

Installation Guide to the Feldspar Compiler

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1 Quick Installation

1.1 Prerequisites

To start the installation of Feldspar, the following dependencies have to be met. See Section 2 for detailed installation instructions of the Haskell environment.

- GHC \geq 6.12 (<http://haskell.org/ghc/>)
- Cabal for Haskell (<http://haskell.org/haskellwiki/Cabal-Install>)
- The following extra Cabal packages:
 - `ansi-terminal` (*for `feldspar-compiler`*)
 - `haskell-src-exts` (*for `feldspar-compiler`*)
 - `hint` (*for `feldspar-compiler`*)
 - `MonadCatchIO-mtl` (*for `feldspar-compiler`*)
 - `mtl` (*for `feldspar-language`*)
 - `QuickCheck` (≥ 2.4 && < 3) (*for `feldspar-language`*)
 - `tagged` ($= 0.2.*$) (*for `feldspar-language`*)
 - `type-level` ($\geq 0.2.4$) (*for `feldspar-language`*)
 - `happy` (*for `haskell-src-exts`*)

1.2 Installing Feldspar Packages

1.2.1 Minimal Installation

- Download and unpack the `feldspar-language` and `feldspar-compiler` packages from the Feldspar page: <http://feldspar.inf.elte.hu/feldspar/>
- First enter the `language` and then the `compiler` subdirectories and issue the following command in each of them:

```
$ cabal install
```

- Note that **on Windows systems** administrator privileges are required for this installation. Another option is installing Feldspar for only the current user with the `--user` flag. But in this case one of the following lines has to be added to the `Path` environment variable depending on configuration:

- C:\Users\%USERNAME%\AppData\Roaming\cabal\bin
- C:\Documents and Settings\%USERNAME%\Application Data\cabal\bin

1.2.2 Minimal Installation from Hackage

- Issue the following commands:

```
$ cabal install feldspar --language
$ cabal install feldspar --compiler
```

- Note that **on Windows systems** administrator privileges are required for this installation. Another option is installing Feldspar for only the current user with the `--user` flag. But in this case one of the following lines has to be added to the Path environment variable depending on configuration:

- C:\Users\%USERNAME%\AppData\Roaming\cabal\bin
- C:\Documents and Settings\%USERNAME%\Application Data\cabal\bin

1.2.3 Installation with Documentation

- To install the documentation **without linked source code**, just issue the `cabal install` commands with the `--enable-documentation` flag:

```
$ cabal install --enable-documentation
```

- To install the documentation **with linked, colourized source code**, first of all install the latest version of Haddock and HsColour.

```
$ cabal install haddock hscolor
```

- **In case you use GHC-6.10** issue the following command instead of previous one:

```
$ cabal install 'haddock<2.6' hscolor
```

- Download and unpack `feldspar-language` and `feldspar-compiler` packages from the Feldspar page: <http://feldspar.inf.elte.hu/feldspar/>

- First enter the `language` directory and issue the following commands:

```
$ cabal install
$ cabal haddock --hyperlink --source
$ cabal install
```

- Enter the `compiler` directory and install it using the following command:

```
$ cabal install
```

- The generated documentation might be found at the following locations (depending on the actual configuration):
 - `~/ .cabal/share/doc/feldspar-language-0.4`
 - `C:\Program Files\Haskell\doc\feldspar-language-0.4`
 - `C:\Users\%USERNAME%\AppData\Roaming\cabal\doc\ feldspar-language-0.4`
 - `C:\Documents and Settings\%USERNAME%\Application Data\ cabal\doc\feldspar-language-0.4`
- Note that **on Windows systems** administrator privileges are required for this installation. Another option is installing Feldspar for only the current user: Issue the `cabal configure` and `cabal install` commands with the `--user` flag and add one of the following lines to the `Path` environment variable depending on your configuration:
 - `C:\Users\%USERNAME%\AppData\Roaming\cabal\bin`
 - `C:\Documents and Settings\%USERNAME%\Application Data\ cabal\bin`

Administrator privileges are required for installing Haddock and HsColour. If they are not installed, issue the `cabal haddock` command without the `--hyperlink-source` flag.

2 Installing Haskell Environment

In order to install Feldspar as described in the previous section, it requires Haskell and all the related tools. This section gives detailed description of installing this environment under specific systems.

