sbt Reference Manual

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Preface

sbt ÂÖ • Èó®

sbt ‰ΩøÂî®Â∞ëëÊïï∞ÁöÑÂá†‰ ™Ê¶ÇÂøµÊù • ÊîØÊíëÂÆÉÁÁÅµÂ¥µÊ¥Â ‰ îÂ° Â§ßÁöÑÊûÑÂª ÂÆö‰ â„Ä
sbt Â ‰ çÂÆ忮®ÂÉêÀ ‰ªñÁöÑÊûÑÂª ‰ΩìÁ ªÂ±ºÁöÑÂÅå îÂ¶Çîß îÊ¶ÇÊû≤ÂñÅÊ≤Âá°£ÁöÑÊûê
Â∞‰‰ º̈ö ÈÅåÂà∞‰ ‰ õÁ ÜÊäÇÈ÷ûÊù≤ËêÊ≤è„ÄÇ

ËøôÂØåÂÖ • Èó®ÊåÂÂçóÈ¶ÜÁ öñ‰ Ü‰ ‰ õ‰ΩΩ†Âú®ÁÅ Âíå‰Á̂Æ†Â¥Â¥Âà•Â¥¥È§‰ ‰ ™
sbt ÊûÑÂª ÂÆö‰ âÈó Èú ÈúÄËÅ¶ÅÁ • ÈÅìÁ öÂöÑÊ¶ÇÂøµ„ÄÇ

Â° ÁÉêÂ ™ ËÆÆÁ úñÂÆåÂÆ • ÂÖ • Èó®ÊåÂÂçóÂ°

Ê¶ÇÊûûú‰Ω†ÈùûÂ Êû ÁÜÊûÊû∞ÊíÁöÑ • Áõ¥Êé • ËøõÂÖ • ‰ â • ‰ ãÂáî†Â∞èÈäÇÈÅåÇ‰ ÜËß£ÈúúÊÂÖúÈÅÇ‰ Á
.sbt ÊûÑÂª ÂÆö‰ âÔºåscopesÔºåÊ≥¥Â¥§öÂÖ ‰ éËÆæÁΩÆ„ÄfÁ ‰ΩÜÈòØÊ≤è‰ ¨‰ ç‰‰ ΩÈÉ Å Ë@áÊ

ÊúÄÂ • ΩÊòØÊåÂ° Â èÈòÖÈ†ÁÖ°Ê≤åÂõ†‰ ÜÂÉ Ê≤åÂ¥çéÂ ‰ ‰ ÇÈäÊúÂö∞Ê§Å ÂÖ¢ÂöÑÂ° ≤ñ Â¥È¶∞Ê ≤ñ

ÊÑñÈ∞¢Â∞ùËØï sbt Â ‰ î ‰ ΩìÈ™™Å‰ ÂÖ ‰ Á öÑ‰ ‰ âÊ° £ Ôºö

ÂÆâË£Ö sbt

ÂàõÂ ‰ ‰ ™ sbt Â • Á®ÅÔºÅçÂ‰ ‰ ÂÅÉÂ¥‰ Ä⣺è‰ ‰ ‰ ÄÂÅÉÊ • Ôºö

- ÂÆâË£Ö sbt Â ‰ îÂàõÂª ËÑöÊú¨Êù • ËøêË°åÂÆÉ„ÄÇ
- Âª Á´ã‰ Ä‰ ™ÁÆÄÄÂçïÁàöÑ hello world Â • Á®ã
  - ÂàõÂª ‰ Ä‰ ™Â • Á®ãÁàõÆÂΩïÂ ‰ î€ÜÊ êÊñá‰ª Êîæ•®ÂÖ ‰ „ÄÇ
  - ÂàõÂª ‰ Ω†ÁáÑÊûÑª ÂÆö‰ â„ÄÇ
- Á®ßÂª ÂâçÂæÄ Ëøê˰å sbt Â ¶‰ †ÊÄé‰ àËøê˰å sbt„ÄÇ
- ÁÑ ÂêéÂâçÂæÄ .sbt ÊûÑª ÂÆö‰ â Â ¶‰ †Êõ¥Â§öÂÖ ‰ éÊûÑª ÁáÑÂÆö‰ â„ÄÇ

ÊúÂÂêéÔºåÂÆâË£ÖÊ • È™§Â∞±ÁÆÄÄÂãñ‰ ‰ Ä ™ Jar Êñá‰ Âíá‰ Ä ™ Shell ËÑöÊú¨ÔºåÂ‰ ΩÜÊòÒØÂèññÂÜ ‰ é‰ Ω†ÁáÑ Âè∞Ôºåâë‰ ª¨Êèê‰ æõ‰ ÜÂ • ΩÂá†ÁÅßÊñ Â°èÈù • ‰ MacÔºåWindowsÔºåLinuxÔºåTypesafe ActivatorÔºåÊàñÊâãÂä®ÂÆâË£Ö Êèê‰ æõ‰ ÜÁ Â îÂöÑÂÆâË£ÖÊ • È™§„ÄÇ

ÊèèÁÁ§ ÂíåÊäÄÄ ß

Â¶ÇÊûûúÔºΩ†Âú®Ë°å sbt Êó ÈÅáÂà∞‰ ªª‰ ΩïÈóÆÈ¢òÔºåÊü • Áúã ÂÆâË£ÖÂ ÄËÆÆ ‰ ÂöÑÂª àÁ´ÅØÁªñÁ´ÅÂÆâË£Ö ÊòØÂ • ñÔºåterminal encodingÔºåÔºåHTTP ‰ ªÁ£ÁÅÜÔºåJVM ÂèÇÊïï∞„ÄÇ

Âú® Mac ‰ äÂÆâË£Ö sbt

ÈÄöËøéáÁ¨¨‰ âÊñ ÁúÑÂåÖÂÆâË£Ö

Ê ®ÊÑÑÈÔºö Á¨¨‰ âÊñ ÁúÑÂåÖâØÈËÉΩÊ ∞ÁúÑÁáàÂ åÊú¨ÔºåËØ Ë∞åñÁÂ∞

ÈÄöËøéá Macports ÂÆâË£Ö

```
$ port install sbt
```

ÈÄöËøéá Homebrew ÂÆâË£Ö

```
$ brew install sbt
```

ÈÄöËøéáÈÄöÁî®ÁúÑÂåÖÂÆâË£Ö

‰ ãËΩΩ ZIP ÊàñËÄÖ TGZ ÂåÖÂ Âß£Âéã„ÄÇ

Typesafe Activator

ÂèÇËßÅ Typesafe ActivatorÂÆâË£ÖÊåáÂçó.

ÊâãÂä®ÂÆâË£Ö

ÂèÇËßÅÂÊâãÂä®ÂÆâË£ÖÊåáÂçó„ÄÇ

Âú® Windows ‰ äÂ ÆâË£Ö sbt

ÈÄöËøá Windows ÂÆâË£ÖåÖÂÆâË£Ö

‰ ãËΩΩ msi ÂÆâË£ÖåÖ Â ÂÆâË£Ö„ÄÇ

ÈÄöËøáÈÄöÁî®ÁöÑÂÆâË£ÖåÖÂÆâË£Ö

‰ ãËΩΩ ZIP ÊàñËÄÖ TGZ ÂåÖÂ Ëß£Âéã„ÄÇ

Typesafe Activator

ÂèÇËßÅ Typesafe ActivatorÂÆâË£ÖÊåáÂçó.

ÊâãÂä®ÂÆâË£Ö

ÂèÇËßÅÊâãÂä®ÂÆâË£ÖÊåáÂçó„ÄÇ

Âú® Linux ‰ äÂÆâË£Ö sbt

ÈÄöËøáÈÄöÁî®ÁöÑÂÆâË£ÖåÖÂÆâË£Ö

‰ ãËΩΩ ZIP ÊàñËÄÖ TGZ ÂåÖÂ Ëß£Âéã„ÄÇ

UbuntuÂíåÂÖ ‰ªñÂü ‰ éDebianÁöÑÂèëË°åÁâà

DEB ÂÆâË£ÖåÖÂÖÁî±sbtÂÆòÊñ ÊîØÊåå„ÄÇ

UbuntuÂíåÂÖ ‰ªñÂü ‰ éDebianÁöÑÂèëË°åÁâà‰ΩøÁî®DEBÊ†ºÂ°èÔºå‰ΩÜÈÄöÂ ‰ΩΩ†‰ ç‰ªéÊú¨Âu
Ôºà¶ÇSynapticÔºâ„ÄÇ ‰ªéÂ¶ªÀ ΄ØËøê˰尉 ãÈùçÁöÑÂëΩ‰ß§ÂÆâË£ÖsbtÔºà‰Ω†ÈúÄÆ¶ÅË ÖÁ ßÂ

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

ËΩØ‰ª ÂåÖÂÆ°ÁÁÂ ÜÂô®Â∞ÜÊ£ÄÄÊü•‰ •Ëã•Â ‰ ™Êèê‰ æõÂÆâË£ÖËΩØ‰ª ÂåÖÂöÑÈÈÖçÁÁ Ò„Á
‰ åËõõÂà Êñ‰ª ÂèëÂ ÉÂà∞ BintrayÔ°åËÄÅbintray Êñ ‰ æøÂú∞Êèê‰ æõ‰ ÜAPTËµÑÊ èÂ ì„ÄÇ‰ΩΩ
‰ ÄÊ¶ÂÆâË£Ö‰ ÜsbtÔ°å‰ΩΩ†‰ °öËÉΩΩ§üÂú®aptitudeÊàñSynapticÁöÑÂåÖÂ°ïÂ òÊõ¥Êñ∞Âêé‰Æ
Settings -> Software & Updates -> Other SoftwareÔ°ö

Figure 1: Ubuntu Software & Updates Screenshot

Á ¢Â Ω‰ºÅ‰ öÁâàLinuxÂíåÂÖ ‰ªñÂü ‰ éRPMÁöÑÂèëË°åÁâà

RPM ÂÆâˣÖåÖÁ±sbtÂÆòÊñ ÊîØÊåÅ„ÄÇ

Á ¢Â Ω‰ºÅ‰ öÁâàLinuxÂíåÂÖ ‰ªñÂü ‰ éRPMÁöÑÂèëË°åÁâà‰ΩøÁî®RPMʆºÂ°è„ÄÇ ‰ªéÁ ªàÁ´ØËøêˡå‰ ãÈù¢ÁöÑÂëΩ‰ª§ÂÆâˣÖsbtÔºà‰ Ω†ÈúÄˡ†ÅË ÖÁ ßÁî®Êà ÊùÉÈôêÔºåÂõ†Ê §È

```
curl https://bintray.com/sbt/rpm/rpm > bintray-sbt-rpm.repo
sudo mv bintray-sbt-rpm.repo /etc/yum.repos.d/
sudo yum install sbt
```

sbt ‰ åËøõÂà Êñá‰ª ÂèëÂ ÉÂà∞ BintrayÔºåËåÄåBintray Êñ ‰æøÂú∞Êèê‰æõ‰ ÜRPM˵ µÑÊ êÂ ì„ÄÇ‰

> Ê ®ÊÑèÔººö ËØ Â∞Ü‰ªaa‰ΩïÂíáËøø‰ §‰ ™ÂåÖÁõ ÂÖ ÁöÑÈóÆÈ¢òÂèçÈ¶àÂà∞
> sbt-launcher-package È° ÁõÆ„ÄÇ

Gentoo

Âú® sbt ÂÆòÊñ ÁöÑÊ†ë‰ Ê °ÊúáÊèê‰æó ebuild„ÄÇ ‰ΩÜÊòÖØÊúá‰ªá‰ åËøõÂà ÂêàÂ
sbt ÁöÑ ebuilds„ÄÇ ÂèØ‰ª • ÈÄöËøá‰ª • ‰ ãÊñ ¿è‰ªáÈøô‰ õ ebuilds
‰ ÂêàÂ sbtÔºö

```
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
```

> Ê ®ÊÑèÔººö ËØ Â∞Ü‰ªaa‰ΩïÂíá ebuild Áõ ÂÖ ÁöÑÈóÆÈ¢òÂèçÈ¶àÂà∞
> ËøôÈáá„ÄÇ

Typesafe Activator

ÂèÇËßÅÅ Typesafe ActivatorÂÆâˣÖÊåáÂçó.

Êâã Â ä®Â ÆâˣÖ

ÂèÇËßÅÅÊâã Â ä®Â ÆâˣÖÊåáÂçó„ÄÇ

Êâã Â ä®Â ÆâˣÖ sbt

Êâã Â ä®Â ÆâˣÖÈúÄˣ¶‰ ãËΩΩ sbt-launch.jarÔºåÁÑ ÂêéÂàõÂ ‰ ËÑöÊú¨Êù • ËøêË°åÂ ÆÉ„ÄÇ

Unix

Â∞Ü sbt-launch.jar Êñá‰ ÊîæÂú® ~/bin ‰ ã„ÄÇ Âàõ‰ ‰ Ä‰ ™ËÑöÊú¨Êù • ËøêË°åËøô‰ ™
jarÔºåÂëΩÖú¨ ~/bin/sbt ÂÜÖÂÆ Â¶Ç‰ ã:

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

ÁªôËØ • ËÑöÊú¨Ëµã‰ àÂèØÊâßË°åÊùÉËôêÔºö

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

Windows

Âú® Windows ‰ äÊâãÂä®ÂÆâË££ÖÁöÑÊ • È™§Ê† ÊçÆÊòòÂâ¶‰ΩøÁî®
Cygwin ÂíåÁªàÁ´ØÁÁöÑÑ‰ çÂêåËÄå‰ çÂêå„ÄÇ Âú®‰‰ªª‰Ωï ÊÉÅÖÂÜΩ‰ µ‰ ãÔºåÂ∞Ü
batch Êñá‰ª EàñËÄÖËÑöÊú¨Êñá‰ªª Ê ªÂä†Âà∞ path ‰ Ôºªå‰ΩøÂ æóÂàèØ‰ª • Âú®‰ªªÊÑèË ØÂæÑ‰ where
sbt Êù • ËøêË°å sbt„ÄÇ ÂêåÊó Ôº°Â¶ÇÊûûÈúÄ‰Ä¶ÅÁö ÑÑ‰ËØË°ùÔº°Ê† ÊçÆÊú Âô®Ë∞ÉÉÁ‰ Ä‰ ã
JVM ÁöÑÂèÇÊï∞ËÆæÁΩÆ„ÄÇ

Non-Cygwin

ÂØ ‰ é‰ΩøÁî®Êî†ÂÜ Windows ÁªàÁ´ØÁöÑÈùû Cygwin Áî®Êà Ôºå‰ªòÂ∞ªÂ ¶Ç
sbt.bat ÁöÑ batch Êñá‰ªª Ôºö

```
set SCRIPT_DIR=%~dp0
java -Xms512M -Xmx1536M -Xss1M -XX:+CMSClassUnloadingEnabled -XX:MaxPermSize=256M -jar "%SCRIP
```

ÁÑ ÂêéÂ∞Ü‰ ãÈΩΩÂ • ΩÁöÑÑ sbt-launch.jar ÊîæÂú®ÂíáÁ sbt.bat Áõ ÂêåÁöÑË ØÂæÑ‰ ã„ÄÇ

Cygwin ÂíåÊ†áÂááÁöÑ Windows ÁªàÁ´Ø

Â¶ÇÊûûÁî®‰ΩøÁ®ÅÁî® Cygwin ÂíåÊ†áÂááÁöÑ Windows ÁªàÁ´ØÔºåÂ∞ªÂ ¶Ç‰ ãÁöÑ
bash ËÑöÊú¨ ~/bin/sbtÔºö

```
SBT_OPTS="-Xms512M -Xmx1536M -Xss1M -XX:+CMSClassUnloadingEnabled -XX:MaxPermSize=256M"
java $SBT_OPTS -jar sbt-launch.jar "$@"
```

Áî®‰ ãÈΩΩÂ • ΩÁöÑ sbt-launch.jar Êñá‰ªª ÁöÑÑË ØÂæÑÊõøÈççÊç¢Êéâ sbt-
launch.jarÔºåÂ¶ÇÁÊûúÈúúÄÁË¶ÅÅÁöÑÑËË°ñÔºåËÊ∞Âæ∞ó‰Ω ΩÁî® cygpath„ÄÇÁÁªôËÑöÊú¨Ëµã‰ àÂèØÊâßË°åÊù

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

Cygwin Âíå Ansi ÁªàÁ´Ø

Â¶ÇÊûûÁî®‰ΩøÁ®ÅÁî® Cygwin Âíå Ansi ÁªàÁ´ØÔºåÊîîØÊåÁËåÅ Ansi ËΩ¨‰ âÂ èÂàóÅ ‰ î‰èè‰ªª‰ ÈçèÁî®ª • ÈÄëöÁ
stty ÈÖçÁÁ°ÆÔºÑôÔºåÂ ¶Ç ‰ ™ bash Êñá‰ªª ~/bin/sbtÔºö

```
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
```

Áî®‰ ãËΩΩÂ • ΩÁöÑ   sbt-launch.jar   Êñá‰ª ÁöÑË ØÂæÑÊõøÊç¢Êéâ   sbt-launch.jarÔºåÂ¶ÇÊûûÈúÄÄÊ¶ÅÂÁöÑÑËËØØùËÆ∞Âæó‰ΩøÁî® cygpath„ÄÇÁªêÔËÑÖÖÉú¨Ëµã‰ àÂèØÊâßË°åÈùÈ

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

‰ ‰ ÜËÆ©ËÄÄÊ†ºÔº°àbackspaceÔºâËÉÉΩÂ§üÂú® Scala ÁöÑÊéßÂà Âè∞‰ Ê £Â Â • ‰ΩúÔºå‰Ω†È†ÈúÁ
characterÔºâÔºåÂíáÂú® stty ‰ ÈÖçÁÁÁÅΩÆÁÁöÑ‰ ÄÊ† „ÄÇÂØ ‰ éÈ∫ãËÆ§ÁöÑ
cygwin Á™àÁ´ØÔºøàminttyÔºéÔºøÅ Âú®ËÆÆæÁΩÆÈÄâÂ° -> ÈîÆ‰ ÔºåÂ¶ÇÊûûú‰‰ΩΩ†ÁöÑÂâ†Èê§Á¨ÑÊòØ
cygwin Èª∞ÈÆ§ÁöÑ ^HÔºå,ÁúÈÄÄÊ†ºÂëëÈÄÄ ^H,Áù ÈúÁÄÄÊ†ÂË¢´Á¨´ÈÄâ‰ „ÄÇ

Ê ®ÊÑèÔºö ÂΩìÂâçÂÖ ‰ªªñÁöÑÑÈÚÁÁ§ÑΩÆøò‰ çÊîÛÛÂ檰Ô ÄÇ̀Ø
Êèê‰ § pull request ÂÆûÁÁÉ∞ÊàñÈÄÄÖÊ¥èÊÃÃ∞Â Á™èÊîÕÛÂåÂÁöÑÑÈÚÁÁÁÁΩΩÆ„ÄÇ

Â ÆâË£Ö Typesafe Activator (ÂåÖÂê´sbt)

Typesafe Activator ÊòØsbtÁöÑ‰ Ä‰ Â™ÊáÂ§ö‰ âÁÉ¨È°ú¨ÔºåÂ ÆÉÊ †Âä†‰ §‰ ™Èçùù§ñÁöÑÂëΩ‰ª
uiÂíáactivator new„ÄÇactivatorÂëΩ‰ §ÁÁ†ÆÄË®®Â‰ ã Â∞±ÊòØsbtÁöÑ ‰ ™Ë ÖÂü „ÄÇ

‰Ω†‰Âè‰ • ‰ªé typesafe.comËé ÂæóActivator„ÄÇ

If you see a command line such as `sbt ~test` in the documentation, you will
also be able to type `activator ~test`. Any Activator project can be opened in
sbt and vice versa because Activator is "sbt powered."

Â¶ÇÊûú‰Ω†‰Âú®ÊñáÊ°£‰ Áõ¨àÂÆ à Áª‰ Ä‰ ™ÂëΩ‰ª‰ Ô êÂ¶Çsbt
`~test`ÔºåÁ‰Ω†‰ üÂ∞ÜÂèØ‰ª • ÈîÆÂÖ • `activator ~test`„ÄÇ‰ªªÊÑÈÑè‰ ™ActivatorÂ • Á®ãÈåíÈÆÂ

ActivatorÁ ãËΩΩÂåÖÊã¨activatorËÑÅÊú¨áíáÁ Á™Íactivator-launch.jarÔºåÂàÂÖÂÂâ¨Áõ ÂΩì‰ éÈ

- ÈîÆÂÖ • ‰ çÂ ¶ÂèÇÈ∞ÁöÑactivatorÂ∞ÜÂÂ∞±ËØÉÂ¶úúÊµ£ÄãÂÖ¶Âê¶ËÆ£ÉÂÖ • `activator shell`Êàññactivator uiÊ®°°ÂºÔêÔºõÈîÆÂÖ • `activator shell`Êù • ÊòéÁ Æ ÈíÆçÂ§ÂÖ • ÂéΩ‰ §ËÔ°åÊèèÂê§
- `activator new`ÂÖÅÂ Ê ‰Ω†‰ûéé‰ Ä‰ ™§ßÁöÑÑÈ° ÁõÆÈÆ®ÊôûÂÁÆÂΩï‰ ÂáΩ‰ Ë êÁöÑ‰ FrameworkScalaÂ îÁî®Áãã èÈ™®Êû
- `activator ui`ÂêÂ∞Âã®‰ ÄÄÁÎß®ø´È§ÜÂê§Âä®ÁÂÁõÆÁ°È åà Áï°Èù¢ÔºåÂ Ô®‰ é‰Σ¶é™È§ÜÂÂÁÆÂΩïÊµ

ActivatorÊèê‰ªÄï‰ §Â∞Á ãËΩΩÔ õÂ∞èÁöÑÑ"minimal"‰ ãËΩΩÂåÖÂè™ÂåÖÂê´‰ ´Â§ÖË£Öø£ÖËÑÅÊú¨áíáÂ

Hello, World

Ëø¢‰ ÄÂ∞ëËäÇÂ¶áËÆ應ªÑ†Â Á™àâË£Ö sbt ‰ Ü„ÄÇ

Âàõ° ‰ Ä‰ ™ÉúÂ Ê ÁÁ†Â§Á°ÑÈ° ÁÁÆÂΩ¶Ω

‰ Ä‰ ™Âê¢ÄÊ ïÁöÑ sbt È° Áõ¶Â• • ÊàÑ‰ Ä‰ Âå†ÂÂÂáÁ™‰ Ê Âà ÅÂ§ãÁ¶‰ ÁöÑÁöÑ„ÄÇ
Â∞ÜÈØ†Âê¢Ä‰ ‰ Ä‰ hello ÁÁ†ÂÂΩ†ïÔºåÂå§Â§ãÂÜÂ • Á™‰ ÁöÑÑ ÊÅ†ÂÑáíá‰ hw.scalaÔºö

```scala
object Hi {
  def main(args: Array[String]) = println("Hi!")
}
```

Áé∞Âú®Âú® hello ÁõÆÂΩï‰ ãÂêØÂä® sbtÔºåÁÑ ÂêéÊâßË°å run ÂëΩ‰ª§ËøõÂÖ•Âà∞ sbt ÁöÑ‰ §‰ íÂºèÂΩ‰ª§Ë°å„ÄÇÂú® Linux ÊàñËÄÖ OS X ‰ äÁöÑÂëΩ‰ª§ÂèØËÉΩòØ‰ËôôÊ† Ôºö

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

Âú®Ëøô‰ ™‰æãÂ ê‰ Ôº°sbt ÂÆåÂÖ®ÊåâÁÖ§Â ¶ÂÆöÂ •‰ Ωú„ÄÇsbt Â∞Ü‰ °öÊá™Âä®Êâæ‰àæÂ∞∞‰ª • ‰ ãÂ ÜÖÂÆ Ôºö

- È° ÁõÆÊ† ÁõÆÂΩï‰ ãÂöÑÊ êÊñá‰ª§
- src/main/scala Êàñ src/main/java ‰ ÁöÑÊ êÊñá‰ª§
- src/test/scala Êàñ src/test/java ‰ ÁöÑÊµãËØïÊñá‰ª§
- src/main/resources Êàñ src/test/resources ‰ ÁöÑÊï∞ÊçÆÊñá‰ª§
- lib ‰ ÁõÑ jar Êñá‰ª§

Èª≥ËÆ§ÊÉÖÂÜµ‰ ãÔºåsbt ‰ °öÁÅ®ÁåâÂ íÂêØÂä®Ëá™Ë ´Áõ Âêâ‰àâÊú¨ÁõÑ Scala Êù•ÊûÑÂ È° ÁõÆ„ÄÇ ‰ Ω†ÂèØ‰ª• ‰ÈööËøáÊ®ßË°å sbt run Êù• ËøêÊê°È°ÁõÆÊàñËÄÖ‰ÈööËøöá sbt console ËøõÂÖ • Scala REPL„ÄÇsbt console Â Áª≥Â Æ‰ÈöÆ ËÆæÁΩÆÂ •È° ÁõÆÁöÑ classpathÔºåÊâ‰ª • ‰ÈöÆ‰ÈöØ‰ ‰ª Êù† ÁæÈö° ÁõÆÂ Scala ‰ß ‰ æã„ÄÇ

ÊûÑÑÂ ° ÂÆö‰ â

Â§ß§ÊöÈ∞È° ÁõÆ‰úÄˤÂ‰ Ä‰ õÊÆ¢‰ ®ËÆæÁΩÆ„ÄÇÂü Êú¨ÁõÑÊûÑÑ ÊÆÁΩÆÈöÂÆÊÑÂú® project ÊñáÊòá ÁõÑ
build.sbt Êñá‰ª§ Èáá„ÄÇ ‰úµã¶ÇÔºåÅÊ¶Ç ÅÊûÑú‰ÈöÂöÑÈö° ÁõÆÊìÂú® hello ‰Èöåú‰ú® hello/build.sbt ‰ ÂèØ‰ª • ËøôÊ† Âîôãö:

```scala
lazy val root = (project in file(".")).
  settings(
    name := "hello",
    version := "1.0",
    scalaVersion := "2.11.7"
  )
```

Âú® .sbt ÊûÑÑ ÂÆö‰ â ËøôËãÇ‰ %ÈöÂ∞Ü‰ %úöÂ ¶Âà∞Âö°Êõ°Âö°ÁΩÖÂÖ %é Â¶ÇÁ ΩïÁ°ñÂÜô build.sbt ËÑöÊú¨ÁöÑ‰ úÈö• ø„ÄÇ

Â¶ÇÊûú‰ÈöÂöÁÂ§áÜÂ§Ý Ü‰ÈöÂöÑÈö° Â°ÁâÊêìÂ ÂÔö‰ Ä‰ ™ jar Âö ÔºåÂú® build.sbt ‰ Ëá Â∞ëËÉ°Â ÂÜô‰ä name Âíá version„ÄÇ

