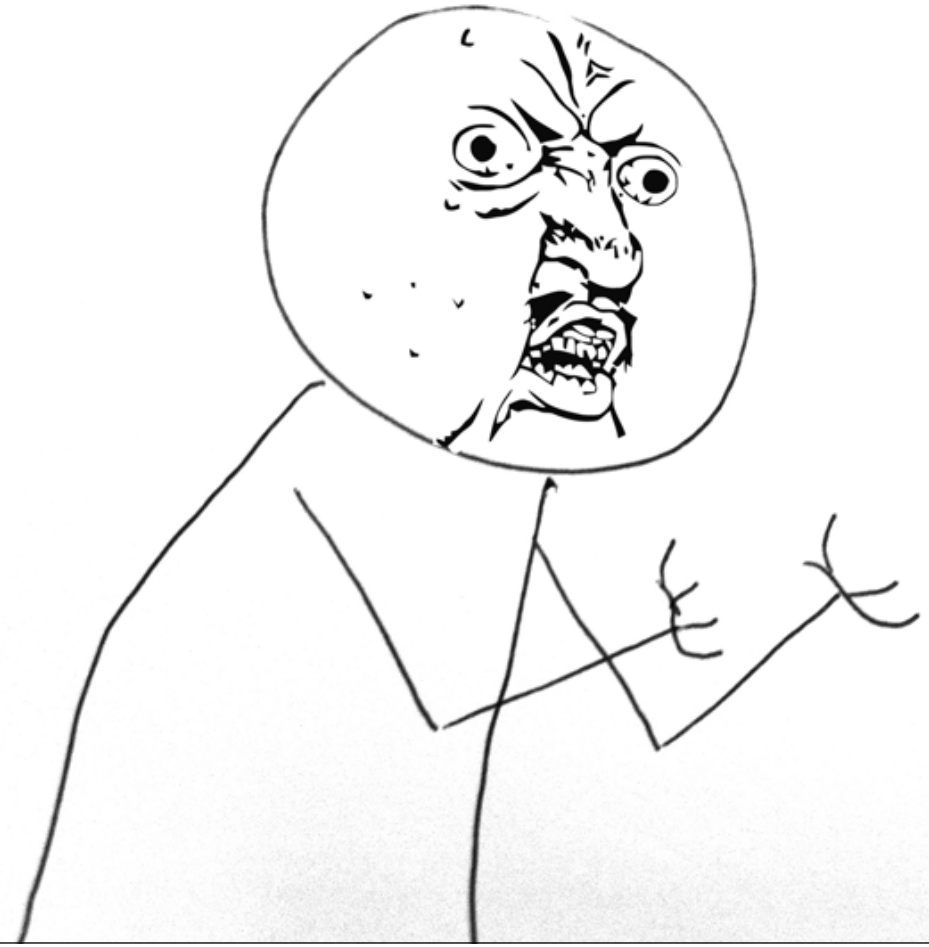
Scala in the JEE world

How and why we have used Scala to implement portions of typical Java EE

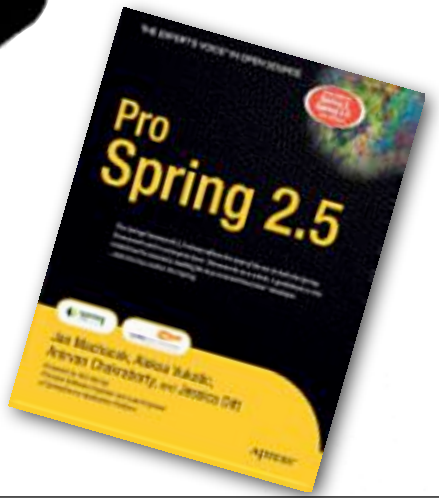
@honzam3gg

Jan Macháček

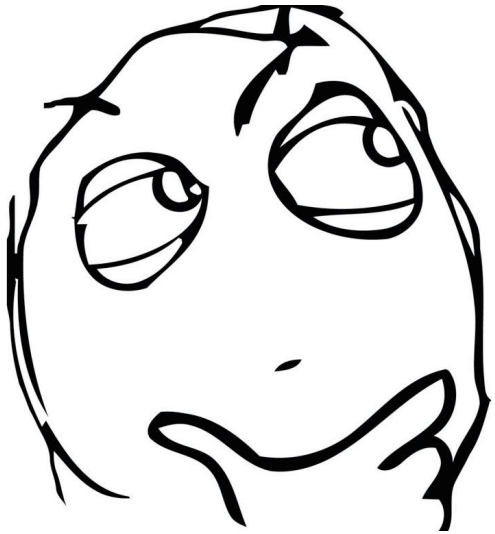


@honzam399

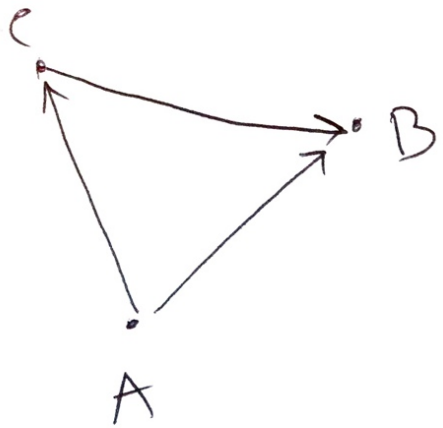
Jan Macháček



