

# **Scala Butthurt Tools**

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sbt

# Добавление зависимостей

```
libraryDependencies += "org.typelevel" %% "cats-core" % catsVersion
```



# Добавление зависимостей

```
libraryDependencies += "org.typelevel" %% "cats-core" % catsVersion
```

Выполнение задач

```
sbt compile test it:test
```

sbt?

# Ключи

## initial-definition.sbt

```
val someSetting = SettingKey[String](label = "some-setting")
someSetting := "initial value"

// hundreds lines of code ...

someSetting := "computed initial value"
```

# Ключи

## project/somewhere.sbt

```
someSetting := "user defined value"
```

```
// hundreds lines of code...
```

```
someSetting := "more appropriate value for this case"
```

```
// more lines of code...
```

```
someSetting := "even more appropriate value"
```

# Ключи

## **project/somewhere-else.sbt**

```
// hundreds lines of code...
someSetting := "value without concern about other file"
```



# Кишки плагинов: путь к артефакту

```
[warn] === Local snapshots: tried
[warn]   http://localhost:8081/content/repositories/snapshots/dev/saksmt/plugin/brokenPath_2.12_1.0/0.0.1-SNAPSHOT/brokenPath-0.0.1-SNAPSHOT.pom
[warn]   ::::::::::::::::::::::::::::
[warn]   ::          UNRESOLVED DEPENDENCIES          ::
[warn]   ::::::::::::::::::::::::::::
[warn]   :: dev.saksmt.plugin#brokenPath;0.0.1-SNAPSHOT: not found
[warn]   ::::::::::::::::::::::::::::
[warn]
[warn] Note: Some unresolved dependencies have extra attributes. Check that these dependencies exist with the
requested attributes.
[warn]       dev.saksmt.plugin:brokenPath:0.0.1-SNAPSHOT (scalaVersion=2.12, sbtVersion=1.0)
```

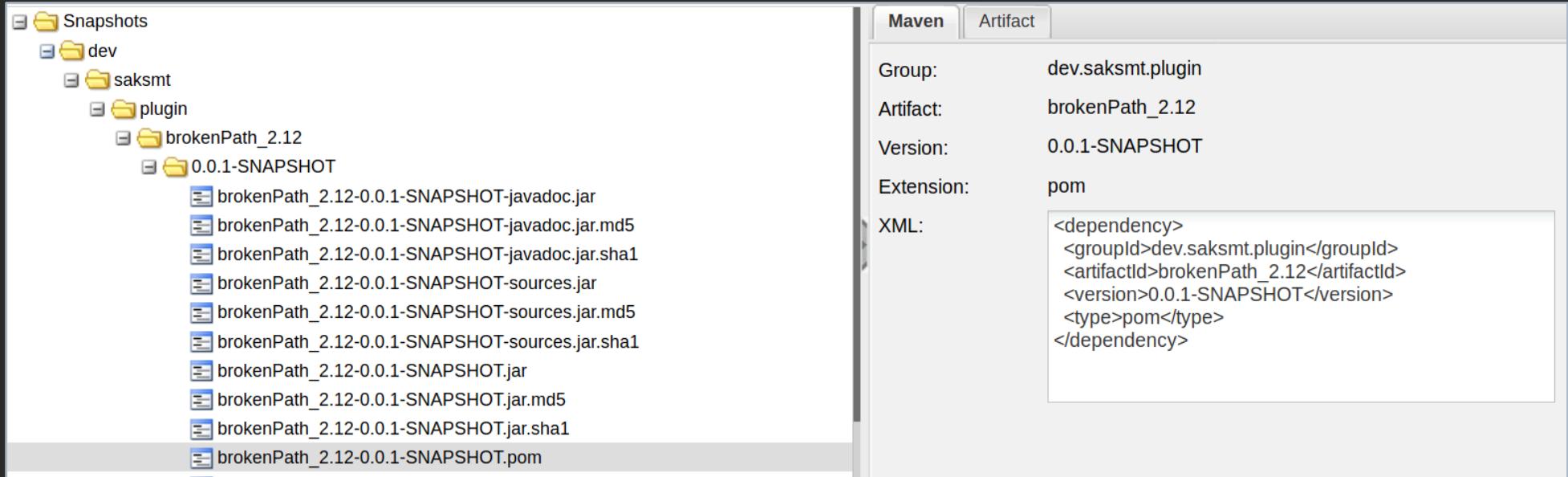
# Включаем внимание

```
[warn] === Local snapshots: tried
[warn]   http://localhost:8081/content/repositories/snapshots/dev/saksmt/plugin/brokenPath_2.12_1.0/0.0.1-SNAPSHOT/brokenPath-0.0.1-SNAPSHOT.pom
[warn]   ::::::::::::::::::::::::::::
[warn]   ::          UNRESOLVED DEPENDENCIES          ::
[warn]   ::::::::::::::::::::::::::::
[warn]   :: dev.saksmt.plugin#brokenPath;0.0.1-SNAPSHOT: not found
[warn]   ::::::::::::::::::::::::::::
[warn]
[warn] Note: Some unresolved dependencies have extra attributes. Check that these dependencies exist with the
requested attributes.
[warn]       dev.saksmt.plugin:brokenPath:0.0.1-SNAPSHOT (scalaVersion=2.12, sbtVersion=1.0)
```