ËÆæÁΩÆ sbt ÁâàÊú¨

‰Ω†ÂèØ‰ªª • ÈÄöËøáÂàõÂª hello/project/build.properties Êñá‰ªª Âº Ââ ÊåáÂÆö‰ Ä‰ ™ÁâàÊú¨ sbt„ÄÇÂú®Ëøô‰ ™Êñá‰ªª ÈáåÔºåÁºñÂÜôÂ¶Ç‰ ãÂÜÖÂÆ Êù • Âº Ââ ‰ΩøÁî®
0.13.11Ôºö

```
sbt.version=0.13.11
```

sbt Âú®‰ çÂêåÁöÑ release ÁâàÊú¨‰ ÊòØ 99% ÂÖºÂÆ ÁöÑ„ÄÇ‰ΩÜÊòòÔÂú® project/build.properties Êñá‰ªª ‰ ËÆæÁΩÆ sbt ÁöÑÁâàÊú¨‰ªªºçÁÑ ËÉΩËåøÂÖç‰ Ä õÊΩúÂú®®Á

Áõ ÆÂΩïÁªìÊûÑ

Ëøô‰ ÄÂ∞èËäÇÂ Åá ÆËÆæ‰Ω†Â Áª è Âª èÂÆâË£Ö sbt Â ‰ î Á ÁÂèÒ ÖØ Áƒ ÄËÒÒÖË Ø ø
Hello, World ‰ Ü„ÄÇ

Âü Á°ÄÁõÆÂΩï

Âú® sbt ÁöÑÊúÛ Â ÈáåÔºå,Áúû Âü Á°ÄÁõÆÂΩï,ÄùÊòÒ Âå ÖÂê´È á ÁõÆÂöÑ Áõ ÆÂΩï„ÄÇ âÄ • Ôºå¶Ç
Hello, World ‰ Ä† ÁöÑÈ° Áõ hello ÔºåÂå Ö â hello/build.sbt Âíá
hello/hw.scalaÔºå hello Â∞±ÊòÒÂü Á°ÄÁõÆÂΩï„ÄÇ

Ê ê‰ª£Á†Å

Ê ê‰ª£Á†ÅÂè‰Ω† • ÂÉè hello/hw.scala ‰ Ä† ÁöÑÊîÁú®®° ÁõÆÁõÑÂü Á°ÄÁõÆÂΩï‰ „ÄÇÁÑ Ë
sbt Âíá Maven ÁöÑÈ òòË¶ßÁöÑ êÊñá‰ªª ÁöÑÁõÆÂΩïÁ ÒÊòÒË òÒ ‰ Ä† ÁöÑÔºåÊâÊÊÉáÁöÑ Ø ÂæÑ

```
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/ ‰ ÂÖ ‰ªÒñÁõÆÁõ „Â∞ÜËÅÂ ÆøÁõ • „ÄÇËÅÂ î Ô åÊâÂÊÉáÁöÑÈöêËóê Ó èÁõ ÆÂΩï‰ ü‰ öËÅ µ â

sbt ÊûÑ´ ÂÆö‰ âÊñá‰ª

‰Ω†Â Á´èÂú®È° Á̃ÆÁ̃ÑÂü Á°ÄÁ̃ÆÂΩï‰ Áúã̃Âà∞‰ Ü build.sbt„ÄÇÂÖ ‰ªñÁ̃öÑ
sbt Êñá‰ª Âú® project Â êÁ̃ÆÂΩï‰ „ÄÇ project Á̃ÆÂΩïÂèØ‰ª • ÂåÖÂê´
.scala Êñá‰ª Ô°åËøô‰ õÊñá‰ª ÊúÄÂêé‰ªöÂíå .sbt Êñá‰ª ÂêàÂ ÂÖ±ÂêåÊûÑÊàêÂÆåÊï¥ÁöÑÊûÑÂ
Á́ÑÁ́áÊûÑ´ „ÄÇ

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

‰Ω†ÂèØËÉÉΩÂú® project/ ‰ ‰ üÁúãÂà∞‰ Ü .sbt Êñá‰ª Ô°å‰ΩÜÊòÒÂÂÆÆÉ‰ çÁ âÂê戉É° Á̃Æ
.sbt Êñá‰ª „ÄÇËøôÂ∞ÜÂú® Á®çÂêé ËߣÈáäÔ°åÂõ†‰ È¶ñÂÒà‰Ω†ÈúÄ‰É¶Å‰ Ä‰ õËÉåÊ̂Ø•Ᾱ• ËÖ

ÊûÑ´ ‰ ßÂìÅ

ÊûÑ´ Âá Èù • ÁöÑÊñá‰ª Ô°åÁ°ñ̃ÑÈ¶ØëᇠÑÂåÖÁ̃ÆÑ classesÔ°åÊâìÂåÖÁÆ°Ꮰ̃ñá‰ª Ô°åcaches
Âíå̃Ꮰ̃Ê°£Ô°å̃è°ËÆ§ÂÜôÂú® target Á̃ÆÂΩï‰ „ÄÇ

ÈÖçÁΩÆÁâàÊú¨ÁÆ°ÁêÜ

‰Ω†ÁöÑ .gitignore Êñá‰ª Ô°å̃ÊàñËÄÖ‰ ‰ªñÁ̃àà̃Ê¨Êéß̂ñ Á ª´ªüÁ âÊêÂêé̃Ñá‰ª Ô°åÂ îËÖ • Âã

```
target/
```

Ê ®ÊÑèÔ°öˮôÊ̂áÂêéÊëé̂ùc̃úÄÄ¶Å‰ ™ / Ô°åÂè™Â ÈÖçÁ̃ÆÂΩïÔ°å‰ îÂÂçÈùc‰ çÁ̃ΩÊúá
/ Ô°åÈô§§‰ ÜÂå ÈÖçÊ̂Æ̃ÄöÁ̃Ñ target/ ËøòÂå ÈÖç project/target/
Ô°å„ÄÇ

ËøêÊ°å

ËøôÂ Ä∞èËäÇÂ∞ÜËÆ Ëø∞Âú®‰Ω†ÁΩ†Â Á´ãã • ΩÈ° Á̃Æ‰ ãÂêé¶ÇΩïÂéª‰Ω∞Âᮮ
sbt„ÄÇÂ̲å̄Ææ‰ Ω†Â Á´è ÂÆâÂ£Ö sbt Â ‰ îÂ Á´èÂàõ´ Ëøá Hello,
World È° Á̃ÆỀàñ̃Ö ‰ªñÈ° Á̃Æ„ÄÇ

‰ §‰ íÊ®° Â°è

Âú®‰Ω†Â Á́ÑÈ° Á̃ÆÁ̃ÆÂΩï‰ ãËøêË°å sbt ‰ çË ü‰ªaa‰ΩïÂèÇÊï∞Ô°ö

```
$ sbt
```

ÊâßË°å sbt ‰ çË ü‰ªaa‰ΩïÂëΩ‰ª§Ë°åÂèÇÊï∞Âå∞Ü‰ºöËøõÂÖ • ‰ §‰ íÊ®°Â°è„ÄÇ‰ §‰ íÊ®°Â°èÊúá
tab Ëá™Â®®Ë° • ÂÖ®ÂäüËÉΩÂíåÂéÜÂè Ëæ∞ÂΩïÔ°å„ÄÇ

‰æããÂ¶ÇÔ°åÂú® sbt ÂëΩ‰ª§Ë°åÂèáÈàìÂÖ • compileÔ°ö

```
> compile
```

ÂÜçÊ¨° `compile`Ôºå Âè™ÈúÄË¶ÅÊåâÂêë‰ äÁöÑÊñ ÂêëÈîÆÔºåÁÑ ÂêéÂõûËΩ¶„ÄÇ
ËæìÂÖ• `run` Êù• ÂêØÂä®Á®ãÂ è„ÄÇ ËæìÂÖ• `exit` ÊàñËÄÖ Ctrl+D ÔºàUnixÔºâÊàñËÄÖ Ctrl+Z ÔºàWindowsÔºâÂèØ‰ª• ÈÄÄÂá ‰ §‰ íÊ®°Âºè„ÄÇ

Êâ Â§ÑÁêÜÊ®°Âºè

‰Ω†‰ üÂèØ‰ª• Áî®Êâ Â§ÑÁêÜÊ®°ÂºèÊù• ËøêË°å sbtÔºåÂèØ‰ª• ‰ª • Á© Ê†º‰ ÂàÜÈöîÁ¨¶ÊåáÂÆö
sbt ÂëΩ‰ª§ÔºåÂ∞ÜÂëΩ‰ª§ÂíåÂèÇÊï∞Áî®ÂºïÂè ÂºïËµ Êù• ‰ ÄËµ ‰º†Á ªô sbt„ÄÇ‰æãÂ¶ÇÔºö

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

Âú®Ëøô‰ ™‰æãÂ ê‰ Ôºå`testOnly` Êúâ‰ §‰ ™ÂèÇÊï∞ `TestA` Âíå `TestB`„ÄÇËøô‰ ™ÂëΩ‰ª§‰ºöÊåâÈ° Â èÊâßËÅåÔºà`clean`Ôºå `compile`Ôºå ÁÑ Âêé `testOnly`Ôºâ„ÄÇ

ÊåÅÁª ÊûÑÂª ÂíåÊµãËØï

‰ ‰ ÜÂä†Âø´Á ºñËæë-Á ºñËØë-ÊµãËØïÂæ™ÁéØÔºå‰Ω†ÂèØ‰ª• ËÆ© sbt Âú®‰Ω†‰øùÂ òÊ êÊñá‰ª Êó Ëá™Âä®ÈáçÊñ∞Á ºñËØëÊàñËÄÖË ëÊµãËØï„ÄÇ Âú®ÂëΩ‰ª§ÂâçÈù¢Âä†‰ äÂâçÁºÄ ~ ÂêéÔºåÊØèÂΩìÊúâ‰ Ä‰ ™Êàñ§ö‰ ™Ê êÊñá‰ª ÂèëÁîüÂèòÂåñ

```
> ~ compile
```

ÊåâÂõûËΩ¶ÈîÆÂÅúÊ ¢ÁõëËßÜÂèòÂåñ„ÄÇ ‰Ω†ÂèØ‰ª• Âú®‰ §‰ íÊ®°ÂºèÊàñËÄÖÊâ Â§ÑÁêÜÊ®°Âºè
~ ÂâçÁºÄ„ÄÇ ÂèÇËßÅ Ëß¶ÂèëËÊâßË°å Ëé ÂèñËØ¶Á ªÜ‰ø°ÊÅØ„ÄÇ

Â Áî®ÂëΩ‰ª§

‰ ãÈù¢Êò؉ Ä‰ õÈùûÂ Â Áî®ÁöÑÁöÑ sbt ÂëΩ‰ª§„ÄÇÊõ¥Âä†ËØ¶ÁªÜÁöÑÂàóË°®ËØ ÂèÇËßÅ
ÂëΩ‰ª§Ë°åÂèÇËÄÉ„ÄÇ

```
<td><tt>clean</tt></td>
<td>Âà†Èô§ÊâÄÊúâÁîüÊàêÁöÑÊñá‰ª Ôºà Âú® <tt>target</tt> ÁõÆÂΩï‰ ãÔºâ„ÄÇ</td>
```

```
<td><tt>compile</tt></td>
<td>Á ºñËØëÊ ê Êñá‰ª Ôºà Âú® <tt>src/main/scala</tt> Âíå
```

src/main/java ÁõÆÂΩï‰ ãÔºâ„ÄÇ

```
<td><tt>test</tt></td>
<td>Á ºñËØëÂíåËøêË°åÊâÄÊúâÊµãËØï„ÄÇ</td>
```

```
<td><tt>console</tt></td>
<td>ËøõÂÖ•Âà∞‰ Ä‰ ÂåÖÂê´ÊâÄÊúâÁ ºñËØëÁöÑÊñá‰ª ÂíåÊâÄÊúâ‰æùËµñÁöÑ classpath ÁöÑ Scala Ëß£ÊûêÂô®,
```

Ctrl+D ÔºàUnixÔºâÔºåÊàñËÄÖ Ctrl+Z ÔºàWindowsÔºâ ËøîÂõûÂà∞
sbt„ÄÇ

```
<td><nobr><tt>run &lt;ÂèÇÊïœ&gt;*</tt></nobr></td>
<td>Âú®Âíå sbt ÊâÄÂ§ÑÁöÑÂêå% Ä% ËôöÊãüÊú % äÊâßË°åÈ° ÁõÆÁöÑ main class„ÄÇ</td>

<td><tt>package</tt></td>
<td>ÂœÜ <tt>src/main/resources</tt> % ãÁöÑÊñá%ª Âíå <tt>src/main/scala</tt> %ª•Âèä <tt>src/mai
```

```
<td><tt>help &lt;ÂëΩ%ª§&gt;</tt></td>
<td>Êòæ§ ÊåâÂÆöÁöÑÂëΩ%ª§ÁöÑÊ˻%ÁöÑ¶áªÜÂ ÆÂä©%ø°ÊÅØ„ÄÇ¶ÇÊûúÊ °ÊúáÊåáÂÆöÂëΩ%ª§Û°å%°öÊòæÁ§ ÊâÄÊúáÂ
```

```
<td><tt>reload</tt></td>
<td>ÈáçÊñœÂà†ËΩΩÊûÑÃª ÂÆö% âÛ°à<tt>build.sbt</tt>Û°å <tt>project/*.scala</tt>Û°å <tt>project/
```

Tab Ëá™Âä®Ë° • ÂÖ®

‰ §‰ íÊ®°Â°è‰ ãÂåÖÊã¨Á© ÁöÑÂëΩ‰ §Ë°åÈÉΩÊúá tab Ëá™Âä®Ë° • ÂÖ®„ÄÇsbt
ÁöÑÑ‰ Ä% ™Áâ Âà´ÁöÑ ¶ÂÆöÊòòÛÔ°åÂΩìÊåâ tab ÈîÆ‰ ÄÊ¨°ÁöÑÊó ÂÄôÂèèØËÉΩÊè™‰‰öÊòòæÁ§ Êá

ÂëΩ‰ §ÂéÜÂè ËÆ∞ÂΩï

‰ §‰ íÊ®°Â°èÊúáÂéÜÂè ËÆ∞ÂΩïÛ°åÂç ‰ΩØ‰Ω†ÈÄÄÂÄá sbt ÁÑ ÂêéÈáçÊñ∞ËøõÂÖ • „ÄÇÊúÄÄÆÄÂ

```
<td><tt>!</tt></td>
<td>Êòæ§ ÂéÜÂè ËÆ∞ÂΩïÂëΩ%ª§Â ÆÂä©„ÄÇ</td>
```

```
<td><tt>!!</tt></td>
<td>ÈáçÊñœÊâßË°åÂâç% ÄÊù°ÂëΩ%ª§„ÄÇ</td>
```

```
<td><tt>!:</tt></td>
<td>Êòæ§ ÊâÄÊúá% ãÂâçÁöÑÂëΩ%ª§„ÄÇ</td>
```

```
<td><tt>!:n</tt></td>
<td>Êòæ§ % ãÂâçÁöÑÊúÄÊêé <tt>n</tt> Êù°ÂëΩ%ª§„ÄÇ</td>
```

```
<td><tt>!n</tt></td>
<td>ÊâßË°å <tt>!:</tt> ÂëΩ%ª§Êòæ§ ÁöÑÃªìÊûú% ãÊ†á%  <tt>n</tt> ÁöÑÂëΩ%ª§„ÄÇ</td>
```

```
<td><tt>!-n</tt></td>
<td>ÊâßË°å%ªéÊ∅•ÂëΩ%ª§ÂæÄÂâçÊïœÁ¨ n Êù°ÂëΩ%ª§„ÄÇ</td>
```

```
<td><tt>!string</tt></td>
<td>ÊâßË°åÊúÄÈØëÊâßË°åÂËøøáÁöÑ%ª• string ÊâìÂ§¥ÁöÑÂëΩ%ª§„ÄÇ</td>
```

```
<td><tt>!?string</tt></td>
<td>ÊâßË°åÊúÄÈØëÊâßË°åÂËøøáÁöÑÂåÖÊ´ string ÁöÑÂëΩ%ª§„ÄÇ</td>
```

.sbt ÊûÑÂª ÂÆö‰ â

Ëøô‰ ÄÂ∞èËäÇÊèèËø∞ sbt ÊûÑÂª ÂÆö‰ âÛ°åÂåÖÂ´´‰ Ä% õ,ÄúÁáÜÈËÆ ,ÄùÂíå
build.sbt ÁöÑÊÉ Ê ï„ÄÇÂÅáÊÆæ‰Ω†Â Áªè␣Ωï ‰ΩΩøÁî®
sbt Â ‰ îÈòÖÈ∅ªÊøáÂÖ • Èó®ÊåáÂçóÂâçÈù¢ÁöÑÂá†Â∞èËäÇ„ÄÇ

ÊûÑÂ^a Â Æö‰ âÁöÑ‰ âÁßçÈ£éÊ†º

ÊûÑÂ^a Â Æö‰ âÊúâ‰ âÁßçÈ£éÊ†º„ÄÇ

1. Â§öÂ • Á®ã .sbt ÊûÑÂ^a Â Æö‰ â
2. bare .sbt ÊûÑÂ^a Â Æö‰ â
3. .scala ÊûÑÂ^a Â Æö‰ â

Ëøô‰ ÄÂ∞èËäÇÂ∞ÜËÆ®ËÆ ÊúÄÊñ∞ÁöÑÂ§öÂ • Á®ã.sbt ÊûÑÂ^a Â Æö‰ âÔ°åÂ ÆÉÁ^{aì}Âêà‰ Ü‰ §Áf
.sbt ÊûÑÂ^a Â Æö‰ â][Bare-Def]Âíå.scala ÊûÑÂ^a Â Æö‰ âÔ°àÂú®ÂÖ • Èó®ÊåáÂçóÁöÑÂâêÈù¢ÈÉ®ÂàÜÔ°°â

Ê §Â§ñÔ°åÊûÑÂ^a Â Æö‰ âÂèØ‰ • ÂåÖÂê´‰ • .scalaÁ^{aì}Â∞æÁöÑÊñá‰ â Ô°å‰ Ωç‰ éÂü ÁõÆÂΩïÁóf

‰^aÄ‰ àÊòØÊûÑÂ^a Â Æö‰ âÔ°ü

sbt Âú®Ê££ÄÊü • È° ÁõÆÂíåÂ§ÑÁ˜ÄÜÊûÑÂ^a Â Æö‰ âÊñá‰ â ‰ ãÂêéÔ°åÂΩ¢Êàê‰ ‰ ™ProjectÂ Æö‰

Âú®build.sbt‰ ‰Ω†ÂèØ‰ • ÂàõÂ^a ‰ Ä‰ ™Êú¨ÁõÆÂΩïÁöÑProjectÂ • Á®ãÂ Æö‰ âÔ°åÂÉèËøôÊ†

```
lazy val root = (project in file("."))
```

ÊØè‰ Ä‰ ™Â • Á®ãÂØ Â î‰ Ä‰ ™‰ çÂèØÂèòÁöÑÊò†Â∞ÑÊ®°Ôºàimmutable
mapÔ°âÔ°à‰ Ä‰ õÈìÆÂ˚ÂØ ÁöÑÈõÜÂêàÔ°âÊù • ÊèèËø∞Â • Á®ã„ÄÇ

‰ æã„Å¶ÇÔ°å‰ Ä‰ ™è´ÂÂö name ÁöÑ keyÔ°åÊò†Â∞ÑÂào‰ Ä‰ ™Â óÁ¨¶‰ ÁöÑÂ Â∞Ô°åÂç È° Áõ

ÊûÑÂ^a Â Æö‰ âÊñá‰ â ç‰ ºÁáÂ∞¥Êé • Â∞±Âìç sbt ÁöÑ map„ÄÇ

ÂèñÈÄä‰ â£‰ õÁöÑÊûÑÔ°åÊûÑÂ^a Â Æö‰ â‰ ºÂàõÂ^a ‰ ‰ ™Á±±Â^a ûã‰
Setting[T] ÁöÑÂ ûã§ßÁáÂÔ°å Ë±°ÂàóÊ°®Ô°åT ÊòØÊò†Â∞ÑÑË°®ÁöÑ ÂÄ°àvalueÔ°âÂÁöÑÁ±±^aÂûã„ÄÇ‰
Setting ÊèèËø∞ÁöÑÊò�‰ ÄÊ°° Âû Êò†Â∞ÑÑË°®Ô°àmapÔ°âÁöÑÊΩ¨ÊçÔ°å
ÂÉèÂ¢ûÂä†‰ Ä‰ ™Êñ∞ÁöÑÊìÊ°®Â Âû ÊàñÊ°ÂÈõΩÂä†Âà∞‰ Ä‰ ™Â Á^aèÂ òÂú®ÁöÑ
value‰ ä„ÄÇÔ°àÂú®ÂáÆÏ∞^aèÂ^añÂ®ãÂ ‰ é‰ΩøÂÁ®ç çÂØÂèòÊïÊçÆÁ±±Â^{aì}ÊûÑÂíåÂ Â^aÁöÑÊÄùÈ
‚Äî„Äî Â ÆÉ‰ ç‰ ™öÂ∞±Âú∞Êò¥Êñ∞ÊóßÁöÑ map„ÄÇÔ°â

‰ Ω†ÂèòÂ^a • ‰ Êú¨ ÁõÆÂ∞ï‰ ãÁöÑÊ ÁõÆÂêçÁÁÁ∞∞Â ËÅî‰ Ä‰ ™
Setting[String]Ô°åÂ ÂèËøôÔ°ö

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

Ëøô‰ ™Setting[String]‰ ºÂÈ ÄËö ÊøØÂ¢ûâçÂ^aËä†Ô°àÊ£±ÊÄ°Êó°Ê°ô^òÊøØÊ^aç¢Ô°ânameÈîÆÁ^aÂ∞Ñ‰ Â^aº‰
"hello" Ê±ª • Âû map ÂÅö‰ Ä̰°Ëª¨ Êçí„ÄÇ̰°Ëª¨ ÊçíÂ®êÁöÑ map Êàê‰
sbt Ê°∞ÁöÑ map„ÄÇ

‰ ‰ ÜÂàó^a Ëøô‰ ™mapÔ°åsbt ‰ ºÂ°àÂ Ê°âÊ°úÊÆæͰΩÆͰ°ÑÂÈòÊíÔ°å̰ëÁ®Êøø̰°ëÔ°± Ḛ̀åËøôÊ†‰
key ÁöÑḚ̂î ÂèòͰå‰ • ‰ íæÂú®‰ °Ê°µ ̰ ¢Á̰Ω̰ûÂ^aËá‰ â̰¶ÇÊûú value
‰ æ̰µÑ‰ éÂÖ ‰ ^añÁöÑ keyÔ°å‰ ̰øÂ̰àÂ§̰ÑÂ̰ÄÜ‰ ^añ̰ëÔ¢Â‰ ̰æ̰µñ̰ÁöÑ
key„̰ÄÇ ÁÑ ÂèêÔ°å sbt ‰ ̰øÂ̰ò Settings ÊéíÂ • Ω Â̰ èÁöÑÂ̰àóË°®ÊøøÊó°ÁÁëÂÁ̰àÜÁ̰ëÔ°̰åḚ̂ÄÂ° Â ḛ̀ä̰Ḛ̂Øè‰ Â
map ‰ „ÄÇ

15

ÊÄªÁªìÔºö‰ Ä‰ ™ÊûÑÂª ÂÆö‰ âÊòØ‰ Ä‰ ™ProjectÔºåÊã•Êúâ‰ Ä‰ ™Á±ªÂûã‰ Setting[T] ÁöÑÂàóË°®ÔºåSetting[T] ÊòØ‰ºöÂΩ±ÂìçÂà∞ sbt ‰øøÂ òÈîÆÂÄºÂØ ÁöÑ map ÁöÑ‰ ÄÁßçΩ¨ÊççÔºåT ÊòØÊØè‰ Ä‰ ™ value ÁöÑÁ±ªÂûã„ÄÇ

Â¶Ç‰ΩïÂú® build.sbt ‰ ÂÆö‰ âËÆæÁΩÆ

build.sbt ÂÆö‰ â‰ Ü‰ Ä‰ ™ ProjectÔºåÂÆÉÊåÅÊúâ‰ Ä‰ ™Âêç‰ settingsÁöÑscalaË°®ËææÂ
‰ ãÈù¢ÊòØ‰ Ä‰ ™‰æããÂ êÔºö

```scala
lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.11.7"
)

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

ÊØè‰ ÄÈ° Setting ÈÉΩÂÆö‰ â‰ ‰ Ä‰ ™ Scala Ë°®ËææÂºè„ÄÇÂú®
settings ‰ ÁöÑË°®ËææÂºèÊòØÂØÁ í íÁöÑÔºåËÄå‰ îÂÆÉ‰ª¨‰ª¨ªÖ‰ªªÖ¨Ò¨ÖÊòØÁ°®ËææÂºèÔºåÔ
Scala ÂØ Âè•„ÄÇ

Ëøô õË°®ËææÂºèÂèØ‰ª• Áî valÔºålazy valÔºådef Â£∞Êòé„ÄÇ
build.sbt ‰ çÂÖÅËÆ ‰ΩøÁî®È° Â±ÇÁöÑ object Âíá class„ÄÇÂÆÉ‰ª¨ª¨ ÂøÖÈºªÂÜôÂà∞
project/ ÁõÆÂΩï‰ ã‰ Úú‰ ÂÆåÊï¥ÁöÑ Scala Ê êÊñá‰ „ÄÇ

Âú®Â ¶Ëæ Ôºåname Ôºå version Âíá scalaVersion ÈÉΩÊòØ *ÈîÆÔºåkeysÔºâ„ÄÇ‰ Ä‰ ™ÈîÆÔºåkeyÔºâÂ
SettingKey[T]ÔºåTaskKey[T] ÊàñËÄÖ InputKey[T] ÁöÑÂÆû‰ª‰æããÔºåT
ÊòØÊúüÈúïÊúóÁöÑ value ÁöÑÁ±ªÂûã„ÄÇ key ÁöÑÁ±ªÂà´ ´Â∞ÜÂú®®‰ ãÈù¢Ë Ëß£„ÄÇ

ÈîÆÔºåKeysÔºâÊúâ‰ Ä‰ ™Ëøî ÂõûÁ Setting[T] ÁöÑ := Êñ Ê ï„ÄÇ‰ΩøÁî†ÂèÕ‰ • ÂÉè‰ΩøÁî®Âíá
Java ÁöÑËÕ Ê ï‰ Ê† Ëûé ÁÆ®ËÕ • Êñ Ê ïÔºö

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

‰ΩøÜÊòÕÔºåScala ÂØÅËÕ name := "hello" Ëøô îÕ Ë∞ÉÁî®ÔºåÂú® Scala
‰ Ôºå‰ Ä‰ ™ÂèÕÉ‰ Ä‰ ™ÁÂ∞ÔºåÊòØÁ´Ëïì∞ÁöÑÑÊ Ê ‰ªÂ ÉÂ®‰ Ôºå‰ ‰ΩøÁ Ê ïÔºöÁ∞ÉÁî®Ô

