of the available jGRASP *startup* settings, and a list of available plug-ins for jGRASP. Most readers will need to refer to only a few of the sections below.

Since jGRASP is written in Java, you must have Java installed on your machine in order to run jGRASP. To compile and run Java programs, you will need to install the full Java 2 Platform Standard Edition (J2SE) Development Kit which is usually referred to as the **JDK.** See Section 1.5 for information on the JDK as well compilers for other languages.

Objectives – When you have completed this tutorial, you should be able to successfully install jGRASP on your computer, change the default compiler configuration, set *paths* and *classpaths*, modify the jGRASP *startup* settings, and be familiar with the available *plug-ins* for jGRASP.

The details of these objectives are captured in the hyperlinked topics listed below.

1.1 The Install Files

The current version of jGRASP is available from http://www.jgrasp.org in separate *install* files: one is self-extracting for **Microsoft Windows**, one is for **Mac OS X (10.4 or higher),** and the third is a generic **ZIP** file primarily intended for **Linux** and **UNIX** systems, although it can be used to install jGRASP on any system. Each of these is briefly described below. Beginning with version 1.8.6_02, jGRASP requires Java 1.5 (a.k.a. Java 5.0) or higher. If you must use an older version of Java, you will need to use jGRASP 1.8.6_01.

> **jGRASP exe** – **Windows self-extracting exe file.** *In order to run jGRASP and compile and run Java programs, the full JDK (rather than JRE) must be installed.*

> **jGRASP pkg.tar.gz** – **Mac OS X 10.4 or higher (PPC or Intel) tarred and gzipped package file** (requires admin access to install). J2SDK is pre-installed on Mac OS X machines, but you may want to upgrade if a newer version is available.

> **jGRASP zip** – **Generic Zip file**. After unzipping the file, refer to README file for installation instructions. *The full JDK must be installed in order to run jGRASP and to compile and run Java programs.*

1.2 Installing on Windows 95/98/2000/XP/Vista

If you plan to compile and run Java programs on a Windows machine, the **jGRASP exe** install file is recommended. Prior to running jGRASP, you will also need to have installed the full JDK on your machine. If you are not planning to compile and run Java programs (e.g., you plan to compile and run programs written in C/C++ but not Java) then you will only need the JRE installed rather than the full JDK.

After you have downloaded the install file, simply double click on it, and you should see the jGRASP Setup dialog open as shown in Figure 1-1. Click "Next" to continue the installation process. The script will take you through the steps for installing jGRASP. If you are uncertain about a step, you should accept the default by clicking *Next* and/or pressing the ENTER key.
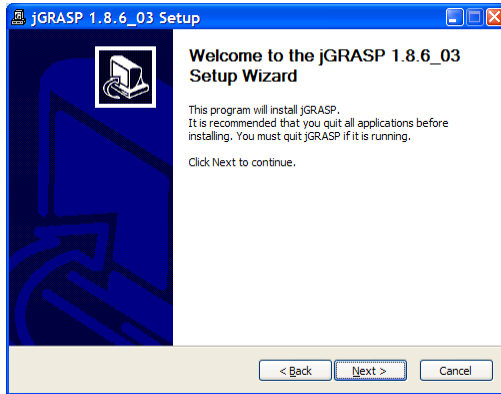
Figure 1-1. jGRASP Setup dialog

The License Agreement is shown in Figure 1-2. You will need to scroll the dialog on your screen to see the entire license. After reviewing it, click "I Agree" to continue.
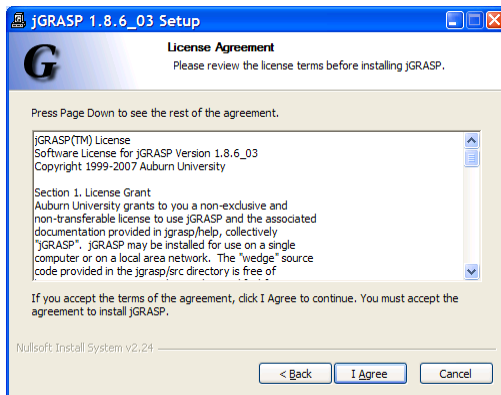