Experts at Cake Solutions



They thought we wanted



$\Gamma \vdash_{\lambda\to} M : A$

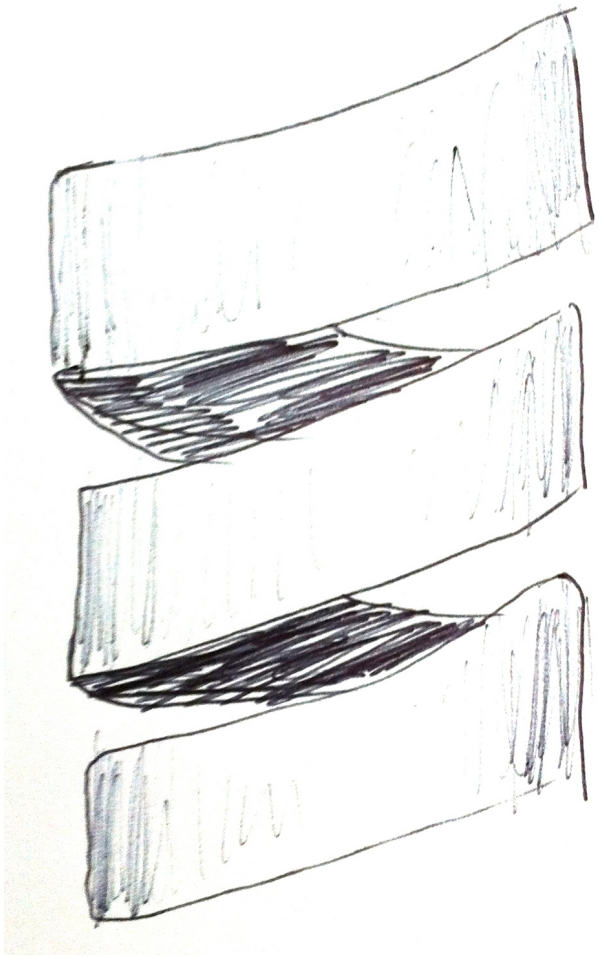
$f : A \to B$, $g : B \to C$:

$g \cdot f : A \to C$, $1_A : A \to A$

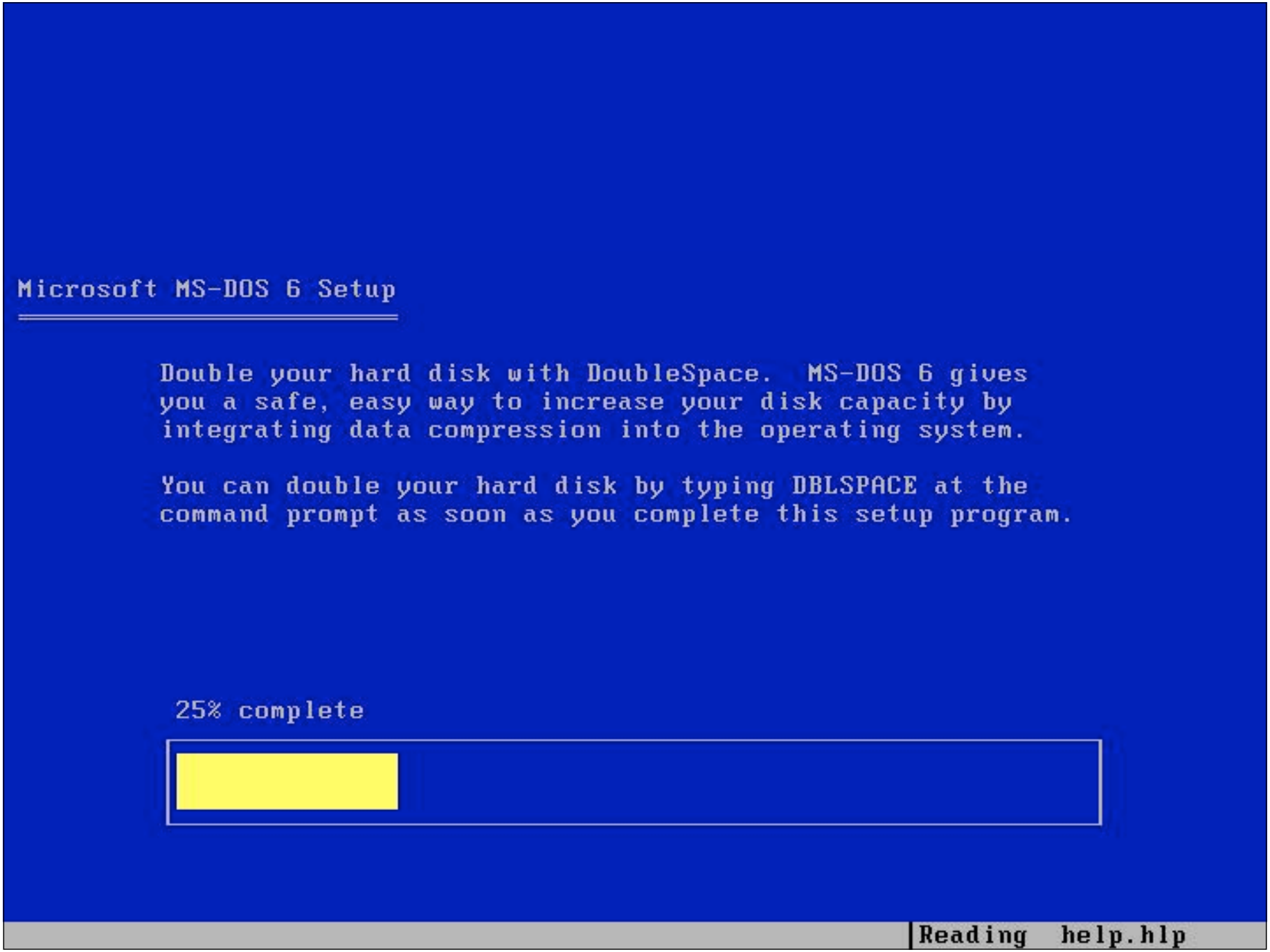
$h \cdot (g \cdot f) = (h \cdot g) \cdot f$; $f \cdot 1_A = f = 1_B \cdot f$

