

# sbt

## Contents

Preface . . . . .	4
sbt . . . . .	4
. . . . .	4
Mac sbt . . . . .	5
. . . . .	5
. . . . .	5
. . . . .	5
Windows sbt . . . . .	5
Windows . . . . .	5
. . . . .	5
. . . . .	5
Linux sbt . . . . .	5
. . . . .	5
RPM DEB . . . . .	6
Gentoo . . . . .	6
. . . . .	6
sbt . . . . .	6
Unix . . . . .	6
Windows . . . . .	7
Hello, World . . . . .	7
. . . . .	8
. . . . .	8

sbt	9
.	9
.	9
.	9
sbt	10
.	10
.	10
.	10
.	10
.	11
.	11
.	11
Tab	12
.	12
.sbt	12
.	12
?	13
build.sbt	13
(Keys)	14
tasks settings	15
sbt Keys	16
build.sbt	16
.	16
Scope	17
Key	17
Scope	17
Scope	18
.	18
sbt scope key	18
scoped key	19
scope	19

scope . . . . .	21
scope . . . . .	22
. . . . .	22
:	22
: += += . . . . .	23
key . . . . .	23
: += += . . . . .	25
. . . . .	25
. . . . .	25
. . . . .	26
. . . . .	28
. . . . .	28
. . . . .	29
root . . . . .	30
. . . . .	30
. . . . .	31
. . . . .	31
. . . . .	31
. . . . .	31
. . . . .	32
. . . . .	33
. . . . .	33
. . . . .	33
. . . . .	33
. . . . .	34
. . . . .	34
.scala . . . . .	34
sbt . . . . .	35
.scala . . . . .	35
build.sbt Build.scala . . . . .	36
.scala . . . . .	37

.....	37
:	38
Bare .sbt .....	38
bare .sbt .....	38
( 0.13.7 ) .....	39
.....	39
sbt: .....	39
.....	40

## Preface

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**

          :  
          ,

[Macports](#)

```
$ port install sbt
```

[Homebrew](#)

```
$ brew install sbt
```

[ZIP](#)   [TGZ](#)

**Windows**    **sbt**

**Windows**

[msi](#)

[ZIP](#)   [TGZ](#)

**Linux**    **sbt**

[ZIP](#)   [TGZ](#)

RPM DEB

:

- RPM
- DEB

: [sbt-launcher-package](#)

Gentoo

sbt ebuild sbt [ebuilds](#) ebuilds sbt:

```
$ 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 :

```
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 "%SCRIPT_DIR\
```

[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      Scala      sbt run      sbt console  Scala REPL sbt
console      classpath,      Scala

```

```

    build.sbt      ,      hello , hello/build.sbt      :

lazy val root = (project in file(".")).
  settings(
    name := "hello",
    version := "1.0",
    scalaVersion := "2.11.4"
  )

.sbt      build.sbt

    jar , build.sbt      name version

```



```

sbt

hello/project/build.properties      sbt      ,      0.13.7:

sbt.version=0.13.7

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
  .scala
```

```
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
clean
( target )
compile
( src/main/scala src/main/java )
test

console
classpath Scala :quit, Ctrl+D (Unix), Ctrl+Z (Windows)
sbt
run < >*
sbt main class
package
src/main/resources src/main/scala src/main/java class jar
help < >

,

reload
(build.sbt, project/.scala, project/.sbt )

```

## Tab

tab sbt , tab ,

, sbt :

!

!!

!:

!n

n

ln

!n

!-n

n

!string

string

!?string

string

## .sbt

sbt , “ ” build.sbt sbt

1. .sbt
2. bare .sbt
3. .scala

```

    .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) ,
    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 := "2.11.4"
)

```

```

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  (prop-
erty),  (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 )

    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 := "2.11.4"
)

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 cur-
  - rent, 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, configu-
ration *( ),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"

Settings (build.sbt , .scala Setting sbt
)

```

```

    := key SettingKey[T] T, key sequence,

    • +=
    • +=

    , 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] Setting      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 con-
figuration )

    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")

```

```

        ,
        :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 configu-
ration 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      sbt
    ,
    :
<root>/project/Common.scala:

import sbt._
import Keys._

object Common {
    def text = "org.example"
}

<root>/build.sbt:

organization := Common.text

    .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/0.13/plugins/ ~/.sbt/0.13/plugins/ classpath  
sbt , ~/.sbt/0.13/plugins/ .sbt .scala project/
```

```
, ~/.sbt/0.13/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      .scala      val,Build      Plugin      plugin val
      .sbt

      ,      ,      ; :=      :

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

sampleStringTask := System.getProperty("user.home")

sampleIntTask := {
  val sum = 1 + 2
  println("sum: " + sum)
  sum
}

      ,      ,      value
      sbt ; Scala      ,      ,      HTML,      ,      HTML
(      HTML      )
sbt      ,      API      IO

      ,      ,
      , [      ][sing-Plugins]
      ;

.scala

      ,      .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 # , project/ project

build.sbt # project/project ;

project/ #

Build.scala # project/project/

! project/project/
, .scala .sbt , build.sbt Build.scala

.scala

.sbt :

hello/ #

build.sbt # build.sbt project/

project/ #

Build.scala # project/ ,

build.sbt Scala , Build.scala ( project/ .scala )

*.sbt

.sbt , ,

