

sbt Reference Manual

Contents

| | |
|-------------------------|----------|
| Preface | 3 |
| sbt | 3 |
| sbt | 3 |
| | 3 |
| Mac sbt | 4 |
| | 4 |
| | 4 |
| Windows sbt | 4 |
| Windows | 4 |
| | 4 |
| | 4 |
| Linux sbt | 4 |
| | 4 |
| Ubuntu Debian | 4 |
| Linux RPM | 5 |
| Gentoo | 5 |
| | 6 |
| sbt | 6 |
| Unix | 6 |
| Windows | 6 |
| Hello, World | 7 |
| | 7 |
| | 8 |
| sbt | 8 |
| | 8 |
| | 8 |
| | 8 |
| sbt | 9 |
| | 9 |
| | 9 |
| | 9 |
| | 9 |
| | 10 |

| | |
|----------------|----|
| | 10 |
| | 10 |
| Tab | 11 |
| | 11 |
| .sbt | 11 |
| | 11 |
| | 12 |
| build.sbt | 12 |
| Keys | 13 |
| tasks settings | 14 |
| sbt Keys | 14 |
| build.sbt | 15 |
| bare .sbt | 15 |
| | 15 |
| Scope | 15 |
| Key | 16 |
| Scope | 16 |
| Scope | 17 |
| | 17 |
| sbt scope key | 17 |
| scoped key | 18 |
| scope | 18 |
| scope | 19 |
| scope | 20 |
| | 20 |
| | 21 |
| += += | 21 |
| key | 21 |
| += += | 23 |
| | 23 |
| | 23 |
| | 24 |
| | 26 |
| | 26 |
| | 27 |
| root | 28 |
| | 28 |
| | 29 |
| | 29 |
| | 29 |
| | 29 |
| | 29 |
| | 30 |
| | 31 |
| | 31 |
| | 31 |

| | |
|--------------|----|
| | 31 |
| | 32 |
| | 35 |
| | 36 |
| sbt | 36 |
| | 36 |
| .scala | 37 |
| | 37 |
| | 37 |
| sbt: | 38 |
| | 38 |

Preface

sbt

sbt sbt

sbt

.sbt scopes

sbt

sbt

sbt

- sbt
- hello world
-
-
- sbt sbt
- .sbt

Jar Shell Mac Windows Linux Lightbend

Activator

sbt terminal encoding HTTP JVM

Mac **sbt**

ZIP TGZ

Windows **sbt**

Windows

msi

ZIP TGZ

Linux **sbt**

ZIP TGZ

Ubuntu **Debian**

DEB sbt

Ubuntu Debian DEB DEB apt-get aptitude
Synaptic sbt sudo

```
echo "deb https://dl.bintray.com/sbt/debian-experimental /" | sudo tee -a /etc/apt/sources.list
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 642AC823
sudo apt-get update
sudo apt-get install sbt
```

Software & Updates

Ubuntu Software Other Software Updates Authentication Additional Drivers

- ☒ **Canonical Partners**
Software packaged by Canonical for their partners
- ☒ **Canonical Partners (Source Code)**
Software packaged by Canonical for their partners
- ☒ **Independent**
Provided by third-party software developers
- ☒ **Independent (Source Code)**
Provided by third-party software developers
- ☒ <http://dl.bintray.com/sbt/debian> /

Add... Edit... Remove Add Volume... Revert Close

```
mkdir -p /usr/local/portage && cd /usr/local/portage
git clone git://github.com/whiter4bbit/overlays.git
echo "PORTDIR_OVERLAY=$PORTDIR_OVERLAY /usr/local/portage/overlays" >> /etc/make.conf
emerge sbt-bin
ebuild
```

sbt

sbt-launch.jar

Unix

```
sbt-launch.jar ~/bin jar ~/bin/sbt :
#!/bin/bash
SBT_OPTS="-Xms512M -Xmx1536M -Xss1M -XX:+CMSClassUnloadingEnabled -XX:MaxPermSize=256M"
java $SBT_OPTS -jar ` $0`/sbt-launch.jar "$@"

$ chmod u+x ~/bin/sbt
```

Windows

| | | | | |
|---------|--------|-------|------|-----|
| Windows | Cygwin | batch | path | sbt |
| sbt | JVM | | | |

Non-Cygwin

```
Windows Cygwin sbt.bat batch
set SCRIPT_DIR=%~dp0
java -Xms512M -Xmx1536M -Xss1M -XX:+CMSClassUnloadingEnabled -XX:MaxPermSize=256M -jar "%SCRIP
sbt-launch.jar sbt.bat
```