ÈîÆÔºåkeyÔºåname ‰ äÁöÑ := Êñ Ê ï‰ºöÊ õôÔºå‰ Ä‰ ™ SettingÔºåÂú®ËøôÊ°åÁ Êã á
Setting[String]„ÄÇString ‰ üÂá Áé∞Âú® name ËáÈ ´ÁöÑÁ±ªÂûã
SettingKey[String] ‰ „ÄÇ Âú®Ëøô ™‰ æãÂ êÔºåÁ ÁöÑÈîÆÁöÑ
Setting[String] ÊòØ‰ ™ sbt ÁöÑ map ‰ Â¢Â†ÊÜ¨ËÄÖÊòØ‰æÉç¬ÂÉÂ†≠
name ÁöÑÈîΩ¨ÊççÔºåÂ∞±ÂÉÊÜ‰ "hello"„ÄÇ

Â¶ÇÊûú‰Ω†‰ΩøÁî®‰ ÜÈîôËØØÁ±ªÂûãÁöÑ valueÔºåÊûÑÂª ÂÆö‰ â‰ºöÁºñËØë‰ çÈÄöËøáÔºö

```
lazy val root = (project in file(".")).
  settings(
    name := 42  // ÁºñËØë‰ çÈÄöËøá
  )
```

ÈîÆÔºàKeysÔºâ

Á±ªÂûãÔºàTypesÔºâ

Êúâ‰ âÁ±ªÂûãÁöÑ keyÔºö

- `SettingKey[T]`Ôºö‰ ‰ ™ key ÂØ Â î‰ Ä‰ ™Âè™ËÆ°ÁÆó‰ ÄÊ¨°ÁöÑ valueÔºàËøô‰ ™ÂÄ®Âú®Â ä†ËΩΩÈ° ÁõÆÊÂöÑÊó ÂãÊËÆ°ÁÆó‰ºåÂÄ Âéé‰ ÄÁõ•‰øùù Ê òÁúÄÄÔºâ
- `TaskKey[T]`Ôºö‰ ‰ ™ key ÂØ Â î‰ Ä‰ ™Áß ‰ ã‰ *task* ÁöÑ valueÔºåÊèèÊ¨¨ÈÉΩ‰ºöÈáçÊñ∞Ëá°ÁÆóÁöÑÂ ôÊíÈÉΩ òÂ ú®ÊΩúÂ ú®ÁöÑÂ Ø‰ΩúÁî®„ÄÇ
- `InputKey[T]`Ôºö‰ ‰ ™ key ÂØ Â î‰ Ä‰ ™ÂØ‰ ∞é∞ Êé∞ Êî Âω‰ ™§Ë∞åÂÇ∞ËÌ∞ÁöÑ task„ÄÇËØ¶Â ÜÂÜÂ Æ ÂèÇËÉÅ Input Tasks„ÄÇ

ÂÜÖÁΩÆÆÁöÑ Keys

ÂÜÖÁΩÆÆÁöÑ keys ÂÆûÈôôÔº äÊòØÂ Ø Ë±° Keys ÁöÑÂ óÊÆµ„ÄÇbuild.sbt ‰ ºöÊ êÂºÂ åÂÖÂ´ import sbt.Keys._ÔºåÊ â‰ • Âè‰ • ÈÄËøá name Âèñ‰ ∞ sbt.Keys.name„ÄÇ

Ëá™ÂÆö‰ â Keys

Âè‰ • ÈÄËøáÂÆÉÂ ‰ ¨ ÂêÑËá™ÁöÑ Êñ Ê ïÔºösettingKeyÔºåtaskKey Âíá inputKey Âàõ‰ Ëá™ÂÆö‰ â keys„ÄÇ ÈÄè‰ ™Êñ Ê ïÉÊúúÂêÎÊû key ÁöÑÂêçÁß∞ÂèñÊòñ‰ éÂ å éÂ ô val Âèò Ëáéé ÁöÑ Â °„ÄÇ‰ æ ¶ÇÔºå Â Âô Ä ‰ ™Êñ∞ÁöÑ task hello ÂÆö‰ â‰ ‰ ™ keyÔºå

```
lazy val hello = taskKey[Unit]("% Ä%  task Á§ %æã")
```

ÈøôÈáâÊàëË‰ ¨ÁöÑ‰ ä ãÂ ‰ â ãÂÆûÈØØ¥Ê òé‰ Ü .sbt ÊñÊ Ô‰ Êñ§‰ ÜÂÂ øÂ ° ÂåÂ ô´ÄÆæÁΩΩÂÔºsettingsÔºå vals Âíá defs„ÄÇÊâÊÊúúÈøôô õÊÆö‰ âÈÄç‰ çöÂú®ÊÆæÁΩΩÂÔºsettingsÔºâ‰ ãÂÂçË¢´Ëûæ ´Ë êÁÆóÁËÄéÄ vals Âíá defs ÂøÖÈ∞‰ • Â© Ë°åÂ í°ÂÆÆæÁΩΩÂÔºsettingsÔºâ‰ êÂâ ÂÜÈ Æ„ÄÇ

> **Ê ®ÊÑ†Ôºö** ËÄö Ô° å‰ΩøÁî® lazy val ËÄå çÈòØ val Âè‰ • ÈòÂ óçÂ àéÂ í§Ëé êÈìÁé Â éÂöÑÈìÁÆóÈ¶éÂÆÆ¢¢„ÄÇ

Task vs Setting keys

`TaskKey[T]` Ê ÒÁî®®Êî ‰ ÂÆö‰ â *task* ÁöÑ„ÄÇTasks Â∞±Ê ÒÂØÂ Éè compile ÊàñËÄÄ package Ëøô† ÁöÑÊ‡ç‰Ω†„ÄÇÂÆ‰ Ê¨‰ ÂèØÈÉÉÈøøîÂ õû UnitÔºàUnit Âú® Scala ‰ Ë®Â§ voidÔºâ‰ ‰ Â åÈ éÂÉÄÂèØÈÉÉÈøøîÂ õû task Á õ ÂÖ ÁöÑËøîÂ õûÂ Â ºÔºå ‰ æ ãÂ ¶Ç package Â∞±Ê ÒÂ î‰ ‰ ™Á±ªÂûã‰

`TaskKey[File]` ÁöÑ taskÔºå ÂÆÉÁöÑËøîÂõûÂÄºÊòØÂÖ ÁîüÊàêÁöÑ jar Êná‰ª „ÄÇ

ÊØèÂΩì‰Ω†Êâßˡå ‰‰ ™ taskÔºå‰æãÂ¶ÇÂú® sbt ÂòΩ‰ª§Ë°å‰ Ëæì •compileÔºåsbt Â∞Ü‰ªöÔ∂Â Ê âÂèäÂà∞ÁöÑË°è‰ ™ task ÊÅ∞Â • ΩÊâßË°å‰ ÄÊ¨°„ÄÇ

sbt ÊèèËø∞È° ÁõÆÁöÑ map ‰öÂ∞ÜËÆæÁΩÆÔºàsettingÔºå‰øøùÂ ò‰ Âõ ÂÆöÁöÑÑ óÁ¨¶‰ ÔºåÊØ namÔºõ‰ΩÜÒÂÆÆÉ‰ çÂæó‰ ç‰øøùÂ ò task ÁöÑÂèèÊâßË°å‰ª£Á†ÅÔºåÊÔîΩÇ compile – Âç ‰ΩΩøËïôÊÆµÂ∆ÉâßË°åÁöÑÑ‰ª£Á†ÅÊúÄÂªËøîÂõû‰ ‰ ™Â óÁ¨¶‰ ÔºåÔºåÂÆÉ‰ üÈúÂ

‰ ‰ ™Áô∆ÂÆöÁöÑ key ÊÄ™ÊòòÂÊåâê‰ ™ task ÊàñËÄÖ
‰ ‰ ™ÊôÊÈÂÆöÁöÑÑËÆæÁΩÆÔºå„ÄÇ‰ üÂ∞±Êò∏Ô ¥Ôºå“taskiness” (ÊòØ‰êÊØèÊ¨∏ÈÉÈáçÊñ∞ÊâßË°åÁöÑÔºåÊòØ key ÁöÑ‰ ‰ ™Â±ûÊßÔºàpropertyÔºâÔºåËÄå‰ çÊòØ‰

ÂÆö‰ â tasks Âíá settings

‰Ω†‰ÂèØ‰ • ‰ΩΩøÁî® := Áªô‰ ‰ ™ setting Ëµã‰ ‰ ™ÂÄ ÊàñËÄÖÖªó‰ô‰ ™ task Ëµã‰ ÄßËºÆÁ¥ó„ÄÇÂ Ô é settingÔºåËôô‰ ™ÂÄ°ÂàÊ™‰öÂú®È ÁõÆÈáçÂ ÁöÑÔ ÁÆê‰ä†ËΩΩÂ taskÔºåËôô‰ ™ËØÆÁé‰öÁ∞Âú® task ÊÂèÊÊßË°åÂöÑÊó ÂÂôÁñ∞ËÆÆÁîÆ„ÄÇ

‰æãÂ¶ÇÔºåÂÆû‰úÁéÂ∞Ô‰êÈ ÂÈ®ÂÜ‰ ÄÈ ÁÀ hello taskÔ∂ö

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

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

Ê´‰ª¨Âè∏Â ÂúÁ∫™‰ Â àáÁ∆çÂü∞Êó ËßÅËøÂÆö‰ Á settings ÁöÑ‰æãÂ ÔÔºå

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

Tasks Âíá Settings ÁöÑÁ±ª Âûã

‰ªêÁ±ªÂûãÂ ªÁ∆üÁúÑÒÀáíÂ ¶Ê∆ • Ò ÔºåÊ∞áÈ Ê task key ÂàõÂ ª ÁöÑ Setting ÂíáÊ∆ÊØÒá setting key ÂàõÂ ª ÁöÑ Setting ÊúÁÆ®çÂæÔ çÂ „ÄÇtaskKey := 42 ÁöÑÁ±ªÂûãÊòØ `Setting[Task[T]]` Ëãâ settingKey := 42 ÁöÑÁ±ªÂûãÊòØ `Setting[T]`„ÄÇËøôÂØ ‰ éÁ±ªù§ß§Ö§öÊ≠ÄÁ∆ÆÖÂ±µÂ Ê´á Â± Â∞çÔÔõtask key Âú®Ê∆ÊØ°ÁöÑÊô ÂÄ∞‰ªçÑ ÂàõÂ ‰ Ä‰ ™Â±µ‰ T ÁöÑÁ±ªÔÔºàvalueÔºâÂ „ÄÇ

`T` Á±ª‰ÃÂíá `Task[T]` Á±ªÂûãÁöÑ‰ çÂêêÁ±ªÔê¥Ñ ÂÊòÅÔÔºå‰ ÄÂ setting ‰ ç ÁЃΩΩæùÂµñ‰ Ä‰ ™ taskÔºåÂ∏‰ Ä‰ ™ setting Âè∏‰öÚ®È∞ ÁÆ®ÁöÑÁ±ªÂûãËïôó‰ Ê¨∞Ôºå ç‰ü‰ùËáçÈ∏ÇËÆ ÁΩ ÁÆ®È ÁõÆ§ß§Âú® ÁöÑÂÜ‰À‰ Âʉ Ä∞ÔçÂ∞Æ‰ Â∞∞„ÄÇ

sbt ‰ §‰ íÊ®°Â°è‰ ÁöÑ Keys

Âú® sbt ÁöÑ‰ §‰ íÊ®°Â°è‰ ãÔºå‰Ω†ÂèØ‰ª•ËæìÂÖ•‰ªªÂ‰ Ëæì task ÁöÑ name Êù•ÊâßË°åËØ• task„ÄÇËøôÂ∞±Êòغ‰ %‰Ä‰ àËæìÂÖ• compile Â∞±ÊòØÊâßË°å compile task„ÄÇcompile Â∞±ÊòØØ‰ task ÁöÑ key„ÄÇ

¶ÇÊûú‰Ω†Ëæì‰Ö• ÁöÑÊòòØ‰ ‰ ™ setting key ÁöÑ name ËÄå‰ çÊòØØ‰ Ä ™ task key ÁöÑ nameÔº°åsetting key ÁöÑÂÂ°ÔºàvalueÔº¢åÍºöÊòòæÁ§ Âá Êù• „ÄÇËæìÂÖ•‰ Ä ™ task key ÁöÑ name ‰°öÊâßË°å‰ÖØ task ‰Ω†ÊòØ‰ ç‰°öÊòòæÁ§ ÊâßË°åÁ ™ÁÊûúÁ ™ÁöÑÂÂ°Ôº°Ôºõöõ show <task name> ËÄå‰ çÊòØ ÁÆÄÂ≥ÁÁÁ Á Â<task name> ÂèØ‰ • Áúãà∞ÈËÄ• task ÁöÑÊâßË°åÁÁ™ÈûÁ„ÄÇÂØ ‰Ñ é key name ÁöÑ‰ Ä ™Á ¶Â Æö±ÈòÑ‰Ω®Âî® camelCaseÔº°åËøôÊ† ÂëΩ‰ª§Ë°åÈáåÁöÑ name Âíå Scala ÁöÑÊ†áÈØÜÁÁ ¶Â∞±‰ Äê ‰ Ü„ÄÇ

‰ ÜËßß£Êõ¥Â§öÁÂÖ ‰ é‰ªª‰Ωõï key ÂÜÖÂÆ ÔºåÂèÇ‰ª™ Âú® sbt ‰ §‰ íÊ®°Â°èÁöÑÂëΩ‰ª™§Ë°åÂÈáåËæìÂÖ• inspect <keyname>„ÄÇËøôôÁÑ ÁÁÑ inspect ÊòòæÁ§ ÁöÑ‰ ‰ õè‰Çø°ÊÅ Ê°úÊè¢Êè¢‰ âÔº°‰ÄÁ Ú´®È Ú•ÇÊÊòòæÁ§ setting ÁöÑ value ÁöÑÂ±ªÂûãÁ‰ íá setting ÁöÑÁ°ÑÄ‰ã„ÄÇ

build.sbt ‰ ÁöÑÂ°ïÂÖ•

‰Ω†Âè‰ª•ÂÜÜ import Ë∞ Âë• ÊîæÂú® build.sbt ÁöÑÈÁÁ ÈÉ®ÔÁõÂ£Â°‰Äê ÂèØÂë• ‰ ç Áî®Á© Ë•å ‰ ãÈù¢ÊâÁöÑÂ°ïÂÖ•Ôöö

```scala
import sbt._
import Process._
import Keys._
```

Ôº°ÂèÂ§ßÂ§Â§ÑÊ∞ÔºåÂ§ÑÁÊ†ú‰Ω†‰ÄÁÊúù Build ÂØ Ë±°Êûñ•ËÄÄÄ Plugin ÂØ Ë±°Á°ÑÁÁ°ÑÂÜÂÆÂ Ê∞°‰°öÈÏ¢´Â°ïÂÖ• „ÄÇÁ Ú´®È Âö°Âû ‰ éÈø¢Ô õÀ .scala Ê∂Ñ‰ ÂÆ∂ öÁ â„ÄÇÔºå

Ê ™Âä†‰ æùÈµñÂ ì

Êúù‰ §ÁÁ°ßÊ Â°Ê ™Âä†Á¨ ¨‰ ù êÊñ ÁöÑ‰ æùÈµñ„ÄÇÁ‰ Ä Ä°çÊÂÂ±ÁÊòòÈÂ∞± jar Êñ‰ª ÊîæÂÖ• lib/Ôº°ÈÇûÊ°ÂÆÁÆÆ°ÁöÑ‰ æùÈµñÔºåÁ â„Ç• Ê°°çÁ°ÑÂ§§Â§ßÁÂú® build.sbt ‰ Ê ™Âä†ÊÑ°°ÁöÑ‰ æùÈµñÔºåÂÉÁ°§ËøÉÊ∂† Ôöö

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

lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.11.7"
)

lazy val root = (project in file(".")).
```

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```
settings(commonSettings: _*).
settings(
  name := "hello",
  libraryDependencies += derby
)
```

Â∞±ÊòØÂÉèËøôÊ† Ê ªÂä†ÁâàÊú¨‰‰   10.4.1.3   ÁöÑ   Apache   Derby
Â ì‰Ωú‰ ‰ùùÂùµñ„ÄÇ

key libraryDependencies ÂåÖÂê´‰ §‰ ™Êñ Èù¢ÁöÑ§çÊùÇÊÄßÔºö+=
Êñ Ê ïËÄå‰ çÊòØ :=ÔºåÁ¨¨‰ å‰ ™Â∞±ÊòØ % Êñ Ê ï„ÄÇ+= Êñ Ê ïÊòØ§∞ÜÊñ∞ÁöÑÂÄ∫ËøΩÂä†ÊØØ •
key ÁöÑÊóßÂÄ∫ÊêéÈù¢ËàÂ‰ çÊòØÊõøÊç¢ÂÆÉÔºåËøô§∞ÜÂú® Êõ¥Â§öËÆæÁΩÆ
‰ ‰ ™ãÂ™ç„ÄÇ% Êñ Ê ïÊòØÁî®Êù •‰ %éÂ óÂ ¶%‰ ÊûûÈÈ† Ivy Ê®°Âùó ID
ÁöÑÔºåÂ∞ÜÂú® Â ì‰æùÊùµñ ‰ ‰ãÂä°ç„ÄÇ

ÁõÆÂâçÔºå ÄÂõ¥Â∞∞ÂÖ •Èó®ÊááÂçóÁöÑÊêéÈù¢ËÆ®ÂàÜÔºåÊàë‰ªË ËøÈ‰ Ü ì‰æùÊùµñÁöÑ‰
Â ì‰æùÊùµñ Êù •‰ %ãÂ™çËøô‰ ãÂÜÖÂÆÆ „ÄÇ

Scope

Ëøô‰ ÄÂ∞∞èËäÇ‰%ãÂ™ç scope„ÄÇÂÂáËÆÆæ‰Ω†‰ ÄªÈÒÖØÂ ‰ îÁÈ†ÜÊß£‰ ÜÂàç‰ ÄÂ∞∞èËäÇ
.sbt ÊûûÑ ÂÆö‰ â„ÄÇ

ÂÖ ‰é Key ÁöÑÊâÄÊúáÊïÖÖ‰ ã

Ââç‰ ÄÂ∞∞èËäÇ Êàë‰ªª¨ÆÆ§‰ ÂÉè name ÁöÑ‰ Ä™ key Áõ ÂΩ슉 é
sbt ‰%øù ÒÈ îÆÂ ºÂØ ÁöÑ map ‰ ÁöÑ‰ Ê‰ËÆÆ∞ÂΩïÔºåÊêéÈè™ÊòØ‰ ÄßçÆÆÂåñ„ÄÇ

‰ ãÂÊû‰ ä쪂Äߍ‰ ‰ ™ key ÂèØ‰ •Âú®Â§ö‰ ™‰ ä‰ ãÊñá‰ ÂÖ Ëå‰ ‰ ™ÂÆ∫ÂèØè%
„Äúscope„Äù„ÄÇ

‰ Ä‰ õÂÖ ‰Ωì‰ÁÁõ‰ãã êÔºö

- Â¶ÇÊûûÂú®%Ω†ÁöÑÊûûÑ ÂÆö‰ â‰ ÊúáÁö ™È° ÁöÑÂú®ÁÈ†Âú©ÊÆÊØØ ™È° ÁöÑ Êêé‰ Ä
  key ÂèØ‰ • ÊúáÁ¨ôÁöÑÂÄ„ÄÇ
- Â¶ÇÊûû‰ ì†ÊÉ Ê† ÊçÆ‰ çâôÁöÑÊ†ÂÆΩçÂºÈËËÆÉ‰ª¨ÔºåÂkey
  compile Âó ‰ é main Ê êÊñá‰ª Âíá test Ê êÊñá‰ª ÂèØ‰ • Êúáçâôçö ÑÂÄ„ÄÇ
- Key packageOptionsÔºåÂ ÂÖ ê‰ Âà õÂ¬ jar ÂÂΩÂÂ ‰ õÈÄ Ä ÔºåÂèØ‰ • Êúáçâôçö
  class Êñá‰ â Êâ Â ÂΩ Êàî packageBinÔºåÂ Ê ê‰ £Ât‡Â óÂÂΩ Êàî
  packageSrc„ÄÇ

ÂÄôÂ¬ÊûûÂöÑ key name Ê °ÊúááÂçìÄ ÄÂöÑÂ¬ÔºåÂú®‰ çâô†‰ Âú©‰ çâôÁö
scope ‰ ãÂ¬ÆÉÁö‡Ã°Âçâ„ÄÇ