Figure 1-2. License Agreement

The next screen, Figure 1-3, allows you to select the components you want to install. Most users should simply install the "Standard" group of components, which is the default. However, if you need to provide common settings for all users on a network, you should select the "Administrator" group (or "Admin Items"). When these are included, you will be asked to provide an admin folder name in a later screen (Figure 1.5).
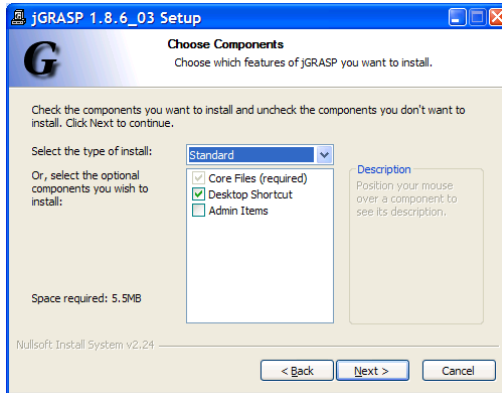
Figure 1-3. Selecting components to install

The screen in Figure 1-4 allows you to indicate the folder where jGRASP is to be installed. The Windows default is "Program Files" so most users should just click "Next" to continue
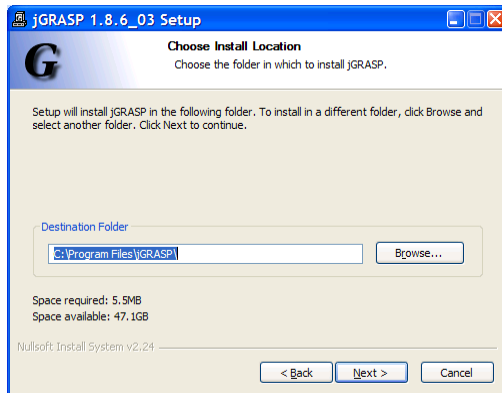

Figure 1-4. Choosing the *Install* directory

The screen in Figure 1-5 will only be displayed if you selected the "Admin Items" above in Figure 1-3. Most users should not install Admin Items. However, if you include Admin items, you need to provide a directory for the common settings for all users on the target network. Use a full path to specify the directory. This directory must be accessible and readable by all users, and writable only for the system administrators. You should select a directory location outside the jGRASP distribution, so that you can continue to use the settings after upgrading.

Administrators (i.e., anyone with write access in the common settings directory) will have additional options on the "Settings" menu when they run jGRASP. These include CSD, Compiler, and Print settings.
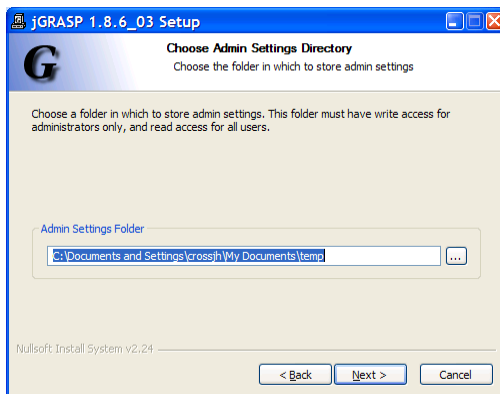

**Figure 1-5.   Choosing the *Admin* directory
if "Admin Items" are included in Figure 1-3**

The screen in Figure 1.6 allows you to specify the Start Menu folder for the jGRASP shortcuts. Normally, this folder would be named "jGRASP" as indicated and you should click "Next" to continue.
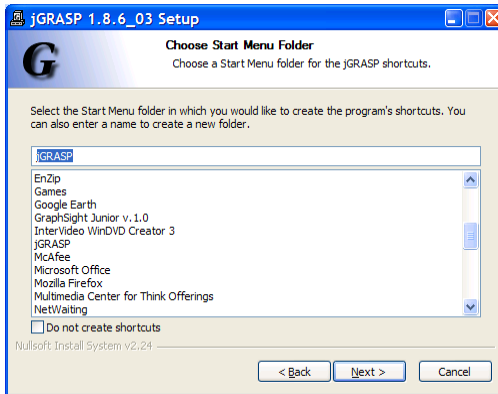

