SpinalHDL / **SpinalHDL** Public

Scala based HDL

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dev

Dolu1990 Add PhaseRandomizedMem ... 5 hours ago **5,786**

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About SpinalHDL

SpinalHDL is:

- A language to describe digital hardware
- Compatible with EDA tools, as it generates VHDL/Verilog files
- Much more powerful than VHDL, Verilog, and SystemVerilog in its syntax and features
- Much less verbose than VHDL, Verilog, and SystemVerilog
- Not an HLS, nor based on the event-driven paradigm
- Only generates what you asked it in a one-to-one way (no black-magic, no black box)
- Not introducing area/performance overheads in your design (versus a hand-written VHDL/Verilog design)
- Based on the RTL description paradigm, but can go much further
- Allowing you to use Object-Oriented Programming and Functional Programming to elaborate your hardware and verify it
- Free and can be used in the industry without any license

Links

- Documentation
  https://spinalhdl.github.io/SpinalDoc-RTD/
- Chinese documentation
  https://thucgra.github.io/SpinalHDL_Chinese_Doc/

- API reference
  https://spinalhdl.github.io/SpinalHDL/dev/spinal/index.html
- Presentation of the language
  https://spinalhdl.github.io/SpinalDoc-RTD/master/SpinalHDL/Getting%20Started/presentation.html
- SBT base project
  https://github.com/SpinalHDL/SpinalTemplateSbt
- Gradle base project
  https://github.com/SpinalHDL/SpinalTemplateGradle
- Jupyter bootcamp
  https://github.com/SpinalHDL/Spinal-bootcamp
- Workshop
  https://github.com/SpinalHDL/SpinalWorkshop
- Google group
  https://groups.google.com/forum/#!forum/spinalhdl-hardware-description-language
- Donation channel
  https://opencollective.com/spinalhdl

English: chat on gitter 中文: chat on gitter

Get it

SpinalHDL is simply a set of Scala libraries. Include them into your project and you're good to go! If you're unsure about what to do, simply clone one of our example projects (see links above).

SBT (Scala build tool)

```
scalaVersion := "2.11.12"

libraryDependencies ++= Seq(
  "com.github.spinalhdl" % "spinalhdl-core_2.11" % "latest.release",
  "com.github.spinalhdl" % "spinalhdl-lib_2.11" % "latest.release",
  compilerPlugin("com.github.spinalhdl" % "spinalhdl-idsl-plugin_2.11" % "latest.release")
)
```

You can force SBT to pick a specific SpinalHDL version by replacing `latest.release` with a specific version. See the SpinalHDL SBT Template project's `build.sbt` file for a full SBT example.

Gradle

```
repositories {
        mavenCentral()
}

dependencies {
        compile group: 'com.github.spinalhdl', name: 'spinalhdl-core_2.11', version: '1.6.4'
```

```
        compile group: 'com.github.spinalhdl', name: 'spinalhdl-lib_2.11', version: '1.6.4'
}
```

Mill(Build Tool)

```
import mill._
import mill.scalalib._

object MySpinalModule extends ScalaModule {
  def scalaVersion = "2.11.12"

  def ivyDeps = Agg(
    ivy"com.github.spinalhdl::spinalhdl-core:1.6.4",
    ivy"com.github.spinalhdl::spinalhdl-lib:1.6.4",
  )

  def scalacPluginIvyDeps = Agg(ivy"com.github.spinalhdl::spinalhdl-idsl-plugin:1.6.4")
}
```

JAR

```
https://oss.sonatype.org/content/groups/public/com/github/spinalhdl/spinalhdl-core_2.11/
https://oss.sonatype.org/content/groups/public/com/github/spinalhdl/spinalhdl-lib_2.11/
```

The files are available on Maven as well.

Change logs

https://github.com/SpinalHDL/SpinalHDL/tags

License

The SpinalHDL core is using the LGPL3 license while SpinalHDL lib and others are using the MIT license. That's for the formalities. But there are some practical statements implied by those licenses:

Your freedoms are:

- You can use SpinalHDL core and lib in your closed/commercial projects.
- The generated RTL is yours (.vhd/.v files)
- Your hardware description is yours (.scala files)

Your obligations (and my wish) are:

- If you modify the SpinalHDL core (the compiler itself), please, share your improvements.

Releases 16

v1.8.1 Latest
on Mar 27

+ 15 releases

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Packages

No packages published

Contributors 83

+ 72 contributors

Environments 1

github-pages Active

Languages

Scala 75.5% Verilog 11.7% Python 4.3% VHDL 2.7% SystemVerilog 2.3% C++ 2.0% Other 1.5%