Cygwin Windows

```
Cygwin Windows bash ~/bin/sbt
SBT_OPTS="-Xms512M -Xmx1536M -Xss1M -XX:+CMSClassUnloadingEnabled -XX:MaxPermSize=256M"
java $SBT_OPTS -jar sbt-launch.jar "$@"
```

```

sbt-launch.jar      sbt-launch.jar      cygpath
$ chmod u+x ~/bin/sbt

```

Cygwin Ansi

```

Cygwin  Ansi      Ansi      stty      bash  ~/bin/sbt
SBT_OPTS="-Xms512M -Xmx1536M -Xss1M -XX:+CMSClassUnloadingEnabled -XX:MaxPermSize=256M"
stty -icanon min 1 -echo > /dev/null 2>&1
java -Djline.terminal=jline.UnixTerminal -Dsbt.cygwin=true $SBT_OPTS -jar sbt-launch.jar "$@"
stty icanon echo > /dev/null 2>&1

sbt-launch.jar      sbt-launch.jar      cygpath
$ chmod u+x ~/bin/sbt

backspace  Scala      erase character  stty      cygwin
mintty     ->      cygwin  ^H “  ^H”

pull request

```

Hello, World

```

sbt

sbt      hello      hw.scala
object Hi {
  def main(args: Array[String]) = println("Hi!")
}

hello  sbt  run  sbt      Linux  OS X
$ mkdir hello
$ cd hello
$ echo 'object Hi { def main(args: Array[String]) = println("Hi!") }' > hw.scala
$ sbt
...
> run
...
Hi!

sbt      sbt

•
• src/main/scala  src/main/java
• src/test/scala  src/test/java
• src/main/resources  src/test/resources

```

- lib jar

```

sbt console Scala classpath sbt run Scala sbt console Scala REPL sbt

```

```

build.sbt hello hello/build.sbt
lazy val root = (project in file(".")).
  settings(
    name := "hello",
    version := "1.0",
    scalaVersion := "2.11.8"
  )
.sbt build.sbt
jar build.sbt name version

```

```

sbt
hello/project/build.properties sbt 1.0.0-M4
sbt.version=1.0.0-M4
sbt release 99% project/build.properties sbt

```

```

sbt Hello, World

```

```

sbt " " Hello, World hello hello/build.sbt
hello/hw.scala hello

```

```

hello/hw.scala sbt Maven
src/
main/
resources/
  <files to include in main jar here>
scala/
  <main Scala sources>

```



```

    java/
      <main Java sources>
  test/
    resources
      <files to include in test jar here>
    scala/
      <test Scala sources>
    java/
      <test Java sources>
src/

sbt

      build.sbt  sbt  project  project  .scala  .sbt

build.sbt
project/
  Build.scala
  project/  .sbt  .sbt

      classes  jars  caches  target

.gitignore
target/
  /  /  target/  project/target/

      sbt  sbt  Hello, World

sbt
$ sbt
sbt  tab
sbt  compile

```

```
> compile
    compile          run          exit    Ctrl+D  Unix   Ctrl+Z  Win-
dows
```

```

sbt          sbt          sbt
$ sbt clean compile "testOnly TestA TestB"
    testOnly    TestA TestB          clean compile    testOnly
```

```

- -          sbt          ~
> ~ compile
    ~
```

```

sbt
<td><tt>clean</tt></td>
<td>          <tt>target</tt>          </td>
<td><tt>compile</tt></td>
<td>          <tt>src/main/scala</tt>
src/main/java
<td><tt>test</tt></td>
<td>          </td>
<td><tt>console</tt></td>
<td>          classpath  Scala          <tt>:quit</tt>
Ctrl+D  Unix   Ctrl+Z  Windows   sbt
<td><nobr><tt>run <lt; >>*</tt></nobr></td>
<td>  sbt          main class </td>
<td><tt>package</tt></td>
<td> <tt>src/main/resources</tt>          <tt>src/main/scala</tt>  <tt>src/main/java</tt>          cla
<td><tt>help <lt; >></tt></td>
<td>          </td>
<td><tt>reload</tt></td>
<td>          <tt>build.sbt</tt> <tt>project/*.scala</tt> <tt>project/*.sbt</tt>          )
```

Tab

tab sbt tab

sbt

```
<td><tt>!</tt></td>
<td>      </td>

<td><tt>>!!</tt></td>
<td>      </td>

<td><tt>>!:</tt></td>
<td>      </td>

<td><tt>>!<n</tt></td>
<td>      <tt>n</tt>    </td>

<td><tt>!n</tt></td>
<td>  <tt>>!:</tt>      <tt>n</tt>    </td>

<td><tt>>!-n</tt></td>
<td>      n    </td>

<td><tt>>!string</tt></td>
<td>      string    </td>

<td><tt>>!?string</tt></td>
<td>      string    </td>
```