Figure 1-6. Choosing the *Start Menu* folder

Figure 1.7 shows the file associations supported in jGRASP. By default jGRASP includes those file extensions that are not already associated with other applications. After selecting (or unselecting) as appropriate, click "Install" to begin the install process.
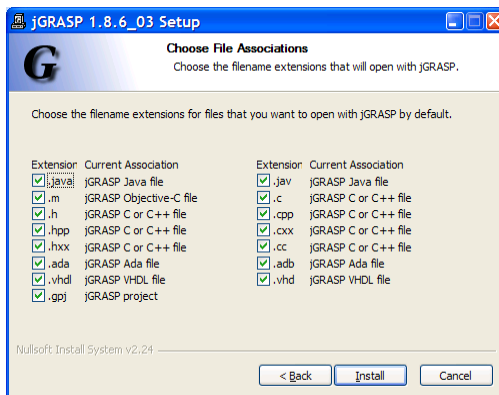

Figure 1-7. Choosing *File Associations*

Figure 1-8 shows the progress of the installation and Figure 1-9 indicates that installation is complete. Click "Finish" to close the Install wizard.
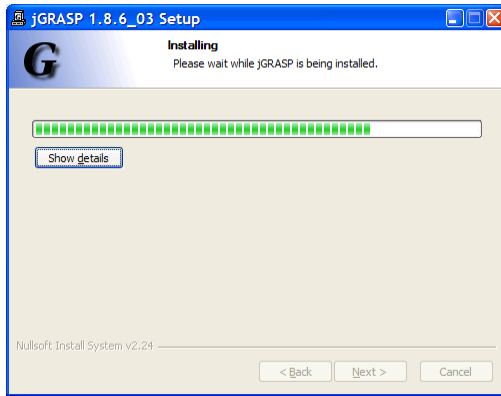

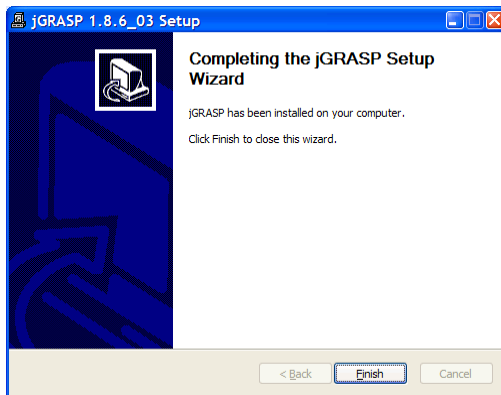**Figure 1-8. Installing jGRASP**

Figure 1-9. Installation complete

You should find the jGRASP icon on your desktop, and jGRASP should also be listed on the Windows **Start** > **All Programs** menu.

jGRASP

You can start jGRASP by double clicking the icon on your Windows desktop or via the Windows **Start** menu. See "Getting Started" for details.

1.3 Installing on Mac OS X

To install jGRASP on a Mac OS X machine, an administrator password is required. When you download jGRASP, the install file (.pkg.tar.gz) should unzip and untar automatically. If this does not happen, you can use Stuffit Expander [or from a terminal, use "gunzip jgrasp*.tar.gz" then "tar xf jgrasp*.tar"]. You should now be able to double click on the .pkg file to continue the installation.

Figure 1-10 shows the introduction screen of the jGRASP Installer with a recommendation regarding the folder in which jGRASP should be installed. In most cases, you will want to install jGRASP in the /Applications/ folder so that anyone who has an account on your machine can use jGRASP.
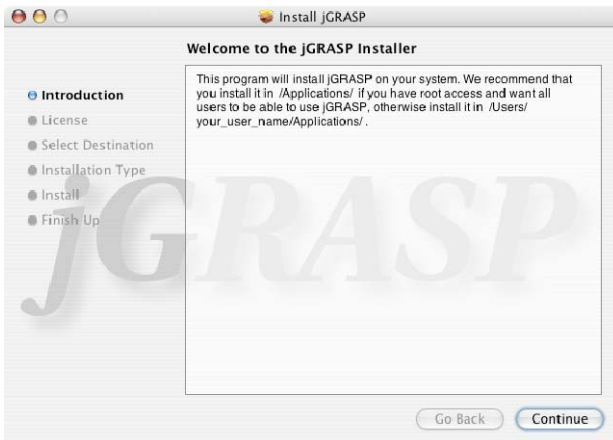

