Morty & Bender

- By pulp-platform

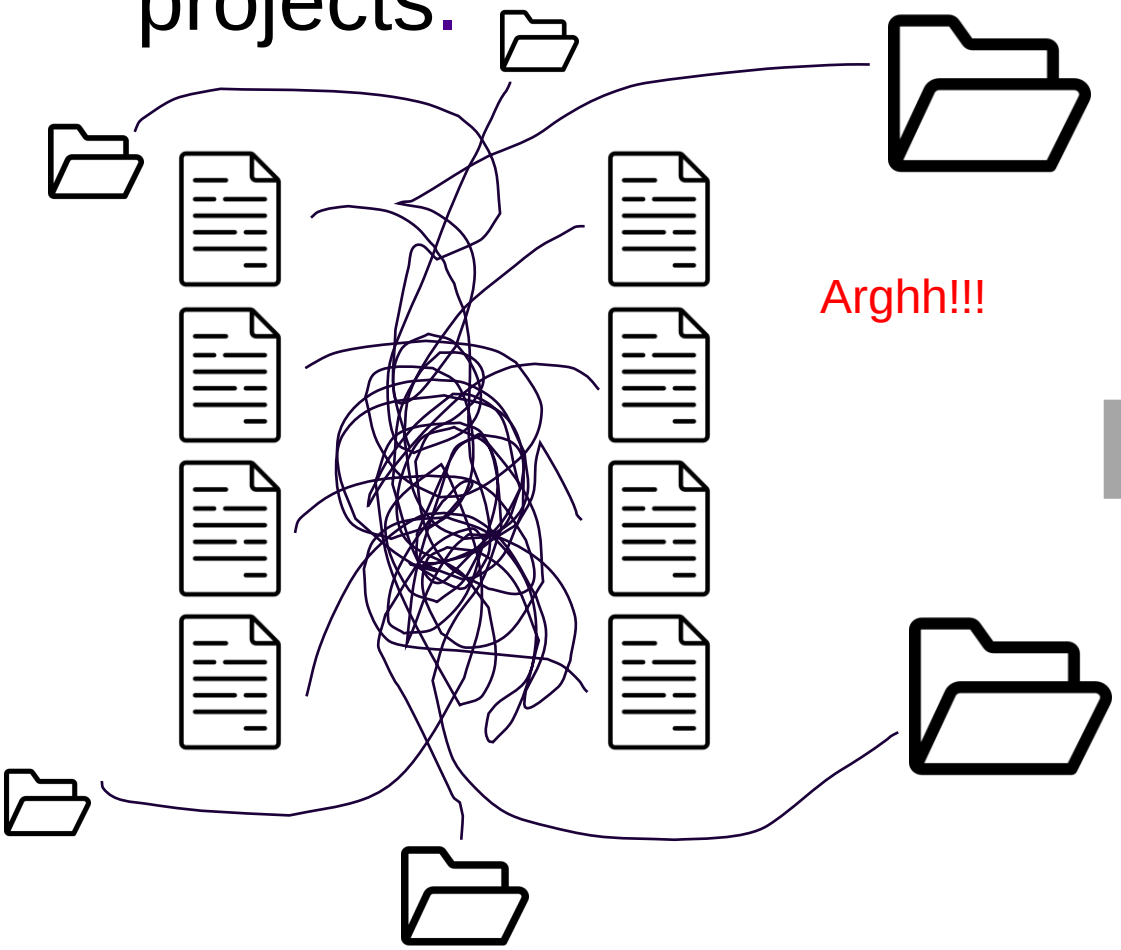
PULP (Parallel Ultra Power) Platform

- **The PULP-platform is an open-source platform, which started as a joint effort between the IIS of ETH Zürich and EEES group of University of Bologna to explore and develop new and efficient computing architectures using RISC-V architecture and open-source hardware design.**

- **Their initial scope was low-power devices, but later it has expanded to cover large, high-performance systems.**

Bender

- Bender is a tool to manage dependencies for HW design projects.