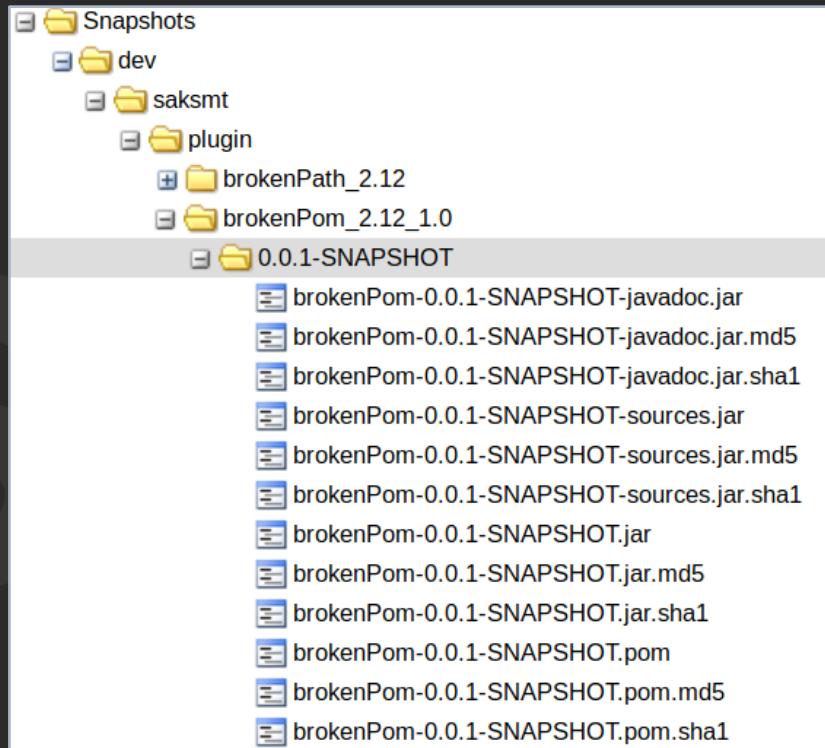
# Включаем ультра-внимательность

```
[warn] === Local snapshots: tried
[warn]   http://localhost:8081/content/repositories/snapshots/dev/saksmt/plugin/brokenPath_2.12_1.0/0.0.1-SNAPSHOT/brokenPath-0.0.1-SNAPSHOT.pom
[warn]   ::::::::::::::::::::::::::::
[warn]   ::          UNRESOLVED DEPENDENCIES         ::
[warn]   ::::::::::::::::::::::::::::
[warn]   :: dev.saksmt.plugin#brokenPath;0.0.1-SNAPSHOT: not found
[warn]   ::::::::::::::::::::::::::::
[warn]
[warn] Note: Some unresolved dependencies have extra attributes. Check that these dependencies exist with the
requested attributes.
[warn]       dev.saksmt.plugin:brokenPath:0.0.1-SNAPSHOT (scalaVersion=2.12, sbtVersion=1.0)
```

# А как оно паблишится поумолчанию?



# Чего хочет sbt?



# Кишки плагинов: pom.xml

```
[error]          Local snapshots: bad module name found in http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenPom_2.12_1.0/0.0.1-SNAPSHOT/brokenPom-0.0.1-SNAPSHOT.pom: expected='brokenPom' found='brokenPom_2.12_1.0'
[error]          Local snapshots: bad scalaVersion found in http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenPom_2.12_1.0/0.0.1-SNAPSHOT/brokenPom-0.0.1-SNAPSHOT.pom: expected='2.12' found='null'
[error]          Local snapshots: bad sbtVersion found in http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenPom_2.12_1.0/0.0.1-SNAPSHOT/brokenPom-0.0.1-SNAPSHOT.pom: expected='1.0' found='null'
[warn]  ::::::::::::::::::::::::::::
[warn]  ::      UNRESOLVED DEPENDENCIES      ::
[warn]  ::::::::::::::::::::::::::::
[warn]  :: dev.saksmt.plugin#brokenPom;0.0.1-SNAPSHOT: java.text.ParseException: inconsistent module descriptor file found in 'http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenPom_2.12_1.0/0.0.1-SNAPSHOT/brokenPom-0.0.1-SNAPSHOT.pom': bad module name: expected='brokenPom' found='brokenPom_2.12_1.0'; bad scalaVersion found in http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenPom_2.12_1.0/0.0.1-SNAPSHOT/brokenPom-0.0.1-SNAPSHOT.pom: expected='2.12' found='null';bad sbtVersion found in http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenPom_2.12_1.0/0.0.1-SNAPSHOT/brokenPom-0.0.1-SNAPSHOT.pom: expected='1.0' found='null';
[warn]  ::::::::::::::::::::::::::::
```

# И ЧТО ТАМ?

```
<project
    xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven..
    <modelVersion>4.0.0</modelVersion>
    <name>brokenPom_2.12_1.0</name>
    <groupId>dev.saksmt.plugin</groupId>
    <artifactId>brokenPom_2.12_1.0</artifactId>
    <packaging>jar</packaging>
    <description>brokenPom</description>
    <version>0.0.1-SNAPSHOT</version>
    <url>https://github.com/saksmt/scala-butthurt-tools</url>
    <licenses>
        <license>
            <name>MIT</name>
            <url>https://spdx.org/licenses/MIT.html</url>
            <distribution>repo</distribution>
        </license>
    </licenses>
    <scm>
        <connection>ssh://git@github.com/saksmt/scala-butthurt-tools.git</co
        <url>https://github.com/saksmt/scala-butthurt-tools</url>
    </scm>
    <developers>
        <developer>
            <id>saksmt</id>
            <name>Kirill Saksin</name>
        </developer>
    </developers>
    <dependencies>
        <dependency>
            <groupId>org.scala-sbt</groupId>
            <artifactId>sbt</artifactId>
            <version>1.2.8</version>
        </dependency>
    </dependencies>
</project>
```