Figure 1-10. jGRASP Setup dialog

The software license for jGRASP is shown in Figure 1-11. After you have reviewed it, click "Continue". In the next screen, Figure 1-12, you must agree to the terms of software license by clicking "Agree" in order to continue the installation process. If you click "Disagree" the installation will be cancelled.
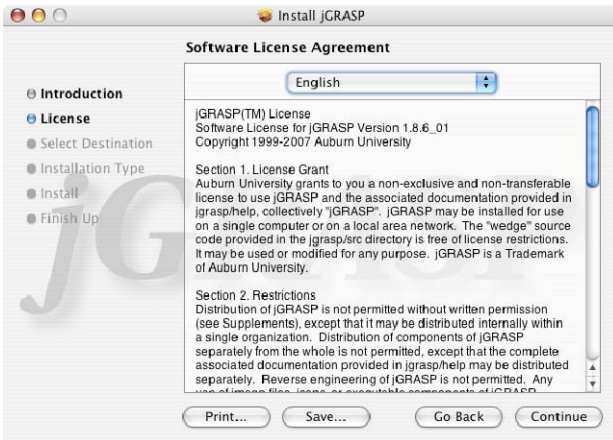
Figure 1-11. License Agreement
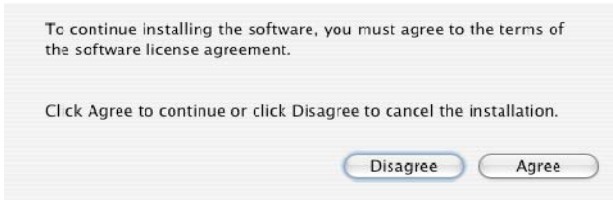
Figure 1-12. Selecting components to install

The screen in Figure 1-14 allows you to select a destination volume and folder for the installation. In the example, the defaults are shown.

Figure 1-14. jGRASP Setup dialog

When you see the screen in Figure 1-15, just click next. Figure 1-16 shows the "Authenticate" dialog. As indicated above, installing software under Mac OS X requires administrator privileges so you will need to enter your user name and password in order to complete the installation process.

Figure 1-15. License Agreement

Figure 1-16. Selecting components to install

After the jGRASP installation completes, you should see the dialog below.

Figure 1-17. Installation is complete

jGRASP should now be available via the Applications folder.

Figure 1-18. jGRASP start button
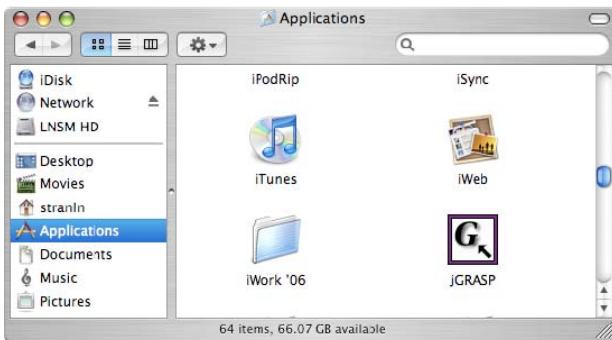
The first time you run jGRASP, the CSD font will be installed on your system, and a soft link to the jGRASP startup script (for command line execution) will be created in /usr/bin or your $HOME/bin directory.

1.4 Installing on Other Systems
(including x86 Linux, SPARC Solaris, and NetBSD/i386)

Unzip the distribution (.zip) file in the directory where you wish to install jGRASP. This will create a jgrasp directory containing all the files. You may want to add the "bin" subdirectory of this directory to your execution path or create a soft link to .../jgrasp/bin/jgrasp from a directory on the executable path.