.sbt

sbt “ ” build.sbt sbt

1. .sbt
 2. bare .sbt

.sbt [bare .sbt][Bare-Def] .scala
- .scala project/

```

sbt          Project
build.sbt    Project
lazy val root = (project in file("."))
              immutable map
              name key
              sbt map
              Setting[T] T value Setting map map
              value map — map
              Setting[String]
lazy val root = (project in file(".")).
  settings(
    name := "hello"
  )
  Setting[String] name "hello" map map sbt map
  map sbt key value key key sbt
Settings map
  Project Setting[T] Setting[T] sbt map T
value

build.sbt

build.sbt    Project    settings scala

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.11.8"
)

lazy val root = (project in file(".")).
  settings(commonSettings: _*).
  settings(
    name := "hello"
  )
  Setting Scala settings Scala
  val lazy val def build.sbt object class project/
Scala

```

```

name version scalaVersion keys key SettingKey[T] TaskKey[T]
InputKey[T] T value key
Keys Setting[T] := Java
lazy val root = (project in file(".")).
  settings(
    name.:=("hello")
  )
Scala name := "hello" Scala
key name := Setting Setting[String] String name
SettingKey[String] Setting[String] sbt map name
"hello"
value
lazy val root = (project in file(".")).
  settings(
    name := 42 //
  )

```

Keys

Types

key

- SettingKey[T] key value
- TaskKey[T] key task value
- InputKey[T] key task Input Tasks

Keys

```

keys Keys build.sbt import sbt.Keys._ name
sbt.Keys.name

```

Keys

```

settingKey taskKey inputKey keys key value key
val task hello key
lazy val hello = taskKey[Unit](" task ")
.sbt settings vals defs settings vals
defs settings
lazy val val

```

Task vs Setting keys

```
TaskKey[T]    task Tasks compile package Unit Unit Scala
void         task package TaskKey[File] task jar
            task sbt compile sbt task
sbt map setting name task compile -
    key task setting "taskiness" ( key property value
```

tasks settings

```
:= setting task setting value task task
```

```
hello task
```

```
lazy val hello = taskKey[Unit]("An example task")
```

```
lazy val root = (project in file(".")).
  settings(
    hello := { println("Hello!") }
  )
```

```
settings
```

```
lazy val root = (project in file(".")).
  settings(
    name := "hello"
  )
```

Tasks Settings

```
task key Setting setting key Setting taskKey := 42
Setting[Task[T]] settingKey := 42 Setting[T] task key
T value
```

```
T Task[T] setting task setting
```

sbt Keys

```
sbt task name task compile compile task compile
task key
    setting key name task key name setting key value task
key name task value show <task name> <task name>
task key name camelCase name Scala
    key sbt inspect <keyname> inspect setting
value setting
```

build.sbt

```
import build.sbt

import sbt._
import Process._
import Keys._

scala Build Plugin scala
```

bare .sbt

```
bare .sbt Setting[_] Project

name := "hello"
version := "1.0"
scalaVersion := "2.11.8"
```

```
jar lib/ build.sbt

val derby = "org.apache.derby" % "derby" % "10.4.1.3"

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.11.8"
)

lazy val root = (project in file(".")).
  settings(commonSettings: _*).
  settings(
    name := "hello",
    libraryDependencies += derby
  )

10.4.1.3 Apache Derby

key libraryDependencies += := % += key
% Ivy ID
```

Scope

```
scope .sbt
```

Key

| | | | | | | | | | |
|------|-----|-----|---------|--|--|--|--|--|--|
| name | key | sbt | map | | | | | | |
| key | | | "scope" | | | | | | |

- key
- key compile main test
- Key packageOptions jar class packageBin packageSrc

key *name* scope

scoped key

| | | | | | | | |
|----------------|-------|-----------|-------|-----|-------|-----|------|
| sbt | map | settings | map | key | scope | key | set- |
| ting build.sbt | scope | key | | | | | |
| scope | | build.sbt | scope | | | | |

Scope

Scope scope key

scope

- Projects
- Configurations
- Tasks

Project Scope

| | | | | |
|---------|----------|------|---------|---------|
| | settings | keys | | |
| Project | setting | | setting | setting |

Configuration Scope

| | | | |
|---------------|-----------|---------------|-----|
| configuration | classpath | Configuration | Ivy |
|---------------|-----------|---------------|-----|

MavenScopes

sbt configurations

- Compile src/main/scala
- Test src/test/scala
- Runtime task run classpath

| | | | |
|-------------------------|---------------|-----------------------|---------------|
| key | configuration | configuration | task |
| key compile package run | key | key sourceDirectories | scalacOptions |
| fullClasspath | configuration | | |