# А не хватает чего?

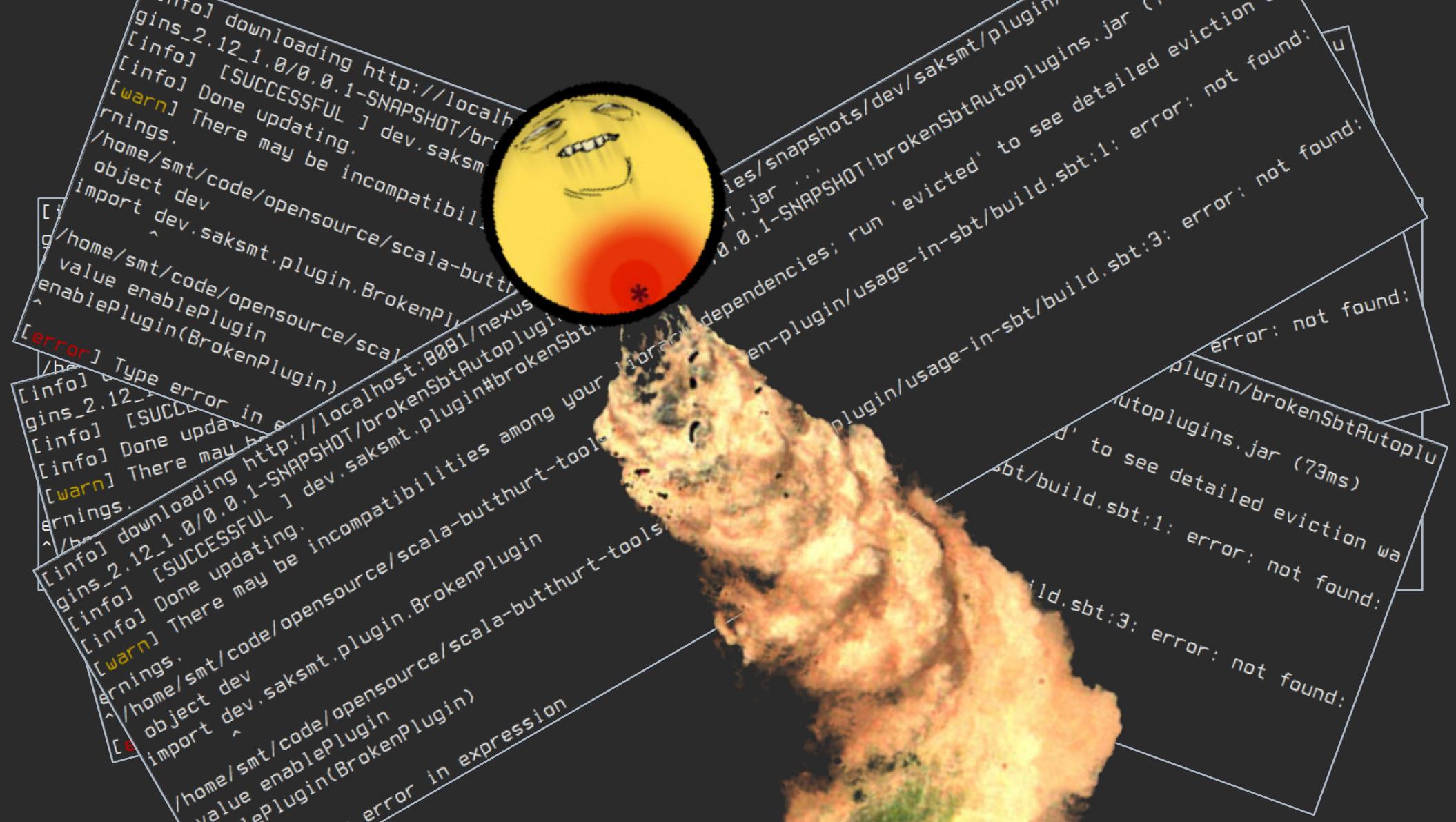
```
<properties>
    <scalaVersion>2.12</scalaVersion>
    <sbtVersion>1.0</sbtVersion>
</properties>
```

```
[info] downloading http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenSbtAutoplugins_2.12_1.0.0.0.1-SNAPSHOT/brokenSbtAutoplugins-0.0.1-SNAPSHOT.jar ...
[info] [SUCCESSFUL ] dev.saksmt.plugin#brokenSbtAutoplugins;0.0.1-SNAPSHOT!brokenSbtAutoplugins.jar (73ms)
[info] Done updating.
[warn] There may be incompatibilities among your library dependencies; run 'evicted' to see detailed eviction warnings.
/home/smt/code.opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:1: error: not found:
object dev
import dev.saksmt.plugin.BrokenPlugin
 ^
/home/smt/code.opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:3: error: not found:
  value enablePlugin
enablePlugin(BrokenPlugin)
 ^
[error] Type error in expression
```

```
[info] downloading http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenSbtAutoplugins_2.12_1.0/0.0.1-SNAPSHOT/brokenSbtAutoplugins_0.0.1-SNAPSHOT.jar ...
[info] [SUCCESSFUL ] dev.saksmt, org.scala-sbt#brokenSbtAutoplugins_0.0.1-SNAPSHOT!brokenSbtAutoplugins_0.0.1-SNAPSHOT.jar ...
[info] Done updating.
[warn] There may be incompatibilities among your library dependencies; run 'evicted' to see detailed eviction warnings.
[info] downloading http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenSbtAutoplugins_2.12_1.0/0.0.1-SNAPSHOT/brokenSbtAutoplugins_0.0.1-SNAPSHOT.jar ...
[info] [SUCCESSFUL ] dev.saksmt.plugin#brokenSbtAutoplugins_0.0.1-SNAPSHOT!brokenSbtAutoplugins_0.0.1-SNAPSHOT (73ms)
[info] Done updating.
[warn] There may be incompatibilities among your library dependencies; run 'evicted' to see detailed eviction warnings.
^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:1: error: not found:
object dev
^import dev.saksmt.plugin.BrokenPlugin
/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:3: error: not found:
  value enablePlugin
  enablePlugin(BrokenPlugin)
^
[error] Type error in expression
```

```
[info] downloading http://localhost:8081/nexus/content/repositories/snapshots/dev/saksmt/plugin/brokenSbtAutoplugins_2.12-1.0.0.1-SNAPSHOT/brokenSbtAutoplugins.jar (73ms)
