

Setup.hs

Exercises (Preview)



Monday Morning
Haskell

Lecture 1 - GHCup

Installation

Your first goal for these exercises is to install GHCup, which works a bit differently depending on your operating system. As long as you can run the command `ghcup --version`, you can move on to the next part of these exercises (**Listing and Changing Versions**).

You can find the full instructions online here: <https://www.haskell.org/ghcup/install/>

These instructions include any system requirements, including which distro packages are required on Linux.

Linux (Including Windows Subsystem for Linux)

Before installing GHCup, you must ensure you have installed the following distro packages (using `apt` or similar). I'm printing the list given for Ubuntu. It might change a bit depending on your distribution:

```
build-essential
curl
libffi-dev
libffi8ubuntu1
libgmp-dev
libgmp10
libncurses-dev
libncurses5
libtinfo5
```

The `curl` command below will also pause and print the list of requirements before asking you to proceed with installation. So if required packages are different for your distro, you'll be able to see.

Once you have those dependencies met, installation is easy. You just need to run this `curl` command.

```
curl --proto '=https' --tlsv1.2 -sSf https://get-ghcup.haskell.org | sh
```

There will be a series of prompts. You should make sure GHCup is added to your path and that Haskell Language Server is installed. When it comes to allowing GHCup to manage Stack's GHC versions, I indicated "no". We'll see the consequences of this later. You're welcome to choose the default option of "yes".

This process should modify your `.bashrc` file to update your `PATH` to include the locations of the installed programs. So after the installation finishes, you should be able to run the command `ghcup --version` after re-sourcing your `.bashrc` file.

MacOS

On Mac, you basically only need to run the `curl` command. Dependencies should either already be installed, or should be added as part of the process of running this script.

```
curl --proto '=https' --tlsv1.2 -sSf https://get-ghcup.haskell.org | sh
```

Windows

Doing a pure Windows build is a bit different. You'll be working in Windows Powershell, which has more requirements, so the command is more complicated. Here it is, spaced over multiple lines so you can see what's going on (we'll have a copyable one-line version further down, and the GHCup website also has a copyable version).

```
>> Set-ExecutionPolicy Bypass -Scope Process -Force; `
[System.Net.ServicePointManager]::SecurityProtocol = `
[System.Net.ServicePointManager]::SecurityProtocol -bor 3072; `
try { Invoke-Command -ScriptBlock `
    ([ScriptBlock]::Create((Invoke-WebRequest `
    https://www.haskell.org/ghcup/sh/bootstrap-haskell.ps1 `
    -UseBasicParsing))) -ArgumentList $true } `
catch { Write-Error $_ }
```

Running this command will bring up a couple different prompts. You can just press "enter" and accept the default options. For me, it took several minutes for all the scripts to run and a second window opened at one point. When everything was finished, the second window gave instructions to close both terminals and *then reopen a new Powershell terminal*. After opening a new terminal, I was able to run `ghcup --version` successfully.

Here's the full command on "one line" if you want to copy it all at once instead of breaking it up into different lines (as mentioned, this command is also available through the GHCup website: <https://www.haskell.org/ghcup/>):

```
Set-ExecutionPolicy Bypass -Scope Process
-Force;[System.Net.ServicePointManager]::SecurityProtocol =
[System.Net.ServicePointManager]::SecurityProtocol -bor 3072; try { Invoke-Command
-ScriptBlock ([ScriptBlock]::Create((Invoke-WebRequest
https://www.haskell.org/ghcup/sh/bootstrap-haskell.ps1 -UseBasicParsing))) -ArgumentList $true
} catch { Write-Error $_ }
```

Listing and Changing Versions

When you install GHCup, it will, by default, install all the recommended versions of the different tools mentioned in the lecture (GHC, Cabal, Stack, HLS). Use the `ghcup list` command to see all the available versions. You should see that one version of each program is both installed and selected (indicated by double check marks or the green letters **IS** on Windows).

For the following programs, run the command to check its version and verify that you see the same version that was indicated as "selected" by the `list` command.

```
>> ghc --version
>> cabal --version
>> stack --version
```

Now try installing and setting a different version of GHC. You can do this with two commands. I'll use version 9.4.3 as an example (at the time of writing, GHC 9.2.5 is the recommended version).

```
ghcup install ghc 9.4.3
ghcup set ghc 9.4.3
```

Verify that this worked by checking the version again:

```
ghc --version
The Glorious Glasgow Haskell Compilation System, version 9.4.3
```

Then you can set the version back once again to the recommended version.

If you're on Linux or Mac, you can also try going through this process with the textual user interface (TUI):

```
ghcup tui
```

You should then navigate up to the GHC version you want and press `i` to install it, and then `s` to set it. You can press `q` to close the interface and check the version once again.

For the rest of the exercises, head to Lecture 2 and download the full document!