Haskell Tools and Infrastructure

Matthias Fischmann, Alexander Ulrich

July 1, 2015 — Copyright © 2014 Well-Typed LLP



Topics

- ► How do I find a library for a given task?
- ► How do I install / manage those libraries?
- Where do I find answers to my questions?



Search engines

- ▶ http://hayoo.fh-wedel.de/
- ▶ https://www.haskell.org/hoogle/

Full-text search for packages, functions, types, ...

Many libraries are indexed.

You can set up your own instance:

- to reduce network load
- ▶ to index more / other packages (e.g. unreleased code)



http://hackage.haskell.org/

The official library distribution site.

- https://github.com/haskell/hackage-server the software to run hackage.haskell.org (or your own site)
- ► Think pypi (python), cpan (perl), ...

Features:

- cabal integration (next slide)
- web-based package search
- web-based documentation



http://www.stackage.org/

Package version constraint set that makes hackage more reliable.

- coherent nightly builds
- ▶ LTS

Cabal

- build environment
 - \$ git clone ... && cd ... && cabal install
- library download and dependency manager
 - \$ cabal install binding-gtk
 - \$ cabal install haskell-in-space
 - \$ cabal update
 - \$ cabal list

Cabal

- ▶ integrates testing, docs generation, ...
 - \$ cabal haddock
 - \$ cabal test
- allows you to create your own packages
 - \$ cabal check
 - \$ cabal sdist
 - \$ cabal upload
- just ask!
 - \$ cabal --help

Think: make, ant, npm, bower, apt-get, ...



Cabal file

Every package has a file:

<package name>.cabal

in the root directory.

- The cabal file provides info on
 - release
 - lincensing
 - maintainer
 - provided modules and executables
 - package dependencies
 - ► test suite
 - compiler settings

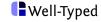


Cabal file

```
gorbla
name:
                      8.109.11
version:
-- synopsis:
-- description:
license:
                      AGPL-3
license-file:
                      LICENSE
author:
maintainer:
-- copyright:
-- category:
build-type:
                      Simple
cabal-version:
                      >= 1.10
```

Cabal file

```
library
  exposed-modules:
      Api
    . DB.Core
    [...]
    , Types
  build-depends:
      base >=4.7 \&\& <4.8
    , acid-state >=0.12 && <0.13
    , aeson >= 0.7 \&\& < 0.8
    [...]
    , warp >=3.0 && <3.1
executable thentos
  main-is:
      Main.hs
  build-depends:
      base
    , gorbla
```



ghc-pkg

To check what packages are installed:

```
$ ghc-pkg list
$ ghc-pkg list transformers
```

To remove local packages from database (not from disk!):

```
$ ghc-pkg unregister transformers
```

⇒ "ghc-pkg unregister" beats "cabal install –force-reinstall"



Cabal Sandboxes

```
$ git clone ... && cd ...
$ cabal sandbox init
$ cabal install
```

If you want to pull in packages from local source trees:

```
$ cabal sandbox add-source ~/.cabal-src/aeson/
```

To manage the packages installed in your sandbox:

```
$ cabal sandbox hc-pkg [list|unregister|...]
```



IDEs

https://www.haskell.org/haskellwiki/IDEs

Most commonly used:

- emacs
 - https://github.com/haskell/haskell-mode/wiki https://www.haskell.org/haskellwiki/IDEs#Emacs
 - Searchable speedbar, ctags integration
 - Incremental compilation and ghci integration
 - Lazy data exploration (present)
 - Code formatting, indentation, alignment
 - Code refactoring
- Vi
- ▶ https://www.haskell.org/haskellwiki/IDEs#Vim
- leksah
 - ► http://leksah.org



Other sources of information

If you want to aimlessly delve deeper into haskell:

- ▶ http://learnyouahaskell.com/
- ▶ http://book.realworldhaskell.org/
- ▶ http://www.reddit.com/r/haskell/new
- ▶ https://ocharles.org.uk/blog
- ▶ http://haskellcast.com/
- ▶ http://well-typed.com/blog



Other sources of information (cont.)

Places to look for answers to specific questions.

- ▶ https://www.haskell.org/onlinereport/haskell2010/
- ▶ http://www.haskell.org/
- ▶ http://stackoverflow.com/questions/tagged/haskell
- ▶ irc:freenode#haskell-beginners,#haskell



[Commercial break]

Well-Typed's Fast Track to Haskell



- ▶ 5th 6th October 2015 in London, delivered by Andres Löh
- ► https://skillsmatter.com/courses/ 464-well-typed-fast-track-to-haskell

