

# sourceinstall, installing software from source using a

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# 1 Introduction for Beginners

This is an introduction for real beginners. If you are already somewhat experienced with UNIX-like systems and GNU install procedures, you should skip this chapter, otherwise

Welcome!

`sourceinstall` will try to make configuration, compilation, installation and removal of source packages easier for you as a beginner, but instead of hiding information and operations, everything that happens will be available for you to see, so you can hopefully understand basic concepts by just using this program.

Provided your system meets the requirements, and thus you manage to have a working installation of `sourceinstall` itself, you will be shortly able to install new software from its source code by surfing the web, identifying a Free Software you like, downloading its SOURCE package, and feeding it to GNU Installer.

## 1.1 Installing the Installer

Proceed to download `sourceinstall-0.2-cvs.tar.gz`, and mark where the file will be placed (the “folder”, the *directory*). For example, we will assume that you are downloading to

```
/home/user/downloads
```

After the download completes, start a console session. Your desktop environment should include a button, picture, or menu item that refers to a “shell”, “terminal” or “console”.

After the console is open, you should see a brief message ending in `$`; this message will be represented here by a single dollar character, and you shall NOT type that character as part of the commands.

Reach the directory you just downloaded your file in, by typing in the shell this command, followed by a RETURN:

```
$ cd /home/user/downloads
```

If you get an error message, double check your command for typos. If things are going well, you will know because you will get nothing else than another `$` ended message (a *prompt*)

At this point enter the following command (this assumes you have the GNU version of `tar`):

```
$ tar -zxvf sourceinstall-0.2-cvs.tar.gz
```

Note that you can use the tabulation (TAB) character to complete names. Experiment with pressing (TAB) around the middle of the file name.

All the files you’ll see are being extracted from the archive, and a new directory is being created in the current one. At the end type:

```
$ cd sourceinstall-0.2-cvs  
$ ./configure
```

A lot of output will be showing at this point. The software is being *configured* (adapted) for your system. If everything runs smooth, you will see at most WARNINGS but no ERRORS. After a while you will get the familiar dollar, and now you can write:

```
$ make
```

Some output will be shown, then again the familiar prompt. And now:

```
$ su
(Enter your root password)
# make install
```

After writing `su`, you will be asked for your root password. You should have set your root password during your Operating System initial setup. If you do not know, try pressing ENTER. The `#` character before `make install` denotes the fact that after `su` you have gained root privileges. Since you are done, drop your root privileges by typing

```
# exit
```

Each time you want to run GNU Source Installer from the console, type:

```
sourceinstall
```

To run it from the graphical environment, you should create some kind of “shortcut” or “link” to the program on your desktop or in your program menus. The program to launch is (assuming default values) `/usr/local/bin/sourceinstall`.

If you experience errors that prevent the correct installation and execution of the program, the next section tries to deal with these cases.

At the end of the procedure you will get the following files installed:

1. `/usr/local/bin/sourceinstall` (link to the program)
2. `/usr/local/bin/sourceinstall.tcl` (the program)
3. `/usr/local/info/sourceinstall.info` (texinfo manual)
4. `/usr/local/man/man1/sourceinstall.man` (man page)

To consult the GNU Source Installer manual type

```
$ info sourceinstall
```

If you want a brief overview of program invocation and options, you can consult the traditional man page by issuing

```
$ man sourceinstall
```

## 1.2 Troubleshooting sourceinstall Installation

If you could not install GNU Source Installer, this is most likely because you do not have the required software in your system.

Look at the output of `./configure`, and you will see which programs have not been found on your system.

The most blocking thing is if you miss `tcl`, `Tk` or `Expect`: in this case `./configure` will exit with an error, and `make` will not be able to run.

If this is your case, you will need to install `tcl`, `tk` and/or `expect`. If you have your OS installation disk(s), chances are that the software is available there, and is installable using the OS specific installation system.

Otherwise, probably the easiest method to obtain an interpreter able to work with GNU Source Installer is to build the `expectk` program, which is included in the `Expect` package.

You can fetch it from <http://expect.nist.gov/>

The other method is to use `tclsh`, with the `Tk` and `Expect` packages. Source releases for `tcl` can be obtained from <http://sourceforge.net/projects/tcl/>.