They thought we wanted

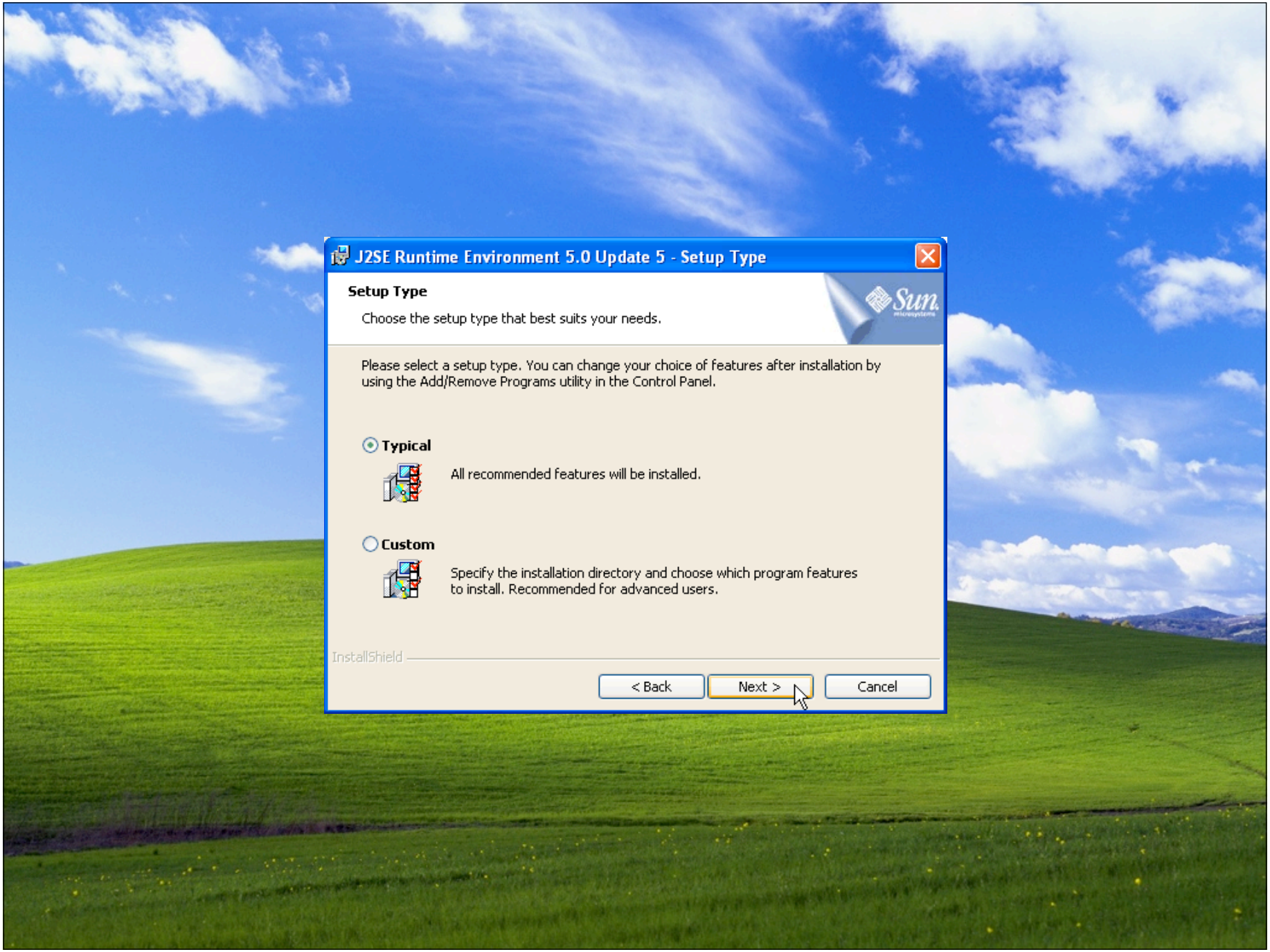
Use Scala

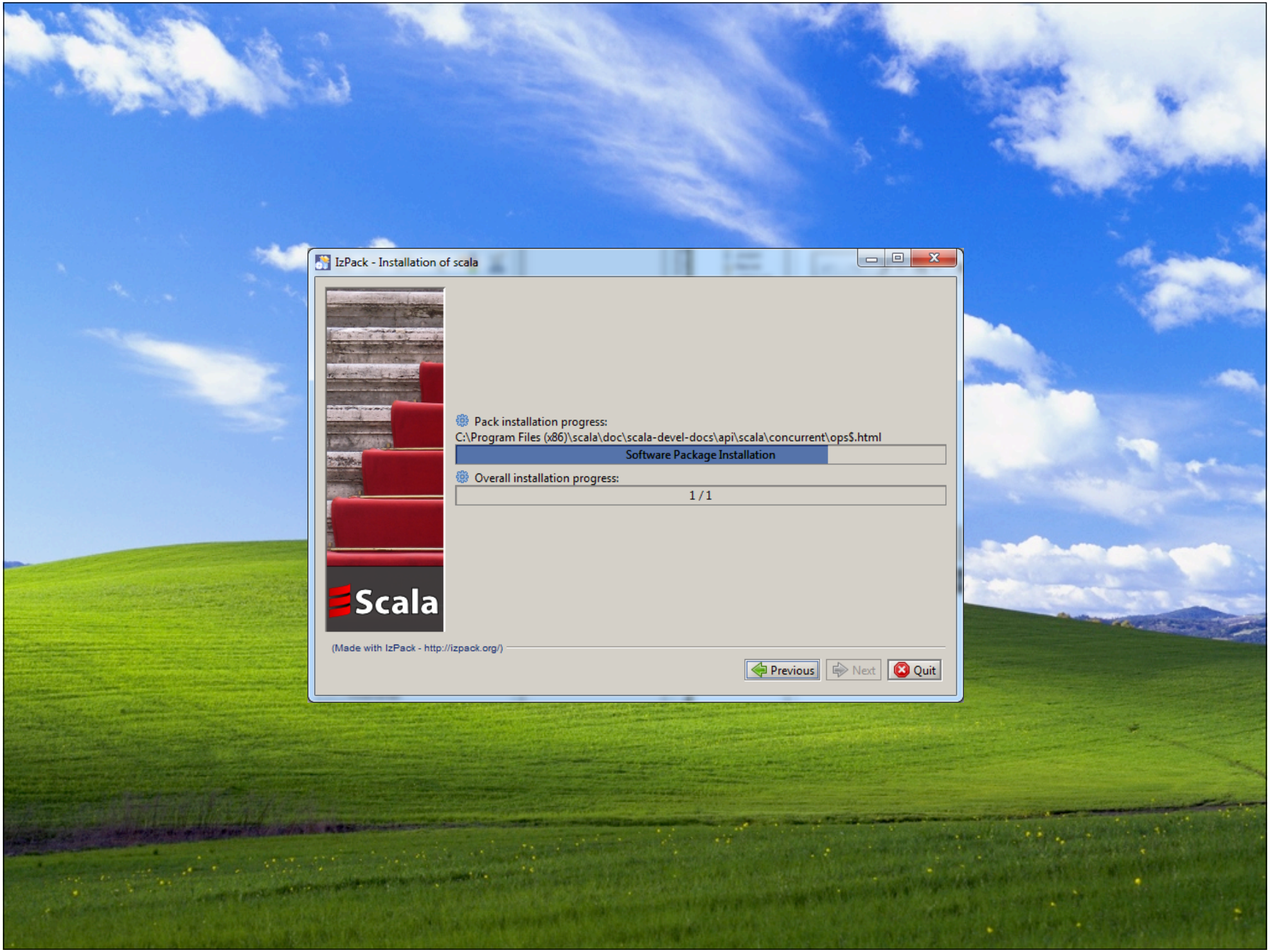


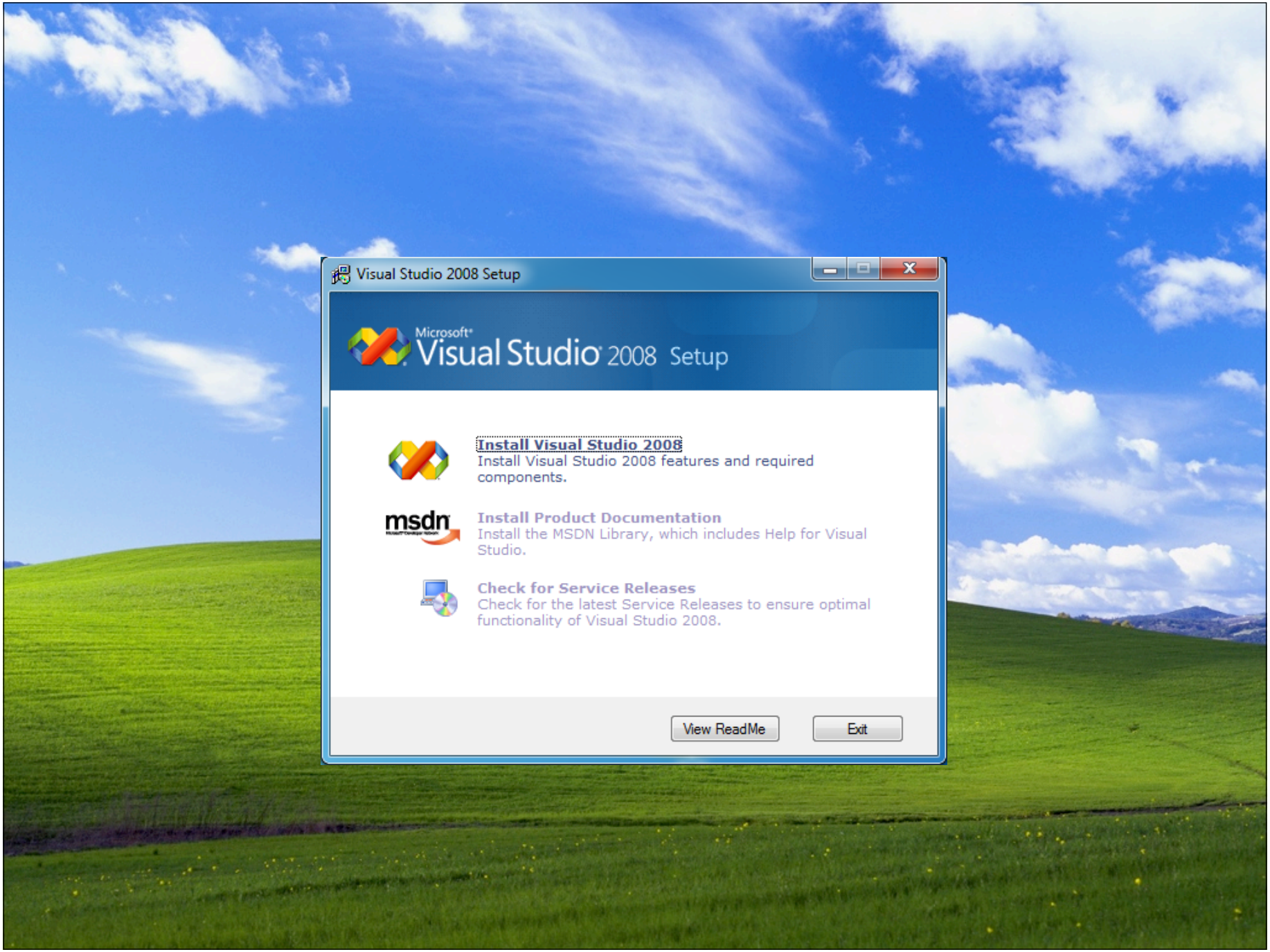
Use Scala


Microsoft MS-DOS 6 Setup
Double your hard disk with DoubleSpace. MS-DOS 6 gives you a safe, easy way to increase your disk capacity by integrating data compression into the operating system.
You can double your hard disk by typing DBLSPACE at the command prompt as soon as you complete this setup program.
25% complete
Reading help.hlp


C:\temp\SPECIAL
File Edit View Favorites Tools Help