[info] [SUCCESSFUL] dev.saksmt.plugin#brokenSbtAutoplugins;0.0.1-SNAPSHOT!brokenSbtAutoplugins.jar: error: not found: u
[warn] Done updating.
[warn] There may be incompatibilities among your library dependencies; run 'evicted' to see detailed eviction wa
rnings.
^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:1: error: not found:
object dev
  import dev.saksmt.plugin.BrokenPlugin
    ^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:1: error: not found:
      value enablePlugin
        ^enablePlugin(BrokenPlugin)
[error] Type error in expression
^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:3: error: not found:
[info] [SUCC
gins_2.12->
[info] Done update
[info] There may be expression
ernings.
^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:1: error: not found:
object dev
  import dev.saksmt.plugin.BrokenPlugin
    ^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:1: error: not found:
      value enablePlugin
        ^enablePlugin(BrokenPlugin)
[error] Type error in expression
^/home/smt/code/opensource/scala-butthurt-tools/samples/broken-plugin/usage-in-sbt/build.sbt:3: error: not found:
```





```
[info] downloading http://localhos...  
gins_2.12_1.0/0.0.1-SNAPSHOT/bro...  
[info] [SUCCESSFUL ] dev.saksm...  
[info] Done updating.  
[warn] There may be incompatibili...  
rnings.  
object dev  
import dev.saksmt.code/opensource/scala-butt...  
g/home/smt/code/opensource/scala-butt...  
value enablePlugin  
enablePlugin(BrokenPlugin)  
[error] Type error in  
/home/smt/code/opensource/scala-butt...  
gins_2.12_1.0/0.0.1-SNAPSHOT/bro...  
[info] [SUCC...  
[info] Done update...  
[warn] There may be incompatibili...  
ernings.  
[info] downloading http://localhost:8081/nexus...  
gins_2.12_1.0/0.0.1-SNAPSHOT/bro...  
[info] [SUCCESSFUL ] dev.saksmt.plugin#brokenSbt...  
[info] Done updating.  
[warn] There may be incompatibilities among your libra...  
ernings.  
object dev  
import dev.saksmt.plugin.BrokenPlugin  
/home/smt/code/opensource/scala-butt...  
value enablePlugin  
enablePlugin(BrokenPlugin)  
[error in expression]
```