ÁÑ ËÄáÔºå§ÄÂÔÆÆöÂöÑ scoped key ÁöÑÂ¬ÊòØÂ¬çô‰ ÄÁö„ÄÇ

Â¶ÇÊûûù‰ ‰ÊÉ É Ëµ Ââç‰ Ô Êàë‰ª¨‰ ÄÆÆ®ÆÆ ËøÄÁöÑÔ°åsbt ÁúÊèàê‰ ‰ ™
map Èù • §ÑÁÂ ¶ÊèèÈ∞∞Ê° ÁöÑ settings ÂàóË†Â®ÔºÄúÂË™ ‰ ™ map
‰ ÁöÑ key Â∞±ÊòØ *scope ‰ ãÁöÑ key„ÄÇÊûûÑ ÂÆö‰ â‰ çâô çÄûÂàóÊØòÆËøà„ÄÇ
```

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settingÔºà‰æãÂ¶ÇÂú® `build.sbt` ‰∏ ÔºâÈÉΩÈúà‰∏ Ä‰∏ ™ scope
‰∏ ãÁöÑ key„ÄÇ

‰∏ ÄÂ∫ scope ÊòØÈöêÂºèÁöÑÊàñËÄÖÈòÙ‰ËÆ§§ÁöÑÔºå‰∏ΩÜÈòØ‰∏ ÄÊ∂¶È∏ËÆ§§ÁöÑÊòÙÈîôÈØØÁ
`build.sbt` ‰∏ ÊåáÂÆö‰∏†ÊúüÂÖÁöÑ scope„ÄÇ

## Scope ËΩ•

*Scope ËΩ•* ÊòØ‰ ÄÁÂ±ªÂûãÔºåËΩ • Á±ªÂûãÁöÑÈØè‰∏ ™ÆûÂÉ‰æ∑ÆûÈÇÆö‰ âËá™Â ±ÁöÑ
scopeÔºà‰∏ ‰ü∞±ÊòØÈΩ•ÔºåÊØè‰∏ ™ÆûÁöÑ key ÂèÕ‰ • Êúâ‰Á™Â ±âÍØ‰ ÄÁöÑÂÄÔº,,‰

ÊúÕ‰ âÁÂ±ª§Â¶ãÁÂñ scope ËΩ•Ôºö

- Projects
- Configurations
- Tasks

## ÈÄöËøøá Project ËΩ•ÂáíÂàÜ Scope

Â¶ÇÊúú‰û∞†Â∞Ü Â§ö‰ ™È Áß ÊîæÂ®ßã‰∏ ™ÊûÑÂ™ ‰∏ ™Êñ‰∏ Â∞ÔºåÈè‰∞ÙÂÉ‰å±é
settings„ÄÇ‰û Á±ÂÊÒËÒ¥ÔÍåkeys ÂèÕ‰ • Ȇ ÊçÆÈ• Áõ≠ËÊ´ Â±ÄÈôôÂú®‰ çÂêâÁöÑ‰ ä‰ ãÊñî
Project ËΩ•ÂèÕ‰∞ • ËÆæÁΩÆÊëÉ‰ûÑÂ ÆÖ§±ÄÁÑ®Â±Ä§‰∏ ™
setting ÂèÕ‰ • Â î Áî®Â∞Â∞Â±ÄÈûÑÂ ÄÂ çÊÒ‰Âÿö™Ëä§‰ ÄÁöÆ„ÄÇÂÈ∂ã‰∏ ™ÂÈÈ∞Â ºÊ
setting ÁöÑÊó ÂÃôÔûñÁÑÕÂ ±ÁÁ ßÈ setting ÈÄö ‰ùΩ‰ ÈΩòË§ÈÆ∂ÁΩÆÊÉëÊ„ÄÇ

## ÈÄöËøøá Configuration ËΩ•ÂáíÂàÜ Scope

‰ Ä‰∏ ™ *configuration* ÂÆö‰ â‰ ÄÁÂ±ª ÂÆöÁÁñÁΩÆËñ‰ ÔºåÈè‰∏ ™ÆûÂ±ÄÂÖåÖ´ÆÅËá™Â ±ÁöÑ
classpathÔºåÊ êÊ í‰ ÂíÍÈ±êÁÑ ÂÖåÖ å„ÄÇConfiguration ÁÖÈ¶ÇÂÂ£µÈù • Ëá™‰ éÂÆÉÍî®Èù • Á
Â ì‰äæùÌµñ ÁÖ Ivy Âí MavenScopes„ÄÇ

Âú® sbt ‰∏ ‰àÂÈ∞Â±èÁî§Í Èô ‰ configurationsÔºö

- `Compile` ÂÆö‰ â‰ ™ÁÑÑÈ Ôºàsrc/main/scalaÔºå
- `Test` ÂÆö‰ â‰∏ Á‰ΩïÈûÑÁ ÊµñËÀîÔºàsrc/test/scalaÔºå
- `Runtime` ‰∏ task `run` ÂÆö‰ â classpath

ÈΩòÈÆ∂ÍÈÉØÈÜµ‰ ãÔ‰ÍíÁÍˆÌÈΩÇ„ÄÅÈãàãÁåÖ„ÄÅÈΩÈøÙËëÁã  ÈÖ Á‰ÑÈâÈÉú
key ÈÁΩÆ§Â±ÄÈûÑ Á‰ ‰∏ ™ configurationÔºåÂ ÈÑ†ÁÖ §Í‰®‰ ÁÂÍÂÍ° con-
figuration ‰∏ ÂÈ∞ÈÉΩ ßÂÍî‰ Á‰ÑÈˆÈÂΩË‰∂ùÍî„ÄÇÈÑ‰ÍÈãÍÈ∞àÁ‰ÑΩæãÍÈ∞ÁÎÂÈ∞±ÈÉØ
task keyÔºöcompileÔºåpackage Ãí run ÁÑ õ ÁÑ ËÈÅÈÉΩÂ§ü ‰Ω±Âìç
ÍÈ∞Èƈ õ key ÁÖÈâÈÉúÍÈΩ ‰ñ keyÔºà‰ææÂ¶ÇÁ `sourceDirectories`ÔºåscalacOptions
Ãí `fullClasspath`Ôºå‰ùÈ∞Â±ÄÈôô‰ ‰ÈΩ • configuration„ÄÇ

## ÈÄöËøøá Task ËΩ•ÂáíÂàÜ Scope

Settings ÂÈ∞Â • ÍΩ±Âìç‰ ‰∏ ™ task Â¶ÇÁÑÙïÂ •ΩúÔ„ÄÇ‰æ∑Â¶ÇÁÔºåtask
`packageSrc` Âø±‰ûêöËÉ¢´ setting `packageOptions` ÂΩ±Âìç„ÄÇ

‰ ‰ ÜÊîØÊåÅËøôÁßçÁâ ÊÄßÔºå‰ Ä‰ ™    task    keyÔºà‰æãÂ¶Ç
`packageSrc`ÔºâÂèØ‰ª•‰Ωú‰ Âè¶‰ Ä‰ ™ keyÔºà‰æãÂ¶Ç `packageOptions`ÔºâÂöÑ
scope„ÄÇ

‰ Ä‰ õÂíåÊâìÂåÖÖÁõ ÂÖ ÁöÑ taskÔºàpackageSrcÔºåpackageBinÔºåpackageDocÔºâÂèØ‰ª• ÂÖ±‰ ´Â
keyÔºå‰æãÂ¶Ç `artifactName` Âíá `packageOptions`„ÄÇËøô‰ õ key
ÂØ ‰ éÊØè‰ ™ÊâìÂåÖÖÁõ task ÂèØ‰ª• Êúâ‰î‰ ÄÁõÑ Â Ä°„ÄÇ

## ÂÖ®Â±Ä Scope

ÊØè‰ ÄÁßç scope ËΩ¥ÈÉΩÂèØ‰ª• Âî®Âíá ËΩ¥Á±ªÂûã‰ ÄÁ¥ÁöÑÂÆû‰æãã‰ª£ÊõÔºå‰æãã
task ËΩ¥ÂèØ‰ª• Âî®‰ Ä‰ ™ task ‰ª£Êõ Ôºâ‰ÂÊàñ ËÄÖËØ ËΩ¥ÂèØ‰ª• Ë¢´Áõ ÂÆöÁõÑÂÄ
`Global` ‰ª£Êõ„ÄÇ

`Global`    ÁõÑÊÑè‰ âÂ∞±ÊòØ‰ Ω†ÊâÊ ÁúüÂæÖÁõÑÔºöÂ∞ Ü    setting
ÁõÑÂÄºÂ îÁî®Âà∞ËΩ¥Âè ‰ Ω†ÊâÂÁõÑÂÆû‰ωæ㉄ÄÇ‰æã㶶Ç¶ÇÊûú‰ Ä‰ ™
task ËΩ¥ÁõÑÂÄºÊòÂÔæò `Global`ÔºåËÇ£‰ àËØ • setting ÁõÑÂÄºÂ∞ÜÊ¢´ÁúüÂõÑ
task ‰ ä„ÄÇ

## ‰ªª£ÁïÜ

Â¶ÇÊûúÂú®‰ Ä‰ ™ scope ‰ ÊüÊ‰ Ä‰ ™ key Ê °ÊûúÂÖ ËÅîÁõÑÂÄºÔºåÈÇ£‰àËØ •
key Â∞±ÊòØØÊüƒ™ÂÆö‰ âÁõÑ„ÄÇ

Âè ‰ éÊØè‰ Ä‰ ™ scopeÔºåsbt ÊûúÂíî±ÂÖ ‰ªÑ scope ÊûûÑÊàÁõÑÊõø‰ª£ÈÄÂ¬ ÁõÑÊêúÁ¥¢Ø ØÂÄâ
key Âú®Áõ ÂÆöÁõÑ scope ‰ ãÊ °ÊûúÂÖ ËÅ¢ÁõÑÂÄºÔºåsbt ‰ªªöÂ∞ùˤØï‰ªéÊõ¥Â†‰ ÄÈã¨ÁõÑ
scopeÔºà‰æãÂ¶Ç `Global` scope ÊàñËÄÖÊûûÂ ÂÖ®Â±Ä scopeÔºâ‰ Ëé Âèñ„ÄÇ

Ëøô‰ ™Ââ ÊÄßÂÒÈ ‰ Ω†‰ ÄõÂ¶ÇÊõ¥Â†‰ ÈãΩÑ     scope
‰ ËÆæÁ Æ‰ ÜÊûú‰ ÈÜ° ËÆæÁΩ ÂÆûÁõÑ‰ 㢰âÔºå㢰 éÔºå‰Ω‰ª‰ Ââó§ö‰™Áõ ÂÆö
scope ËÉΩ§üÂ™ßÊââËØ • ÂÄº„ÄÇ

‰Ω†Âè‰ Ë°Á• Áî¥ÂÈµ ‰Ω¶ inspect ÂëΩ‰§§Êü • ÁûÁõÑ Êâæ¢ Ø¢ÑÈ ÈËÄÖ¶Ä‰ª‰ÂÁÂ¶‰ ãÁÛ㄃ÄÇ
key ÁõÑÊõ‰ª£ÈãÈ° ÁõÑÊü • ÊâæÂ Ø¢Ñ¬æÑËÀ‰¬ ‰ª‰ÂÁ‰Ù‰ª‰Âé„ÄÇÂ怉 ‰ªÛ„ÄÇ

## Ëøê˰å sbt Êó Ê âÂ¶è scope ‰ ãÁõÑ key

Â‰®ÂÈ‰ª‰ß˰åÁõÑ‰ß‰ íˮ˰¢è‰ ãÔºåsbt ÂÉÈËøÊ† ÊòæÁ Ôºå‰ÂíÂÈߣÊ‰êÔºåscope
‰ ãÁõÑ keysÔºö

`{<build-uri>}<project-id>/config:intask::key`

- `{<build-uri>}/<project-id>` ÊÑ£ËΩÜ project ËΩ¥„ÄÇÂ¶ÇÊûú
  project ËΩ¥ÊûúÊûÑÂ ÂÖ®Â±Ä scopeÔºåÂ∞ÜÜÊ Êûú <project-id>
  ÈÉ®ÂàÜ„ÄÇ
- `config` ÊÑ£ËΩÜ configuration ËΩ¥„ÄÇ
- `intask` ÊÑ£ËΩÜ task ËΩ¥„ÄÇ
- `key` ÊÑ£ËΩÜ scope ‰ ãÁõÑ key„ÄÇ

‚Äú*‚Äù‚Âè ‚ÂèØ‰ª • ‚Âá Áé∞Âú®‰ªaaÊÑèÒÎΩ¥ÔºåÂèÇÈÄÉ Global scope„ÄÇ

¶ÇÊûú‰Ω†ÁùÂÅÁ • ÈÉ®Âù scoped keyÔºåÂÆÉ‰ºöÂÉè‰ ãÈù¢ËøôÊ† Êé®Êñ Ôºö

- Â¶ÇÊûú‰ÁùÅÁ • projectÔºåÂΩìÂâçÁöÑ project ‰ºöÂ¢´ ΩΩÁî®„ÄÇ
- Â¶ÇÊûú‰ÁùÅÁ • configuration ÊàñÎÄÄ taskÔºå‰ºöÂá™Âä®Ê£ÄÊµã
  key ÊâÄÊúá‰ÁµúËµñÁöÑ configuration„ÄÇ

Êõ¥Â§öËØ¶Á¥ÜÂÜÂÆ ÔºåÈ ÂèÇËßÂ ‰ é Configuration Á ªÁªä‰ §‰ í„ÄÇ

## ‰ΩøÁî® scoped key Ê†áËØØÜÁöÑ‰æãÂ ê

- `fullClasspath` ‰ºªÖÒ‰ÖÊåá‚Æö‰ Ü‰ Ä‰ ™ keyÔºåÊââ‰ª • ‰ºö‰Ωø‰Áî®ÈùÒ‰ÒÈƧ‚Ò scopeÔºö‰Ωì‚âç‚ÁÁö project‚ key ÊâÄ‰ÁµúËµñÁöÑ configuration Âíå‰Ò∏‚± task ‚Ò scope„ÄÇ
- `test:fullClasspath` Êåá‚ Æö‰ configurationÔ∫åÊâ‚Ä • Ëøô‰™ fullClasspath Â∞±‚ú® test configuration scope ‰ ãÔºåÂ Ò ‰π‰ §‰™ scope ÈΩ¥‰ È™ÒÈ ߉ Äº„ÄÇ
- `*:fullClasspath` Â∞Ü configuration ÊåáÂÆö Ò GlobalÔºåË∞‰ çÈò∏Èò§ÁöÑ configuration„ÄÇ
- `doc::fullClasspath` Â∞Ü key `fullClasspath` Â±ÄÈôêÂú® doc task
  ‰ Ò‰Áöproject ÈΩ¥Â íå configuration ÈΩ¥Ëø∏Ëò§È™ÒÈ ß„ÄÇ
- `{file:/home/hp/checkout/hello/}default-aea33a/test:fullClasspath`
  Êåá‚Æö‰ Ü‰ Ä‰ ™ projectÔ∫å‰ú® `{file:/home/hp/checkout/hello/}default-aea33a`
  ‰º ÔºåÊ†á{file:/home/hp/checkout/hello/}  Ê†áÈÄÜ     projectÔº
  ÒÅ‰ î project id ‰ú® `default-aea33a` ÊûÒÂ‰ ‰ „ÄÇ‰ üÊåá‚ÆöÒ Ü
  configuration ‰ testÔ‰∏ÜÊòÒÂ∞ÜÒ task ÈΩ¥ÁÒó‰ È™ÒÈ ß„ÄÇ
- `{file:/home/hp/checkout/hello/}/test:fullClasspath` Â∞ÜÊûÒÂ‰ ‰ 
  `{file:/home/hp/checkout/hello/}` ÁöÑ project ÈΩ¥Ëè™Á ΩÆ‰ ÂÖ®Â±ÄÊûÒÂ‰ „ÄÇ
- `{.}/test:fullClasspath` Â∞ÜÊûÒÂ‰ ‰ `{.}` ÁöÑ project ÈΩ¥Ëè™Á ΩÆ‰ ÂÖ®Â±ÄÊûÒÂ‰ „ÄÇ‰
  ‰Âè‰ • ‰Áî® Scala ‰Ò£Á†Å‰ Â ôÊ ‰ `ThisBuild`„ÄÇ
- `{file:/home/hp/checkout/hello/}/compile:doc::fullClasspath`
  ÁÆ°ÁÖ ÜÂ Ò®ÈÉ®Á ÒÂ ‰ ‰™ scope ÈΩ¥„ÄÇ

## Â Æ°Êü • scope

Âú® sbt ÁöÑ §‰ íÈ®Á è‰ ãÒ‰∏Âù‰ • ‰ΩøÁî® inspect
ÂèΩ‰∞§Êûü • ÁùÜ ß£ key ÂíÂ ÆÁÉ Â îÁö scope„ÄÇÂ∞ùËØ inspect
`test:fullClasspath`Ôº

```
$ 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
```

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```
[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
```

Âú®Á¨‰ ÄË°åÔºå‰Ω†ÂèØ‰ª•ÂúãÂà∞ËøôÊòØ‰ Ä‰ ™ taskÔºåÂíå
.sbt ÊûÑÂª ÂÆö‰ â ‰ ‰ªãÁ ªçÁÑ setting Áõ ÂØ Ô°â„ÄÇËØ• task
ÂæóÂà∞ÁöÑÂÄºÁ±ªÂûã‰ scala.collection.Seq[sbt.Attributed[java.io.File]]„ÄÇ

‚ÄúProvided by‚Äù Ë®®ÊòéÂÆö‰ âËØ • ÂÄºÁöÑ scoped keyÔºåÂú®Ëøô‰™‰æãÂ ê‰ ÊòØ
{file:/home/hp/checkout/hello/}default-aea33a/test:fullClasspathÔºåfullClasspath
Âú® test configuration ‰ ‰ îÂú® {file:/home/hp/checkout/hello/}default-aea33a
project ‰ ãÔºå„ÄÇ

‚ÄúDependencies‚Äù   ÂèØËÉΩÊ °ÊúâÊÑè‰ âÔºõ‰ Á Â aßÁª ÈòÖËØ∞
‰ ã‰ ÄËäÇ„ÄÇ

‰Ω†‰ üÂèØ‰ª• ÂúãÂà∞‰ Ä‰ õ‰ª£ÁÁºÔ°õÂ¶ÇÊûûúÈ °Êúâ‰ÂÆö‰æö âÔº ‰ ãÈÄîÂæÑÈü • ÊâæÔºö
‰º°öÈÄöËøøïá‰ª • ‰ ãÈÄîÂæÑÈü • ÊâæÔºö

- ÂÖ ‰ªañ‰ §‰ ™ configurationÔºåruntime:fullClasspath Âíå
  compile:fullClasspathÔºå„ÄÇÂú®Ëøô‰ õ scoped key‰ Ôºåproject
  Ê °ÊúâÊåáÂÆöÔºöÂúùÂ∞±ÊÑèÂ ê ÁùÄÊòØ ‚ÄúÂ Ω‰Ââ project‚Äù Ëºå‰ î task
  Ê °ÊúâÊåáÂÆöÔºöÂúùÂ∞±ÊÑèÂ ê ÁùÄÊòØ Global„ÄÇ
- ÂΩì project Ê °ÊúâÊåáÂÆö ‚ÄúÂ Ω‰Ââç project‚Äù Â ‰ î task
  Ê °ÊúâÊåáÂÆö‰ Global Êó Ôºåconfiguration ‰ ûöÈ¢ ´ËÆæÁ ÆÊêàê

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GlobalÔºà*:fullClasspathÔºâ„ÄÇ

- ÂΩìÂÓ®Â±ÄÊûÑÂ∫ ‰ Ê °ÊúâÊåáÂÆöÁÁ ÂÆöÁÁÑ project Êó Ôºåproject ‰ºöË¢´ÊÆæÁΩÆÊèà {.} ÊàñËÄÖ ThisBuild„ÄÇ
- Â∞Ü project ËΩ¥ËÆæÁΩÆÊèàâ GlobalÔºà*/test:fullClasspathÔºâÔºàËÆ∞‰ΩèÔºå‰ çÊåáÂÆö project ‰ Ë®Á Áî®ÂÇìÂâçÁÁÑ currentÔºåÊáÂ‰ • ÈøôÊÉáÊ‰ • Êâæ Global ÊòØ‰ Ä‰ ™Êñ∞ÁÑÊñ ‰°ÁÔºõÁÔºö* Âíá ‚ÄúÊ°áÂ‰ § Ê °Êúá project‚Äù Â Ø ‰ é project ËΩ¥ÊòØ‰ ç‰ ÄÊ† ÁÔºö*/test:fullClasspath Âíá test:fullClasspath ‰ çÊòØ‰ ÄõÁ çÔºö„ÄÇ
- project ËΩ¥Âíá configuration ËΩ¥ÈÉΩ‰ºöÁï´ËÆæÁÁÑ GlobalÔºà*/*:fullClasspathÔºàÔºàËéøËÆ∞ÂæóÊáÔºö¨Â Á™èËΩ¥Ëøá‰ ç çÊáÂ‰ § task Ë®Á Áî® GlobalÔºåÊáÂ‰ • */*:fullClasspath Ë®Á ‰ ÚÔºõÊΩ¥ÊÇÔ§á GlobalÔºö„ÄÇ

Â∞ùËØïÁÁÑ inspect fullClasspathÔºàÂíÁ äÈù¢‰æÁ ê‰ ÁÁÑ inspect test:fullClasspath Áõ ÂØ ÔºâÈù • Êü • ÁÁÑÂÆÉ‰Ä°Êá ÁÁ‰ÁÔºåÂõ†‰ configuration Ê¢´ÁÁÁÁ • ÜÔºåsbt Êá™ÂÑ®Ê£ÄÄÊµÃ ËÆæÁÁ‰ compile„ÄÇ Âõ†Ê § inspect compile:fullClasspath ÂæóÂà∞ÁÁÑÁÁ‰ÊûûÂúÔ•Ê ‰ • ÎÄ • Âíá inspect fullClasspath ÂæóÂà∞ÁÁÑÁÁ‰Êûûú‰ ÄÊ† „ÄÇ

Â∞ùËØïÁÁÑ inspect *:fullClasspath‰Ω™ú‰ ÂØ ÊØÎ„ÄÇÈ™ÈÄËÆ§ÊÊÄÖÂÄµ‰ ãÔºöÁfullClasspath Ê °ÊúáÂÆæ‰ âÂú® Global configuration ‰ ‚ÄûÄ„ÄÇ

Êõ¥Â§öËØ¶ÁÁÄ¶ÜÁÑÂÜÖÂ ÂØ ‰Ø ÁÁ‰ é Configuration Á ¬Á¬ü‰ §‰ í„ÄÇ

Âú®ÊûûÑÂ¬Å ÂÆö‰ â‰ Ê âÂèä scope

¶ÇÊûûú‰ΩΩ†ÂààÁÁ ÁÑ build.sbt ‰ Êúá‰ Ä‰ ™bare keyÔºåÂ ÆÉÁÁÑ‰Ωú‰î®‰ éÂ∞ÜÊÒ∞ÂØÂì âç project ‰ ãÔºöconfiguration Âíá task ÂúÁ GlobalÔºö

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

ÂêØÂä® sbt Â ‰ îÊâßË°Á inspect name ÂèØ‰ ‰ • Áúã ÂΩÂ§ ÂÆÉ ÆÉÁÁ‰± {file:/home/hp/checkout/hello/}default-aea33a/*:name Êèê‰ ‰ãÔºöÁΩ®∞±Êè∞ÂØÂª¥ÔºöÁproject ÊèØ {file:/home/hp/checkout/hello/}default-aea33aÔºöÁ configuration ÊèØ *ÔºöË®Á ÂÖÂ±ÂÄÔºåÁ•task Ê °ÊúáÊàÁ Ê Êá‰ • ÔºàÂ ÆûÊáÖ‰ç üÊèÂÄ®Â±ÄÁÁ„ÄÇ

Keys ‰ ‰ÖË∞ÁÁî®Ê‰ Ä ™ÁçËΩ∞ÔÓöÑ in Êñ Ê ïËÆæÁΩÆ scope„ÄÇ‰ô†Á‰Â¿ô in Êñ Ê ïÂöÑÂÇ°∞ÊèÁΩ®‰ • ÊèÁ‰ªÁΩ®∞ï scope ËΩ¥ÁÁÑ Æû‰ã„ÄÇÂØÂ¶Ç·ÂíÇ ØÁΩ®Ôºå‰®∞Á‰ • ‰Âêã name Â±ÄÈêôÂ√ô® Compile configuration ‰ ÔºöÂ∞Á ±ú Ê °Âúüà ÂûÁ Ñ ÆÉ£èÂËÄÂèÔ±Ë¶Å ËÂÿô Å ÂÅøÂÔºö

```scala
name in Compile := "hello"
```

ÊàñËÄÖ‰ΩΩ†ÂèÔ‰ • Êää name Â±ÄÈêôÂÆú® packageBin task ‰ Ôºöö Ê °‰ªÄÊ‰ àÊ‰è ‰ çÔºöÅ‰ªøö

```scala
name in packageBin := "hello"
```

ÊàñËÄÖ‰ΩΩ†ÂèÔ‰ • Êää name Â±ÄÈêôÂÓ§öÁ ™ scope ËΩ¥Ôº ÔºöÁ‰ãÂ¶ÇÁÂ®Â∞® Compile configuration ÁÁÑ packageBin task ‰ Ôºöö
```

```scala
name in (Compile, packageBin) := "hello"
```

ÊàñËÄÖ‰Ω†ÂèØ‰ª•Áî® Global Ë°®Á§ ÊâÄÊúáÁöÑËΩ¥Ôºö

```scala
name in Global := "hello"
```

Ôºàname in Global ÈöêÂºèÁÁ∞Êää scope ËΩ¥ÁöÑÂÄº Global ËΩ¨Êçç‰
scope ÊâÄÊúáËΩ¥ÁÁ∞Â∞ºÂùá‰ GlobalÔºõtask Âíå configuration
ÈªòËÆ§ÊòòØ GlobalÔºåÂõ†Ê §ËøòÈáåÁÁ∞ÊïàÊûôÁÁ∞Â∞Ü project
ËÆæÁΩÆÊêàê GlobalÔºå ‰ üÂ∞±±ÊòòËØØÔºåÂÆö‰ â‰ Ü */*:name
ËÄÄ‰ çÊòò {file:/home/hp/checkout/hello/}default-aea33a/*:nameÔºâ

Â¶ÇÊûú‰Ω†‰ ãÂâç‰ çÁÁÁ ScalaÔºåÊèèÊÈí‰ Ä‰ ãÔºöin Âíá :=
‰ªaÖ‰ªaÖÊòÒÊñ Ê ïÔºå‰ çÊòÒØÂêÜ îÊ ïÂíáÜߣËøôÁÁÇ ÂæàÈáçË¶Å„ÄÇScala
ËÆ©‰Ω†Áî®‰ ÄÁß ÄÄ§§ãÊõ¥¥Â • ΩÁÑ§Ñ ªèÁÑÑÜÛÂÆÉ‰ªaÖ¨ÔºåÔº åÜ•Êòò‰ç‰†‰ üÂèØ‰ª• Áî®
Java ÁöÑÈ£éÊ†ºÔºö

```scala
name.in(Compile).:=("hello")
```

ÊØ´ÊóÁÁ†ÁÜÁÑ±‰ΩØ§Áî®ÈÈôôÁß‰ ëÈôãÁöÑËΩØ Ê ïÔºå‰ΩÜÈòØÂÆÉÉÈòêÊòéÈøøÂ ÆûÈôÔ‰ äÊ∫ØÊñ Ê ï„,

ÊåáÂ Æö scope ÁöÑÊó Êú

Â¶ÇÊûú‰ Ä‰ ™ key ÈÄöÂ ÁöÑ‰Ω†ÂüïÊúáÈòÊ ÆæçÔºå‰Ω†ÁÄ¶Â§ÊåáÂ Æö
scope„ÄÇ‰ æãÂ¶ÇÔººÜÁ®àÁ§µäÂ¶ÇÔºåcompile task ÈªòËÆ§ÊòÒÁ§ØÂú® Compile Âíá Test con-
figuration ÁöÑ scope ‰ ÔºåÜÁÑÁ§ ÅÇÁ§ õ scope ‰ ãÁ§ÑÂÆÉÁÑ‰ çÜòÂú„ÄÇ

‰ ‰ ÜÊî ÂèØ key compile ÁöÑÂ ãÔºåÜÁ§†‰ çÊÈ¶ÅÈ æÈ âÈ compile
in Compile ÊàñËÄÖ compile in Test„ÄÇÁî®ÊÈôéÊÈ äÁöÑ compile
‰ΩºÂ§ÅÂÆÌÂâ project ÁöÑ scope ‰ ÅÆö‰‰ ‰ ™Êñ∞ÁöÑ
taskÔººÊ ïÂ ÇÈò†ÜÛÁöÑ configuration ÁöÑ scope Ê†áÂìÄÁöÑ compile
task„ÄÇ

Â¶ÇÊûú‰Ω†ÈÄ Å§Âà∞ÂÉè ,Äú‰ΩØÄà®Êú‰™ÂÆö‰ âÁöÑ úË ïÆÏÆ,Äù
ËæôÊÈ† ÁöÑ ÆÏ Ôå§ÁÖÈÈ ÅÆ Èô‰ Å†ÊêÂ Æö scope Â߱ˢ• ÅÜ ÜÔºåÊàñËÄÖ‰ΩØ†ÊêÂ Æö‰ Ü‰ Ä‰
scope„ÄÇ‰Ω†‰ Ω øÂí ÁöÑ key Âè ÉÄΩÆö‰ âÂú‰ ÅÇ ‰ªaÑ ÁöÑ scope
‰ Â„ÄÇsbt ‰ΩºÂ∞¥ËØÏÁî®ÈÎôÂØØ àÅÄ Å†ÂÈ¢ÈèêáÇ ‰ Å†ÁöÑÊÉ Ê ïÒ‰ aÑ àÔºõÂ¶ÇÇ
,Äú‰ΩØ†ÊΩÆÂ compile:compileÔºÔ¨,Äù

‰ ÄÁÂ Ñ Ä¥Ê Ô‰ çÂâÑ‰ª• ËôéÊÈ† ËÆ§‰ Ôºåname Âè¬Êò¢ Ô key
ÁöÑ ‰ ÄÈÈ®Ä Ò„ÄÇÂ ÆûÊêñ§ ä¢ÑÊÈ Æö‰ Æö ÁöÑ key ÈÉùÁø‰ name Âíå
scope ÁÆÑÈòÇ¬ÔÔÔºàscope Êúá‰ â‰ ™ÈØ¢ÁÔ¶Ç•ÆÆ ÀÂ∞ÂÈ ÜÒ Ý¶ÜÔ¶ÆpackageOptions
in (Compile, packageBin) ÈòØ¢ËÄ®Á§ key name ÁöÑ ¶ÅÂÍiÂÈÕ¥ÁöÑ¢Áøãe„ÄÇ
ÂÖ ÁÄ†ÂÆÔ packageOptions ‰ üÊÈòÁÑ ‰ ‰ ™ key nameÔÔ%ÁÜÂ¶ÂÈ ÁÄ§Âôú Å%Á Âôú
in Êñ Ê È keyÔÔ%ÁÑöÂÑ¢Ä¶ÆÆÆÂ Æ¶Ä¶ Ô‰ % ™ scopeÔÔöÂΩÜ¬ÆeçÁÄ§
projectÔÔåglobal configÔÔåglobal taskÔÔ„„ÄÇ
```

# Ê õ ¥ Â § ö Â Ö ‰ é Ë Æ æ Á Ω Æ

Ë ø ô ‰ Ä Â ∞ è Ë ä Ç Â ∞ Ü ‰ ª ã Á ª ç È ò § ‰ Ü Á î ® Â ü Ê ú ¨ Á ö Ñ := Ê ñ Ê ï Â à õ Â ª Ë Æ æ Á Ω Æ Ô º å Ë ø ò Ê ú â Â Ö ‰ ª ñ Á ö Ñ
.sbt Ê û Ñ Â ª Â Æ ö ‰ â Â í å scope„ÄÇ

## Â õ û È ° æ Ô º ö Ë Æ æ Á Ω Æ

Ë ø ò Ë Æ ∞ Â æ ó Â ú ® .sbt Ê û Ñ Â ª Â Æ ö ‰ â ‰ Ô º å ‰ Ä ‰ ™ Ê û Ñ Â ª Â Æ ö ‰ â Â à õ Â ª ‰ Ü ‰ Ä ‰ ™
`Setting` Â à ó Ë ® Ô º å Á Ñ Â ê é Ë ø ô ‰ õ `Setting` Ë ¢ ´ Á î ® È ù • Â Ø sbt Á ö Ñ Ê û Ñ Â ª Ê è è Ë ø ∞ Â Å ö Ë Ω ¨ Ê ç ¢ Ô º à Â Æ É
map Ô º â „ÄÇ ‰ ‰ ™ `Setting` Â ∞ ± Ê ò Ø Â ∞ Ü sbt ‰ õ ã Â â ç Á ö Ñ map
‰ Ω ú ‰ Ë æ ì Ö • ‰ ‰ î Ë æ ì Á ‰ ‰ ™ Ê ñ ∞ Á ö Ñ map Á ö Ñ Ë Ω ¨ Ê ç ¢ „ÄÇ
Ë ø ô ‰ ™ Ê ñ ∞ Á ö Ñ map Â ∞ ± Ê ò Ø sbt Á ö Ñ Ê ñ ∞ Á ä Ê Ä Å „ÄÇ