Task Scope

```

Settings      task      task packageSrc  setting packageOptions
              task key   packageSrc    key   packageOptions  scope
              task packageSrc packageBin packageDoc      key   artifactName
packageOptions key      task

```

Scope

```

scope          task      task      Global
Global         setting          task   Global  setting      task

```

```

scope  key      key
scope sbt  scope          key  scope  sbt      scope  Global
scope    scope
      scope          scope
inspect  key      " "

```

sbt scope key

```

sbt      scope  keys
{<build-uri><project-id>/config:intask::key
• {<build-uri><project-id>  project  project  scope
  <project-id>
• config  configuration
• intask  task
• key  scope  key
“*”      Global scope
      scoped key
•  project  project
•  configuration  task  key  configuration
Configuration

```

scoped key

- fullClasspath key scope project key configuration task scope
- test:fullClasspath configuration fullClasspath test configuration scope scope
- *:fullClasspath configuration Global configuration
- doc::fullClasspath key fullClasspath doc task project configuration
- {file:/home/hp/checkout/hello/}default-aea33a/test:fullClasspath project {file:/home/hp/checkout/hello/}default-aea33a {file:/home/hp/checkout/hello/} project project id default-aea33a configuration test task
- {file:/home/hp/checkout/hello/}/test:fullClasspath {file:/home/hp/checkout/hello/} project
- {./}/test:fullClasspath {./} project {./} Scala ThisBuild
- {file:/home/hp/checkout/hello/}/compile:doc::fullClasspath scope

scope

```
sbt inspect key scope inspect test:fullClasspath
$ sbt
> inspect test:fullClasspath
[info] Task: scala.collection.Seq[sbt.Attributed[java.io.File]]
[info] Description:
[info] The exported classpath, consisting of build products and unmanaged and managed, internal
[info] Provided by:
[info] {file:/home/hp/checkout/hello/}default-aea33a/test:fullClasspath
[info] Dependencies:
[info] test:exportedProducts
[info] test:dependencyClasspath
[info] Reverse dependencies:
[info] test:runMain
[info] test:run
[info] test:testLoader
[info] test:console
[info] Delegates:
[info] test:fullClasspath
[info] runtime:fullClasspath
[info] compile:fullClasspath
[info] *:fullClasspath
[info] {./}/test:fullClasspath
[info] {./}/runtime:fullClasspath
```

```

[info] {./}/compile:fullClasspath
[info] {./}/*:fullClasspath
[info] */test:fullClasspath
[info] */runtime:fullClasspath
[info] */compile:fullClasspath
[info] */*:fullClasspath
[info] Related:
[info] compile:fullClasspath
[info] compile:fullClasspath(for doc)
[info] test:fullClasspath(for doc)
[info] runtime:fullClasspath

      task .sbt      setting      task      scala.collection.Seq[sbt.Attributed[java.io.File]]
“Provided by”      scoped key      {file:/home/hp/checkout/hello/}default-aea33a/test:fullClasspath
      test configuration {file:/home/hp/checkout/hello/}default-aea33a
project
“Dependencies”

      sbt

      • configuration runtime:fullClasspath compile:fullClasspath
        scoped key project      “ project” task      Global
      • project      “ project” task      Global configuration
        Global *:fullClasspath
      • project project {./} ThisBuild
      • project Global */test:fullClasspath project current
        Global * “ project” project */test:fullClasspath
        test:fullClasspath
      • project configuration Global */*:fullClasspath task
        Global */*:fullClasspath Global

inspect fullClasspath inspect test:fullClasspath con-
figuration sbt compile inspect compile:fullClasspath
inspect fullClasspath

inspect *:fullClasspath fullClasspath Global configuration

Configuration

scope

build.sbt bare key project configuration task Global
lazy val root = (project in file(".")).
  settings(
    name := "hello"
  )

```

```

sbt inspect name {file:/home/hp/checkout/hello/}default-aea33a/*:name
project {file:/home/hp/checkout/hello/}default-aea33a configuration
task * task
Keys in scope in scope name Compile configuration

name in Compile := "hello"
name packageBin task
name in packageBin := "hello"
name scope Compile configuration packageBin task
name in (Compile, packageBin) := "hello"
Global
name in Global := "hello"
name in Global scope Global scope Global task
configuration Global project Global */*:name
{file:/home/hp/checkout/hello/}default-aea33a/*:name
Scala in := Scala Java
name.in(Compile).:=("hello")