While users will find the .zip installation file suitable for Linux and UNIX systems, it will also work on Windows Mac OS X systems. Since the installation file can be unzipped anywhere, the user should note the directory.

1.5 Compilers

Although jGRASP includes settings for a number of popular compilers, it does not include any compilers. Therefore, if the compiler you need is not already installed on your machine, it must be installed separately. Since these are generally rather large files, the download time may be quite long depending on your connection speed. If a compiler is available to you on a CD (e.g, with a textbook), you may save yourself time by installing it from the CD rather than attempting to download it.

Compiler Settings - jGRASP includes settings for the following languages and compilers. The *default* compiler settings are underlined. Note that links for those that can be freely downloaded are included for your convenience.

> **Ada** (GNAT)
>
>> http://www.cygwin.com (includes gnatmake)
>
> **C, C++** (GNU/Cygnus, Borland, Microsoft)
>
>> http://www.cygwin.com
>>
>> http://www.borland.com/downloads/download_cbuilder.html
>
> **FORTRAN** (GNU/Cygnus)
>
>> http://www.cygwin.com (includes g77, i.e., GNU Fortran)
>>
>> Note that FORTRAN is currently treated as Plain Text so there is no CSD generation.
>
> **Java** (J2SE JDK, Jikes)
>
>> http://java.sun.com/javase/downloads/index.jsp

Assembler (MASM)

> http://www.masm32.com/masmdl.htm

> Note that assembler is treated as Plain Text so there is no CSD generation.

After you have installed the compiler(s) of your choice, you will be ready to begin working with jGRASP. If you are not using the default compiler for a particular language (e.g., *JDK* for Java), you may need to change the Compiler Settings by clicking on **Settings > Compiler Settings > Workspace**. Select the appropriate language, and then select the environment setting that most nearly matches the compiler you have installed. Finally, click *Use* on the right side of the Settings dialog. For details see Compiler Environment Settings in **jGRASP Help**.

1.6 Setting PATH and CLASSPATH

If you plan to use Java packages other than the standard Java Libraries, these will need to be added to your computer's Java *classpath*. You may also need to add the directories containing various compilers and/or tools to the system path of your machine. If you will not be compiling from the command line, you can make these changes in jGRASP, and the steps for setting the system path and classpath are similar. Since most users will be setting the classpath rather than system path, the steps for doing this are described below.

Go to **Settings** > **PATH/CLASSPATH** > **Workspace** from the <u>control panel</u> (jGRASP desktop menu).

Select the **CLASSPATHS** tab in the settings dialog if it is not already selected, then click the **New** button.

In the "New CLASSPATH / Doc Path" dialog, click the **Browse** button for "Path or JAR File" and navigate to the JAR file or the folder containing the target Java package root, and click the **Choose** button.

(Optional) If javadoc documentation is provided and you want to set the documentation path for the classes in the JAR or package folder, click the **Browse** button for "Documentation Path", select the folder containing the associated javadoc documentation, and click the **Choose** button.

Finally, click **OK** on the "New CLASSPATH / Doc Path" dialog, and **OK** on the settings dialog.

Once you have one or more classpath entries listed, these can be turned on and off with the associated check boxes. They can also be re-ordered by dragging an entry up or down the list. The order of the entries is important since the classpaths are searched from top to bottom. The same is true for system paths which are entered in the PATH tab of the dialog.

