

sbt Reference Manual

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| | 26 |
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| | 27 |
| | 28 |
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Preface

sbt

sbt sbt

sbt

.sbt scopes

sbt

sbt

sbt

- sbt
- hello world

—

—

- sbt sbt
- .sbt

Jar Shell

Mac Windows Linux

sbt terminal encoding HTTP JVM

Mac sbt

ZIP TGZ

Homebrew

```
$ brew install sbt -devel
```

Macports

```
$ port install sbt
```

Windows sbt

ZIP TGZ

Windows

msi

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 2EE0EA64E40A89B84B2DF73499E  
sudo apt-get update  
sudo apt-get install sbt
```

```
sbt Bintray Bintray APT  
sbt aptitude Synaptic System Settings ->  
Software & Updates -> Other Software
```



Figure 1: Ubuntu Software & Updates Screenshot

Linux RPM

```
RPM sbt
Linux RPM RPM sbt sudo
curl https://bintray.com/sbt/rpm/rpm-experimental > bintray-sbt-rpm.repo
sudo mv bintray-sbt-rpm.repo /etc/yum.repos.d/
sudo yum install sbt
sbt Bintray Bintray RPM
sbt-launcher-package
```

Gentoo

```
sbt ebuild sbt ebuilds ebuilds sbt
emerge dev-java/sbt
```

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      sbt console      Scala REPL sbt

```

```

build.sbt      hello      hello/build.sbt
lazy val root = (project in file("."))
  .settings(
    name := "hello",
    version := "1.0",
    scalaVersion := "2.12.1"
  )
.sbt      build.sbt
jar      build.sbt      name      version

```

```

sbt
hello/project/build.properties      sbt      1.0.0-M5
sbt.version=1.0.0-M5
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; &gt;*</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; &gt;</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
              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 := "2.12.1"
)

lazy val root = (project in file("."))
  .settings(
    commonSettings,
    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 := "2.12.1"
```

```
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 := "2.12.1"
)

lazy val root = (project in file("."))
  .settings(
    commonSettings,
    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.

```

      commonSettings      settings

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.12.1"
)

lazy val core = (project in file("core"))
  .settings(
    commonSettings,
    // other settings
  )

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

```

```

.settings(
  commonSettings,
  // 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-M5/plugins/      ~/.sbt/1.0.0-M5/plugins/
classpath      sbt      ~/.sbt/1.0.0-M5/plugins/      .sbt      .scala
project/
      ~/.sbt/1.0.0-M5/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,

```

```

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,
  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

```

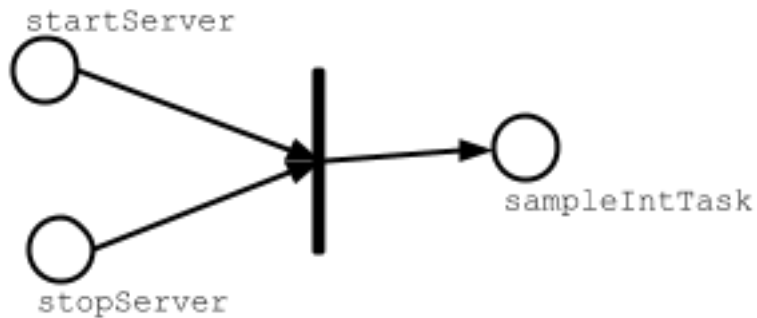


Figure 2: task-dependency

| 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

```

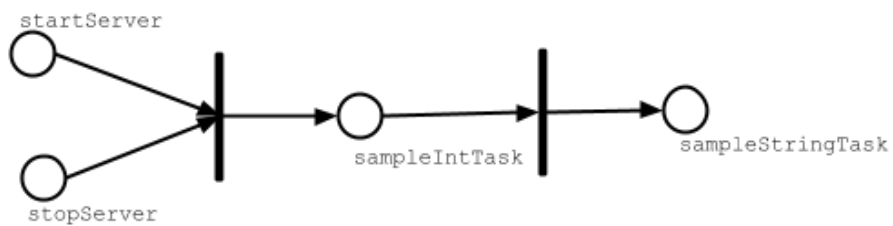


Figure 3: task-dependency

```

test      compile in Test test in Test

```

```

stopServer                                     stopServer sampleStringTask stopServer
sampleStringTask
lazy val library = (project in file("library"))
.settings(
  commonSettings,
  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" % "2.4.17"

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

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

lazy val commonSettings = Seq(
  version := "0.1.0",
  scalaVersion := "2.12.1"
)

lazy val backend = (project in file("backend"))
  .settings(
    commonSettings,
    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