```

scope

```

key scope compile task Compile Test configuration scope
scope
key compile compile in Compile compile in Test compile
project scope task configuration scope compile task
“ ” scope scope key scope sbt
“ compile:compile ”
name key key name scope scope packageOptions
in (Compile, packageBin) key name packageOptions key
name in key scope project global config global task

```

```
:= .sbt scope
```

```

    .sbt      Setting      Setting  sbt      map  Setting
    sbt  map      map      map  sbt
    setting      map      .sbt      :=
    :=  Setting      map      name := "hello"  map      map
    key name      "hello"

    +=  +=

    :=      key      SettingKey[T]  T      key      se-
    quence

    • +=
    • +=

    key sourceDirectories  in  Compile  Seq[File]  key
    src/main/scala      source
    sourceDirectories in Compile += new File("source")
    sbt  file()
    sourceDirectories in Compile += file("source")
    file()  File
    +=
    sourceDirectories in Compile += Seq(file("sources1"), file("sources2"))
    Seq(a, b, c, ...)  Scala
    source      :=
    sourceDirectories in Compile := Seq(file("sources1"), file("sources2"))

    key

    task  setting      value  value      := +=  +=
    project  organization

    // name our organization after our project (both are SettingKey[String])
    organization := name.value

    // name is a Key[String], baseDirectory is a Key[File]
    // name the project after the directory it's inside
    name := baseDirectory.value.getName

```

```

    java.io.File      getName    baseDirectory

name := "project " + name.value + " from " + organization.value + " version " + version.value
    name      organization    version      name

name := baseDirectory.value.getName    name      baseDirectory
build.sbt      sbt      inspect name

[info] Dependencies:
[info] *:baseDirectory
    sbt      setting      setting      setting      task      task
        inspect compile      key compileInputs      inspect compileInputs
        key      compile      sbt      update      compile      sbt
    update
    sbt      key      key

:= +=    +=      key      sbt      “      ”      key
scope
sbt      sbt

key      task
    task      setting      task      task      Def.task      taskValue := +=
+=
    classpath      source generator
sourceGenerators in Compile += Def.task {
    myGenerator(baseDirectory.value, (managedClasspath in Compile).value)
}.taskValue

task
    .sbt      :=      task key      Setting[Task[T]]      Setting[T] Set-
ting      Task      Task      Setting
    key      Keys
val scalacOptions = taskKey[Seq[String]]("Options for the Scala compiler.")
val checksums = settingKey[Seq[String]]("The list of checksums to generate and to verify for

```

```

scalacOptions checksums          key    task
    build.sbt scalacOptions checksums
// scalacOptions task    checksums setting
scalacOptions := checksums.value

    setting key    task key    setting key    task
    task

// checksums setting    scalacOptions task
checksums := scalacOptions.value

+= +=

    setting task    key    :=
cleanFiles += file("coverage-report-" + name.value + ".txt")

.sbt Scopes

•    lib    jar
•    repository

    jar    lib    classpath
    jar    lib    ScalaCheck Specs2 ScalaTest
lib    classpaths compile test run console    classpath
    dependencyClasspath in Compile    dependencyClasspath in
Runtime
    build.sbt    unmanagedBase key    lib
    custom_lib lib
unmanagedBase := baseDirectory.value / "custom_lib"
baseDirectory    baseDirectory    unmanagedBase
value
    unmanagedBase jar task unmanagedJars
task    unmanagedJars task    Compile configuration    lib
unmanagedJars in Compile := Seq.empty[sbt.Attributed[java.io.File]]

```

```

sbt  Apache Ivy          Ivy  Maven

libraryDependencies Key

      libraryDependencies          Maven POM    Ivy          sbt

      groupId artifactId revision

libraryDependencies += groupId % artifactID % revision

      Configuration val configuration

libraryDependencies += groupId % artifactID % revision % configuration

libraryDependencies Keys

val libraryDependencies = settingKey[Seq[ModuleID]]("Declares managed dependencies.")

      %      ModuleID      ModuleID      libraryDependencies

      sbt Ivy          sbt          Apache Derby      Maven2

libraryDependencies += "org.apache.derby" % "derby" % "10.4.1.3"

      build.sbt          update sbt Derby      ~/.ivy2/cache/org.apache.derby/
compile update          update

      +=

libraryDependencies += Seq(
      groupId % artifactID % revision,
      groupId % otherID % otherRevision
)

      libraryDependencies :=

%%      Scala

      groupId %% artifactID % revision      groupId % artifactID %
revision      groupId      %% sbt          Scala          %%

libraryDependencies += "org.scala-tools" % "scala-stm_2.11.1" % "0.3"

      scalaVersion 2.11.1          "org.scala-tools"      %%

libraryDependencies += "org.scala-tools" %% "scala-stm" % "0.3"

      Scala          jar

      Scala          %%          2.10.1          scalaVersion
:= "2.10.4"          %%          2.10.1          %%          Scala