After having a working interpreter, restart the procedure from `./configure` and things should be better.

If you miss any of the other helper programs, only the particular functionality offered by that program will be missing (a WARNING will be shown).

This is a comprehensive list of programs that GNU Source Installer uses, from the most important ones, to the really secondary:

`'tcl interpreter'`

`tclsh` with the Tk and Expect tcl packages, or in alternative the all-in-one `expectk` interpreter.

`'sh, cp, mv, rm, du, su, rmdir'`

these are part of every unix-like, you must have them

`'tar'`

this is necessary to extract the source .tar archive - in theory you could use GNU Source Installer without this, but it would not be practical.

`'gzip, gunzip'`

these are necessary to uncompress .gz files and to compress the stored source using the quick but less-than-bz2 (but still good) space efficient .gz compression.

`'bunzip2, bzip2'`

these are necessary to uncompress .bz2 files and to compress the stored source using the very space efficient (but more time consuming) .bz2 compression. By default, the source is stored using this compression.

`'unzip, zip'`

these deal with .zip files. It is very unlikely that you will find Free Software source packages available only in .zip format so you can ignore this. Also, you do not want to compress your source using zip. I found both .gz and .bz2 to be much more efficient at least when dealing with source. Ignore warning if not present.

`'compress'`

this deals with .Z files. The gzip utilities are used to uncompress .Z packages, so you would only need this if for some arcane reason you want to store source in .Z format. Ignore warning if not present.

If you still have problems, you can write an email to the `sourceinstall` users mailing list [bug-sourceinstall@gnu.org](mailto:bug-sourceinstall@gnu.org) and ask for help. Feedback of any sort is also welcome.

Good luck, and I hope this helps :)

## 2 Introduction for the Experienced

Source Installer (`sourceinstall`) is a program that offers a graphical interface to source package configuration, installation, tracking and removal.

It is intended to work on Unix-like systems (with GNU/Linux as a primary target).

This is a tool intended for the user, not for developers: it has nothing to do with package creation.

The user installs new source packages by browsing the web, downloading a source package (in `.tar.gz` or other formats), and then feeding it to the source installer.

### 2.1 Why should you use this program?

If you already build most of the software on your system from source code, you might try `sourceinstall` as a way to centralize and better organize your interactive source installs. Here is what this software offers to the experienced user:

**‘better integration with your GUI programs.’**

Other GUI programs could interface with GNU Source Installer and provide tighter integration if desired.

This would be possible by interfacing at the simplest level (the executable level), by running `sourceinstall mypackage-1.0.1.tar.gz` for example.

Another item, this one in the wishlist yet, is the drag-and-drop of source packages to the `sourceinstall` gui.

**‘tracking of all currently installed source packages,’**

with info about install size, source size, and all files relevant to each package.

**‘automatic quick check for broken installs.’**

If you remove or rename a file associated with an installed package, then clicking on the package will prompt the problem, and mark the missing file in red. If you can not solve the issue yourself by restoring the file, you can click “Reinstall” and get a fresh reinstallation.

**‘implicit check for reliable and gnu-conforming packages.’**

The program will issue warnings if the package offers only a very spartane build system, or does not correctly honor common Makefile targets and features.

**‘full debugging output.’**

A pseudo-console with all the output is provided, so you will be able to get notified of warnings and errors from `./configure`, `make`, and all other programs.

**‘clean uninstallation’**

The program performs crosschecks between make uninstall results and internal information available on individual packages (gathered during the install process). These checks can detect files left over by the make uninstall procedure, and if no other package claims them, they are suggested for removal.

## 2.2 Why should you avoid this program?

The following is a critique against this tool, that shows what you lose, or do not gain in contrast to relying on the good old command line:

‘you can lose time.’

`sourceinstall` basically installs two times. However, the install process is generally not so time-consuming, for example in contrast to the compile process. The program makes a test installation first (if `DESTDIR` is supported), to make a final check and gather useful information. This has an impact on total installation time.

‘it is not scriptable.’

`sourceinstall` can be called with filename parameters, but during installation dialogs can be popped up if decisions have to be taken. This is a tool thought for interactive use, so if total automation is your goal, `sourceinstall` is not for you.