2.1 Windows 7, Windows XP

- Download and install the Haskell Platform from the page <http://hackage.haskell.org/platform/>
- Update the Cabal package list:

```
> cabal update
```

2.2 Ubuntu 10.10

- Install GHC, `cabal-install` and Happy for `haskell-src-exts` installation:

```
$ sudo apt-get install ghc6 cabal-install happy
```

- Add the prefix `~/ .cabal/bin` to the `PATH` environment variable:

```
$ echo 'PATH=~/ .cabal/bin:$PATH' >> ~/ .bashrc
```

- Update the Cabal package list:

```
$ cabal update
```

2.3 Fedora 14

- Install GHC, `cabal-install` and Happy for `haskell-src-extends` installation:

```
$ su
$ yum install ghc cabal-install happy
$ exit
```

- Add the prefix `~/cabal/bin` to the `PATH` environment variable:

```
$ echo 'PATH=~/cabal/bin:$PATH' >> ~/.bashrc
```

- Update the Cabal package list:

```
$ cabal update
```

2.4 openSUSE 11.3

- In order to install GHC, add a new repository:

```
$ ROOT="http://download.opensuse.org/repositories"
$ HK="devel:/languages:/haskell:"
$ DIR="$HK/platform-2010.2/opensUSE_11.3"
$ URL="$ROOT/$DIR"
$ REPO="$URL/devel:language:haskell"
$ sudo zypper ar "$REPO:platform-2010.2.repo"
$ sudo zypper ref
```

- Install GHC, `cabal-install` and Happy for `haskell-src-extends` installation:

```
$ sudo zypper in ghc cabal-install happy
```

- Add the prefix `~/cabal/bin` to the `PATH` environment variable:

```
$ echo 'PATH=~/cabal/bin:$PATH' >> ~/.bashrc
```

- Update the Cabal package list:

```
$ cabal update
```

2.5 Installation on Generic Linux

Installing GHC

- The GHC binary installer requires the following packages. Please make sure that they are installed:
 - `binutils`
 - `coreutils`
 - `gcc`
 - `perl`
 - `sed`
- Download the appropriate GHC binary package from the "*Binary Packages*" section from the "*Current Stable Release*" section from <http://haskell.org/ghc/download.html>
- Unpack the archive and enter the newly created directory.
- Use the following commands to install the package:

```
$ ./configure
$ sudo make install
```

Installing cabal-install

- To build `cabal-install` it requires the following packages. Please make sure that the `gmp` and `zlib` development packages are installed. For example:
 - `libgmp3-dev` or `gmp-devel`
 - `zlib1g-dev` or `zlib-devel`
- Download the `cabal-install` tarball from <http://hackage.haskell.org/package/cabal-install>
- Unpack the archive and enter the newly created directory.
- Run the script `bootstrap.sh`:

```
$ ./bootstrap.sh
```

- Add the prefix `~/cabal/bin` to the `PATH` environment variable:

```
$ echo 'PATH=~/cabal/bin:$PATH' >> ~/.bashrc
```

- Update the Cabal package list:

```
$ cabal update
```

Installing the Happy Cabal package

- Use the following command:

```
$ cabal install happy
```

2.6 Installation on FreeBSD

Installing GHC

Basically there are three methods to install GHC.

- Use the Ports Collection to build from source. This will handle all dependencies. (Here it is assumed that the ports tree is under `/usr/ports/`.)

```
$ cd /usr/ports/lang/ghc
$ make install clean
```

The command will ask for administrator privileges for installing.

- Install the pre-compiled binary package from a remote FTP server. This will handle all dependencies. It is recommended to be issued as `root`.

```
# pkg_add -r ghc
```

- Download and use the binary installer from the GHC home page. This usually provides the latest GHC available.

– The installer requires the following packages to be present.

- * `gmp`
- * `libiconv`
- * `gmake`
- * `perl`
- * `autoconf`

They can be installed in a single command (as `root`).

```
# pkg_add -r gmp libiconv gmake perl autoconf
```

– Download the appropriate GHC binary package from the "*Binary Packages*" section from the "*Current Stable Release*" section from <http://haskell.org/ghc/download.html>

– Unpack the archive and enter the newly created directory.

– Use the following commands to install the package.

```
$ ./configure --prefix=<place of installation>
$ gmake install
```

Installing cabal-install

- Building `cabal-install` it requires the `wget` package to be installed.

```
# pkg_add -r wget
```

- Download the `cabal-install` tarball from <http://hackage.haskell.org/package/cabal-install>.
- Unpack the archive and enter the newly created directory.
- Run the `bootstrap.sh` script.

```
$ ./bootstrap.sh
```

- Add directory of `cabal-install` (that is `$HOME/.cabal/bin` by default) to the `PATH` environment variable.
- Note that if the network connection is firewalled then it may be worth to set the `HTTP_PROXY` environment variable before using `cabal-install`.
- Update the Cabal package list.

```
$ cabal update
```