# CLI: аргументы

```
$ sbt testOnly "**TrueSpec"
[info] Loading settings for project global-plugins from idea.sbt .
...
[info] Loading global plugins from /home/smt/.sbt/1.0/plugins
[info] Loading settings for project usage-in-sbt-build from plugin
s.sbt ...
[info] Loading project definition from /home/smt/code.opensource/s
cala-butthurt-tools/samples/broken-plugin/usage-in-sbt/project
[info] Loading settings for project usage-in-sbt from build.sbt ..
.
[info] Set current project to usage-in-sbt (in build file:/home/sm
t/codeopensource-scala-butthurt-tools/samples/broken-plugin/usage
-in-sbt/)
[info] Passed: Total 0, Failed 0, Errors 0, Passed 0
[info] No tests to run for Test / testOnly
[success] Total time: 0 s, completed 19.02.2019 16:20:15
[error] Expected symbol
[error] Not a valid command: **
[error] **TrueSpec
```

# Shell: несколько команд

```
sbt:usage-in-sbt> compile test
[error] Expected whitespace character
[error] Expected '/'
[error] compile test
[error] ^
```

**Resolve keys, resolve project, ...**







# Простой билд

```
import mill._, mill.scalalib._

trait Common extends ScalaModule {
  def scalaVersion = "2.12.8"
  def organization = "dev.saksmt.mill_sample"

  override def scalacOptions: Target[Seq[String]] = Seq(
    "-Ypartial-unification",
    "-unchecked",
    "-feature",
    "-Ywarn-value-discard"
  )

  def build() = T.command {
    compile()
    test.test()
  }

  object test extends super.Tests {
    override def ivyDeps = Agg(ivy"org.scalatest::scalatest:3.0.1")

    def testFrameworks: Target[Seq[String]] = Seq("org.scalatest.tools.Framework")
  }
}

object core extends Common
object api extends Common {
  override def moduleDeps = Seq(core)
}

def build() = T.command {
  core.build()()
  api.build()()
}
```

# CLI: mill покажи кишки!

```
$ mill show api.test.ivyDeps
[1/1] show
[
  {
    "dep": {
      "module": {
        "organization": "org.scalatest",
        "name": "scalatest",
        "attributes": {

        }
      },
      "version": "3.0.1",
      "configuration": "default(compile)",
      "exclusions": [

      ],
      "attributes": {
        "type": "",
        "classifier": ""
      },
      "optional": false,
      "transitive": true
    },
    "cross": {
      "$type": "mill.scalalib.CrossVersion.Binary",
      "platformed": false
    },
    "force": false
  }
]
```

# CLI: чего надо этой таске?

```
$ mill insepect build
Cannot resolve insepect. Did you mean inspect?
$ mill inspect build
[1/1] inspect
build(build.sc:31)

Inputs:
  core.compile
  core.test.forkArgs
  core.test.forkEnv
  core.test.testFrameworks
  core.test.testFrameworks
  core.test.runClasspath
  core.test.runClasspath
  core.test.compile
  core.test.forkWorkingDir
  api.compile
  api.test.forkArgs
  api.test.forkEnv
  api.test.testFrameworks
  api.test.testFrameworks
  api.test.runClasspath
  api.test.runClasspath
  api.test.compile
  api.test.forkWorkingDir
```

# Рефакторим билд

**buildCommons/  
common.sc**

**buildModules/  
api.sc  
core.sc**

**build.sc**

# buildCommons/common.sc

```
import mill._, mill.scalalib._

trait Common extends ScalaModule {
    def scalaVersion = "2.12.8"
    def organization = "dev.saksmt.mill_sample"

    override def scalacOptions: Target[Seq[String]] = Seq(
        "-Ypartial-unification",
        "-unchecked",
        "-feature",
        "-Ywarn-value-discard"
    )

    def build() = T.command {
        compile()
        test.test()()
    }

    object test extends super.Tests {
        override def ivyDeps = Agg(ivy"org.scalatest::scalatest:3.0.1")

        def testFrameworks: Target[Seq[String]] = Seq("org.scalatest.tools.Framework")
    }
}
```

## buildModules/api.sc

```
import $file.^ .buildCommons.common
import $file.coreModule

object api extends common.Common {
  override def moduleDeps = Seq(coreModule.core)
}
```

## buildModules/core.sc

```
import $file.^ .buildCommons.common

object core extends common.Common
```

## build.sc

```
import mill._

import $file.buildModules.coreModule
import $file.buildModules.apiModule

def build() = T.command {
  coreModule.core.build()()
  apiModule.api.build()()
}
```

**Mill – build tool для вашего  
следующего проекта**





# Кеширование и сериализация

```
import mill._, mill.scalalib._

case class MyCustomDataType()

object reallyNaive extends ScalaModule {
    def scalaVersion = "2.12.8"
    def taskWithMyCustomDataType = T(MyCustomDataType())
}
```

# Кеширование и сериализация

```
$ mill reallyNaive.taskWithMyCustomDataType
Compiling /home/smt/Documents/talks/scala-butthurt-tools/samples/mill/missing-codec/build.sc
build.sc:9: could not find implicit value for parameter rw: upickle.default.ReadWriter[build.this.MyCustomDataType]
  def taskWithMyCustomDataType = T(MyCustomDataType())
                                         ^
build.sc:9: `T.command` definitions must have 1 parameter list
  def taskWithMyCustomDataType = T(MyCustomDataType())
                                         ^
Compilation Failed
```

# Аппликативная мина

```
import mill._, mill.scalalib._

object naive extends ScalaModule {
    def scalaVersion = "2.12.8"

    def myCustomTask = T {
        "hello"
    }

    def myTaskF(str: String) = T.task { str + "!" }

    def myCustomTaskWithDependencies = T {
        myTaskF(myCustomTask())()
    }
}
```

# Подорвались

```
$ mill naive.myCustomTaskWithDependencies
Compiling /home/smt/Documents/talks/scala-butthurt-tools/samples/mill/mill-applicatives/build.sc
build.sc:13: Target#apply() can only be used with a T{...} block
    myTaskF(myCustomTask())
                           ^
Compilation Failed
```

# А ЧЕГО МЫ ХОТЕЛИ-ТО?

```
def myCustomTask : Task[String] = Task.pure(value = "hello")
def myTaskF : String => Task[String] = (str: String) => Task.pure(str + "!")
def myCustomTaskWithDependencies : Task[String] = myCustomTask.flatMap(myTaskF)
```



# Аппликативы говорите?

```
import mill._, mill.scalalib._

class Sample(scV: String) extends ScalaModule {
    def scalaVersion : Target[String] = scV

    def build() = T.command { Thread.sleep( millis = 5000 ) }
}

object sample extends Cross[Sample]( cases = "2.11.12", "2.12.8")
```