‘some packages might not work.’

`sourceinstall` has to make some generalizations and will not be able to install difficult packages. An experienced user or developer can quickly go through a broken or sketched `Makefile` and fix things for his system, but `sourceinstall` can not. On the other hand, if enough people use this tool, this could further drive developers towards the autotools and to create better packages in general.

‘no package-level dependency tracking, no repository, nothing at all’

If your package blocks during configuration, for example, you still look at that damned error message in the pseudo-console and act consequently (generally this involves browsing for that missing file/package).

‘people who install everything from source might not give a damn.’

After widespread adoption, however, even less experienced users could be able to approach the source packages (and hopefully become more experienced with time)

## 3 Invoking

This chapter shows the options and parameters that `sourceinstall` accepts.

### 3.1 Synopsis

```
sourceinstall [-hV] [[SOURCE_PACKAGE], ...]
```

If called without any arguments, the program starts a graphical interface and waits user input to decide the action to perform.

### 3.2 Options

If called with the ‘`-h`’, or long equivalent ‘`--help`’ option, then no graphical interface will be started, and a help message with the available options will be displayed on standard output.

If called with the ‘`-V`’, or long equivalent ‘`--version`’ option, then no graphical interface will be started, and a version string message will be displayed on standard output.

If one or more ‘`SOURCE_PACKAGE`’ parameters are specified, then all specified source packages will be installed in the given order. The first install failure breaks the chain.



## 4 Usage for Beginners

### 4.1 The default setup

For beginners, a default setup known to work well for GNU Source Installer is the following:

1. Your OS distribution provided programs are prefixed using `‘/usr’`. GNU Source Installer itself is either prefixed using `‘/usr’` or `‘/usr/local’` (this means that the program executables are in `‘/usr/bin’` or `‘/usr/local/bin’` respectively).
2. You login normally as you always do with your user name, then start the GNU Source Installer using command `sourceinstall`. You do NOT login as root. At the appropriate times, during installation, you will be asked for the root password if necessary.
3. The default prefix in your preferences is `‘/usr/local’`, and thus you install your source packages in `‘/usr/local’`
4. You are the only one on the system that installs source packages, and always do that logging in as the same user.

### 4.2 Looking for the right package

First of all, think about a software you want. It is highly probable that such a software package is available under a Free license somewhere.

You can search by simply using a web search engine.

Tip: add GPL or another Free license name to your search, so you are sure to find real Free Software, and not freeware, shareware or whatelse. You can also try the term “Open Source” (the Free Software movement generally despises the term, but it is less prone to sending you to a freeware or even commercial page than trying to enter “Free Software” in your engine).

You can choose another road, and use a Directory instead. Good places to start are the Free Software Directory and Savannah (home to the `sourceinstall` project development). Other good places to search are Freshmeat and Sourceforge, although you will find a lot of not really Free software there too.

Once you have found an interesting software, look for a SOURCE download (`.tar.gz`, `.tar.bz2`, ..) Proceed with the download, and mark where the file will be downloaded.

### 4.3 Adding a new source package

Once you have a new shiny source package, it is time to add it from the Source Installer. Run `sourceinstall`, then press the **Add** button.

In the **Add** dialog that appears, you can choose **Browse** to locate the package, and finally choose **Ok** to proceed. Let the other checkboxes be with their default values.

If everything runs smooth and the package has been built with the autotools, you will be presented with a configuration window, where all package options can be tweaked prior to installation.

If you have no idea about what those options mean, at least take a look at the option descriptions. You can then try `‘Auto’` to go on with the defaults.

The option ‘**--prefix**’ will be highlighted. This is because it’s a very useful and important option, that lets you specify where your install tree should start.

When you are satisfied with the options, choose **Ok** and wait for the software to be configured and compiled.

If no problems occur, you will be eventually asked for the root password (if needed), and then you will be informed about the result of the install operation.

## 4.4 Changing the Preferences

The default prefix to use for your installs can be changed, like other options, in the **Preferences** from the **Edit** menu, and it is initially set to ‘**/usr/local**’.

Here are the preferences you can change and their description:

“Default installation choices: Manual configuration, Install, Keep Source” These are the default values for the checkboxes when you trigger the **Add** action. Beginners should keep all those selected.