```

```

build.sbt  Build.scala

.sbt .scala      ,
      hello      , hello/project/Build.scala:

import sbt._
import Keys._

object HelloBuild extends Build {
  val sampleKeyA = settingKey[String]("demo key A")
  val sampleKeyB = settingKey[String]("demo key B")
  val sampleKeyC = settingKey[String]("demo key C")
  val sampleKeyD = settingKey[String]("demo key D")

  override lazy val settings = super.settings ++
    Seq(
      sampleKeyA := "A: in Build.settings in Build.scala",
      resolvers := Seq()
    )

  lazy val root = Project(id = "hello",
    base = file("."),
    settings = Seq(
      sampleKeyB := "B: in the root project settings in Build.scala"
    ))
}

, hello/build.sbt:

sampleKeyC in ThisBuild := "C: in build.sbt scoped to ThisBuild"

sampleKeyD := "D: in build.sbt"

sbt      inspect sampleKeyA,  :

[info] Setting: java.lang.String = A: in Build.settings in Build.scala
[info] Provided by:
[info] {file:/home/hp/checkout/hello/}/*:sampleKeyA

inspect sampleKeyC,  :

[info] Setting: java.lang.String = C: in build.sbt scoped to ThisBuild
[info] Provided by:
[info] {file:/home/hp/checkout/hello/}/*:sampleKeyC

```

```

    "Provided by" value .sbt sampleKeyC in ThisBuild
  .scala Build.settings sbt ,
  ,inspect sampleKeyB:

```

```

[info] Setting: java.lang.String = B: in the root project settings in Build.scala
[info] Provided by:
[info] {file:/home/hp/checkout/hello/}hello/*:sampleKeyB

```

```

    sampleKeyB : ({file:/home/hp/checkout/hello/}hello)
    ({file:/home/hp/checkout/hello/})
    ,inspect sampleKeyD sampleKeyB:

```

```

[info] Setting: java.lang.String = D: in build.sbt
[info] Provided by:
[info] {file:/home/hp/checkout/hello/}hello/*:sampleKeyD

```

```

sbt .sbt Build.settings Project.setting , ,.sbt
Build.scala, sampleC sampleD, build.sbt build.sbt " "
Build.sbt

:sampleKeyC sampleKeyD build.sbt sbt Build .sbt
,import HelloBuild._ build.sbt

:

```

- .scala , Build.settings ,
- .scala , Project.settings ,
- .scala Build .sbt
- .sbt .scala
- .sbt ,

```

.scala

```

```

.scala , Scala , , .scala
.sbt , .scala , .sbt

```

```

sbt , project/ reload plugins

```

```

> reload plugins
[info] Set current project to default-a0e8e4 (in build file:/home/hp/checkout/hello/project/)
> show sources
[info] ArrayBuffer(/home/hp/checkout/hello/project/Build.scala)
> reload return
[info] Loading project definition from /home/hp/checkout/hello/project
[info] Set current project to hello (in build file:/home/hp/checkout/hello/)
> show sources
[info] ArrayBuffer(/home/hp/checkout/hello/hw.scala)
>

```

```

, reload return ,

```

```

:

```

```

build.sbt      Build Project settings      ,Build Project
settings      , build.sbt      ,      sbt      Build Project
“      ”

```

```

,      :

```

- .scala Build.settings Project.settings
- ; ~/.sbt/0.13/global.sbt
- ,
- .sbt
- ( project ) (~/.sbt/0.13/plugins/)

## Bare .sbt

```

.sbt      .sbt

```

```

bare .sbt

```

```

.sbt      .scala      , bare      .sbt
bare .sbt      Setting[_]      ,      Project

name := "hello"

version := "1.0"

scalaVersion := "2.11.4"

```

( 0.13.7 )

: 0.13.7

bare build.sbt:

```
// ,
name := "hello"
version := "1.0"
scalaVersion := "2.10.3"

sbt ,
```

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
  - [.sbt](#) vs. [.scala](#)
  - build.sbt , .scala task
  - sbt ,
  - 
  - addSbtPlugin project/plugins.sbt ( build.sbt )
  - , , sbt
- !

sbt , !