# Аппликативы говорите?

```
import mill._, mill.scalalib._

class Sample(scV: String) extends ScalaModule {
    def scalaVersion : Target[String] = scV

    def build() = T.command { Thread.sleep( millis = 5000 ) }
}

object sample extends Cross[Sample]( cases = "2.11.12", "2.12.8")
```

```
$ time mill ___.build
[2/2] sample[2.12.8].build
mill ___.build 0,27s user 0,06s system 3% cpu 10,17s total
```

# Аппликативы говорите?

```
import mill._, mill.scalalib._

class Sample(scV: String) extends ScalaModule {
    def scalaVersion : Target[String] = scV

    def build() = T.command { Thread.sleep( millis = 5000 ) }
}

object sample extends Cross[Sample]( cases = "2.11.12", "2.12.8")
```

```
$ time mill _._.build
[2/2] sample[2.12.8].build
mill _._.build 0,27s user 0,06s system 3% cpu 10,178 total
```

```
$ time (mill '_[2.11.12].build'; mill '_[2.12.8].build')
[1/1] sample[2.11.12].build
[1/1] sample[2.12.8].build
( mill '_[2.11.12].build'; mill '_[2.12.8].build' ; ) 0,56s user 0,08s system 6% cpu 10,377 total
```

**Видишь документацию? Нет. И я не вижу**





Oron Port @soronpo

How do I use mill with a different scala organization? Specifically I want to use Typelevel Scala.  
I tried

```
object foo extends ScalaModule{
  def scalaOrganization = "org.typelevel"
  def scalaVersion = "2.12.4-bin-typelevel-4"
}
```

and I get

```
Compiling compiler interface...
1 targets failed
foo.compile java.util.NoSuchElementException: None.get
  scala.None$.get(Option.scala:366)
  scala.None$.get(Option.scala:364)
  mill.scalalib.ZincWorkerModule.$anonfun$worker$5(ZincWorkerModule.scala:62)
  mill.scalalib.worker.ZincWorkerImpl.compileZincBridgeIfNeeded(ZincWorkerImpl.scala:84)
  mill.scalalib.worker.ZincWorkerImpl.withCompilers(ZincWorkerImpl.scala:224)
  mill.scalalib.worker.ZincWorkerImpl.compileMixed0(ZincWorkerImpl.scala:187)
  mill.scalalib.worker.ZincWorkerImpl.compileMixed(ZincWorkerImpl.scala:159)
  mill.scalalib.ScalaModule.$anonfun$compile$2(ScalaModule.scala:126)
  mill.define.ApplyerGenerated.$anonfun$zipMap$9(ApplicativeGenerated.scala:21)
  mill.define.Task$MappedDest.evaluate(Task.scala:337)
```



Li Haoyi @lihaoyi

no idea, build Mill with a `println` and see why it's misbehaving?



Oron Port @soronpo

OK, will do

I'll open an issue in the meanwhile.



Oron Port @soronpo

Jan 29 17:51

[lihaoyi/mill#527](#) this is unfortunate. Any workaround to get the dependency libraries automatically imported to IntelliJ project?



Li Haoyi @lihaoyi

Jan 29 18:12

fix it?



Oron Port @soronpo

Jan 29 18:16

I'd love to if I find the time. Currently I'm considering the move to mill from sbt, but the extra cost to make things work seems higher than remain with the broken concept of sbt that works.