“Manual configuration” means that you will be able to see the software configuration window. It will get you acquainted with the common options supported by the packages, so it is recommended to keep this selected.

You can always choose **Auto** in the configuration window to stick with the defaults.

“Install” means that when you add new packages, they will be installed. Most beginners would want this.

“Keep Source” means that the configured source code is compressed, archived and stored for later use. This does waste some space, but ensures a cleaner uninstall process, and can provide a future easy reinstallation.

“Strip binaries (not recommended)”: this option should be off. It can cause a lot of trouble if you don’t know what you are doing. It involves removing symbolic information from the installed programs.

“Default install prefix”: this is the default prefix to use when installing software packages. Programs and data will generally be installed in a subtree of the specified directory. The default value is ‘**/usr/local**’ and is a good one for system-wide installs.

“Src compression”: this is the compression format to use when archiving source packages. By default it is **.bz2** (which provides very space-efficient compression), but if you have plenty of space in your disk and prefer quicker installs and uninstalls you can change it to **.gz**

## 4.5 Querying package information

Clicking on the package will show all available information on that package, and will activate the actions for the installed package: **Remove** and **Reinstall**. This will also trigger a quick check to ensure that the package has all its needed files in place.

## 4.6 Removing a package

To remove a package, select it from the list and click the **Remove** button. When you **Remove** a package, you can decide to uninstall the package but keep it in compressed source form. This way, should you decide to install again later, you have the already configured source, and only need to select it from the list and choose **Install**.

These instructions should get you started. Read on if you want to know more.

## 5 Usage for the Experienced

A package processed by `sourceinstall` can exist in three forms:

1. installed + archived configured source
2. installed only
3. archived configured source only

For example, if you are short on space, and you are installing a well-behaved package (you get no warning about `DESTDIR` not being honoured during installation), you can decide to remove the archived source (losing all the advantages though) to free up some space. Alternatively, you can avoid to store it in the first place when you perform the **Add** action.

On the contrary, you might think that you do not require a certain installed program right now, so you select the **Remove** action for that package, but remove only the installation and not the source, so you can quickly reinstall should you require the software again in the future. Your configuration will be preserved, you will not need to pass through the configuration window anymore if you were fine with the last installation.

### 5.1 Consistency checks

Another service that `sourceinstall` silently offers is a simple set of consistency check for existing installations. Selecting a package from the list at any time will show all available information about the installed package, and a check will be performed to see if the install looks ok. If some of the files required by the program are missing, you will find a notice and all the missing files will be highlighted in red and marked with an asterisk (\*). At this point you can correct the problem by restoring the missing files yourself (for example, you might have accidentally moved them for arcane reasons), or just perform a **Reinstall** action for the package. Additionally, during the uninstallation cross-checks between make uninstall results and internal package information, only independent files (that is, files that are not being claimed by other packages) are proposed for removal. This works better if you avoid installing non-conforming packages, because Source Installer will not be able to know which files a non-conforming package claims.

### 5.2 Conforming and non-conforming packages

It is recommended to install only conforming packages using Source Installer. Conforming packages are built using the autotools, and honor the install targets and environment variables correctly. In particular, conforming packages must honor `DESTDIR`.

Conforming packages get better uninstallation, better checks, more information in the Package information window. A single non-conforming package can make uninstallation checks degrade. Uninstalling the non-conforming package restores the better uninstallation checks.

For these reasons, you will be warned when attempting to install a non-conforming package.

Much less important is the `autoconf` version used to produce the configure script. If the version is old (currently < 2.50), only basic configure options will be recognized and editable in the configuration window.

## 5.3 Other package management systems

It is highly probable that you will have many different tools that provide package management. For example, if you are running a GNU/Linux distribution, you probably have your distribution-specific way to handle binary (or even source) packages. What I suggest here is to make a clean separation between your distribution-provided packages (along with any additional packages installed using your distribution-specific tools), and the source packages installed using the distribution-independent GNU Source Installer. One good way to obtain this, is to use different prefixes for each package management system you use. Suppose your distribution-handled packages are in `/usr`, then your source packages managed by GNU Source Installer (or by yourself) can be prefixed using `/usr/local` (this is the initial value). This way you ensure that file dependancy checks are not tainted by other packages managed by other tools.