Arghh!!!

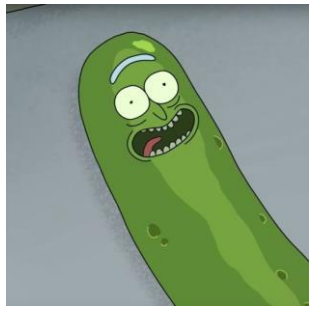
Bender

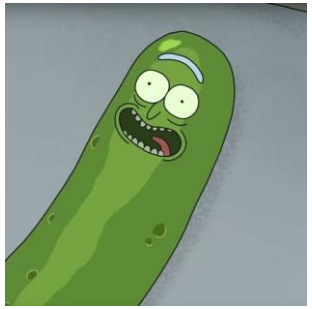
```
Source/Package/
├── a/
│   ├── dependency_file1
│   └── dependency_file2
└── b/
    ├── dependency_file1
    └── dependency_file1
```

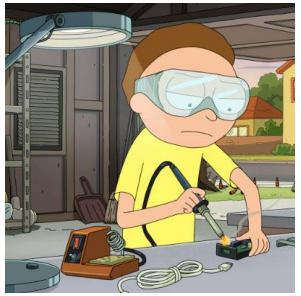
Tampere University

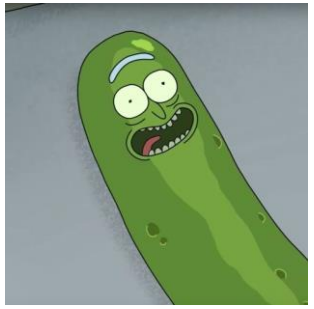
Morty

-Morty is used to handle SystemVerilog modules, packages, or interfaces that share the same name, which would otherwise cause compilation or simulation failures.

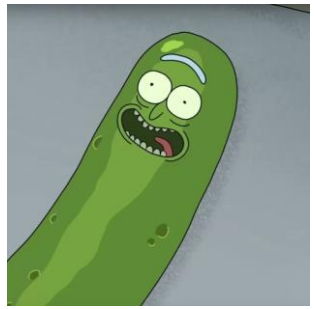








World A Rick



World B Rick

Which one is my Rick?

Morty

World A Morty

That is my Rick!

Morty

- 4666 lines of code
- 70.5% Rust, 26% CSS & 3.5% SystemVerilog
- Apache-2.0 licensed
- Quite clear instructions

```
// There are 2 modules a and b which are located in files a.sv and b.sv.
// a.sv
module a_counter ();
endmodule

// b.sv
module b_adder ();
endmodule

// These modules a.sv and b.sv can be combined using command:
./morty a.sv b.sv -p pickled_

// The output is:
// Compiled by morty-0.9.0 / 2026-01-22 13:43:15.434977882 +02:00

module pickled_a_counter ();
endmodule
module pickled_b_adder ();
endmodule
```

Bender

- 11647 lines of code
- 99% Rust, 1% Other
- Apache-2.0 OR MIT licensed
- Instructions for this are a bit unclear
- Managed to get simulation .tcl file created

```
olli@OlliPC:~/soc_design/bender/soc_survey$ ./bender script vsim -t test
# This script was generated automatically by bender.
set ROOT "/home/olli/soc_design/bender/soc_survey"

if {[catch { vlog -incr -sv \
    "+define+TARGET_SIMULATION" \
    "+define+TARGET_TEST" \
    "+define+TARGET_VSIM" \
    "$ROOT/src/a.sv" \
    "$ROOT/src/b.sv" \
    "$ROOT/src/top.sv" \
}]} {return 1}

if {[catch { vlog -incr -sv \
    "+define+TARGET_SIMULATION" \
    "+define+TARGET_TEST" \
    "+define+TARGET_VSIM" \
    "$ROOT/src/tb_top.sv" \
}]} {return 1}
```