Tips and Tricks to Fix Your Nix

CDL 2025

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Debugging Expressions

What's the Problem?

Nix is an **interpreted** (dynamically and implicitly typed) **functional** (with function currying by default) programming language.

What's the Problem?

Error reporting is **bad**; the line reported in the stack trace is often quite far away from the actual mistake you've made.

Quick Advertisement!

Look, **https://sraka.xyz/posts/contracts.html** is cool :)

Setup Your `$EDITOR`

Use an LSP! Like `nil` and `nixd`. Configure checks on save or a pre-commit hook that can, e.g., run `deadnix` and `treefmt`.

Use the REPL

I use it all the time; it's also a great way to learn the Nix language.

`__trace` and `break`

Yay, debug prints... but **NEW:** a `--debugger` option!

Demo

```
let
  zA = 30;
  zB = builtins.trace 13 12;
in
{
  zC = builtins.break zA + zB;
}
```

Debugging Builds

What's the Problem?

Nix isn't incremental. When a command fails, you have to rebuild *(and almost always re-evaluate)* from scratch the whole thing, and there's no built-in way to interactively debug your issue...

Visualize Incremental Builds

`nix-output-monitor` gives you a nice interface to visualize what takes time in your build, and even better, `nix-fast-build` reuses the same TUI but builds your dependencies in parallel.

When It Doesn't Work

Use `nix derivation show` to inspect `.drv` files, and `nix why-depends` to trace dependency chains.

Demo

```
> nix why-depends /nix/store/fy9cyhdyb32jgvbjs7kwadfnx644dp
                  /nix/store/yw7vb4hamv9mqgbgf7598zvis7k2sp

/nix/store/fy9cyhdyb32jgvbjs7kwadfnx644dp97-pandoc-cli-3.6
  /nix/store/wp8fa5j4qj1x4mysnkhl96dkrhjyr3pg-lua-5.4.7
    /nix/store/yw7vb4hamv9mqgbgf7598zvis7k2spyx-ncurses-6.5
```

To Go Further

- Debug a Failed Derivation with `breakpointHook` and `cntr`
- Unit Test Your Nix Code

Q/A