Chisel Installation

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1 Introduction

This document is a installation guide for *Chisel* (Constructing Hardware In a Scala Embedded Language). Chisel is a hardware construction language embedded in the high-level programming language Scala.

2 Setting Up Chisel

2.1 Github

- Get an account on `www.github.com`
- Register your public key on `github.com`

2.2 Install

2.2.1 MacOSX

1. Install XCODE including console tools.
2. Install MacPorts from `http://www.macports.org`

From there install the following MacPorts packages:

1. `git`
2. `openjdk6`

using

```
sudo port install
```

2.2.2 Linux

To install Chisel on Linux, install the following packages:

1. `git`
2. `g++`
3. `openjdk-7-jre`
4. `openjdk-7-jdk`

using

```
sudo apt-get install
```

3 Github

`cd` above directory = `$DIR` you've chosen to place Chisel and type:

```
cd $DIR
git clone https://github.com/ucb-bar/chisel.git
```

Your copy of the Chisel repository will then be in `$DIR/chisel`. Define this as a variable in your bash environment:

```
export CHISEL = $DIR/chisel
```

The following is the Chisel directory structure you will find in `$CHISEL`:

```
chisel/      # install chisel at same level as your
     project
  tutorial/
  src/       # chisel source code
  sbt/
  doc/
    manual/
    tutorial/
    installation/
```

4 Setting Up Chisel

5 Getting Started with Tutorial

Test your configuration as follows:

```
cd $CHISEL/tutorial/emulator
make gcd
```

6 Creating Your Own Projects

SBT has a particular directory structure that we adhere to and somewhat improve. Assuming that we have a project named *gpu*, then the following would be the template:

```
chisel/          # install chisel at same level as your
     project
  tutorial/
  src/
gpu/
  chisel -> ../chisel
  sbt/
    project/
      build.scala # edit this as shown below
    chisel -> ../chisel/sbt/chisel/
    gpu/
      src/
        main/
          scala -> ../../../../src
  src/
    gpu.scala # your source files go here
  emulator/   # your C++ target can go here
```

Alternatively, you can use `chisel/tutorial` as a template making sure to get the symbolic links correct. The following is the `build.scala` template:

```
import sbt._
import Keys._

object BuildSettings {
  val buildOrganization = "edu.berkeley.cs"
  val buildVersion = "1.1"
  val buildScalaVersion = "2.9.2"

  val buildSettings = Defaults.defaultSettings ++ Seq (
    organization := buildOrganization,
    version      := buildVersion,
    scalaVersion := buildScalaVersion
  )
}

object ChiselBuild extends Build {
  import BuildSettings._

  lazy val chisel =
    Project("chisel", file("chisel"),
            settings = buildSettings)
  lazy val gpu =
    Project("gpu", file("gpu"),
            settings = buildSettings)
      dependsOn(chisel)
}
```