‰ ç Â ê å setting È Ä ö Ë ø á ‰ ç Â ê å Á ö Ñ Ê ñ Â º è Â Ø Ë • map Ë ø õ Ë ° å Ë Ω ¨ Ê ç ¢ „ÄÇ ‰ ã Â â ç Â ú ®
.sbt Ê û Ñ Â ª Â Æ ö ‰ â ‰ Ô º å ‰ Ω † Â ª è Ë Ö ò Ë Ø Ê Ω ‰ ‰ Ü := Ê ñ Ê ï Â Ö Á ö Ñ Â Ü Ö Â Æ „ÄÇ

È Ä ö Ë ø ø á := Â à õ Â ª Á ö Ñ `Setting` ‰ º ö Â æ Ä Ë Ω ¨ Ê ç ‰ ã Â ê é Ê ñ ∞ Á ö Ñ map
‰ Ê î Â Ö • ‰ ‰ ™ Â õ Â Æ ö Á ñ Â Ë á é „ÄÇ ‰ æ ã Â ¶ Ç Ô º å Â ¶ Ç Ê û ú ‰ Ω † È Ä ö Ë ø ø á
`name := "hello"` Â Ø map Â Å ö ‰ Ë ¨ ° Ë Ω ¨ Ê ç Ô º å Ê ñ ∞ Á ö Ñ map ‰ key
`name` Â ∞ ± ‰ ø ù ò Á Á ‰ ‰ ™ Â ó Á ¨ ¶ ‰ `"hello"`„ÄÇ

## Ë ø Ω Â ä † Â Ä º Ô º ö += Â í å ++=

È Ä ö Ë ø ø á := Ê ñ Ê ï Ë µ ã Â Ä º Ê ò Ø Ê ú Ä Á Å Â Ä Á ç é Á ö Ñ Ë Ω ¨ Ê ç ¢ Ô º å ‰ Ü Ê ò Ø key
‰ ü Ê ú â Â æ ã Â § ö Â Ö ‰ ª ñ Á ö Ñ Ê ñ Ê ï „ÄÇ Â ¶ Ç Ê û ú `SettingKey[T]` ‰ Á ö Ñ T
Ê ò Ø ‰ ‰ ™ Â à õ Â ª ‰ æ ã Â ¶ Ç Ç Ô º å ‰ ‰ ™ key Á ö Ñ Â Ä º Á ö Ñ Á Å ± ª Â û ã Ê ò Ø
sequence Ô º å ‰ Ω † Â ∞ ± Â ± Ø ‰ ª • Â æ Ä Ë ® é Ë ø Ω Â ä † Ë Ä å ‰ ç È ò Ê õ Ê ø Ê ç „ÄÇ

- += ‰ ö Ë ø Ω Â ä † Â ç ‰ ‰ Â Ö É Á ¥ † Â à ∞ Â à ó Ë ® ® ‰ „ÄÇ
- ++= ‰ ö Ë ø û Ê é • ‰ § ‰ ™ ‰ Â à ó Ë ® „ÄÇ

‰ æ ã Â ¶ Ç Ô º å ‰ ‰ ™ key `sourceDirectories in Compile` Á ö Ñ Â Ä º Ê ò Ø
`Seq[File]`„ÄÇ È ò ò Ë Æ § È É Ö Ö Â Ü µ ‰ ã Ë Ø • key Á ö Ñ Â Ä º ‰ ö Â Å Ö Â ê ´
`src/main/scala`„ÄÇ Â ¶ Ç Ê û ú ‰ ‰ ü È É ‰ ‰ å ‰ Ë Ø ã Â Å ö source Á ö Ñ Á õ Ω ï ‰ ã Á ö Ñ Ê ‰ ª £ Á † Â Ô º ã

```
sourceDirectories in Compile += new File("source")
```

Ê à ñ Ë Ä Ö Ô º å È Å Å Â µ Â æ ™ Á ¶ Â Æ ö ‰ Ω ø Á î ® sbt Â å Ö ‰ ‰ ™ `file()` Â á Ω Ê ï ∞ Ô º ö

```
sourceDirectories in Compile += file("source")
```

Ô º å`file()` Â è ™ Ê ò Ø Ô º å Â à õ Â ª ‰ ‰ ™ ‰ ™ ‰ Ê ñ ∞ Á ö Ñ `File`„ÄÇÔ º å

‰ Ω † ‰ ã ‰ Â í ® ++= ‰ Ä Ê ¨ ° Ê ª Â ä † Â § ö ‰ ‰ ™ Â Ä º Ô º ö

```
sourceDirectories in Compile ++= Seq(file("sources1"), file("sources2"))
```

`Seq(a, b, c, ...)` Ê ò Ø Scala Á î ® Ë ã • Ê û Ñ Â ª Â à ó Ë ® Á Å † Á Å Ü Ë Ø Ê ï „ÄÇ

Ë ¶ Å Â Â Æ å Â Ö ® Ê õ õ Ê ç ‰ ‰ ò Ë Æ § Á ö Ñ source Á õ Æ Â Ω ï Ô º å Â Ω ì Á Ñ ‰ ò ‰ ‰ ‰ Ω ø Á î ®
:= Ê ñ Ê ï Ô º ö

27

```
sourceDirectories in Compile := Seq(file("sources1"), file("sources2"))
```

‰æùËµñ‰ éÂÖ ‰ªñ key ÁöÑÂÄºËÆºÁÆóÂÄº

°ïÁî®è¶‰ Ä‰ ™ task ÊàñËÄÖ setting ÁöÑÂÄºÂè™ÈúÄˤ¶Ë∞ÉÁî®ÂÆÉ‰ª¨ÂêÑËá™ÁöÑ value Êñ Ê ï„ÄÇËØ• value Êñ Ê ïÊØîËæÉÁîâ ÊÆäËÄå‰ îÂè™ËÉΩÂú® :=Ôºå+= ÊàñËÄÖ ++= Êñ Ê ïÁöÑÂèÇÊï∞‰ äË∞ÉÁî®„ÄÇ

‰Ωú‰‰ Á¨¨‰ ™‰æãÂ êÔºåËÄÉÊöëÂÆö‰ â‰ ™ÂêçÁÅ∞Âíå project ‰ ÄÊ Ö organization„ÄÇ

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

ÊàñËÄÖÔºåËÆæÁΩÆÁöÑÂíáÈ° Áõ ÁÆóÂ êÂΩïâêçÂßç‰ ÄÊ ë Ôºö

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

Ëøô‰ ™Ë∞¨Êçç‰ ÈááÁî® ÈááÈùcÁöÑ java.io.File ÈáåÈùcÁöÑÊ†áÂáÂÜñ Ê ï getName Âèñ‰ªøÜ baseDirectory ÁöÑÂÄº„ÄÇ

ÈááÁî®Â§ö‰ ™ËæìÂÖ • ÊòØÂ±ª‰ªππÁöÑ„ÄÇ‰æãÂ¶ÇÔºå

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

ÈÄöËøøÂ∞Ü name ‰ ãÂ§çÁöÑÂÄåÂíå organization ‰ª Âèä version ÁöÑÂÄºÊ ºÊ • Ëµ Êù • ÔºåÁî®Â ÑÊèàÂê name ÁöÑÊñ∞ÂÄº„ÄÇ

ÂåÖÂê´‰‰æùËµñÁöÑËÆæÁΩÆ

Âú® name := baseDirectory.value.getName ËÆæÁΩÆ‰ ÔºåÂname ‰ºº *‰æùËµñ‰ é* baseDirectory„ÄÇÂ¶ÇÊûûÊ†Ω‰ Ä∞Ü äÈúcÁöÑ‰ª£Á†ÅÂ†ÅÂÅÜôÂÖ • build.sbt ‰ Ôºåå ‰ îÂêØÂä® sbt ÁöÑ §‰ íÈ®ºÂºèÔºåÅÑ ÂêéËæìÂÖ • inspect nameÔºåÁ‰Ω††Â îÈØ • Áú ÂÂà∞Ôºåà ÈÉ®ÂàÜÂú¨∞ÔºâÔºö

```
[info] Dependencies:
[info] *:baseDirectory
```

Ëøô±ÊòØ sbt Áü • ÈÅì‰ ‰™ setting Â¶Ç‰Ωÿï‰æùËµñ‰ éÂèè¶‰ Ä‰ ™ setting„ÄÇËøùËÆÆ∞Â ÷‰ Ä‰ õ setting ÊèèËøø‰ Ü taskÔºåÊïâ‰ ™ •ËøôÁÊñ Â¥è‰ ‰ üÂÂõÂ ‰ Ü task ‰ ãÈÄ•ÁöÑ‰æùËµñÂÖ Á ™„ÄÇ

‰æãÂ¶ÇÔºååÂÇÈúÈ∞†ÂÇÊèèË ë inspect compile ‰∞†‰ªºÂÂÂÆ…ÁÆÂ ÆÉ‰æùËµñ‰ ÜÂè•‰ Ä‰ ™ key compileInputsÔºååËÅå‰ õÇÊèèÈ∞†ÂÆ ÊèËèÏ‰° inspect compileInputs ÂÆÉÈèò‰∞†ÈÀ‰æùËµñ‰ éÂÖ ‰ªñÁöÑ key„ÄÇ ÄõÂ•È∞†Â Ø‰æùËµñÈàæ‰∞†ÂÂÉÂ î ïËÎ‰ü„ÄÇ‰æã compile Êñ Ôºå sbt Ëá™Âà®ÊàßÊèßÂ‰™ • Ë äËÂßçÊèê‰ † • ‰ µÈÒÁ∞Á°Âõ†Ôºö compile Ëßì°ÁÆÂóÈúÄˤ¶ÂÂöÑËèìÂè • ÁöÑÂÄºÈúÄˤ¶Å sbt ÂÖàÊâßËè° update ËÆºÁÆ•óÁ„ÄÇ
```

ËøôÊ† Ôºåsbt   ‰ ÊâÄÊúáÁöÑÊûÑÑ\ ‰æù‰Ëµñ‰ÈÉΩÊòØ   *Ëá™Ââ®ÁöÑ*
ËÄå‰ çÊòØÊòæÁ§ Â£∞ÊòéÁöÑ„ÄÇÂ¶ÇÊûûú‰Ω†Âú®Ê¶‰ Ä‰ ™ËÆºÁÆó‰ Áî®Ââà∞‰ ÜËØØ •
key   ÁöÑÂÂºÔºåËÇ£%‰ àÈÇ£%‰ ™ËÆºÁÆÉÂ∞±‰ºö‰æùÁ∞ñËØØ •
key„ÄÇÂ ÆÉÂ∞±ÊòØÂèØ‰ª • Â • ‰Ω⁄ÔºÅ

ÂΩ¬ÌËÆæÁΩ ÆÊú™ÂÆö‰ âÊ²

Êó†ËÆ ‰Ω⁄ïÊ² ‰ Ä‰ ™ËÆæÁΩ ÆÁî® :=Ôºå+= ÊàñËÄÖ ++= Êó ‰æù‰Ëµñ‰ éËá™Â ±ÊàñËÄÖÂè¶ Ä‰%
key ÁöÑÂ ÄºÔºåÂ ÆÉ‰æùËÆµñÁöÑÂ ÄøØÈªÍ Â òÂú®Ôºåòú ÄºÁöÑsbt
Â∞±‰ºöÊä±ÊÄ®„ÄÇ‰æãÂ¶ÇÔºåÂ ÆÉÂ ÄëÂØĞÄΩ‰ºöÁØØØ¥ ,ÂúÂ⁄ïÂî®‰ ÜÊú™ÂÆö‰ âÂöÑËÆæÁΩÆ, Â
ÂΩ¬Ëøôâèë©Áî¥Êó ÔºåÂ°Æˠ˧% Ä‰ ã‰Ω†‰ΩøÁî®ÁöÑ key Âú® scope
‰ Â ‰ îÂ Á™Æö‰ â‰ Ü„ÄÇ

Âú®sbt‰ ÂàõÂ Âæ™ÁÂî®ÊòØÂèØÈËÉΩÁöÑËøôÊòØÈîôËØØ ÁöÑÂ¶ÇÊûùΩ†Âæ™Âî®‰Ω†Ôºå Ä™ÁÂî®Â
‰ºÂ¥ä˧â‰Ω†„ÄÇ

‰æùÁËµñ‰ éÂÖ ‰ ™ñ key ÁöÑÂ ÄÁöÑ task

‰Ω†Ââ Ø‰ • ËÆºÁÆó‰ Ä‰ õ task ÊàñËÄÖ setting ÁöÑÂ ÄÈù • ÂÆö‰ âÂè¶ Ä‰ ™
task ÊàñËÄÖ‰ Âè¶ Ä‰ ™ task ËøΩ ·ÄºÂö„ÄÇËÄöËøâ‰Ω ΩøÁî®
`Def.task` Âíá `taskValue` ‰Ωú‰ :=Ôºå += ÊàñËÄÖ ++=ÁöÑÂèÇÊïï∞ÂèÉ‰Ω • ÂÅöÂà∞„ÄÇ

‰Ωú‰ Á¨‰ ‰ ™‰æãÂ êÔºåËÄÉÊôëËøΩÂã†‰ ‰ ™‰ΩøÁî®È° ÁÆÜ ÁõÆÂΩïÂΩ¬ïÂ°ñËØØë
classpath ÁöÑ source generator„ÄÇ

```scala
sourceGenerators in Compile += Def.task {
  myGenerator(baseDirectory.value, (managedClasspath in Compile).value)
}.taskValue
```

ÂåÖÂê∞‰æùÁµñÁöÑ task

Âú® .sbt ÊûÑÂ ÂÆö‰ â ‰ ÊèêÂà∞Ëøø¥å°ÂΩì‰ΩàÈ†ÈËÄÉËøø¥ :=
ÊàñÄÖ ‰ ™ñÈ Ê ïÂã ‰ Ä‰ ™ËÆæÁΩ ÆÉ Ôºåtask key Âàõ ÄÂ ÁöÑÊòØ
`Setting[Task[T]]` ËÄå‰ çÊòØ `Setting[T]`„ÄÇ `Setting` ÂèØ‰ • ÊòØ Task
ÁöÑËæì ÔºåÂ Ê ‰ΩÜ Task ‰ çËÉΩÊòØ Setting ÁöÑËæì • „ÄÇ

‰ • Ëøô %‰ §‰ ™ key ‰ ‰æãÂÄÁ‰ é Keys ‰ ÔºåÔö

```scala
val scalacOptions = taskKey[Seq[String]]("Options for the Scala compiler.")
val checksums = settingKey[Seq[String]]("The list of checksums to generate and to verify fo
```

Ôºåscalac0ptions Âíá checksums ‰ íÁõ Ê ÁÊúâ Ä ÔºåÂ ÆÉ‰ æ¨Âè™ÊàØ úÂâ Ä±Âûã ÁöÑÑ
keyÔºåÂèÖ ‰ ‰ ™ÊòØ task„ÄÇÔôâ

ÂèÇ‰Ω • Á¬ñËØØ build.sbt Â∞Ü scalac0ptions Êò¨Â∞ÑÂàà checksumsÔºå‰ΩÜÊòØÂèçËµáÈù • ‰ çÂ

```scala
// scalacOptions task ‰ ö‰æùÁ checksums setting Êù•Âû ˆ Â¥ â
scalacOptions := checksums.value
```

ÂèçÂêëÁöÑÊìç‰ΩúÊòØ ‰ çÂèØËÉΩ ÁöÑ„ÄÇ‰ üÂ∞±ÊòØØ ËØØ¥Ôºå‰ Ä‰ ™
setting ÁöÑ key ‰ çÈÉΩ‰ æùÈµñ‰ é‰ Ä‰ ™ task ÁöÑ key„ÄÇÊòØØÂõ†‰ ‰ Ä‰ ™
setting ÁöÑ key Âè™‰ ‰ öÂ ®È° Á õÆÂâ†ËΩΩÂöÑÊó Â ôÊ Æ°ÁÆó„ÄÈ¨°Ô ºåÊâÂ‰ ‰ •
task ‰ ç‰ ‰ öÊÛèÊ¨ °ÈÉΩÈáçÊñ∞Êâßˈ åÔ ºåÊÄä task ÊúüÂæÖÖÊÛèÊ¨ °ÈÉΩÈáçÊñ∞ËÆ°ÁÆó„ÄÇ

// checksums setting ‰ çÈÉΩ‰ æùÈµ scalacOptions task Êù•ÂÆõ‰ â
```
checksums := scalacOptions.value
```

ËøΩÂä†‰ æùÈµñÔºö+= Âíå ++=

ÂΩìËøΩÂä†Âà∞‰ ‰ ™Â Áªë‰ ‰ öÈõ ¥ÂñÑ setting ÊàñËÄÖ task
Êó ÂèØ‰ Ä ‰ ‰ ΩøÂî®Âè¶‰ ‰ õ keyÔ ºåÂ∞±Â±ÉÂ ÆÉ‰ â¨ ÂèØ‰ Ä ‰ ÈÄöÈøá
:= ËµãÂ Ä‰ ‰ Ê† „ÄÇ‰ æãÂ ¶ÇÔ ºåÂÊÎÊ ËØ¥‰ Ω†Êúâ‰ Ä ‰ ‰ ‰ È°Êúá

```
cleanFiles += file("coverage-report-" + name.value + ".txt")
```

Â ì‰ æùÈµñ

ÈòÖËØ ‰ ËøôÊ åÊ é Ô ºåÂÂÂ æÆ‰ ÄÔ Â ‰ ÈòÖËØ ‰ ËøáÊúñ∞Êâ ÃÂ‰ Èó®Ââ çÈ¶ÂöÑÂÜÖÂ Ô
.sbt ÊûÑÂ ÆÂö‰ âÔ ºåScopes Âíá Êõ¥Â§öÂÖ ‰ éÊÆæ ÁΩ Æ„ÄÇ

Âè‰ ‰ ÈÀöËøá‰ ãÈ ù¢Ëøô‰ §Á ß¢Ëñ Â çè ‰ Ââ¨ ì‰ æùÈµ ñÔ ö

- *ÈùûÊ âÁÆ ‰ æùÈµñ* ‰ ÊîæÂ ú® lib ÁõÆÂ Ωï‰ õ ÁÁöÑ jar Êñ á‰ ‰
- *Ê âÁÆ ‰ æùÈµ ÈÖçÁΩÆÂ ú®ÊûÑÂ ‰ ÊõÍ‰ Æö‰ ‰ Ô åÂ ‰ ‰ Ô Ô ì‰ ºöÈÅ áÂ å‰ ‰ ‰ ìÔ àarepository

ÈùûÊ âÁÆ °‰ æùÈµ

§§Â§ÇÈ ï∞‰ ‰ ºöÁÆ®Ê âÁÆ °‰ æùÈµ ñÈÄ å‰ çÊ éØÈùûÊ âÁÆ °‰ æùÈµ„ÄÇ‰ ΩÜÊòòÈùûÊ âÁÆ °‰ æ

ÈùûÊ âÁÆ °‰ æùÈµ ñÂÉ èÈ ø ô† Â ‰ ΩúÔ öÂ∞ Ü jar Êñ á‰ Êîæ ‰ ú® lib
Êñ á‰ Â§ ‰ ˜° ‰ ÂÔ Ã‰ ‰ ÅÔ å∞Ü‰ ÂÔ Ë¢´ ‰ ‰ Ä Êî ÁÆ ÁöÑ
classpath ‰ „ÄÇÊ ºÊúâÊ õ¥Â§öÁöÑ‰ ÃÊÆ é‰ ‰ Ü ∞Å

‰ Ω†‰ Ä ‰ ÂÕÈµ ãËØï‰ æùÈµ ñÁ õÑ jar Êñ á‰ ‰ ÈÀÂú® lib
ÁõÆÂ ï‰ Ã∞ÑÂ ÆÂî Â ¶ ScalaCheckÔ ºåSpecs2Ô ºåScalaTest„ÄÇ

```
lib    ÁõÆÂ ï‰ ÃÂöÑÊ âÂ ‰ æùÈµ ñËÆ Ω‰ ºÊúâ
```    classpathsÔ à Â Ø
`compile`Ô å `test`Ô å `run` Âíç `console` ÈÉΩÊàé Â´∞Ôïå„ÄÇÂ Ê ÊúÂ ‰É°Ê Â Ø Â Ö ‰ ÁöÑ‰ Ä‰ ™Êî Âÿ
classpathÔ å ‰ ΩÈÈÂ¶ÂÂôÈ ÄÇÂΩËø∞ÉÊ¥Ô å‰ ãÂ Ô dependencyClasspath
`in Compile` ÊàñËÄÖ `dependencyClasspath in Runtime`„ÄÇ

Â¶ÇÊûúÁ î®ÈùûÊ âÁÆ °‰ æùÈµ ñÁöÑÈØ ùÂÔ å‰ çÂ ÂæÄ    `build.sbt`
Êñ á‰ ‰ Ã ‰ ‰ ‰ Ô ΩïÂ Ü ÆÆ Ô å‰ çÈ øÔ ΩÔ ‰ ‰ ‰ ïÔ à
`unmanagedBase` keyÔ åÂ Â ÆÔ Ω ÆÆ Âî® ‰ ‰ Ã‰ ‰ çÂ âÁÁ ñ ÆÂ ÉÈù
`lib`„ÄÇ

Âî® `custom_lib` Êõø‰ £ `lib`Ô ö

```
unmanagedBase := baseDirectory.value / "custom_lib"
```

30

baseDirectory ÊòØÈ° ÁõÆÁöÑÊ† ÁõÆÂΩïÔºåÊâÂ‰ª • Âú®ËøôÊáå‰Ω†‰æùÊçÆ
baseDirectory   ÁöÑÂÄ°Êî Âèò‰ Ü   unmanagedBaseÔºåÈÄöÈøáÂú®
Êõ¥Â§öÄ ‰ éËÆæÁΩÆ   ‰ ‰ªãÁ°ºÄÑ‰ Ä‰ªÁÁÄÑ value
Êñ Ê ï„ÄÇ

ÂêâÊó ‰ üÊúâ‰ Ä‰ªÂàó‰ æ unmanagedBase ÁõÆÂΩï‰ ãÊââÊúá jar
Êñá‰ªª ÁöÑ task Âè´ unmanagedJars„ÄÇÂ¶ÇÊûú‰Ω†ÈÉ Áî®Â§ö‰ ™ÁõÆÂΩïÊàñËÄÖÂÂö‰ Ä‰ õÊõ¥Â.
task ÊõøÊççÊï¥‰ ™ unmanagedJars taskÔºå ‰æãÂ¶ÇÊ ÖÁÊ ÖÁ ÖÁ ÖÁ ÖÁ ÖÁ ÖÁ ÖÁ ÖÁ ÖÁ
configuration ÁöÑÂàóÈ°®ÔºåÁ çËÄÉÊôë lib ÁõÆÂ Ωï‰ ãÁõÑÊñá‰ª Ôºö

```
unmanagedJars in Compile := Seq.empty[sbt.Attributed[java.io.File]]
```

ÊâòÁÁÆ°°‰æùËµ‰ñ

sbt ‰ΩøÁúÁî® Apache Ivy Êù • ÂÆûÁé∞ÊâòÁÆ°°‰æùËµ‰ñÔºåÊââ‰ª • Â¶ÇÊûú‰Ω†‰Ø
Ivy ÊàñËÄÖ Maven ÊØîËæÉ‰ÜüÊÇâÁâÁ öÑÑ‰Ω†Â§™Á‰ú°‰æùÂ§ôÂ§öÈ ¶ÁÉ¶„ÄÇ

libraryDependencies Key

Â§ßÂ§öÊ ïïÊÉ∞Êó Âãô Ôºå‰ Ä‰ªÂ§ôÊãÀ Âæ‰∞ÁïÁÄÑ libraryDependencies
ËÆæÁÅΩË° ‰ Âàó Â‰ Ä‰ΩÄÑ‰ ‰ΩæùËµµ„ÄÇ‰ ÁïÁ‰æ • ÈÄöÉ Maven
POM Êñá‰ª ÊàñËÄÖ Ivy ÈÖçÁÅΩÆÊñá‰ª Êù • ÈÖçÁÅΩÆ‰æùËµµÔºåÂÊÄ îÅÂèòÁÄ • ÈÄöÈæøÁ
sbt Êù • Ë∞ÉÁî Á®Êôô‰ Ä‰ õÆñÅ‰ñÆÊñÜ‰É ÔºÄ çÁÄÁ‰Ø‰æùÂ Ôºå‰ ‰æÊ æùÊ æ ÉÆ‰ÂÊÊ‰ Ø‰ÂÁÄÜ‰ÜÑÁ‰Ø

‰æùÂ • ÂÉÂ èÊÄ ÂÆö‰ Ä‰Ω‰æùËµµÔºåÁÄ groupIdÔºå
artifactId Âíá revision ÈÉΩÊòØ óÁÖ¶‰ Ôºö

```
libraryDependencies += groupID % artifactID % revision
```

ÊàñËÄÖÂÉèÊøôÊ† Ôºå Âî®Â óÆÖÈ Ê æÆ ÊàñËÄÖ Configuration val ÂΩìÂÂæ
configurationÔºö