Back Search Folders
Address C:\temp\SPECIAL
Go
File and Folder
Make a new folder
Publish this folder to the Web
Share this folder
Other Places
temp
My Documents
My Computer
My Network Places
Details
DATA
PROGRAM
_INST32I....
_ISDEL.EXE
_SETUP.DLL
_SYS1.CAB
_USER1.CAB
DATA1.CAB
DATA.TAG
LANG.DAT
LAYOUT.BIN
OS.DAT
README.TXT
SETUP.EXE
SETUP.INI
SETUP.INS
SETUP.LID

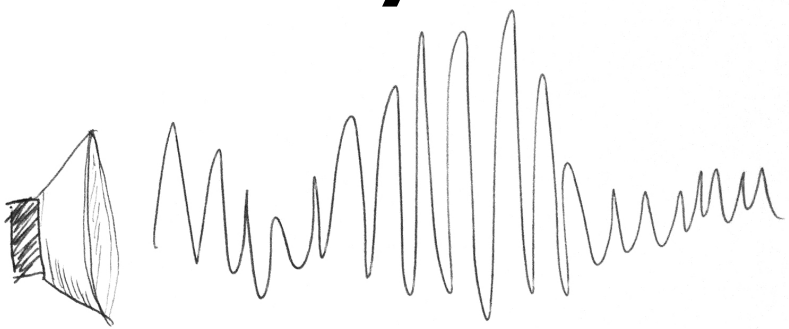

J2SE Runtime Environment 5.0 Update 5 - Setup Type
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type. You can change your choice of features after installation by using the Add/Remove Programs utility in the Control Panel.
Typical
All recommended features will be installed.
Custom
Specify the installation directory and choose which program features to install. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel


IzPack - Installation of scala
Scala
Pack installation progress:
C:\Program Files (x86)\scala\doc\scala-devel-docs\api\scala\concurrent\ops$.html
Software Package Installation
Overall installation progress:
1 / 1
(Made with IzPack - http://izpack.org/)
Previous
Next
Quit