Li Haoyi @lihaoyi

Jan 29 18:40

stay with SBT then



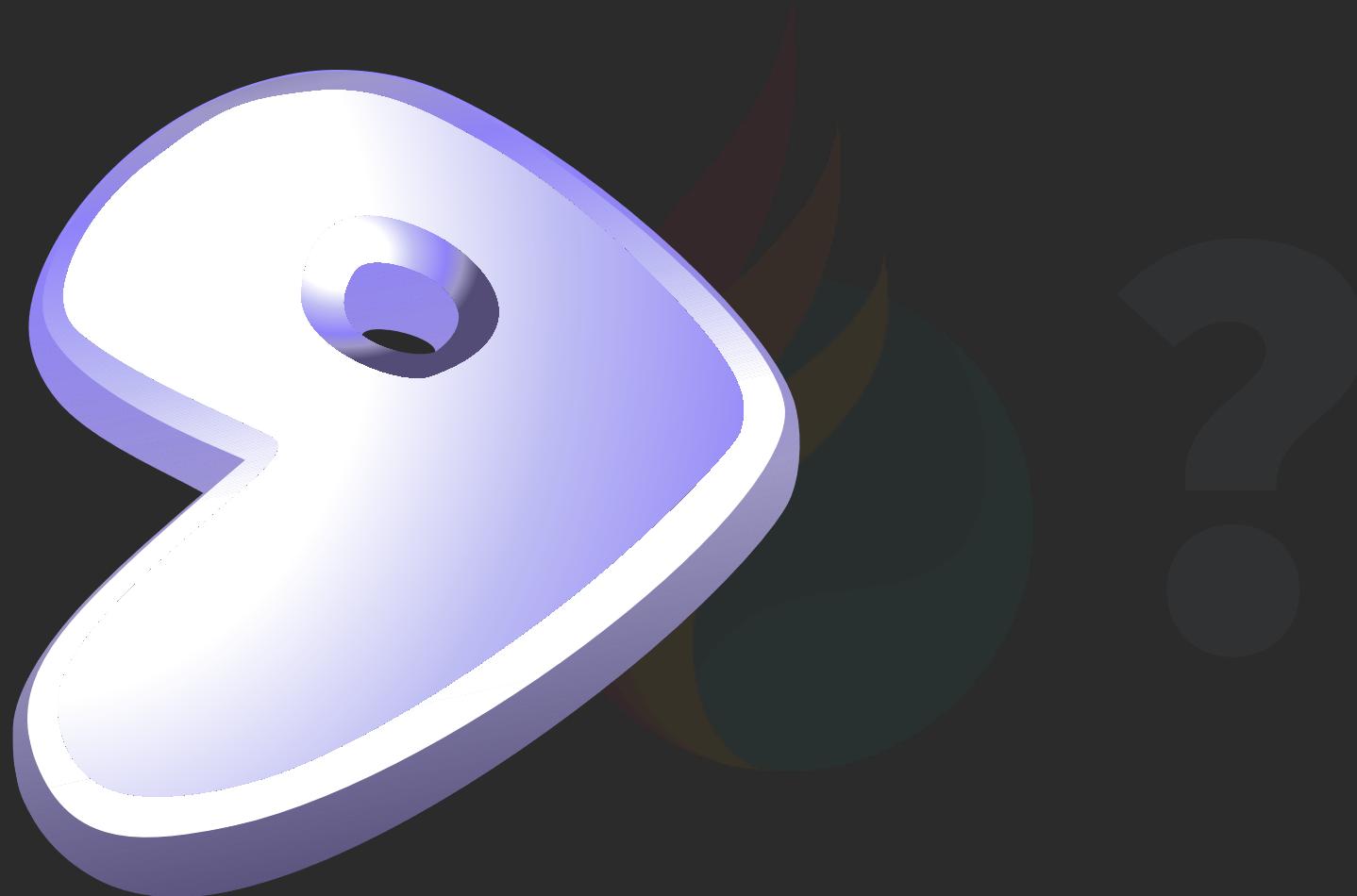


# Лечим бинарные несовместимости ампутацией

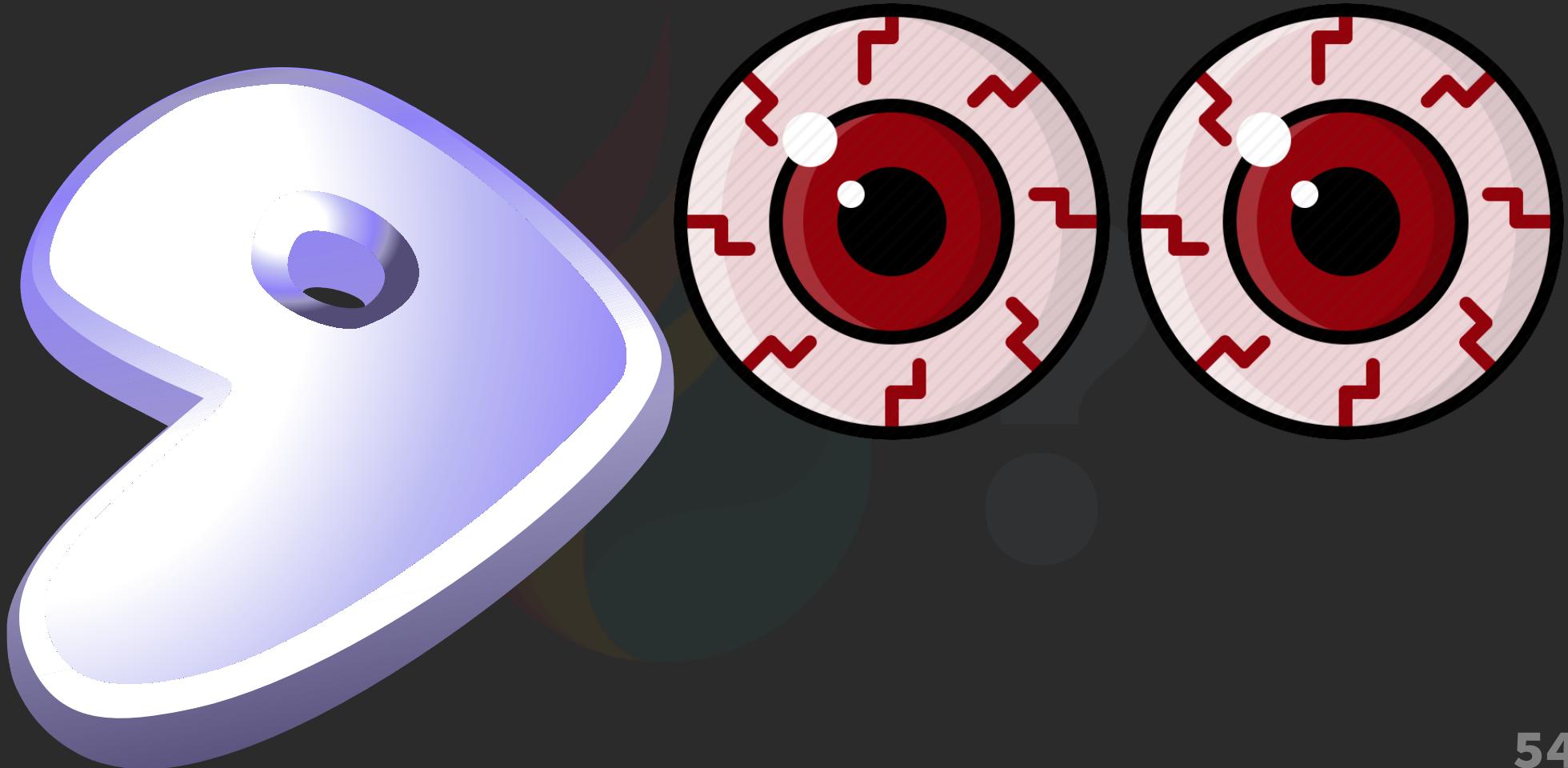
```
java.lang.NoSuchMethodError: cats.implicitly$.catsSyntaxFlatten(Ljava/lang/Object;Lcats/FlatMap;)Lcats/syntax/FlattenOps;
  at org.http4s.MessageOps$class.as(MessageOps.scala:91)
  at org.http4s.Request.as(Message.scala:144)
  at MyWebServer$$anonfun$1.applyOrElse(MyWebServer.scala:57)
  at MyWebServer$$anonfun$1.applyOrElse(MyWebServer.scala:51)
  at org.http4s.package$AuthedService$$anonfun$apply$3.apply(package.scala:77)
  at org.http4s.package$AuthedService$$anonfun$apply$3.apply(package.scala:77)
  at cats.data.Kleisli.apply(Kleisli.scala:71)
  at org.http4s.server.middleware.authentication.package$$anonfun$challenged$1$$anonfun$apply$1.apply(package.scala:14)
  at org.http4s.server.middleware.authentication.package$$anonfun$challenged$1$$anonfun$apply$1.apply(package.scala:12)
  at fs2.Task$$anonfun$flatMap$1$$anonfun$1.apply(Task.scala:40)
  at fs2.Task$$anonfun$flatMap$1$$anonfun$1.apply(Task.scala:40)
  at fs2.util.Attempt$.apply(Attempt.scala:12)
  at fs2.Task$$anonfun$flatMap$1.apply(Task.scala:40)
  at fs2.Task$$anonfun$flatMap$1.apply(Task.scala:38)
  at scala.Function1$$anonfun$andThen$1.apply(Function1.scala:52)
  at scala.Function1$$anonfun$andThen$1.apply(Function1.scala:52)
  at fs2.internal.Future$$anonfun$flatMap$1.apply(Future.scala:17)
  at fs2.internal.Future$$anonfun$flatMap$1.apply(Future.scala:17)