```
libraryDependencies += groupID % artifactID % revision % configuration
```

libraryDependencies Âú® Keys ‰ ÂÉèÊøôÊ† Â£∞ÊòéÔºö

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

Êñ Ê ï % ‰ªÂ óÁ‰¶‰ ÂàõÂª° ModuleID ÂØ Ë±°ÔºåÂÑ ÂêâÂ∞Ü ModuleID
Ê æÂä†Âà∞ libraryDependencies ‰ „ÄÇ

ÂΩìÁÑ ÔÔºåÂÉèË ÆÅÊÖ© sbtÔºåÈÄöËÆæ‰æ IvyÔºåÂÀ • ÊÅæ‰ªÂÀ‰ÜÈÊ æ‰ ãËΩΩÊ®°ÂùΩ,ÄÇÂ¶ÇÁÁÊûú‰Ω†ÂêÑÊ™
sbt Êù • Ëá™Âä Êâ ÁÁÆ öÑÜê ‰ÜÈãÆ§Æ æ ÄΩ‰ ìÔºåÂÊåÆ‰ÂÉøÂ •‰ÜÄú‰Ä • ‰ÄÄú,ÄÇ‰æãÂ¶ÇÔÔºåÂAp ac h
Derby Âú®Ê††áÂÜÁ Á Maven2 ‰ Ø‰ ì‰ Ôö

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

Â¶ÇÁÄûú‰ Ä‰ú® build.sbt ‰ ÊæìÖ • ‰ äÈ±úËøôÊ öÁ ÂÜÜÂ Ôºå ÔºåÂÑÁ Êå‰ÉÄÂË°å
updateÔúåsbt ‰ôÄÑ‰Ä Derby ‰ äËΩΩÂ‰∞ ~/.ivy2/cache/org.apache.derby/„ÄÇÂ Êàá ‰æøÊ‰ÄÊ ‰ Ä
compile ‰æùËµñ‰ é updateÔúåÂÉÊ‰ª • Â§ßÂ§öÊ‰ Ã‰ Áî∞ÂÜ∞‰Âä ÂÂö‰ÂÄøÂ£°Â
update„ÄÇÔúå

Â§ìÁ‰Ñ ÔúåÑΩ†‰ üÂÉ‰Ω‰ • ÈÄ‰ Ä ++= ‰ ÄÊ°‰Â∞ÜÉÂÄúÄ‰æùËµñ‰Ñú‰ ‰ Ä‰ ãÑÀ®Ê ‰Âä

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

Âú®ÂæàÂ∞ëÊÉÖÂÜµ‰ ãÔºå‰Ω†‰ ü‰º°öÈúÄÄ¶ÅÂú® `libraryDependencies`
‰ äÁî® := Êñ Ê ï„ÄÇ

ÈÄöËøá %% Êñ Ê ïËé ÂèñÊ £Á°ÆÁöÑ Scala ÁâàÊú¨

Â¶ÇÊûú‰Ω†Áî®Êò Ø groupID %% artifactID % revision ËÄå‰ çÊòØ
groupID % artifactID % revisionÔºàÂå Âà´Âú®‰ é groupID ÂêéÈù¢ÊòØ
%%ÔºââÔºåsbt ‰ºöÂú® Â • ‰ ª ÂêçÁÅ∞‰ Âä†‰ äÈ° ÁõÆÁöÑ Scala
ÁâàÊú¨Âè „ÄÇ ËøôÂè™Êò ØÂ‰ ÄÂß çÂØ ´Êç Êñ Ê ï„ÄÇ‰Ω†ÂèØ‰ Ñ • ËøôÊ† ÂÜô‰ çÁÅî
%%Ôºö

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

Â ÅáËÆæËæ Êô‰ ™ÊûÑÑ ÁöÑ scalaVersion ÊòØ 2.11.1Ôºå‰ ãÈ ù¢ËøôÂßçÊñ Â°èÊòØÔºÅ âÊ ïàÁöÑÔºàÊ ®
"org.scala-tools" ÂêéÈù¢ÊòØ %%ÔºââÔºö

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

Ëøô‰ Ø ™ÊÉ Ê ïÈòØÂæàÂ§ö‰ œùÈ™ñÈÉΩ‰ººöËè¢ Á ≥ÈÚËëª°ôÂ§ß‰ ™
Scala ÁâàÊú¨ÔºåËÄå‰ ã†ÊÉ Á¨Æ‰ùùÂìáÈ° ÁõÆÂ• ÈÇçÁÑñjarÊ òÔºå åËøõ„Àà ÀàºÂÆ Áõ„„ÄÇ

Â ÆûË µ‰ ÁõÑÂ§çÂùÇÁÂ ¶Âú®‰ éÈÄö ‰ ™‰ Æ®œùÈ™ñ‰ ™ÂºÂ®çÂæÆ‰ çÂêâÁõÑ
Scala ÁâàÊú¨‰ ÄËµ Â • ‰ΩΩúÔº∞ΩÜÊòØÔºÖ %% Â∞±Ê °ÊúáÈÇ£‰ àÊ ïΩ‰ Ü„ÄÇÊââ‰ª • Â¶ÇÊûú‰Ω
2.10.1Ôºå‰ ΩÜÊòØÔºå‰%ΩøÁî®ÁöÑ scalaVersion := "2.10.4"Ôºå
‰ Ω†Ê†Ê ï ‰Ω†øÁî® %% Êñ Ê ïÁ ‰Ωø 2.10.1 ÁöÑÁÁ°ÆÁâàÊú¨ ÂæàÂ§ØÊÉΩ‰ üÂòΩ‰ à • Â¶ÇÊûú‰Ω
%% Ê†ùÊ ïËæ∞Â∞óÁÆÇÂöÑÔºåÂèªÈ™ΩÂÜñÈ•È¶Åü ‰ éÂ‰ ™%% ™
Scala ÁâàÊú¨Êûΰ ÁÅNÔºåáÁÑ ÂêéÁ¨ª∞ûÁññÂ§Ω†Ω‰ ΩÜÔºΩÈΩúÂ§Âä áÂ

ÂèÇËßÅ ‰ §Âèâ ÊûÑ Ëé ÂèñÊ ¥Â§ö‰Ωø‰ø∞ÊÅÂØ„ÄÇ

Ivy ‰ øÆÊ £

```
groupID % artifactID % revision
```
‰ ÁöÑ revision ‰ çÈ™úÁ¨ÂÊòÔºå‰ à ™Âõ Â ÆöÁöÑÂ µÊ¨àÂú„ÄÆ‰ à ™Ê®ùÂµÊûïÊ∞ÂâàÊú¨ÔºåΩΩ†Ê
ËÉΩ§üÜ ÊçÆ‰ ÆåÂ ÆÖ‰ π¶ùÈÏ©‰ ‰ ™È®ÂùÂæÈ™úÂ ¨êç‰ ΩΩ ‰ ÆöÁâ‰Çúúú
"latest.integration"Ôºå"2.9.+" ÊàñÊ°Ä "[1.0,)"Ôºå‰ Âå‰ çÂ Ñ
‰ Ä‰ ™Â ÆöÂÑÁâÊú¨ Ô™Ââë "1.6.1"„ÄÇ‰Çúúú Ivy ‰ øÆÊ¢
Êñ‰ °ÊÂ ÂèñÊ£¶Á‰Ö ÜÖ„ÄÇ

Ëß£Êûê„ô®

‰ çÈ™úÊâÂÖúÂ™‰ ™È™ÅÊÈ™Æ© Ê ïΩ™îæ‰ú®Â¢‰ ÄÄ∞Â§‰ à ùÂ ±öÔΩ®‰ äÔ™åbt
È™ÀàÊ Ω†ÁÆ‰ ™Ê†áÂÖÅÂÖÖÄöÑ Maven2 ‰‰ ì„ÄÇÂ¶ÇÊûú‰ ∞†ÁÑñ‰ é‰ ‰ çÂú®È™ÀàÊ§ÁÖÑ‰‰ ì‰
resolver Êù • Â Ê§ä© Ivy Êâ∞Â Æ„Ä„ÄÇ

ÈÄöËøá‰ • ‰ ãÂ©Âá°Ê ™Êä†ËçÂ§ñÁÂ‰‰ ìÔ™ö
```

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

Âú®‰ §‰ ™Â óÁ¨¶‰ ‰ Èó¥Êúâ‰ Ä‰ ™Áâ ÊÆäÁöÑ at„ÄÇ

‰æãÂ¶ÇÔºö

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

```
resolvers key Âú® Keys ‰  ÂÉèÈøôÊ† ÂÆö‰ âÔºö
```

```
val resolvers = settingKey[Seq[Resolver]]("Áî®Êà % ÊâòÁÆ°‰æùÈµñÂÆö% âÁöÑÈ¢ùÂ§ñÁöÑÊß£Êûê Âô®„ÄÇ
```

```
at   Êñ Ê ïÈÄöËøá‰ §‰ ™Â óÁ¨¶‰  ÂàõÂª ‰ Ü‰ Ä‰ ™   Resolver
```
ÂØ Ë±°„ÄÇ

sbt ‰ºöÊêúÁ¥¢‰Ω†Ω†ÁöÑÊú¨Âú∞ Maven ‰ªìÂ ìÂ¶ÇÊûú‰Ω†Â∞ÜÂÆÉÉ ªÂä†‰ ‰ Ä‰ ™‰ªìÂ ìÔºö

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

ÊàñËÄÖÔºöå‰ ‰ ÜÊñ ‰æøËµ ËßÅÔºö

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

ÂèÇËßå Ëß£Êûê Âô® Ëé ÂèñÊõ¥Â§öÂÖ ‰ éÂÆö‰ Âô®‰Ω†Â∞ÜÂ ËßÑÂàÜ„ÄÇ

Ë¶ÜÂÜôÈªòËÆ§ÁöÑËß£Êûê Âô®

resolvers ‰ çÂåÖÂê´ËªòËÆ§ÁöÑËß£Êûê Âô®ÁöÑ‰ °Ô‰ ªÔºöÊÄ ÄÂµöÁ¥ûÂ ÂÆö‰ âÊ ªÂä†ÈcùÂ§ñÁöÑ

sbt Â∞Ü resolvers Âí‰ Ä‰ õÈªòÈªòÁöÑÁ¥‰ âÊÑÂàÂµ Êô • ÊûÑÊàê
externalResolvers„ÄÇ

ÁÑ ËÄåÔºå‰ ÜÊî âÂèòÊàñÈÄÂÁ ªÈ ªÊÑÂÈËß£Êûê Âô®ÁöÑ‰ ÈúÄÈ¶Å ÈÜÂÜôexternalRe
ËÄÅ‰ çÊòØ resolvers„ÄÇ

Per-configuration dependencies

ÈÄöÂ ‰ºöÊúâ‰æùÈµñÂè™âÊ¢´ ÊµèÈØï‰ª£Á£Á§ÑÅå‰ Ωø‰ ‰ ‰æãÂ¶ÇÔºöÂ ÂÆö‰ô® src/test/scala
‰ ÔºåÈÄöËøá Test configuration Á∞ñÈØëÔºöâÈÄ Âê Êúâ‰ º‰ Ωø‰ ‰ îÂî®‰ ‰Ωø‰Ωø„ÄÇ

Â¶ÇÊûú‰Ω†ÊÉ Ë¶ ‰ Ä‰ ™Ωø‰æùÈµñÂè™Âú® Test configuration ÁöÑ
classpath ‰ ÂáÂ é∞Ë úÂ çÊ Ø Compile configurationÔºåÂÉèÈøôÊ† Ê ªÂä†
% "test"Ôºö

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

‰ üÂèòØÉΩ‰ ü‰ºöÂÉèÈøôÊ† ‰ΩøÂî®Á±ªÂûãÂ ÊâÂÖ®ÁöÑ Test config-uration Ôºö

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

Á é∞Âú®ÔºåÂ¶ÇÊûú‰Ω†Âú®   sbt   ÁöÑÂèΩ‰ §ÊàêÁ§ Ë°åÈáåÊìÂÒ •
show   compile:dependencyClasspathÔºå‰ Ω†‰ çÊ ÎÕ • Âúãà∞ derby
jar„ÄÇ‰ ÜÈØòÂ¶ÇÊûú‰Ω†ËìÎ • show test:dependencyClasspathÔºå
‰ Ω†Â ÎÕ • Âú®Âàó°®‰ Âúã°°∞ derby jar„ÄÇ

ÈÄöÂ ÔºåÊµãËØïÁõ ÂÖ ÁöÑ‰æùËµñÔºåÂ¶Ç ScalaCheckÔºå Specs2 Âíå
ScalaTest Â∞Ü‰‰ºöË¢´ÂÆö‰ â‰ % "test"„ÄÇ

Â ì‰æùËµñÊõ¥ËØ¶Á∫ÜÁáÁõÑÂÜÖÂÆ ÂíåÊäÄÂ ßÂú®ËøôÈáå„ÄÇ

Â§öÈ° ÁõÆÊûÑÑÂª

Ëøô‰ ÄÂ∞àÈäÇ‰ã¾Á∫ÜÁú®‰ Ä‰ ™ÊûÑÑÂª ‰ ÂÆö‰ â§ö‰ ™È° ÁõÆ„ÄÇ

ËØ ÂÖàÈòÖÈ° Ø∞ÂÖ • Èó®ÊåáÂçóÂâçÁ Â Âç Èù¢ÁõÑÂ§ÜÖÂÆ ÔºåÂ∞§§ÂÖ ÈúÄÈ¶ÅÂú®ÈòÖËØ∞Ôºå‰ ¨Â∞èËäÇ‰‰ ã
.sbt ÊûÑÑ ÂÆö‰ â„ÄÇ

Â§öÈ° ÁõÆ

Â∞Ü§ö‰ ™Áõ ÂÖ ÁöÑÈ° ÁõÆÂÆö‰ âÂú®‰ Ä‰ ™ÊûÑÑ ‰ ÊòØÂæàÂ£î®ÁõÑÂ∞§§ÂÖ ÊòØ

ÊØè‰ ™Â êÈ° ÁõÆÂú®ÈûÑ ‰ ÈÉΩÊúâÂÆÉ‰ª‰¨È‰™¨Â ±ÁõÑ êÊñã‰ª Â§ ÔºåÂ∞Ω∫ÊâéÂ åÖó Áú-
jar Êñã‰ª ÔºåËÈÄå‰ îÈÄã ÂíåÂ ‰ªÄ∫ñÁõÑ ÁõÆ‰ ÄÊ ëÈ∞Ω¨„ÄÇ

ÈÄöËøåÂ£∞Êèé‰ ™Á±º§Âûã‰ Project ÁöÑ lazy val ÂÆö‰ â‰ ‰ ¨È° ÁõÑ‰‰æãÁ¶ÇÔºö

```scala
lazy val util = project
```

```scala
lazy val core = project
```

val ÁöÑÂêçÁßªË¢´‰ª ‰ΩúÈ° ÁÑÁ ÁõÆÁöÑ ID ÂíåÂ Áõ‰Âêç„ÄÇËØ • ID
Áªî®Â£ΩÑ•§∞§çÛ Â¢Áî®ËÛ•Ã Áõ„ÄÇÂ Áõ‰Âû•Ûàêç‰ÔΩÈ∞ÉÄöËÈøá
in Êñ Ê ‰ Ê Èèò„ÄÇ‰æãÁ¶ÇÔº‰ ãÈÈ£‰ÿ‰ ‰ ¨Êõ¥Ã†ÈÈæ Á ÁõÁÑÛ èÊÈ • ÂÆûÂÂ‰‰ç‰ Ä%

```scala
lazy val util = project.in(file("util"))
```

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

ÂÖ¨ÂÖ±ÈÆæÂ Æö
To factor out common settings across multiple projects, create a se-
quence named `commonSettings` and call `settings` method on each
project. Note `_*` is required to pass sequence into a vararg method.
Ë¶ÅÂ ®Â§ö‰ ™È° ÁõÆÊÛÂÂÂêÂÖ¨ÂÖ±ÃÆæÂÅÖÔºåÂÂ Âàã™ ‰ ‰ ¨Âêç‰ `commonSettings`ÁõÑ

```scala
lazy val commonSettings = Seq(
  organization := "com.example",
  version := "0.1.0",
  scalaVersion := "2.11.7"
)

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

```scala
    // other settings
  )

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

Áé∞Âú®Êàë‰ª¨ÂèØ‰ª•‚Âú∞‰ª•‚Ä¢Âú®‰ª• Ä§Ñ‰øøÆÊî versionÔºåÂΩìÈáçÊñ∞Âä†ËΩΩÊûûÑÂª Êó Ôºå‰∞ÜÂú®.

‰æùÈµñ

ÊûûÑÂª ‰ª ÁöÑÈ° ÁõÆÂÆÆåÂÖ®Âé‰ª•‚Ä¢Âú∫Ê §Áã¨Á´ÂÔºå‰ΩÜÊòÿ ÈäÂÛµ‰ ãÂÆÉ‰ª•‚¨‰ªºöÈ Âíå classpath„ÄÇ

Aggregation

Aggregation ÊÑèÂë ÁùÄÄú® aggregate È° ÁõÆ‰ÊâßË°å‰ Ä‰ ™ task ‰ ü‰ªºöÂú® aggregated ÁöÑÈ° ÁõÆÊâßË°å„ÄÇ‰ªºæãÂ¶ÇÔºå

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

lazy val util = project

lazy val core = project
```

Âú®‰ äÈùçÁöÑ‰ªºæãÂ ê‰ Ôºåroot È° ÁõÆËÅÅöÂêà‰ Ü util Âíå core„ÄÇÂÉéè‰ªºæãÂ ê‰ ‰ª ÄÔºåÈööÁùÄÄú®‰ ™ È° ÁõÆÊ∞ëÊÅÖÂÜ‰ Âä® sbtÔºåÁÑ ÂêéÂ∞ùËØïÁºñËØë„ÄÇ‰ªºΩ†‰ î˄ÄÄ •‰ ñöÁ∞Â‰ä∞Âú®È¶É®ÁöÑ‰ â‰ ™È° ÁõÆÈ ¢¢´Áññ

Âú®Ëøô‰ïÅÂöÂ êàÁöÑÈ° Áõ‰ Âú®‰ÂÉéËëô™‰æãÂ ê‰ Á root È° ÁõÆ‰ ÄÊ∞ëËØä êàÊî‰ Ç‰ ™ÈööÁùÄÄ‰ Âä®†ÂèØ‰ª•‚Êàå task Êù • ÊéßÂà ËÅöÂêà„ÄÇ‰ªºæãÂ¶ÇÔºå‰ ü ÜÈ°ÅøÂÔçËÅöÂêà update taskÔºö

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

[...]

aggregate in update ÊòØ update task ÁöÑ scope ‰ ãÁöÑÑËÅöÂêàÁöÑ key„ÄÇÔºàÂèÇËÄÇ ß Å scopes„ÄÇÔºå

Ê ®ÊÑèÔºöËÅöÂêà‰ºöÂ Ë°åÁöÑÑËÅöÂêà‰ÅÅÂöÂêàÁöÑ taskÔºåtask ‰ ãÈ ó¥ÁöÑÈ° Â èÊòØÔº‰ çÁ°Æ ÆÂÊöÂ

Classpath ‰œæùËµñ

‰ Ä‰ ™È° ÁõÆÂèØÉ£Ω‰œæùËµñÂè¶‰ Ä‰ ™È° ÁõÆÁöÑ‰ªÁ†Å„ÄÇËøôÊòØØÈÄËöØøáÊ ªÂä†
dependsOn   Êñ Ê ïÊù • ÂÆûÁé∞ÁõÑ„ÄÇ‰œæã¶ÇÔºå¶ÇÊûú core   Âú®
classpath ‰ ÈúÄË¶Å utilÔºå‰Ω†Â∞ÜËøôÊ† ÂÆö‰ â coreÔºö

```scala
lazy val core = project.dependsOn(util)
```

Áé∞Âú® core ‰ ÁõÑ‰ªÁ†ÅÂèØ‰ •‰æùÂ∏‰ •‰œΩøÁî® util ÁõÑÁ±ª„ÄÇÂú®ÁºñËØëÊó ‰ ü‰œ°Âú®‰ §‰ ™
core ‰ ãÂâçÔºåutil ÂøÖÈ°ªË¢´Áê¥Êñ∞ÁºñËØëé„ÄÇ

‰ ‰ Ü‰œæùËµñ§ö‰ ™È° ÁõÆÔºåÂÉèÈøôÊ† dependsOn(bar, baz) Áªô
dependsOn Â§ö‰ ™ÂèÇÊï∞„ÄÇ

configuration Á íÂ ¶ÁöÑ classpath ‰œæùËµñ

`foo dependsOn(bar)` Ë°®Á§ foo ‰ ÁõÑ compile configuration ‰œæùËµñ‰ é
bar ‰ ÁõÑ compile configuration„ÄÇ‰œΩøÂè‰ •ÊòæÁ§ ÁõÑÂÜôÊ≥ïÔºö ÔºödependsOn(bar % "compile->compile")„ÄÇ

`"compile->compile"` ‰ ÁõÑ -> Ë°®Á§ "depends on"ÔºåÂ Ê≥ïÔºö •
`"test->compile"` Ë°®Á§ foo ‰ ÁõÑ test configuration Â∞Ü‰œæùËµñ‰ é
bar ‰ ÁõÑ compile configuration„ÄÇ

Áú ÂÅ ï• ->config È£®ÂàÜÈöóÁ§Ôºö ->compileÔºåÂ Ê≥ï‰ • dependsOn(bar % "test") Ë°®Á§ foo ‰ ÁõÑ test configuration ‰œæùËµñ‰ é bar ‰ ÁõÑ Compile configuration„ÄÇ

‰ Ä‰ ™Â ûûÁî®ÁõÑÂ£‰ ∞Êòé "test->test" Ë°®Á§ test ‰œæùËµñ‰ é
test„ÄÇ‰œæã¶ÇÔºåÔºåÊòéÔºö ÂÖÂÆÆ ‰ Ω†Â∞Üï‰ãÈÈØÂä • Â Ö ‰ª‰ªÁ†ÅÊîæÂú®
bar/src/test/scala ‰ ÔºåÁ†ÅÑÑ ÂêéÂú® foo/src/test/scala ‰ ‰œΩøÁî®Ëøô‰ õ‰ª‰ªÁ†ÅÔºåÂ

Â ‰ é‰ Ä‰ ™‰œæùËµñ‰ †ÂèØ‰ • Êúá§ö‰ ™ configurationÔºåÂ‰ • ÂàÜÂ ÂàÜÈöóÔºåÂ ÂÖàÂ:Ôºö Ôºö
`(bar % "test->test;compile->compile")„ÄÇ

È ùËÆÆ§ÁõÑ root È° ÁõÆ

Â ¶ÇÊûú‰Ω†‰ΩøÁî®ÁõÑÂ‰ Ê†Ôºö ÁöáÁ∞Âˆ´Âæö‰ âÈ° ÁõÑ‰ùsbt ‰ºöÁî®ÊûÑ‰Ä ‰ Âàõ‰ Ä‰ ™È°

Â õ†‰ hello-foo È° ÁõÆÂÆö‰ Âú® Ü base = file("foo")ÔºåÂ ÆÆÉÂ∞Ü‰ ‰œΩöËª∞ÂàÓÂà´Âú´ Âú®
foo   Â êÁõÆÂ Ωï‰ „ÄÇ   ÂÆÆÁõÑÆ êÊñá‰ ÂèØ‰ • Áõ¥Êé• Ëîæ‰ú®
foo   ‰ ãÔºåÂÉè foo/Foo.scalaÔºåÊ†èÈ†ÄÂÖÄÖ‰ú® foo/src/main/scala
‰ „ÄÇÈÄãõ sbt ‰ ÁõÑÂ ¶Ç‰Ä êÁ†Å Â î‰ü®‰ú® foo ÁõÑÂ ¶‰ ãÊô§‰ ÜÊõ§Ôºö Ü†ÑÑ‰Ü§‰ Â£Âö‰ êÊñá‰ñá„ÄÇ

foo ‰ ÁõÑ‰ªª‰ Ωï .sbt Êñá‰ª ÔºåÂ ÁõîÂ ¶ËØØ‰ foo/build.sbtÔºåÂ∞ÜÜ‰‰œΩøÁ†ÁÜïÍ¥ ™ÊûÑÑ‰ Âê‰
hello-foo È° ÁõÑÁõÑ scope ‰ „ÄÇ

Â ¶ÇÊûúÂ‰ ÁõÑ‰ÁõÑÕÊ¥ ™È° ÁõÆÈÄÅ‰ ™È° ÁõÑÈÉ£Îú® hello ‰ Ô¥Â∞àùËØØ‰ú®
hello/build.sbtÔºåÂhello/bar/build.sbt   Á•å   hello/foo/build.sbt
‰ ÂÆö‰ ‰ Ä‰ ™‰ çÊôâ°ÑÁ†ÅÂ àÂ∏ú Ô¥àversion   :=   "0.6"Ô¥â„ÄÇ
Áé∞Âú®Âú® sbt ÁõÑÂ ∏Ω‰ §Ë°å‰ ÊâßË°å show version„ÄÇ‰ §Â îÈÖ • ÂæóÂà∞Ëøô‰ï ÁõÑ‰ø∞ÊÅÇÂ

```
> 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 ÂÆö‰ âÂú® hello/foo/build.sbt ‰ Ô°åhello-bar/*:version
ÂÆö‰ âÂú® hello/bar/build.sbt ‰ Ô°åhello/*:version ÂÆö‰ âÂú®
hello/build.sbt ‰ „ÄÇ ËÆ∞‰Ωè scoped keys ÁöÑËØ Ê ï„ÄÇÊØè‰ ™
version key Âú®ÂØ Â îÁöÑÈ° ÁöÆÁöÑ scope ‰ Ô°åÂü ‰ é build.sbt
Êñá‰ª ÁöÑ‰Ωçç ÁΩÆ„ÄÇ‰ΩÜÊòØÊ∫êÂÊúáÁöÑ‰ â‰ ™   build.sbt
Êñá‰ª ÈÉΩÂè™Êò Êúáؒ¥‰ ™ÊûÑÂ™ ÂÆö‰ âÁöÑ ÄÈ®ÂàÜ„ÄÇ

*ÊØè‰ ™È° ÁöÆÁöÑ¬ªÊ∫êÁöÑÂÆö‰Ωç‰ âÊûÑ•Êñî È° ÁöÆÂü Á™i‰ ãÁöÑ
.sbt Êñá‰ª ‰ ‰ Ô°åÁÑ ËÄå .scala Êñá‰ª Âè‰ â•Âíå äÈùc±ïÁ§ ÁöÑ‰ ÄÊ† ÁÆÄÔ°åÂàóÂá È*
.scala Êñá‰ª ‰ „ÄÇ

ÁÑ ËÄåÔ°å‰ ‰ Ü¬ÜÊ Äʆú‰ΩáÊûÑÂ™ ÂÆö‰ âÈîÊ∫êÔ°å‰ ™È° ÁöÆÁöÑ‰ ãÔ°å‰ΩÜ‰ ™
.scala ‰ ‰ °Â   ÂáÄÂ¶à§ö„ÄÇÁ∫±‰Ω†ÂÅö‰ ª„ÄÇ

Âú®Â êÈ° ÁöÆ‰ Ô°å‰Ü‰ çÈÉ∫ÁÉ£ÂÁ Âÿ ÁöÑ ÊÁöÆÁöÑÊÈ¢èËÄ ÄÖ
project/*.scala Êñá‰ª „ÄÇfoo/project/Build.scala Â∞Ü‰°öË¢´Â∞Ω†‰ „ÄÇ

‰ §‰ í¬°è¬ïÂØ°È° ÁöÆ

Âú® sbt ÁöÑÂëΩ‰ß§Ë°å‰ Ô°åËΩÌÂÖ • projects ÂàóÂá ‰ΩΩ†ÁöÑÈ° ÁöÆÔ°åÊßâßÖå
project <projectname> Âè‰ª • ÈÂÊ™©ÂΩìÂâçÈ° Á°„ÄÇÂΩì‰Ω†Ê°âßÖå
task ÂÉè compileÔ°åÂ†ÇÉ‰öÂú®ÂΩìÂâçÈ° ‰ ä⁄Ê°âßÖå„ÄÇ ÊâÄ‰ • ‰Ω†Ê °È†âÂøÖÖïÂÉé Á™ÑÔ
root È° ÁöÆÔ°å‰ Ô°å • ‰ ™Á™Á≠ÎÈ° ‰ È° ÁöÆ„ÄÇ

‰ Ô°å‰Ô°å • ÈÂÎÈøÈ®æÂßß ÁöÑÈåÂÂ∞ÆöÈ° ÁöÆ ID Âú®Âèΰ‰ ™È° Áöñ ‰àÂßßÖ‰ í‰ ™
taskÔ°å‰ æ‰Ñ¶Ç subProjectID/compile„ÄÇ