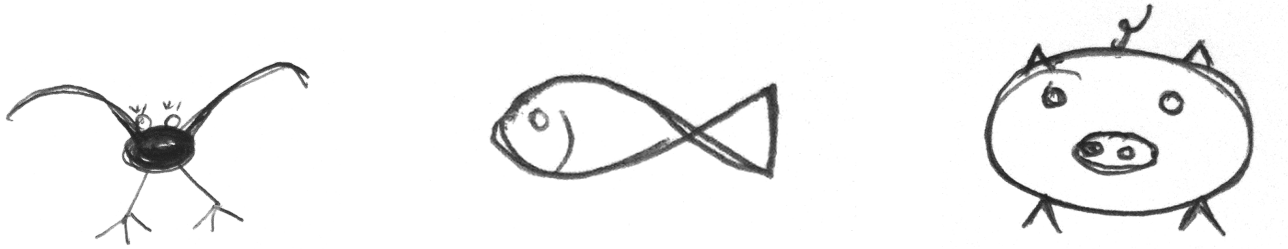

Visual Studio 2008 Setup
Microsoft
Visual Studio 2008 Setup
Install Visual Studio 2008
Install Visual Studio 2008 features and required components.
msdn
Install Product Documentation
Install the MSDN Library, which includes Help for Visual Studio.
Check for Service Releases
Check for the latest Service Releases to ensure optimal functionality of Visual Studio 2008.
View ReadMe
Exit

Maven, baby

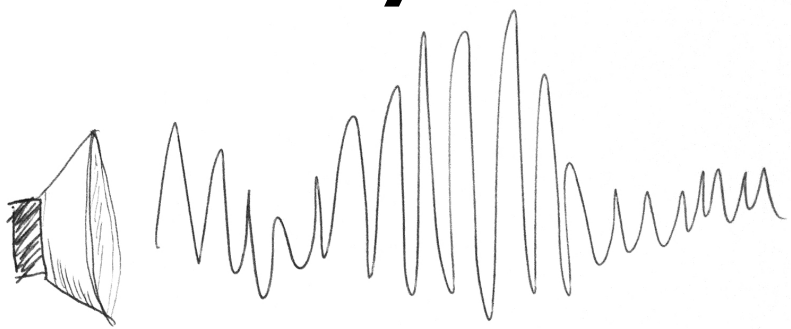
We actually wanted



$$x = 5 + 5$$

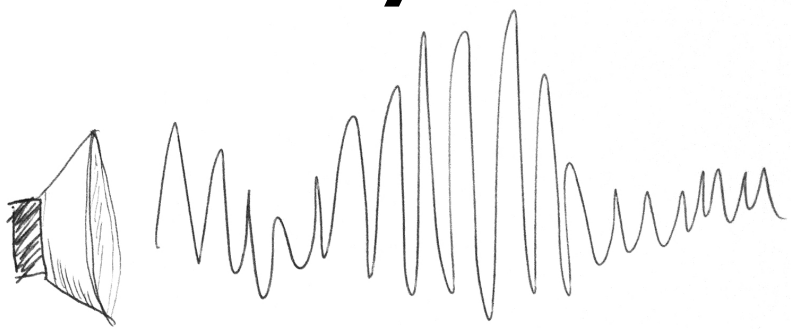


We actually wanted



```
val total =
    items map { i => i.price * i.quantity } sum
```

We actually wanted

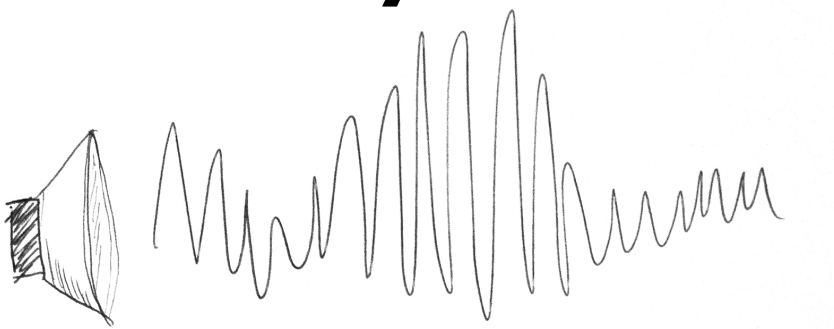


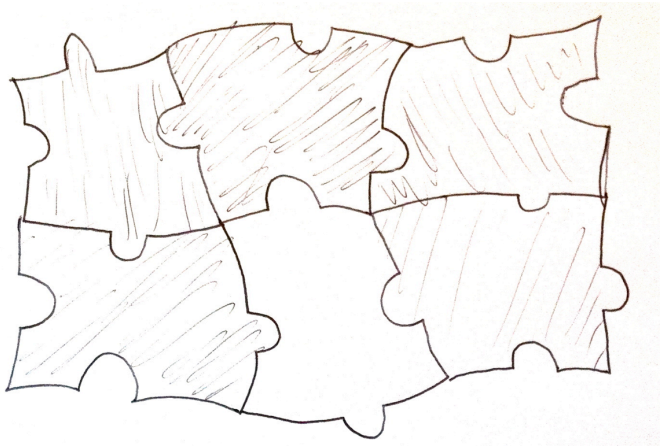
```
case class Order(customer: String,
                 items: Seq[Item])

case class Item(name: String,
                quantity: BigDecimal,
                price: BigDecimal)
```