```


Ivy

```
groupID % artifactID % revision  revision      Ivy
"latest.integration" "2.9.+"    "[1.0,)"    "1.6.1"  Ivy
```

```
sbt      Maven2      resolver  Ivy
```

```
resolvers += name at location
            at
```

```
resolvers += "Sonatype OSS Snapshots" at "https://oss.sonatype.org/content/repositories/snapshots"
```

```
resolvers key  Keys
```

```
val resolvers = settingKey[Seq[Resolver]]("resolvers")
```

```
at      Resolver
```

```
sbt      Maven
```

```
resolvers += "Local Maven Repository" at "file://" + Path.userHome.absolutePath + "/.m2/repository"
```

```
resolvers += Resolver.mavenLocal
```

```
resolvers
```

```
sbt resolvers      externalResolvers
```

```
externalResolvers  resolvers
```

Per-configuration dependencies

```
src/test/scala  Test configuration
```

```
Test configuration classpath  Compile configuration  % "test"
```

```
libraryDependencies += "org.apache.derby" % "derby" % "10.4.1.3" % "test"
```

```
Test configuration
```

```
libraryDependencies += "org.apache.derby" % "derby" % "10.4.1.3" % Test
```

```

sbt          show compile:dependencyClasspath  derby jar      show
test:dependencyClasspath      derby jar
      ScalaCheck Specs2  ScalaTest      % "test"

```

```

.sbt

```

```

      jar
Project lazy val
lazy val util = project

lazy val core = project
val      ID      ID      in
lazy val util = project.in(file("util"))

lazy val core = project in file("core")

```

To factor out common settings across multiple projects, create a sequence named `commonSettings` and call `settings` method on each project. Note `_*` is required to pass sequence into a vararg method.

```

      commonSettings      settings      _*

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.11.8"
)

lazy val core = (project in file("core")).
  settings(commonSettings: _*).
  settings(
    // other settings
  )

```

```

lazy val util = (project in file("util")).
  settings(commonSettings: _*).
  settings(
    // other settings
  )

  version

```

aggregate classpath

Aggregation

Aggregation aggregate task aggregated

```

lazy val root = (project in file(".")).aggregate(util, core)

```

```

lazy val util = project

```

```

lazy val core = project

```

root util core sbt

root task update task

```

lazy val root = (project in file(".")).
  aggregate(util, core).
  settings(
    aggregate in update := false
  )

```

[...]

aggregate in update update task scope key scopes
task task

Classpath

dependsOn core classpath util core

```

lazy val core = project.dependsOn(util)

```

core util core util

dependsOn(bar, baz) dependsOn

configuration classpath

```
foo dependsOn(bar) foo compile configuration bar compile configuration
                        dependsOn(bar % "compile->compile")

"compile->compile" -> "depends on" "test->compile" foo test
configuration bar compile configuration

->config ->compile dependsOn(bar % "test") foo test configuration
bar Compile configuration

"test->test" test test bar/src/test/scala
foo/src/test/scala
configuration dependsOn(bar % "test->test;compile->compile")
```

root

```
sbt

hello-foo base = file("foo") foo foo
foo/Foo.scala foo/src/main/scala sbt foo
foo .sbt foo/build.sbt hello-foo scope
hello hello/build.sbt hello/bar/build.sbt hello/foo/build.sbt
version := "0.6" sbt show version

> show version
[info] hello-foo/*:version
[info] 0.7
[info] hello-bar/*:version
[info] 0.9
[info] hello/*:version
[info] 0.5

hello-foo/*:version hello/foo/build.sbt hello-bar/*:version
hello/bar/build.sbt hello/*:version hello/build.sbt scoped
keys version key scope build.sbt build.sbt

.sbt .scala .scala
.scala

project/*.scala foo/project/Build.scala
```

```
sbt projects project <projectname> task
compile root
ID task subProjectID/compile
```

.sbt .sbt .sbt project/ Scala

build.sbt

task codeCoverage task

```
hello sbt-site hello/project/site.sbt Ivy ID
addSbtPlugin
addSbtPlugin("com.typesafe.sbt" % "sbt-site" % "0.7.0")
sbt-assembly hello/project/assembly.sbt
addSbtPlugin("com.eed3si9n" % "sbt-assembly" % "0.11.2")

resolvers += Resolver.sonatypeRepo("public")
```