ÈÄöÁî®‰ª ¬£Á†Å

Âú®‰ ‰ ™ .sbt Êñá‰ª ‰ ÁöÑ‰ÂÆö‰ âÂ†Ø ‰ éÂÖ ‰ πÁöÑ .sbt
Êñá‰ª ‰ çÂèÂØËß≠„ÄÇ‰ ‰ ÂÂú®‰ çÂâåÁöÑ .sbt Êñá‰ª ‰ ÂÖ±‰ ´‰ §Á£ÑÂÔ°åÂú®ÂûÑÂ™ Ê† ÅÇ
project/ È° ÁöÆÁΩΩ‰ ã ÂÆö‰ â‰ ‰ ™Êà î§ö‰ ÁöÑ Scala Êñá‰ª „ÄÇ

ÂßÇ ÅßÂ Á™ÑÅÎÑ Ëé âèΰΩ•Ü¶ÂÿÖÂ î„ÄÇ

‰ΩøÁî®Á†ÅÊ°í‰ª

ËØ ÂØÂÈ•Ö•Èΰ¬ïÂÖ • È•®ÊÅáÂ Áîåç‰ôΑïÂ πÂÜÖÂé Ô°åÂ∞§ÂÖ ÈúÂÁëÅ‰ô É Â∞∞æÈäÇ‰ ã
build.sbt Âíå Â ì‰∞∞æùÎ∞ñ„ÄÇ
```

‰ªÄ‰ àÊòØÊèí‰ª

Êèí‰ª ÁªßÊâø‰ ÜÊûÑÂª ÂÆö‰ âÔºåÂ§ßÂ§öÊï∞ÈÄöÂ ÊòØÈÄöËøøáÊ ªÂä†ËÆæÁΩÆ„ÄÇÊñ∞ÁöÑËÆæa
task„ÄÇ‰æããÂ¶ÇÔºö‰ Ä‰ ™Êèí‰ª ÂèØ‰ª• Ê ªÂä†‰ Ä‰ ™ codeCoverage
task Êù•Áî•ÊàêÁ Ä‰ ™ÊµãËØï�¶ÜÁõñÁéáÊ•Âëä„ÄÇ

Â£∞Êòé‰ ™Êèí‰ª

Â¶ÇÊûú‰Ω†ÁöÑÈ° ÁõÆÂú® hello ÁõÆÂΩï‰ ãÔºåËÄå‰ î‰Ω†Ê £Âú®ÂæÊÄûÂªÂª Âö‰ â‰ °Âä†
sbt-site Êèí‰ª ÔºåÂàõÂª hello/project/site.sbt Â ‰ îÈÄöËøá‰ °Ê†áÈíÂÊèí‰ª ÁöÑ
Ivy Ê®°Âùó ID Â£∞ÊòéÊèí‰ª ‰æùËµñÁ ÁöÑô adddSbtPluginÔºö

```
addSbtPlugin("com.typesafe.sbt" % "sbt-site" % "0.7.0")
```

Â¶ÇÊûú‰Ω†Ê ‰Ä† sbt-assemblyÔºåÂÂèß ãÈùùÊøôÊ† ÂàõÂª hello/project/assembly.sbt
Ôºö

```
addSbtPlugin("com.eed3si9n" % "sbt-assembly" % "0.11.2")
```

‰ çÊòØÊâÄÊúâÁÑÑÊèí‰ª ÈÉΩÂú®Âêå‰ ™Ê ªÂ çÂ¶Ñ ì‰ ÔºåÂïÂÂú®‰ ™Êèí‰ª ÁöÑ

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

Êèí‰ª ÈÄöÂ Êèê‰æõËÆæÁΩÆÂ∞ÜÂÆÉ‰ Ä†Âà∞È° ÁõÆ Âú®‰ ÂÄÊØÊèí‰ª ÂäüÊÑÔ„ÄÇËøô‰ d

ÂêØÁî®ÂíåÁ¶ÅÁî®Êá™Âä®Êèí‰ª

‰ Ä‰ ™Êèí‰ª ÈÄöÂ§üÂ£∞ÊòéÂÆÉÊ™Â ±ÁöÑËÆæÁΩÆË¢´Êá™Âä®Ê ‰Ä†Âà∞ÊûûÑª ÂÆö‰ÔπÂÂö‰ â

‰Ωú‰Ω† 0.13.5 ÁâàÊú¨ ÁõÑ sbtÔºåÊúâ‰ ‰ ™Ê ñ∞ÁõÑÁ ÊÄßÊ¥ÆÈ®Êèí‰ª ÔºÂÆÉÉÊÑ§üÂú

Â¶ÇÊûú‰Ω†Ê £Âú®‰ ™ÈúÄÈ∂ÊòæÁ ÂáÑÂêØÁôÑÊèí‰ª ÔºåÂÇ£‰ à‰Ω†‰È†Ëù
build.sbt Êñá‰ Ôºö

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

enablePlugins Ên Ê ïÂÖÅËÆ È° ÁõÆ‰ôßÂ∞Âö‰ âÂ£ÆÉ‰ ¨ÈúÄÈ¶Å‰∞øÂî®ÁõÑÊèí‰ª „Ä

È° ÁõÑ ü‰ÂèØ‰ª• ‰∞øÂî disablePlugins Ên Ê ïÉÈê§Êéâ‰ õÊèí‰ª „ÄÇ‰æããÂ¶ÇÔºåÂ¶ÇÁûû
util   % ÁîßªÈ§   IvyPlugin   Êèí‰ª ÁõÑÊ ÂÆö‰ ¨Â∞Ü
build.sbt ‰øÆÊ Â¶Ç ãÔºö

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

Ëá™Âä®Êèí‰ª ‰ºöÂú®ÊñáÊ°£‰ ËØ¥ÊòéÊòÿØÂê¶ÈúÄË¶ÅÊòæÁ§ ÁöÑÂ°ÄâêØ„ÄÇÂ¶ÇÊûûú‰Ω†ÂØ %
sbt ÂëΩ‰ª§Ë°å‰ª ÊâßË°å plugins ÂëΩ‰ª§§„ÄÇ

‰æãÂ¶ÇÔºö

```
> 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
```

ËøôÈááÔºå plugins ÁöÑÑËæìÂá ÊòææÁ§ sbt È™òËÆ§ÁöÑÊèí‰ª ÈÉΩ뢴ÂºÄêØ‰ª Ü„ÄÇsbt
È™òËÆ§ÁöÑÑËÆÆÁΩÆÈÄËøøá3‰ª ™Êèí‰ª Êèè‰ªæõÔºö

1. CorePlugin: Êèè‰ªæõÂØ task ÁöÑÊ† âøÉ Ë°åÉéßÂà „ÄÇ
2. IvyPlugin: Êèè‰ªæõÂèë É„ÄÄËß£ÊûûÊ®°ÂùóÁöÑÁ Âà „ÄÇ
3. JvmPlugin: Êèè‰ªæõÁºñËØØë„ÄÄÊµãËØï„ÄÄÊâßË°å„ÄÄÊâìÂååÖ
   Java/Scala È° ÁõÆÁöÑÁ Âà „ÄÇ

Âè¶Â§ñÔºåJUnitXmlReportPlugin Êèè‰ªæõÂØ ÁîüÊàê junit-xml ÁöÑËØïÈïå™ÂÊÄßÊîØÊåÅÅ„ÄÇ

ËÄÅÂöÑÈùûÈáª™Âä®ÁöÑÊèí‰ª ÈÄö ÈúÄË¶ÅÊèòÂ§ ÁöÑ ™Âä†ËÆÆÁΩÆÂº°‰ª • Ëá¥‰ª éÂ§öÈ° Áö

‰æãÂ¶ÇÔºöÂØ ‰ª é sbt-site Êèí‰ª Ôºå‰ª ÜÂú®È° ÁõÆ ™ÄÄêØÂ§Æ ÉÊÔºåÂ§ÄêÇúÂ§ÄêÂ
site.sbt Êñá‰ª Êù••„ÄÇ

```
site.settings
```

Â¶ÇÊûûÊûûÑÂ Æö‰ª â‰ª Ü™Âßö‰ª™È° ÁõÆÂ°Ä° ÁõÆ Áõ¥Êé•Ê ™Â§¶Á‰ ãÂ´Ö™ Êõûã
```scala
// Âú® `util` È° ÁõÆ % ç£Ωø™û® site Êèí‰ªº
lazy val util = (project in file("util"))

// Âú®`core` È° ÁõÆ ÂºÄêØ site Êèí‰ªº
lazy val core = (project in file("core")).
  settings(site.settings : _*)
```

ÂÖ®Â±ÄÊèí‰ª

ÂèÑ‰ª • ‰ª ÄÊ¨°ÁÆ°ôÊââÈÄúÈ° ÁõÆÂ°âË£ÖÊèí‰ª ÔºåÂèÂì™Ë¶Å∆ú
~/.sbt/0.13/plugins/   ‰ª Â£∞ÊòéÂÆÉ‰ª Ä„ÄÇ~/.sbt/0.13/plugins/
ÊòÉ‰ª ™Â∞ÜÈá™Â ±ÁöÑ classpath ÂØ Âá Á ÄÊèâÂÊ£ÖúÈáÊ ÁöÆÁöÑ
sbt ÊûñÂ ÂÆö‰ª â„ÄÇ Ê¶ÇÁÁï • Âú∞ÆÈÆ ÔºåÂ§ ~/.sbt/0.13/plugins/
‰ª ÁöÑ‰ªaa‰ªΩï .sbt ÊàñÂËÄ .scala Êñá‰ª Â∞±ÁÂáÊèâÂÊ£ÖúÈ° ÁõÆ
project/ ÁõÆÂΩ ‰ª ãÁöÑÑ ÄÊ† „ÄÇ

‰ª ‰ª Ü‰ª ÄÊ¨°ÁÆ°ôÊ£ÖúÁõÆ° ÁõÆ Áõ¥Êé• ™Âä†Êèí‰ª ÔºåΩ†ÔºåÂ§Ä° • ÂàõÂ
~/.sbt/0.13/plugins//build.sbt Â ‰ª îÈ ™Âä† addSbtPlugin() Ë°®ËææÂºè„ÄÇÂà†‰ª ÊëôÊ† ÂååÂ§ÄÂö‰ªÖöÂ
ÂèÇËÈßÊ£ÖÅÄ‰ª Ω ÂæûË µ„ÄÇ

ÂèØÁî®ÁöÑÊèí‰ª

ËøôÈáåÊúâ‰ Ä‰ ™ÂèØÁî®ÁöÑÊèí‰ª ÂàóË®®„ÄÇ

‰ Ä‰ õÁÁâ Ââ´ÊµÅ˨åÁöÑÊèí‰ª Â¶Ç‰ ãÔºö

- ÂØ IDE ÁöÑÊîØÊåÅÔºà‰ ‰ Ü∞Ü sbt È° ÁõÆÂØºÂÖ•Ââ∞ IDEÔºâ
- ÂØ web Ê°ÜÊû ÁöÑÊîØÊåÅÔºå‰æãÂ¶Çxsbt-web-plugin„ÄÇ

Êõ¥Â§öËØØ¶Áª™ÂÜ‰æ∞øÊÅÅÔºåÂåÖ´Â´ëËèí‰ª ÁöÑÊñ Ê ïÔº°ÂèÇËßÅÂÊèí‰ª „ÄÇ
ÂÖ ‰ éÊúÄ‰ºΩ ÂÆûË µÔºåÂèÇËßÅÂÊèí‰ª ÊúÄ‰ºΩ ÂÆûË µ„ÄÇ

Ëá™ÂÆö‰ âËÆæÁΩÆÂíå‰ªªÂä°

ËøôÂ‰ Ä∞èËäÇËÆ Ëß£Â¶Ç‰ç‰ΩïÂàõÂ ˻™ÂÆö‰ âËÆæÁΩÆÂíå‰ªªÂä°„ÄÇ

Âú®ÁÀÜËß£Âûú¨ËäÇ‰ ãÂâçÔºåÈØÂÒàÒòÔÜØ sbt ÂØ•Èó®ÂâçÈù¢ÁöÑÂ´†ËäÇÔºåÂ∞§ÂÖ ÂòØ .sbt ÊûÑÂ¬ Êèö‰â¨Êõ¥ÂíáÊõ¥Áî¥Â§öÂÖ éËÆæÁΩÆ„ÄÇ

ÂÆö‰ â‰ ™Èîî

ËøôÈáå‰ªªÃÁªÃ‰ ç‰ ÜÂ¶ÇÁΩ™ïÂÆö‰ âÈîî„ÄÇÂ§ßÂ§§öÈ∞ÁöÑÈ∞òÊÆ∞ÃÃ§ÈîÂÆö‰ âÂ´ú®ÈøôÈáå„ÄÇ

ÈîÆÂúú‰ âÂ Áç±Â±™Âûã„ÄÇSettingKey Âíå TaskKey Âú® .sbt ÊûÑ ÂÆö‰ âÂ Ëß£„ÄÇÂÖ é InputKey ÁöÑÂÜÖÂÆ Âú®Êæ¿Â è‰ ™Ã‰ äÈ°µÈù¢„ÄÇ

Ââó‰ æ‰ õ‰ Ä‰ Ëá™ Keys ÁöÑ‰æãÁöö

```scala
val scalaVersion = settingKey[String]("scalaÁöÑÁ±àÊú¨")
val clean = taskKey[Unit]("Âà†Èô§ÊûÑÂ ß Áî¬¨ÁàÂöÑÊñ¾ Ôºåç¿â¨ÁÎ¿Áê§Ê¿†Áö§‰îêÂñ source Êñ¾ Ôºö´Ôîñ(...
```

ÈîÆÁöÑÊûÑÈÃ†ÂÇÊ¿∞Êûúâ‰ß‰ ™Â óÃ¶‰ ÂèÇÊù¿∞ÔïÂ óÃ¶‰ Ôºà ,Ä¥scalaVersion,Ä¤ÔÔºåÂÃ¿Êñá¨£Â óÃ¶‰ Ôºà ,Ä¥Âÿî®% éÊûÑÂ Ä ÿ´®ãÁöÑscalaÁöÑÁ±àÊú¨„ÄÇ ,Ä¤ Ôºâ„ÄÇ

ËøòËÆ∞Âæ¿ó.sbt ÊûÑÂ ÂÆö‰ â‰ Ôº£å±™Âûã T Âú® SettingKey[T]
‰ Ë®®Á§ ÁöÑÊèâÁÂÁöÑÃ°ÁöÑÁ±™Âûã„ÄÇÂÃ¶‰ Ã¿Âûã T Âú® TaskKey[T] ‰ ÊåÂ Ã‰ªªÂä°ÁöÑÃ¤Ê¨úÁöÑÁ±™Âûã„ÄÇ Âú®.sbt ÊûÑ Âèö‰ Ôºå‰ ‰ ™ËÆÂÆ (...

ÈîÆÂèØ‰ Ô´.sbt ÊûÑ Âèö‰.sbt ÊûÑ ÂôÔ.scala Êñ‰ Êàñ ‰ ™Èá™Ã´Êèí‰ª ‰ „Ä(...
val Â∞ÜË¢´´Èá™Ã´®ÂÂ∞Â Âà∞‰Ω†ÁöÑ .sbt Êñ‰ „ÄÇ

Êâ´Ê¿°‰åªäÂä°

‰ ÄÉ¶‰Ωî†ÂÆö‰ â‰ Ü‰ Ä‰ ™‰ÇªÂä°ÁöÑÈîÔë¿‰ÇÈúÄÈØÂÆ®ÁÈÆåÂï®ÂÄèÂÆèé‰ÇªÂä°ÂÆö‰ â(...
:= ‰ΩøÂ‰ÇªÂä°ÁöÑÈîÃÂÆâ®Ëàé®ÂÄÜ‰Ç¿ïÁÃ†Ã∞ ÂØ Ëåî®(...

```scala
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
    }
  )
```

Âú®Êõ¥Â§öÂÖ ‰ éËÆæÁΩÆÈáåÊúâÊèèËø∞Ôºå¶ÇÊûú‰ªªÂä°Êúâ‰æùËµñÂÖ Á ªÔºå‰Ω†‰ΩøÁî®
value Êù•Â°ïÁî®ÂÂ„ÄÇ

ÊúâÂÖ ‰ªªÂä°ÂÆûÁé∞ÊúÄÂõ∞ÈöæÁÑÑÈÉ®ÂàÜÂæÄÂæ‰ çÊòØ   sbt
‰ ìÁî®Ôºõ‰ªªÂä°Âè™ÊòØ Scala ‰ª£Á†Å†Å„ÄÇÂõ∞ÈöæÁÑÑÈÉ®ÂàÜÂàÛÈÉÆÒòØÂÜô‰Ω†ÁöÑ
HTMLÔºåÂú®ÈøôÁÁßÊÉÖÂÜμ‰ ãÔºå‰Ω†‰ÂàÈÉÆÈúÁÄ¶Â‰ΩøÁî®‰ ™
HTML Â ìÔºå‰ üËÆ ‰Ω†Â∞Ü‰ ÊûÑÂ Æ´ö‰ â Âä†‰ Ä‰ ™Â ìÁî®‰æùËµπñÊù•Â‰ Á±åÂÜôÂü ‰
HTML Â ì‰ªª£Á†Å†ÂÔºå„ÄÇ

sbt ÂÖ Êúâ‰ Ä‰ õÂÆûÁî®Â ‰ÂÖ Â ìÍ£Êñ ‰ææøÁÁöÑÂáΩÊï∞Ôºåâ Âà´ÊòØÂèØ‰ª • Á•Â ‰ΩΩøÁî®
API ‰ ÁöÑ IO Êù•Â∑ç‰ΩΩúÊñá‰ª ÍáåÁëÊÂÂÆïÄ„ÄÇ

‰ªªÂä°ÁöÑÊâßË°åË∞ ‰ â

ÂΩì‰ªá‰ΩøÁî®ñ‰ éÂÖ ‰ªñ‰ªªÂä°ÁöÑÊá™ÂÆö‰ â‰ªªÂä°‰ ‰ΩøÁî®valueÊ ó Ôºå‰ ™Ë¶åÂÊ
‰ª • sampeIntTask‰ %Êã ÔÔºå‰ªªÂä°‰ Ωì‰ ÁöÑÊÕè‰ ´‰îÑ‰ •Ê†ÄÂú∞ î‰ •Ê†ÇÂú∞‰ Á™Ê é‰ ‰ ë

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

Âú®ÂÁé∞ÂÆû‰ Ôºåà.JVMÂèÂËÉÉΩÂÜ ÂÎîîsum‰ 3Ôºå‰ΩΩÜ‰ªª‰Âè∞ÈËßÇÂÕúÈÂà∞∞ÁöÑÊ°ë‰ ‰ªçÁÂ

Áé∞Âú®ÂÅ åÆ¢ËÆæè‰ªª¨ ÂÆö‰ â‰ ÜÂÁ¶Â§ñ‰ §‰ ™ÁöÑÊá™ÂÆö‰ â‰ªªÂä°startServerÂíåstopS

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

```scala
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
    }
  )
```

‰ªésbt‰ §‰ íÂºèÊèêÁ§ Á¨¶‰ ËøêË°åsampleIntTaskÂ∞ÜÂæóÂà∞Â¶Ç‰ ãÁÂªìÊûúÔºö

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

Ëã • Ë¶ÅÊü • ÁúãÂèëÁîü‰ Ü‰ªÄ‰ à‰ ãÔºåËÆ©Êàë‰¨ Áúã‰ Ä‰ ãsampleIntTaskÂõæÂΩ¢Ë°®Á§ Ôº

‰ çÂêå‰ éÊôÆÈÄöÁÑScalaÊñ Ê ïË∞ÉÁî®Ôºå˰åÁî®‰ªªÂä°ÁöÑvalueÊñ Ê ïÂ∞Ü‰ çË¢´´‰ •Ê†°Âè

- Âú®ÂØ sampleIntTaskÂèñÂÄºÂâçÔØ ‰æùÈµñ‰ªªÂä°ÂèñÂÄºÔºàÂÅèÂ èÔºâ
- Â¶ÇÊûú‰æùÈµñ‰ªªÂä©ÈòÒÂÁÂõ ‰ íÁã Á ´ãÁϰÑÔºåÂ∞ùËØïÂ Ë°åÂèñÂÄºÔºàÂ Ë°åÔºâ
- ÊØèÊ¨°ÁëΩ‰ §ÊâßË°°åÔºåÊÏè‰ ™‰ §Âä°‰æùÈµñËµ° Â∞ÜÂ¢¢´ËØÑ‰ °∞‰ î‰ªªÖÖ¢´ËØÑ‰ °∞‰
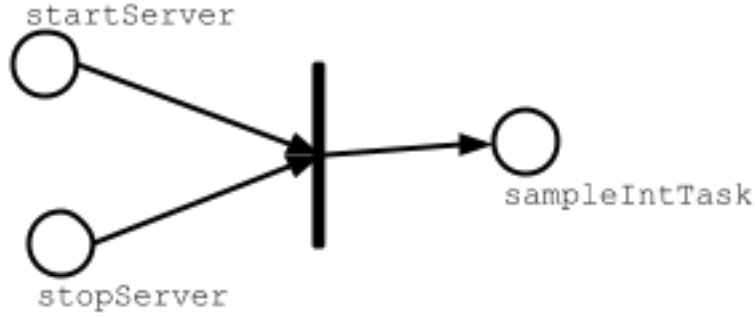
Figure 2: task-dependency

‰ᵃᵃÂä°‰æùËµñÈ° ÂéᵃÈáç

‰ ËØÅÊòéËøôÊúÄÂêé‰ ÄÁ Ô°åÊàë‰ᵃ¨ÂèØ‰ᵃ • ‰ᵃé sbt ‰ §‰ íÂ°èÊèêÁ§ Á¨¶ËøêË°å sampleStringTask„ÄÇ

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

Âõ†‰ sampleStringTask‰æùËµñ‰ éstartServerÂíåsampleIntTask‰ §‰ ™‰ᵃᵃÂä°Ô°åËÄÅsampleInt Scala Êñ Ê ïË∞ÉÁÁî®Ô°åÂÆÉ‰°öË¢´ËÆ°ÁÆ ‰ §Ê¨°Ô°å‰ΩÜÁî±‰ é‰ᵃᵃÂä°ÁöÑ‰æùËµñÈ° Ë¢´Ê†áÊ
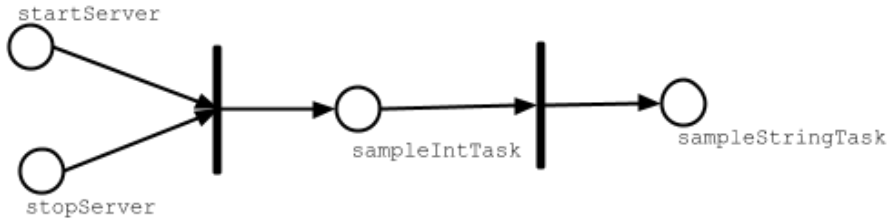
Figure 3: task-dependency

¶ÇÊûúÊàë‰ᵃ¨‰ çÂÅöËáçÂ§ç‰ᵃᵃÂä°Áõ ÂÖ È° ÁÑÑÂéᵃÈáçÔ°åÂàôÂΩìÊàë‰ᵃ¨ÊâßË°åtestÊó ÊúÄÂᵃᵃ in Test‰Ωú‰ test in TestÁöÑ‰æùËµñÈ° Âá Áé∞‰ ÜÂæàÂ§öÊ¨¨°„ÄÇ

Ê ÖÁêÜÜ‰ᵃᵃÂä°

 îËØ • ¶Ç‰ΩïÂÆûÁé∞stopServer‰ᵃᵃÂä°Ô°üÊ ÖÁêÜ‰ᵃᵃÂä°ÁöÑÊ¶ÇÂøµÂ ‰ çÈÄÇÂêà‰ᵃᵃÂä°ÁöÑ sampleStringTask„ÄÇ

```scala
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
    }
  )
```

‰ ‰ ÜËØÅÊòéÂÆÉÂèØ‰ª•Â •‰ΩúÔºåÂú®‰ §‰ íªèÊèêÁ§ Á¨¶‰ ËøêËºå
sampleStringTaskÔºö

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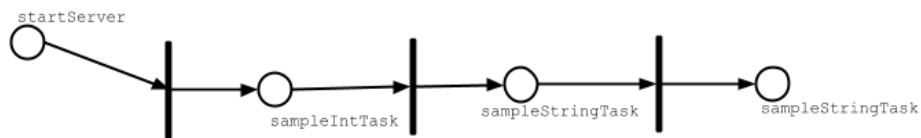

Figure 4: task-dependency

Áõ¥Êé•‰ΩøÁî®Scala

Á°Æ‰øù‰ Ä‰ õ‰ ãÂèëÁîüÂú®ÂÖ ÂÆÉ‰ Ä‰ õ‰ ãÁâ©‰ ãÂêéÁôÑÂè¶‰ ÄÁßÇñ Â°èÊòØ‰ΩøÁî®Í

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

Âõ†‰ ÊôÆÈÄöÁöÑÊñ Ê ïË∞ÉÁÁî®ÈÅµÂ˘Âæ™È° Â èËØ ‰ âÔ°åÊâÄÊúâ‰ ãÊÉÖÊåâÈ° Â èÂèëÁîü„ÄÇËøôÎ

Â∞ÜÂ ÆÉ‰ª¨ËΩ¨‰ Êèí‰ª

Â¶ÇÊûû‰Ω†Âèëé∞Ëá™Â ±Êúâ ÂæàÂ§öËá™Â ÆÖ‰ â‰ £Á†åÂ˘åÂèØ‰ª • ËÄÉËôêÂ∞ÜÂÖ Áß‚Âä®Â Âä ‰ ™Êèí‰ª‰ Â èÂèåÁÊòØ™ÂøˊÈ∞ÂæàÂ§öÂ‰ Áß‚ÂÊ ÂòìÈÊûñ‰ÂÂË Âô®È§ÂÆÂ ‚ Â èÂÊèí‰ª „ÄÇ

Êú¨Â∞∞ËäÇÊòØ™ÂøˊË∞ÂüÁÂ∞î‰ÂÊâ‰ÂÊÊ∞∞Ê∞∞è¥Â§öÂÖ éËÁ™Æö‰ â‰ªªÂ‰ • Âú®‰ªªÂä´‰ â

ÁªÑÁ°ÈûÑÂ

Êú¨È°∞Ëù¢Èù¢®ÆÆ ÊûÑÂ Á°ìÊûÑÂöÑÁªÑÁªÑá„ÄÇ

Êú¨Â∞∞ËäÇÂÅÂáÆÆæ‰Ω†Â Á°èÊòÖÉ‰ Ü‰ ãÂâçÁõÑÁ´†ËäÇÔ°åÂ∞∞§Âß§ÂÖ ÊòÇ
build.sbtÔ°åÂ ì‰øæùÉµñÂíÂ§ö • Á®ãÊûÑÂª „ÄÇ

sbtÊòØÊÄÄíÁΩíÁöÑÑ