  at fs2.internal.Future.step(Future.scala:53)
  at fs2.internal.Future.listen(Future.scala:30)
  at fs2.internal.Future.runAsync(Future.scala:69)
  at fs2.Task.unsafeRunAsync(Task.scala:100)
  at org.http4s.server.blaze.Http1ServerStage$$anonfun$runRequest$1.apply$mcV$sp(Http1ServerStage.scala:109)
  at fs2.Strategy$$anon$3$$anon$4.run(Strategy.scala:54)
  at scala.concurrent.impl.ExecutionContextImpl$AdaptedForkJoinTask.exec(ExecutionContextImpl.scala:121)
  at scala.concurrent.forkjoin.ForkJoinTask.doExec(ForkJoinTask.java:260)
  at scala.concurrent.forkjoin.ForkJoinPool$WorkQueue.runTask(ForkJoinPool.java:1339)
  at scala.concurrent.forkjoin.ForkJoinPool.runWorker(ForkJoinPool.java:1979)
  at scala.concurrent.forkjoin.ForkJoinWorkerThread.run(ForkJoinWorkerThread.java:107)
```



# Source-based dependencies



# Source-based dependencies



Сговор?



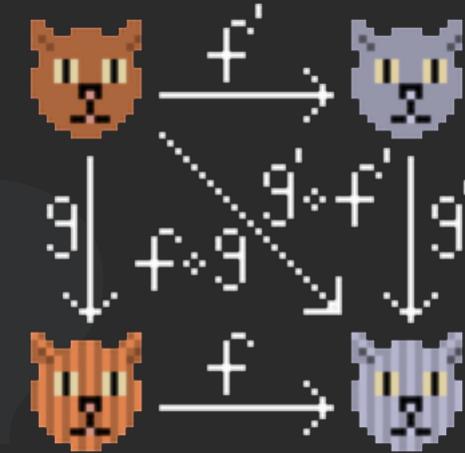
Bamboo



GitLab



# Существующие библиотеки



Finch

# Новые концепты

A word cloud diagram centered around Scala concepts. The words are arranged in a circular pattern, with some words appearing multiple times in different colors. The concepts include:

- application
- schema
- dependency
- repo
- dynamic
- git
- module
- shared
- compiler
- sources
- library
- linking
- project
- import
- plugin
- layer
- scala



# Вопросы?

Scala User Group



Telegram:  
[@scala\\_ru](https://t.me/scala_ru)

Meetup.com:  
[@Scalaspb](https://www.meetup.com/Scalaspb)

Podcast:  
[scalalaz.ru](http://scalalaz.ru)

YouTube:  
[goo.gl/1Tdvyw](http://goo.gl/1Tdvyw)