0.13.5 sbt

```
build.sbt
lazy val util = (project in file("util")).
  enablePlugins(FooPlugin, BarPlugin).
  settings(
    name := "hello-util"
  )
enablePlugins
  disablePlugins util IvyPlugin build.sbt
```

```

lazy val util = (project in file("util")).
  enablePlugins(FooPlugin, BarPlugin).
  disablePlugins(plugins.IvyPlugin).
  settings(
    name := "hello-util"
  )

```

```

sbt      plugins

```

```

> plugins
In file:/home/jsuereth/projects/sbt/test-ivy-issues/
  sbt.plugins.IvyPlugin: enabled in scala-sbt-org
  sbt.plugins.JvmPlugin: enabled in scala-sbt-org
  sbt.plugins.CorePlugin: enabled in scala-sbt-org
  sbt.plugins.JUnitXmlReportPlugin: enabled in scala-sbt-org

```

```

plugins      sbt      sbt      3

1. CorePlugin:      task
2. IvyPlugin:
3. JvmPlugin:      Java/Scala

JUnitXmlReportPlugin      junit-xml

```

```

sbt-site      site.sbt
site.settings

```

```

// `util`      site
lazy val util = (project in file("util"))

// `core`      site
lazy val core = (project in file("core")).
  settings(site.settings : _*)

```

```

      ~/.sbt/1.0.0-M4/plugins/      ~/.sbt/1.0.0-M4/plugins/
classpath      sbt      ~/.sbt/1.0.0-M4/plugins/      .sbt      .scala
project/

      ~/.sbt/1.0.0-M4/plugins//build.sbt      addSbtPlugin()

```

- IDE sbt IDE
- web xsbt-web-plugin

sbt .sbt

```

SettingKey TaskKey .sbt InputKey
Keys
val scalaVersion = settingKey[String]("scala ")
val clean = taskKey[Unit]("source ")
    "scalaVersion" " scala "
.sbt T SettingKey[T] T TaskKey [T] .sbt
    " " batch
.sbt .scala autoImport val .sbt

:=

val sampleStringTask = taskKey[String]("A sample string task.")
val sampleIntTask = taskKey[Int]("A sample int task.")

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0-SNAPSHOT"
)

lazy val library = (project in file("library")).
  settings(commonSettings: _*).
  settings(

```

```

sampleStringTask := System.getProperty("user.home"),
sampleIntTask := {
  val sum = 1 + 2
  println("sum: " + sum)
  sum
}
)

value
sbt      Scala      HTML      HTML
HTML
sbt      API  IO

```

```

value
sampeIntTask
sampleIntTask := {
  val sum = 1 + 2      // first
  println("sum: " + sum) // second
  sum                  // third
}

JVM  sum 3

startServer stopServer  sampeIntTask

val startServer = taskKey[Unit]("start server")
val stopServer = taskKey[Unit]("stop server")
val sampleIntTask = taskKey[Int]("A sample int task.")
val sampleStringTask = taskKey[String]("A sample string task.")

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0-SNAPSHOT"
)

lazy val library = (project in file("library")).
  settings(commonSettings: _*).
  settings(
    startServer := {
      println("starting...")
      Thread.sleep(500)
    },
    stopServer := {
      println("stopping...")
    }
  )

```



```

    Thread.sleep(500)
  },
  sampleIntTask := {
    startServer.value
    val sum = 1 + 2
    println("sum: " + sum)
    stopServer.value // THIS WON'T WORK
    sum
  },
  sampleStringTask := {
    startServer.value
    val s = sampleIntTask.value.toString
    println("s: " + s)
    s
  }
)
sbt      sampleIntTask
> sampleIntTask
stopping...
starting...
sum: 3
[success] Total time: 1 s, completed Dec 22, 2014 5:00:00 PM
      sampleIntTask

```

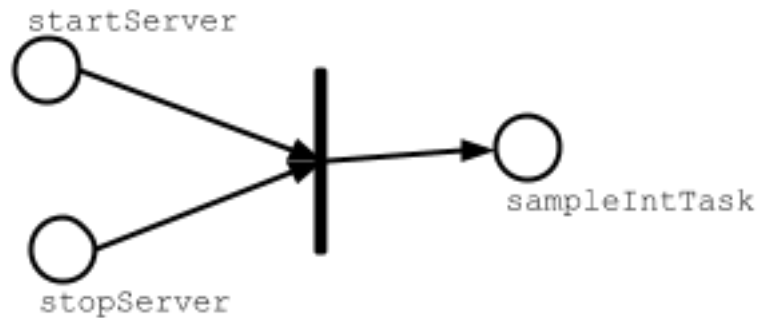


Figure 2: task-dependency

| Scala | value | sampleIntTask | startServer | stopServer | sampleIntTask | sbt |
|-------|---------------|---------------|-------------|------------|---------------|-----|
| • | sampleIntTask | | | | | |
| • | | | | | | |
| • | | | | | | |

```

sbt      sampleStringTask

> sampleStringTask
stopping...
starting...
sum: 3
s: 3
[success] Total time: 1 s, completed Dec 22, 2014 5:30:00 PM

sampleStringTask startServer sampleIntTask  sampleIntTask  startServer
Scala             value          sampeStringTask