```
build.sbt Âæà ÆÆÂçïÔ°åÈöêËöË®ûè‰ Ü sbt ÊòØÂ¶Ç‰ΩïÂ • ‰ΩúÁöÑ„ÄÇsbt
ÊûÑÑÊòÂ î Scala ‰ª£Á†ÂÆÆæ‰ âÁ°ì„ÄÇ‰ª£Á†ÂÊú¨ Ë ´‰ üÂ§ÃÈ∞ªÊòØÊòØÈÉΩË¢´ÊûÑÑ ÂöÑ„ÄÇ
sbt Êõ•Â • ΩÂöÑ Á ´ãÊñ Á°è‰ àÔºü
```

project ÁõÂƠï ÊòÑ‰Ω†ÁÑ • Á®ãÂ¶ÜÖÁ•è‰ ä ™Â • Á®ãÁö° ÁõÑÔ°åÂÆÉü • Èàˊ‰ ¶Á‰ΩïÊ
project‰ ÁõÑÊûÑÑ „ÄÇ±Ô®ÂÖ ÁÉÂûÑ‰ ÁõÑ° ÁõÑÊ ÁõÆÂ¤öÂ§ö‰ªÔÄ ‰ªñÊ ÁõÆÂèÂ • Â
‰Ω†ÁÑÑÊûÑÑ ÂÆö‰ âÊòÑ‰ ª sbt Ë Áõ Æ„ÄÇ

ÈÄí ÆΩíÂèØ‰ • Â ∞Â • ‰ ãÁ•Â„ÄǶ ÇÊûú‰ΩÂ†ñúÉ ‰ ¬‰ Âø‰ΩïÊ • È ®ÂÊñÊáÂà Âõ
project/project/ Áö°Â ÆÆ®çÂ®çÊ∞∞ÉÊïË• ™ ÁõÆ ÁÑÊûÑÑ Êûñ‰ â„ÄÇ

‰ ãÈÙú¢ÊòÑ‰ ™‰øÊ ÊÔÃö

```
hello/                   # È° ÁõÆ ÁõÑÂü Áõ ÁõÆÂƠï

  Hello.scala        # ‚% Ä‰% È° ÁõÆ ÊÊ∞á% ™ Ô∞â% üÂè∞% • Âú®src/main/scalaÔ°â
```

```
    build.sbt        # build.sbt ÊòØproject/ % ÃÖÉÊûÑÂª Ê† È° ÁõÆÁöÑÊ ê%ª£Á†Å„ÄÇÊòØÊûÑÂª ÃÆö% âÈ°
```

```
    project/              # ÃÖÉÊûÑÂª Ê† È° ÁõÆÁöÑÂü ÁõÆÂΩï
```

```
      Build.scala    # ÃÖÉÊûÑÂª Ê† È° ÁõÆÁöÑ% Ä%  Ê êÊñá%ª ÛºåÊòØ%Ω†ÁöÑÊûÑÂª ÃÆö% âÁöÑÊûÑÂª ÃÆö% âÊ
```

```
      build.sbt      # ÃÖÉÃÖÉÊûÑÂª ÁöÑÊ† È° ÁõÆ‚Äî‚Äîproject/projectÁöÑÊ ê%ª£Á†ÅÛºõÊûÑÂª ÃÆö% âÁ
```

```
      project/       # ÃÖÉÃÖÉÊûÑÂª ÁöÑÊ† È° ÁõÆÁöÑÂü ÁõÆÂΩïÛºõÊûÑÂª ÃÆö% âÁöÑÊûÑÂª ÃÆö% âÂ •Á®ã
```

```
        Build.scala # project/project/ ÃÖÉÃÖÉÊûÑÂª ÁöÑÊ† È° ÁõÆ% ÁöÑÊ êÊñá%ª
```

‰ çÁî®ÊãÖÂøÉÔºÅ Â§ßÈÉ®ÂàÜÊó ÂÂô‰ çÈúÄÊ¶Å project/project/
ÁõÆÂΩï„ÄÇ‰ΩÜÊòØÁâÜÈß£Â£ÂÆÉÊòØÊúâÂ ÆÂä©ÁöÑ„ÄÇ

Âè¶Â§ñÔºåå‰ªª‰Ωï‰ª • .scala ÊàñÊÄÖ .sbt ÁªìÂ∞æÁöÑÊñá‰ª ÈÉΩ‰ºöË¢´‰ΩøÁî®ÔºååÂëΩÂêç‰
build.sbt Âíå Build.scalaÂè™ÊòØÊÉÉ‰æã„ÄÇÂ§ö‰ ™Êñá‰ª ‰ üÊòØÂ ÖÅÆ ÁöÑ„ÄÇ

Âú®Âêå‰ Ä% ™Âú∞Êñ Ë üË ™‰æùÈµñÈ°

Áî®project% ãÁöÑ.scalaÊñá‰ª Á ªÊ ÃÈÉ%æ ÃÆö% âÁöÑÄ% ™Â ÆûÈ¥ÊûÑÁöÑÂàÖÂª pr

```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)
}
```

DependenciesÂØ Ë±°Â∞ÜÂú@build.sbt‰ ÂèØÁî®„ÄÇÂ¶ÇÊûûÈ¶ÅÂÆÆ©‰ΩøÁî®valÁöÑ%ª£Á†ÅÊõ¥

```scala
import Dependencies._

lazy val commonSettings = Seq(
  version := "0.1.0",
  scalaVersion := "2.11.7"
)

lazy val backend = (project in file("backend")).
```

```
settings(commonSettings: _*).
settings(
  libraryDependencies ++= backendDeps
)
```

ÂΩì‰Ω†ÁöÑÂ§öÂ • Á®ãÊûûÑÂª ÂèòÂæóÂæàÂ§ßÔºåÂ ‰ îÊÉ Ë¶ÅÂ°Æ‰øùÂ êÈ° ÁõÆÊúá‰ ÄÈá¥ÁöÑ‰

‰ΩìÊó Áî® .scala Êñá‰ª

Âú® .scala Êñá‰ª Ôºå‰Ω†ÂèØ‰ª • ÂÛô‰ªªÊÑèÁöÑ Scala ‰ª£Á†ÅÔºåÂåÖÊã¨È° Â±ÇÁöÑÁ±ªÂíáÂ
Êé®ËçêÁöÑÊñ Ê ïÊòòÂÆ쵉 Â§ßÈÉ®ÂàÜËÆæÁΩÆÂ§û®Â§öÂ • Á®ãÁöÑ
build.sbt Êñá‰ª ‰ ÔºåÂ ‰ î‰ΩøÁî® project/*.scala Êñá‰ª Èù • ÂÅö‰ªªÂä뮮Âàñ‰ú®Â§

ÂÆö‰ âÂä™Âä®Êèí‰ª

ÂØ ‰ éÊõ¥È´´òÁ BÁ®ÑÁ®åÁ∫ß ÔºåÂè¶‰ ÄÁßç ÄÁèçÊñ Â°èÁ±å Â°èÁ®ã‰Ω†ÁöÑÊûûÑÂ ÊòÇÁ™ú®project/*.scala

ÊÄ™Á™ì

Ëøô‰ ÄÈäÇÂ∞ÜÂÖ • Èó®ÊåáÁçÊÄ™Á™ì‰ Â‰ ã„ÄÇ

‰ Â ÜÂ‰ΩøÁî® sbtÔºåÂÊúá‰ Â Ä õÈ¶ÇÂµ‰Ω†ÂÖÜÈ°™Á°ÅÈß£ÄÇËøôÊÄ™Á™úô Ä Äõ ¶ † Êã Á ãÁ
Èô•Â Ü Ëøô Ä õÈ¶ÇÂµÂ ‰ é sbt Â ‰ çÂ§∞ÄÇsbt Áî®‰ Äã∞èÂ®ÂÜ† ÂÉ£ÁÇÂµÊù • ‰Ω†Âã
Â¶ÇÊûú‰Ω†‰ Á ÄèÒ∞‰ Â ‰ éÂ§∞Áî®‰ΩéÊ°Âï‰ Á„ÅÂê‰ é ÂÅì‰ ÜÔ∞Éé™∞†ÈÁ‰ã„Ç

sbt: Ê† ÂøÉÊ¶ÇÂøµ

* Scala Âü Á°Ä„ÅÁ‰ çÂèØÂ‰Ωæ§ÔÇåÁÁ Scala ËØ Ê ïÈùûÂ Êúâ Æ†ä©„ÅÁProgramming in ScalaÔ°åScala ÁöÑ‰ΩõÈÄÂ®Ô°ôÁÈùôÂ Â • ΩÁöÑ‰ºªÂ„ÅÁ
* .sbt ÊûûÑ ÂÆö‰ â
* ‰Ω†ÁöÑÊûûÑ ÂÆö‰ âÂèòÂ‰ ‰Ω ™Â§ßÁöÑ Setting ÂØ Ë±°Â£Ô°©ÔÇåsbt ‰Ω†ÁöÑ Setting ËΩ Êç¢ ãÂⵂÂÑÊîÔ°ôÂØ ÊâãÂë°å task„ÅÁ
* ‰ ‰ ÜÂ§úÂ SettingÔ°åÂú®‰ ‰ ™ key ‰Ω äË∞ÉÂ°ôÂÖ ‰ ÁöÑ‰ ‰ ™Êñ Ê ïÔ°ö:=Ô°å+= ÊàñËÄÖ ++=„ÅÁ
* Ê ºÈúâÂ®Â°òÂÑÃä ÊÄÂ°Äá ‰ éËΩ Êç¢åÁÁ‰øæÃÂ¶ÇÁ°å‰ ™ Setting Â∞ü sbt ÁöÑÈïÊ ïÂ°Ô ÈÕÜ•áÈÇ Êç¢Ê•ê ‰ ™Êñ∞ÁöÑÈ∞ÜÂâ•ÇÔÇåç‰ ¶Â∞±Â
* ÊÑè‰ ‰ ™Ë∞ÉÂ®ÈÈÙÎÁÂ°ô‰ ‰ ™Ââ ÂÆì±Â®Âûã‰ñûÁÂ°Â°ÔÂ†±
  key ÂÜ ÂÆö„ÅÁ
* *tasks* ÊÔ°å ÊàäÁÇ®ËÆæÁ®åÈÈôËöÈøá key ‰ ÂÁ ü value
  ÁÁ®ÊÆÆÂ†§Â°úÙ®ÈÈ ¨Áá ÂâÈ task ÁÁ°Êó ÂÂôÈÈΩ‰ÄÁ°ÄÙáÈÈ•ÈΩÜÊâãÂë°å„ÅÁNon-
  task ËÆ°Â°éóÂÑ™‰ΩöÂÆ§®ÊûûÑ ÂÊó Áî®ÂÃäÁÂ°À™á ‰Âá´Âñ†ÈÈ∞Á ÊâãÂë°å„ÅÁ
* Scopes
* ÊÄÂ°Äá ‰ ™ key ÂÉ£ÂØÁÈÈÈÙõÂ§úÂÒÂÂÈ° ™ valueÔ°åÂ™áÂÈ° scope
  ÂàíÂÒ«„ÅÁ
```
47
```

- scope ‰ºöÁî®‰ â‰ ™ËΩ¥ÔºöconfigurationÔºåprojectÔºåtask„ÄÇ
- scope ÂÖÅËÆ ‰Ω†ÊåâÈ° ÁõÆ„ÄÂÊåâ task„ÄÂÊåâ configuration
  Êúâ‰ çÂêåÁöÑË°å‰ „ÄÇ
- ‰ Ä‰ ™ configuration ÊòØ‰ ÄÁ±ªÂûãÁöÑÊûÑÑ Ôºå‰æãÂ¶Ç
  Compile ÊàñËÄÖ Test„ÄÇ
- project ËΩ¥‰ üÊîØÊåÅ "ÊûÑ ÂÖ®Â±Ä" scope„ÄÇ
- scopes ÂõûÊªöÊàñ ‰ ª£ÁêÜ Âà∞Êõ¥ÈÄöÁî®ÁöÑ scope„ÄÇ
- Â∞ÜÂ§ßÈÉ®ÂàÜÈÖçÁÁΩÆîæÂú® build.sbt ‰ ÔºåΩÜÊòÒØÁ®
  .scala ÊûÑÂ Â Æö‰ âÊñá‰ª ÂÆö‰ â‰Á±ªÂíÂ Á¥Â ßÁ Ñ task
  ÂÆûÁé∞„ÄÇ
- ÊûÑÂ Â Æö‰ âÔºÒ Ä‰ ™ sbt È° ÁõÆÔºåÊù • ËáÒ‰ éÈ° ÁõÆÁõÆÂÂ Ωï„ÄÇ
- Êèí‰ ª ÊòÒÃ ÊûÑ Â Æö‰ âÂíÊÑÍ©Â±ï
- ËÄöËøáÂú® addSbtPlugin Êñ Ê ïÂú® project/plugins.sbt ‰ Ê ÁÁîçÊè‰ ª „ÄÇÔºå‰ çÊÒÒÔ Âú®Ê
  build.sbt ‰ Ôºâ„ÄÇ

Â¶ÇÊûú‰ ™ÊÈÄÍ¥ÁΩ†ÊÑ Ã Á õÅ ÄûÔ¶Á´ÂÁ Î Ê¢Êñ ËΩ ÂØ ÊùÒÍ©ÔºåÂíÒ ÆÂ ä©ÔºåÂÒ
sbt Á õ §‰ íÎ ÄÁî®ÁïÇ ‰ ÄöÂ ÆûÈ™å„ÄÇ

Á • ù‰ Ω† • ΩËøêÔºÅ

ÈôÑ‰ΩΩï

Âõ† sbt ÊòØ‰ Î ™Í ËΩ êÈ° ÁõÂÍ´ Â∞Ï Ê¢Ë≈‰ ñÊÍ È°Ê ë‰ Í¥Â†ÂÔºÅ

ÈôÑ‰ΩΩïÔºöBare .sbt ÊûÑÂ ÂÆö‰ â

Ëøô‰ ÄÂ∞èËäÇËÆÆ Ëø∞‰ ÄÁ¥Í ÇÎÄ Î ûÁΩ Áî®Á ÇÁ .sbt ÊûÑÂ ÂÆö‰ â„ÄÇ
ÁéÂ Íî®ÍéÏçÁ‰ΩÁΩøÂî ÁÎñ‰ ° ÁÆ .sbt ÊûÑÂ ÂÆö‰ â„ÄÇ

‰ ™Ä‰ â àÊòÒ bare .sbt ÊûÑÂ ÂÆö‰ â

‰ çÂÉè § öÈ° ÁÆ .sbt ÊûÑÂ ÂÆö‰ â Âíå .scala ÊûÑÂ ÂÆö‰ â
ÊòàÂ íÂú∞ÊÆö‰ â‰ ‰ ™È° ÁÆÔºå bareÊûÑÂ ÂÆö‰ â‰ ÄöÂí ÊÇÆ
.sbt Êñá‰ ° ÊâÄÄ ÁÎΩÂ ÆãÂî∞ÊÆö‰ â‰ ‰ ™È° ÁÆ„ÄÇ

bare .sbt ÊûÑÂ ÂÆö‰ âÂî±‰ ‰ ™Ä Setting[_] Ë®ËÆÆ ÂîÑÂ ÎïÂÂóÍ Â¤ÑÊÔ ÁÎÂ Î‰ çÊÒÒ‰ â
Project„ÄÇ

```
name := "hello"

version := "1.0"

scalaVersion := "2.11.7"
```

(Âú® 0.13.7 ‰ ãÂâç) ËÆæÁΩÆÈ° ÂøÖÈ°ª‰ • Á© Ë°åÂàÜÈöî

Ê ®ÊÑèÔºöËøôÁÁÁÁÁ© Ë°åÈôêÂÆöÂú® 0.13.7 ‰ ãÂêéÂ∞Ü‰ çÂÜçÈúÄÄ¶Å„ÄÇ

‰Ω†‰ çËÉΩÂÉèËøôÊ† ÂÛôbare build.sbtÔºö

```
// Ê °ÊúâÁ© Ë°åÔ°å‰°öÁ°ñËÆØë‰ çËøá
name := "hello"
version := "1.0"
scalaVersion := "2.10.3"
```

sbt ÈúÄÄ¶ÅÊúâÂêÂ∞àÜÈöîÁÂ¨¶Êù • Ëæ®Âà´‰ Ä‰ ™Ë°®ËææÂ°è‰ªéÂì™ÈúåÂ°ÄÂ∞ÄßãÔºå‰Â∞∞Âì™ÈúåÈ°åÁÅ™ÈÉ

ÈôÑÂΩïÔºö.scala ÊûÑÂª ÂÆö‰ á

Êú¨È°µÈù¢Ê£èèËø∞‰ Ü.scalaÊûÑÑÂª ÂÆö‰ âÂöÑÊÉºÁ≥ÑÁÁÁ‰°®‰ • ÂâçÁÑÑÁ°àÂ°è¨ÁÑñsbt‰
0.13 Ê ªÂä†‰ ÜÂ§öËØ ÁÆ.sbt ÁÑüÊâêÆö‰ âÔºåËøô‰ üÈòÖÊ£é°Ë∂ÁÑÑÊ† Â°è„ÄÇ

ËøôÈèáÂÂå̈Ö‰ÆØÆ‰Ω†âèÈÒÖ̈Ë°ªãÁÈ°åÔÅ™Â∞ßÅ ÊòØ
.sbt ÊûÑÑÂª ÂÆö‰ âÂí̈ÊõÆÁ¥Â§öÁÂ°è ‰ éË°ÆÁΩÆ„ÄÇ

ÂÖ ËÅî build.sbt Âí̈á Build.scala

‰ ‰ ÜÊû̂Âê.sbt Âí̈á .scala ÊñáÛ‰ Âú®ÂÆ؈ÁàÁÁÅÊûÑÑÂª ÁÁ‰ â‰ Ôºå Ô°å‰Æ؈ÈúÄÄ¶ÅÂ°êÜÿÁÁªÂ‰±ÂÁ

‰ ã̈ÉÂÖ¤§‰ ™Êñᬄ ÊêèËø∞‰ ÜÈøô‰ ™ÊñaáÁƒ̈ÅÇã̈ ¨ãÁ ÂÖ°åÂ° ÇÂÔÆ؈ÁÄÈ
hello Êñᬄ Âß ÂÜÔᰰÂ°̂Á̈ hello/project/Build.scalaÔºö

```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"
```

```
    ))
}
```

Áé∞Âú®ÔºåÂàõÂª hello/build.sbtÔºö

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

sampleKeyD := "D: in build.sbt"
```

ÊâìÂºÄ sbt Á™àÁ´ØÂëΩ‰§Á™óÂè£„ÄÇÊï ÂÖ • inspect sampleKeyAÔºå‰Ω†Â∞Ü‰ºöÁúãÂà∞Ôºö

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

ÁÑ ÂêéÊï ÂÖ • inspect sampleKeyCÔºå‰Ω†Â∞Ü‰ºöÁúãÂà∞Ôºö

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

Ê ®ÊÑè "Provided by" ÊòæÁ§ ‰∫ ™ value ÂÖ ÊúâÂõ Âêå‰ÑúÁî®Ëå É Âõ¥„ÄÇÈÇ£ÊòØ
.sbt Êñá‰ª ‰∏ ÁöÑ sampleKeyC in ThisBuild Á âÂêå‰ éÊîæÁÆÆÂú®
.scala Êñá‰ª Build.settings ÂàóË°®‰∏ ÁöÑ‰ Ä ™ËÆæÁÆÆ„ÄÇsbt
‰ºö‰ºéé§ ™Â∞éÊñ ÊäÂÂèñÊûÑÂ Â åÉõ¥ÂÜÖÁúãËÆæÁÆÆÔºåÊù • ÂàõÂª ÊûÑÂ Â Æö‰ â„ÄÇ

ÁÑ ÂêéÔºåinspect sampleKeyBÔºö

```
[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
```

Ê ®ÊÑè sampleKeyB ÊòòË∞´‰ΩúÁî®Âö̈ÑÁúãËÆøô‰ ™Ë° ÁõÆÔºö ({file:/home/hp/checkout/hello/}hello)
ËÄå‰ çÊòØÊï¥‰ ™ÊûÑÂ ({file:/home/hp/checkout/hello/})„ÄÇ

‰Ω†Â îË¨ • Â ÁªÈ„Á∑É‰àÂ∞∞‰ ÜÔºåinspect sampleKeyD Á âÂêå‰ é
sampleKeyBÔºö

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

sbt ‰ªé .sbt Êñá‰ª *ÈôÑÂä†ËÆæÁÆÆÂà∞ Build.settings Áíá
Project.setting ÁúãËÆæÁÆÆÔºåÊçç‰è•ËØùËØ¥Ôºå.sbt ËÆæÁÆÆÊ•Êúâ‰ÒòÂÖàÈùÉ„ÄÇ
Â∞ùËØèÊî ‰èò   Build.scalaÔºå‰ΩøÂæóÂ ÆÉÈ ÉΩËÆæÁÆÆÂ • ‰Ä°
sampleC ÊàñËÄÖ sampleDÔºå‰ã‰ª¨‰ ¨Â Á âèÂú® build.sbt ËÆæÁÆÆÊøá„ÄÇbuild.sbt
‰ ÁúãËÆæÁÆÆ îËØ • ËÉÑ„ÄúÉµ¢„Ä£Ëøá Build.sbt„ÄÇ

‰Ω†‰ üËÆ ‰ºöÊ ®ÊÑèÂà∞Èè¶ ÄΠÅÄÇ ÔºösampleKeyC Âíá sampleKeyD
ÊòòÂ∞àÅ∞ • Âú® build.sbt ÂÜÖÈáÉ•Éé ÂæóÁúã„ÄÇËøôÊòòÂãé†‰ sbt
Â∞ïÂ Build‰ ÁúãÂ∞ÜÖÂ Âà∞ .sbt Êñá‰ª ‰ „ÄÇÂú®ËøôÂ£çÊ É‰ÂÜµ‰ ãÔºåimport
HelloBuild._ ÊòòÂºÄˬ‰´´Â∞ï‰∞ÖÂú® • Âú® build.sbt Êñá‰ª ‰ „ÄÇ

ÊÄ™Á‰ªìÔºö
```

- Âú® .scala Êñá‰ª ‰ ÔºåÂèØ‰ª • Âú® Build.settings ‰ Â¢ûÂä†ËÆæÁΩÆÔºåËøô‰ õËÆæÁΩ
- Âú® .scala Êñá‰ª ‰ ÔºåÂèØ‰ª • Âú® Project.settings
  ‰ Â¢ûÂä†ËÆæÁΩÆÔºåËøô‰ õËÆæÁΩÆá™Âã®Êàè‰ Â • Á®ã‰ΩúÁî®Âüü„ÄÇ
- ‰ªªä‰Ωï‰ú® .scala ‰ ÁöÑ Build ÂØ Ë±°Â∞Ü‰‰ öÊääÂ ÆÉÁöÑÂ ÜÖ Æ Â∞ºÂÖ • Âà∞
  .sbt Êñá‰ª ‰ „ÄÇ
- Âú® .sbt Êñá‰ª ‰ ÁöÑ Æ Ëc´ ËøΩ Â䆠Âà∞ .scala
  ‰ ÁöÑ Æ„ÄÇ
- Âú® .sbt Êñá‰ª ‰ ÁöÑ Æ Êò Ø Âú®Ë° ÁöÑ ‰ úÁî®Â üüÈáÅÔºåÈô§È ê‰ Ω†Ê å Æö Æ  Â ÆÉÁ

## ‰ §‰ íÊ®°ºè‰ ÁöÑÊûûÑª Æö âÈ° ÁõÆ

‰Ω†Áé∞Âú®ÂèØ‰ª • Â âÊç¢Â à∞ sbt ÂêΩ‰ª§Ëª°ÁöÑ§‰ íÊ®°ºÔºåËÆ©Âú® project/ ÁõÆÂΩï‰ ãÁöÑÊûûÑª Æö âÈ° ÁõÆ‰Ωú‰ ÂΩìÂâ° ÁõÆ„ÄÇÂèØ‰ª • ËæìÂÖ • reload plugins Êù • Ëææ‰à∞ÁõÆÁöÑ„ÄÇ

```
> 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)
>
```

Â¶Ç‰ äÊâÄÁ§ Ôºå‰Ω†ÂèØ‰ª • Áî® reload return Á¶ªÂºÄÊûûÑª Æö âÈ° ÁõÆÔºåÂõûûÂà∞‰Ω†Á

ÊèêÈ Ü íÔºöÂ ÆÉÊä Êò ÂõØ çÂèØÂèòÁöÑ

Ë Æ§‰ Âú® build.sbt ÁöÑ ËÆæÁΩ Æ∞Ü Ëc´Ê ªÂä†Âà∞ Build Âíå Project ÂØ Ë±°‰ ÁöÑ settings Â óÊÆµÊ òÂØÈ ôÂ ØÂØÁöÑ„ÄÇÂèñ ËÆ åˉ£‰ ãÁöÑÊ òÂØÔ øåBuild Âíå Project ‰ ÁöÑ settings Âàó Ô∞ ®ÔºåÂ§ •Âèà build.sbt ‰ ÁöÑ ËÆæÁΩÆÔºöËc´
‰ ËøûÂà∞Âè¶‰ ‰ ™‰ ™ Ë∞ ™‰ çÂèØÂèòÁöÑÂèó Ë∞ Ôºöåé ÔºåÂ Â ôÅˆ ûÊ êÊ åÂ ÆÉ¥ÊûûÑª Æ

‰ ãÂ Æû‰ äÂøåÂ¥ îÊúâÊûûÑª ÂØ ‰ª™ñ Êù • Ê ê„ÄÇ‰ª™ñ‰ª™ Ëc´ ËøΩÂä†È° Â è‰ ¶Ç‰ ãÔö

- Êù • Êá™‰ †ÁöÑ .scala ÊûûÑª Êná‰ ‰ ÁöÑ Build.settings
  Âíå Project.settings„ÄÇ
- ‰ †ÁöÑÁî®Êà Ë¥¶Êè ÂØ®Â±ÄËÆ åˉ ÁöÑ‰ õæãÂ¶ÇÂú® ~/.sbt/0.13/global.sbt
  ‰ ‰ †‰àØ‰ • Æö ÂÇ±Âç‰ì‰ † ÊâÄÊú È° ÁõÆÊûûÑª„ÄÇ
- Êèí‰ª†Ê ®ÂÖ • ÁöÑÊûûÑª ÔºåÂàÇ ËßÅßÅÂé‰ õ ãÊù • ÁöÑ‰ΩøÁî®Êèí‰ª™ „ÄÇ
- È° ÁõÆ‰ ã .sbt Êná‰ ‰ ÁöÑÊûûÑª„ÄÇ
- ÊûûÑª Æö âÈ° ÁõÆÔ°àÂç project ‰ ÁöÑÈ° ÁõÆÔ°åÊúâÊù • Ëc´‰Ã ØÂ±ÄÊèí‰ª™ Ôºå~/.sbt

ÂêéÈ û¢ÁöÑÊûûÑª‰ª™ºæË¶ÅÁÆ ÂïÇÈû°ÁöÑ„ÄÇÂ ®Èé©ÁöÑÊûûÑª Æ™‰àØ‰®ÊûûÑªÊù • ÜÂ Æ åˉÀÁ

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