≈

```
val order = Order("Jan",
                  Item("x", 2, 2.5) :: Item("y", 3, 3.25) :: Nil)

val total = order.items map { i => i.quantity * i.price } sum
```

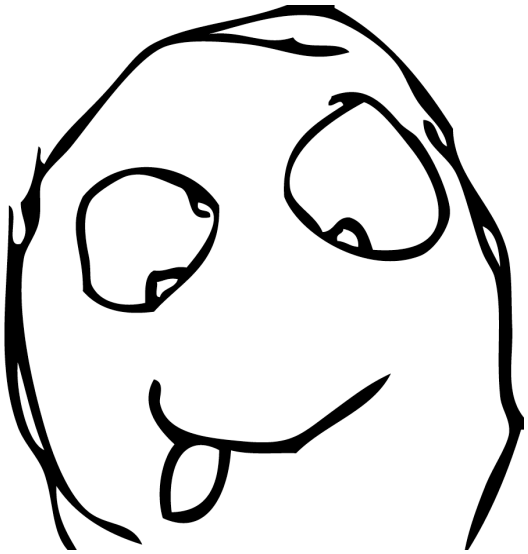
We actually wanted

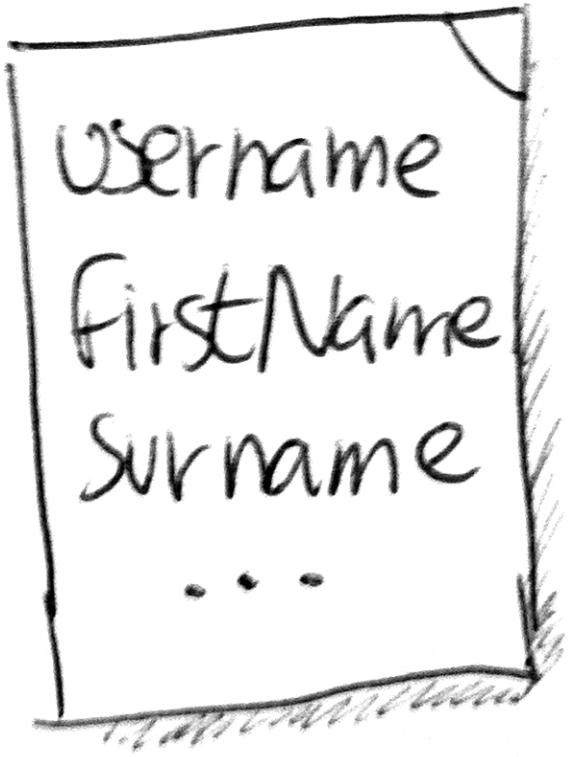




$\lambda x \rightarrow x + 2$

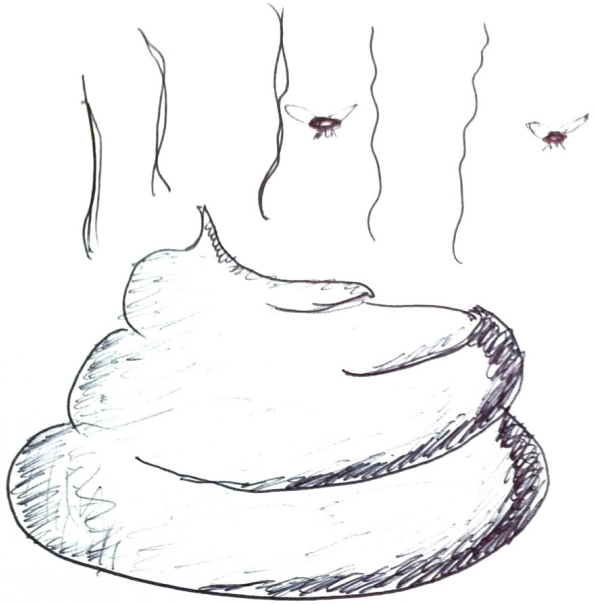
Case study: User





Case study: User

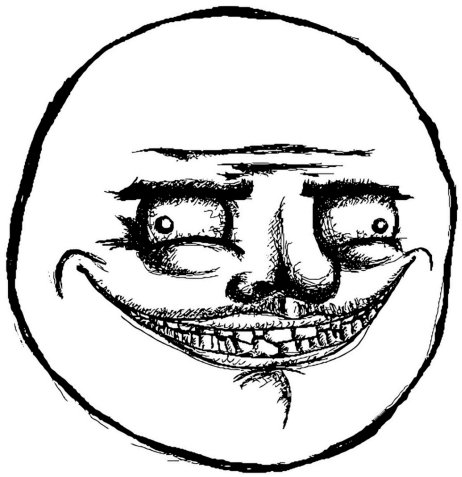
```
public class User {
    private String username;
    private String firstName;
    private String surname;
```



```
}
```