```

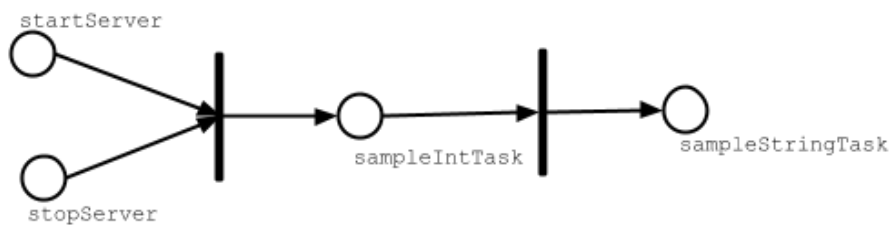


Figure 3: task-dependency

```

test      compile in Test test in Test

```

```

stopServer                                     stopServer  sampleStringTask  stopServer
sampleStringTask

lazy val library = (project in file("library")).
  settings(commonSettings: _*).
  settings(
    startServer := {
      println("starting...")
      Thread.sleep(500)
    },
    sampleIntTask := {
      startServer.value
      val sum = 1 + 2
      println("sum: " + sum)
      sum
    },
    sampleStringTask := {
      startServer.value
      val s = sampleIntTask.value.toString
      println("s: " + s)
      s
    }
  )

```

```

    },
    sampleStringTask := {
      val old = sampleStringTask.value
      println("stopping...")
      Thread.sleep(500)
      old
    }
  )

  sampleStringTask

> sampleStringTask
starting...
sum: 3
s: 3
stopping...
[success] Total time: 1 s, completed Dec 22, 2014 6:00:00 PM

```

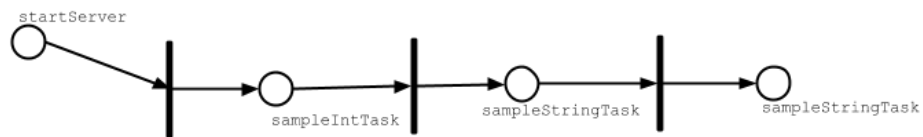


Figure 4: task-dependency

Scala

```

Scala    project/ServerUtil.scala

sampleIntTask := {
  ServerUtil.startServer
  try {
    val sum = 1 + 2
    println("sum: " + sum)
  } finally {
    ServerUtil.stopServer
  }
  sum
}

```

```

build.sbt

sbt

build.sbt      sbt      sbt      Scala      sbt
project        project
  sbt
    ,      project/project/

hello/      #

  Hello.scala      #      src/main/scala

  build.sbt      # build.sbt project/

  project/      #

    Build.scala      #

    build.sbt      #      --project/project

    project/      #

      Build.scala # project/project/
    project/project/
      .scala .sbt      build.sbt Build.scala

project .scala      project/Dependencies.scala
import sbt._

object Dependencies {
  // Versions
  lazy val akkaVersion = "2.3.8"

```

```

// Libraries
val akkaActor = "com.typesafe.akka" %% "akka-actor" % akkaVersion
val akkaCluster = "com.typesafe.akka" %% "akka-cluster" % akkaVersion
val specs2core = "org.specs2" %% "specs2-core" % "2.4.14"

// Projects
val backendDeps =
  Seq(akkaActor, specs2core % Test)
}

Dependencies build.sbt      val      Dependencies._
import Dependencies._

lazy val commonSettings = Seq(
  version := "0.1.0",
  scalaVersion := "2.11.8"
)

lazy val backend = (project in file("backend")).
  settings(commonSettings: _*).
  settings(
    libraryDependencies ++= backendDeps
  )

.scala

.scala      Scala
            build.sbt      project/*.scala      .scala      scala

project/*.scala

sbt          sbt      sbt

```

sbt:

- Scala Scala Programming in Scala Scala
- .sbt
- Setting sbt Setting task
- Setting key := += ++=
- Setting sbt
- key
- tasks key value task Non-task
- Scopes
- key value scope
- scope configuration project task
- scope task configuration
- configuration Compile Test
- project “ ” scope
- scopes scope
- build.sbt .scala task
- sbt
-
- addSbtPlugin project/plugins.sbt build.sbt
- sbt

sbt