

OOPSLA 18, Paper #131 Artifact

Getting Started Guide

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1 Requirements

- Coq 8.6 (or compatible - we tested with Coq 8.6 on Windows 7 and 10, and Ubuntu 18.04; conveniently, this seems to be the version that `apt` on Ubuntu is currently installing)
 - On Windows (and apparently OSX), you can download an installer for that version from <https://github.com/coq/coq/releases/tag/V8.6>
 - On Ubuntu, you can just use `apt`:

```
sudo apt-get update
sudo apt-get install coq
```
- For scripts to work, `cocq` (and, for re-compiling the documentation, if desired, `coqdoc`) must be accessible from `cmd` (on Windows) / `bash` (on Unix-like systems)

2 Running the Artifact

Our artifact is a Coq formalization. To machine-check that formalization, run the script `run.bat` (on Windows) / `run.sh` (on Unix-like systems). The output should at most be echos of the commands that are run (e.g. `coqc [filename].v`). If no errors show up during this phase (and there should be only one warning about extraction inside of a module¹), then all that is left is evaluating the correspondence of the formalization to what we write in the paper, largely following `index.html`. For details, see the step-by-step instructions.

Instead of running the scripts, you can also manually compile the files (either from the command line using `coqc` - you can use the commands from the scripts) or using your favorite Coq IDE, say `coqide`, in the following order:

¹If errors do occur, please check whether you have at least Coq 8.6 installed, using the command `coqc --version`

1. `Util.v`
2. `Section3_Requirements.v`
3. `Section3_Infrastructure.v`
4. `Section3_Proofs.v`
5. `Section4_Requirements.v`
6. `Section4_Infrastructure.v`
7. `Section4_Proofs.v`
8. `Section5.v`

`Introduction.v` does not contain anything relevant to the proof (it just contains `coqdoc` annotations for the documentation), so it does not need to be compiled. The file `Example.v` contains an example of how to use the framework, but is excluded from the claims of the artifact. You can check it anyway by running `coqc Example.v`. Since the example depends on the rest of the Coq formalization, you need to run `run.bat` (on Windows) / `run.sh` (on Unix-like systems) first. Finally, if for some reason you want to re-compile the documentation HTML files that are already included, `makedocs.bat` (on Windows) / `makedocs.sh` (on Unix-like systems) re-generates the HTML files using `coqdoc`. In order to do that, it also compiles and thus checks all the Coq files of the core formalization, as well as the example.