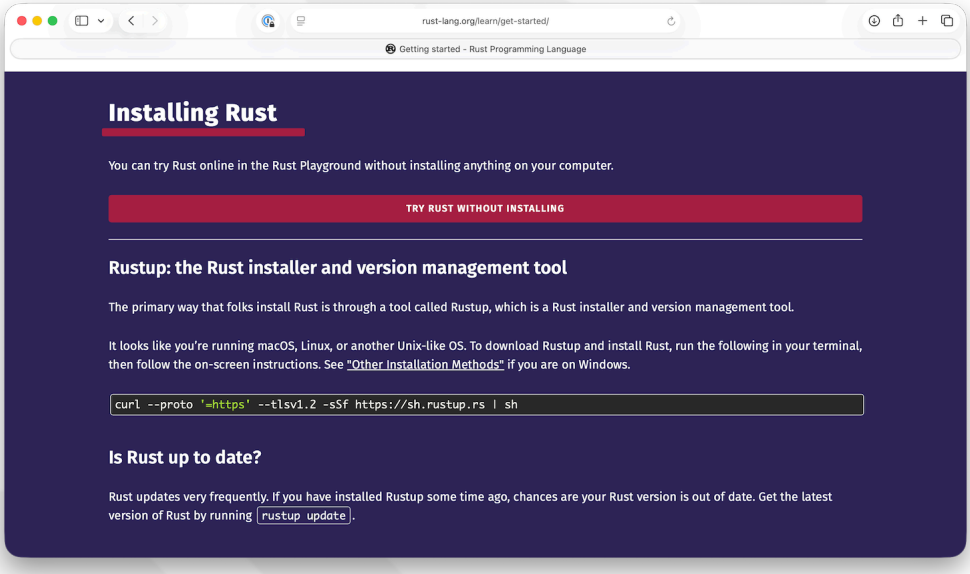
Chapter 2. Getting the Rust Tools

Learn about

- How to download and install the Rust tools

When you are ready to download the Rust tools on your computer and start to use them locally, go to the Rust home page[1] and click the Get Started button. You will be directed to the official method of installing Rust, which is done using a tool called `rustup`. This tool will need to be downloaded first and executed, in a manner that is dependent on the operating system on your computer.

Figure 2.1. Installing Rust



The Rust home page will most likely detect your operating system, and offer you a suitable way of getting `rustup`. On Unix-like systems, like Linux and ma-

[1] https://rust-lang.org

cOS, you will use `curl` to download a shell script and execute it. You can also download the shell script using the URL shown, and audit it before executing it. On Windows you will need to download the `rustup-init.exe` program, which requires the Visual C++ Build Tools. There are also standalone installers, so you will need to make a choice that best suits your environment. The Rust documentation has plenty of up-to-date material about installation on various platforms.

For the sake of discussion, let's assume that you are running Linux or macOS, and you execute the `rustup` initialization script. This will result in the `rustup` tool being installed, and then used to download and install the rest of the Rust tools, including the Rust compiler. The `rustup` tool will also be your method of keeping the Rust tools up to date, and it will be installed in a directory that ends up in your search path.

After the installation is complete, you can use the command `rustup show` to check that the Rust toolchain has been installed. On the author's machine (Apple MacBook Air M4), at the time of this writing, the result looks like this:

```
% rustup show
Default host: aarch64-apple-darwin
rustup home:  /Users/me/.rustup

installed toolchains
--------------------
stable-aarch64-apple-darwin (active, default)

active toolchain
----------------
name: stable-aarch64-apple-darwin
active because: it's the default toolchain
installed targets:
  aarch64-apple-darwin
  x86_64-unknown-linux-gnu
```

There are several versions of the Rust toolchain, with the "stable" version being the tested, released version. Since Rust is developing all the time, there are also "nightly" versions that you can use if you want to use features that may not be ready for prime time yet. In this book we will only use the stable toolchain.

Even the stable toolchain gets updates every six weeks. You can use `rustup` to check for them and install them. At the time of writing this, a new version of the stable toolchain had just been released, so the `rustup update stable` command resulted in downloading and installing the new version 1.92.0:

```
% rustup update stable
info: syncing channel updates for 'stable-aarch64-apple-darwin'
info: latest update on 2025-12-11, rust version 1.92.0 (ded5c06cf 2025-12-08)
info: downloading component 'rust-std' for 'x86_64-unknown-linux-gnu'
 28.0 MiB /  28.0 MiB (100 %)   4.5 MiB/s in  6s
info: downloading component 'rust-src'
  3.4 MiB /   3.4 MiB (100 %)   2.6 MiB/s in  1s
info: downloading component 'cargo'
  8.2 MiB /   8.2 MiB (100 %)   2.8 MiB/s in  3s
info: downloading component 'clippy'
  2.8 MiB /   2.8 MiB (100 %)   1.2 MiB/s in  2s
info: downloading component 'rust-docs'
 20.5 MiB /  20.5 MiB (100 %)   3.6 MiB/s in  7s
info: downloading component 'rust-std'
 26.0 MiB /  26.0 MiB (100 %)   2.7 MiB/s in  9s
info: downloading component 'rustc'
 60.9 MiB /  60.9 MiB (100 %)   3.4 MiB/s in 19s
info: downloading component 'rustfmt'
  1.5 MiB /   1.5 MiB (100 %)   1.3 MiB/s in  1s
info: removing previous version of component 'rust-std' for 'x86_64-unknown-linux-gnu'
info: removing previous version of component 'rust-src'
info: removing previous version of component 'cargo'
info: removing previous version of component 'clippy'
info: removing previous version of component 'rust-docs'
info: removing previous version of component 'rust-std'
info: removing previous version of component 'rustc'
info: removing previous version of component 'rustfmt'
info: installing component 'rust-std' for 'x86_64-unknown-linux-gnu'
 28.0 MiB /  28.0 MiB (100 %)  26.5 MiB/s in  1s
info: installing component 'rust-src'
info: installing component 'cargo'
info: installing component 'clippy'
info: installing component 'rust-docs'
 20.5 MiB /  20.5 MiB (100 %)   5.0 MiB/s in  2s
info: installing component 'rust-std'
info: installing component 'rustc'
 60.9 MiB /  60.9 MiB (100 %)  27.8 MiB/s in  2s
```

```
info: installing component 'rustfmt'

  stable-aarch64-apple-darwin updated - rustc 1.92.0 (ded5c06cf 2025-12-08) (from rustc
 1.91.1 (ed61e7d7e 2025-11-07))

info: checking for self-update
```

The output shows that all the Rust tools were updated. As a last step, `rustup` also tried to update itself, but there was no update available for it. You may want to issue the `rustup update stable` command from time to time to get the latest tools. Check the Rust language blog on the home page for news about new features and bug fixes.