1.7 jGRASP Start Up Settings

For Windows and Mac OS X, jGRASP provides a dialog that allows the user to set jGRASP startup settings. The dialog can be opened from the jGRASP group in the Window's **Start** > **All Programs** menu or the Mac OS X applications directory. If jGRASP is already running, you can open the dialog by clicking **Settings** > **jGRASP Startup Settings** on the jGRASP main menu.
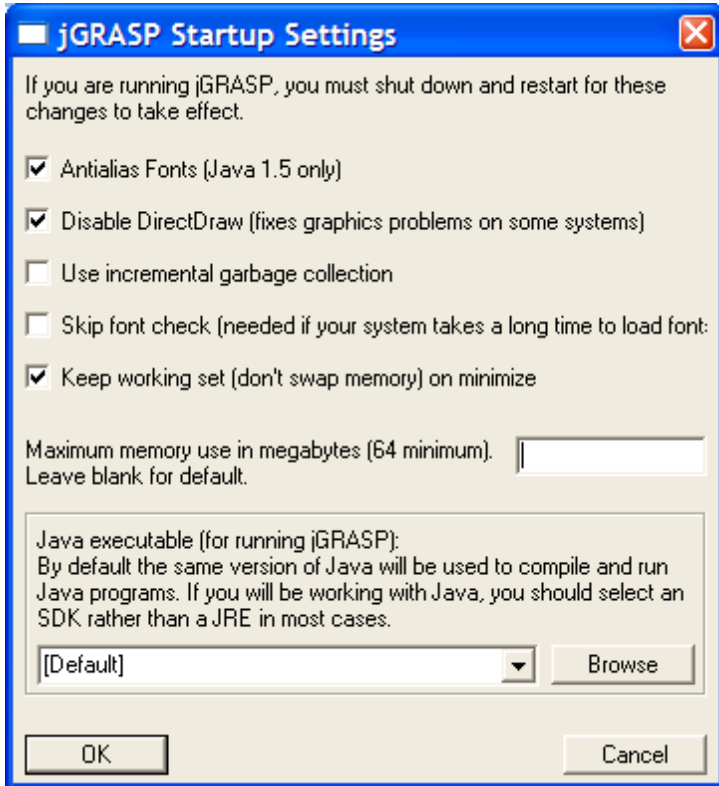

Figure 1-19. jGRASP Startup Settings

Each of the check boxes in the dialog is self-explanatory, and the default settings, shown in Figure 1-19, should be suitable for most users. The last item is a drop down list of all the JRE and JDK version that were found on your machine.   This setting is used to indicate which version of Java to use for jGRASP itself. Unless indicated by other jGRASP settings, the same version of Java will be used to compile and run Java programs. "[Default]" indicates that jGRASP should use the most recent version of Java found on your machine. If

you want to specify a particular version of Java, you may select an entry on the drop down list. Note that if you plan to compile Java programs, then you should select a JDK version rather than a JRE. The disadvantage of selecting a specific JDK is that when a new version of Java is installed, you will have to change the startup setting if you want jGRASP to use it. Hence, "[Default]" is the entry that most users will want. After making changes jGRASP will need to be restarted for the new settings to take effect.

1.8 Plug-Ins for jGRASP

Beginning with version 1.8.7, jGRASP includes "plug-ins" for several useful tools. In order to use a plug-in, the associated tool must be installed on your machine. At startup, jGRASP looks for the tools associated with the plug-ins, and if found, provides access to the tools via the **Tools** menu on the control panel. If you install a tool after jGRASP is already running, you will need to restart jGRASP. If jGRASP does not find the tool or if you want to customize a tool's settings, select the associated Configure option. For example, for Checkstyle, select **Tools** > **Checkstyle** > **Configure**. This will open the **Checkstyle Tool Settings** dialog which will allow you to set Checkstyle's home directory, select a particular **Checks** file, set flags, etc. This allows jGRASP to locate the tool on your machine and then interact with it via the **Compile Messages** tab in the lower window of jGRASP. In the case of Checkstyle, after the tool has been configured, options for **Check File** and **Check Directory** will be available on the Checkstyle menu. **Check File** checks the file in the CSD window that has focus, and **Check Directory** checks all files in the directory containing the file for the CSD window in focus. If the file in the CSD window with focus is in an open project, a **Check Project Files** options will also be available.

Current plug-ins include the following:

(1) **Checkstyle** – automates style checking against a specified "check file". For best compatibility with jGRASP, you are encouraged to install Checkstyle 5. See http://checkstyle.sourceforge.net for details.

(2) **DCD** (**Dead Code Detector)** – finds never used code in your Java programs. See https://dcd.dev.java.net for details.

(3) **FingBugs** – uses static analysis to look for potential bugs in Java code. http://findbugs.sourceforge.net