## 5.4 Users

GNU Source Installer configuration and packages always refer to the particular user that runs it. What follows is a list of possible setups.

As the first example, suppose user Pip wants to install his private packages. He chooses to install in `/home/pip/usr`, at the same time allowing user Merlin to install his own packages in `/home/merlin/usr`. Of course, in this case no one steps on anybody's toes and everything runs smooth.

As the second example, user Merlin is the system administrator, and personally deals with all system-wide package installations. Thus, he logs in using his `merlin` account, then runs `sourceinstall` and uses the default prefix value, which is `/usr/local` to install new programs. When requested by the system, he is asked for the root password. This is ideal for one-user systems.

As a third example, suppose both Pip and Merlin deal with system administration. They get along well, and both deal with system-wide package installations. Thus, they decide to both install packages logging in using the privileged `root` account, and then install using `sourceinstall`. They will both see the same packages, because they are logging in as the same user (`root`). However, only one of the two admins will be able to install software at the exact same time, because to prevent corruption of package data each user is entitled to a single running instance of GNU Source Installer. When the program is already in use, `sourceinstall` refuses to start and explains the error.

As a last example, here's what not to do. Imagine both Pip and Merlin deal with system administration, like before, but since they don't read the docs, they login using their regular accounts, and perform installs using the default system-wide prefix, `/usr/local`, providing the root password then needed. Even if they install at different times this is a bad thing to do: they will not be aware of each other's moves, file dependency tracking will be far less precise, and consequently uninstallation crosschecks will sometimes hint the wrong things.

## 5.5 Files and Directories

If you want to dwell on the internals of `sourceinstall`, this is an interesting chapter. We will look at all files and directories that together make `sourceinstall` work.

The `sourceinstall` executable is in fact a symbolic link to the implementation in use. For example:

```
$ ls -l /usr/bin/sourceinstall*
lrwxrwxrwx 1 root root      11 Jun  3 03:15 sourceinstall -> sourceinstall.tcl
-rwxr-xr-x 1 root root 87019 Jun  3 03:15 sourceinstall.tcl
```

Currently there is only a tcl implementation, but in the future this system will be used to make different implementations of `sourceinstall` coexist.

I have some indistinct ideas about how it could be possible, at configure time, to determine the best supported implementation, and by default make the link point at that (of course the user will be able to choose his preferred version using a configure option).

All this is yet to come though, so for the moment this has no great impact on the universe.

The per user configuration directory is another story:

each user that runs `sourceinstall` gets a `.sourceinstall` directory created in his `HOME`. This is for example a directory tree:

```
$ tree ~/.sourceinstall
/home/claudio/.sourceinstall
|-- build
|-- install-destdir
|-- packages
|   |-- a-renet-1.1.0rc5
|   |-- cmdftp-0.9.2
|   '-- libmikmod-3.2.0-beta2
|-- src
|   |-- a-renet-1.1.0rc5.tar.bz2
|   |-- cmdftp-0.9.2.tar.bz2
|   '-- libmikmod-3.2.0-beta2.tar.bz2
'-- sourceinstallrc
```

If `sourceinstall` were running, you would see another file, `~/.sourceinstall/.sourceinstall_lock`, containing the process id of the running `sourceinstall` process.

In this case there are only three packages installed. Each package has a file name entry with the same name in the `'packages'` directory. That file contains all information on that package.

The source for all three packaged has been archived in the `'src'` directory.

The `'install-destdir'` directory is used during the test installation, and then it is cleared.

The `'build'` directory is used only while building packages, and then it is cleared.

Do not store anything in these directories yourself, because they will be regularly emptied.

The `'sourceinstallrc'` file contains the current user preferences. These are the same options that can be tweaked from the **Preferences** in the **Edit Menu**.

## 6 Reporting Bugs

Email bug reports to [bug-sourceinstall@gnu.org](mailto:bug-sourceinstall@gnu.org), trying to be as clear and precise as possible. This means that you should provide all useful information that could help to identify the problem, and a detailed way to reproduce it. A good starting point is to specify your OS name and version and your interpreter choice (tclsh, expectk or other interpreter) and version.

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