Case study: User

```
case class User(
    username: String,
    firstName: String,
    surname: String)
```

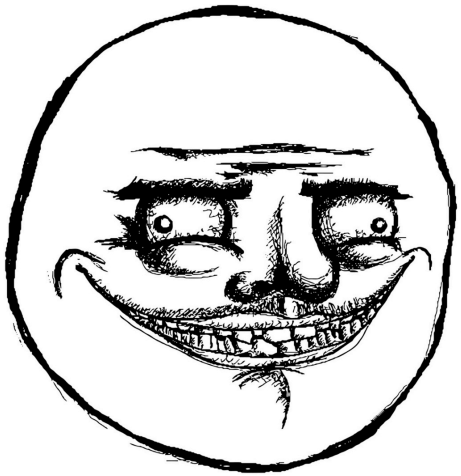


Case study: Maps

```
Map<String, List<? extends Foo<?>>> map =
    new HashMap<String, List<? extends Foo<?>>>();

if (map.containsKey("foo")) {
    List<? extends Foo<?>> v = map.get("foo");
    if(v != null) {
        // there and not null
    } else {
        // there and null
    }
} else {
    // not there
}
```

Case study: Maps

```
val map: Map[String, List[_ <: Foo[_]]] = Map()

map.get("foo") match {
  case Some(v) if v != null =>
    // there and not null
  case Some(v) =>
    // there and null
  case None =>
    // not there
}
```

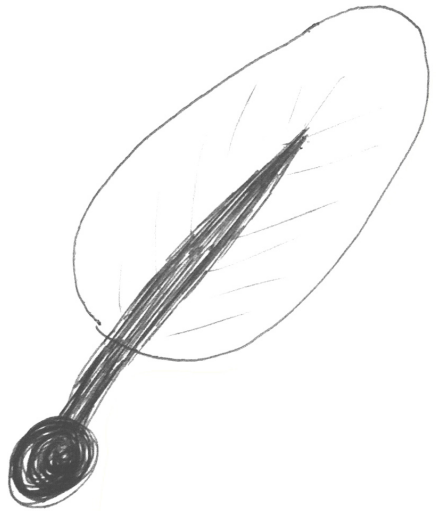


Case study: JDBC

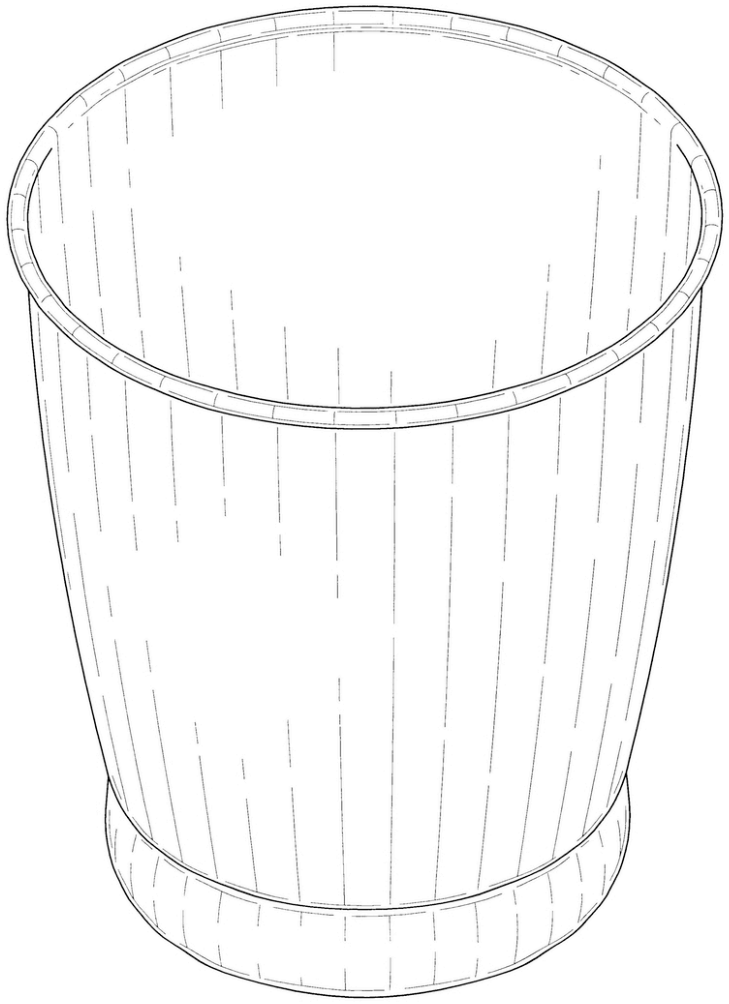
```
val template = new SimpleJdbcTemplate(dataSource)

val result = template.query("SELECT * ...") {
    rs =>
      User(rs.getString("username"),
           rs.getString("firstName"),
           rs.getString("surname"))
}
```

Case study: JDBC

```
<beans  xmlns="http://www.springframework.org/schema/beans"
        xmlns:content=" ... "
        ... >

    <jdbc:embedded-database id="dataSource" />
    <tx:annotation-driven />

</beans>
```



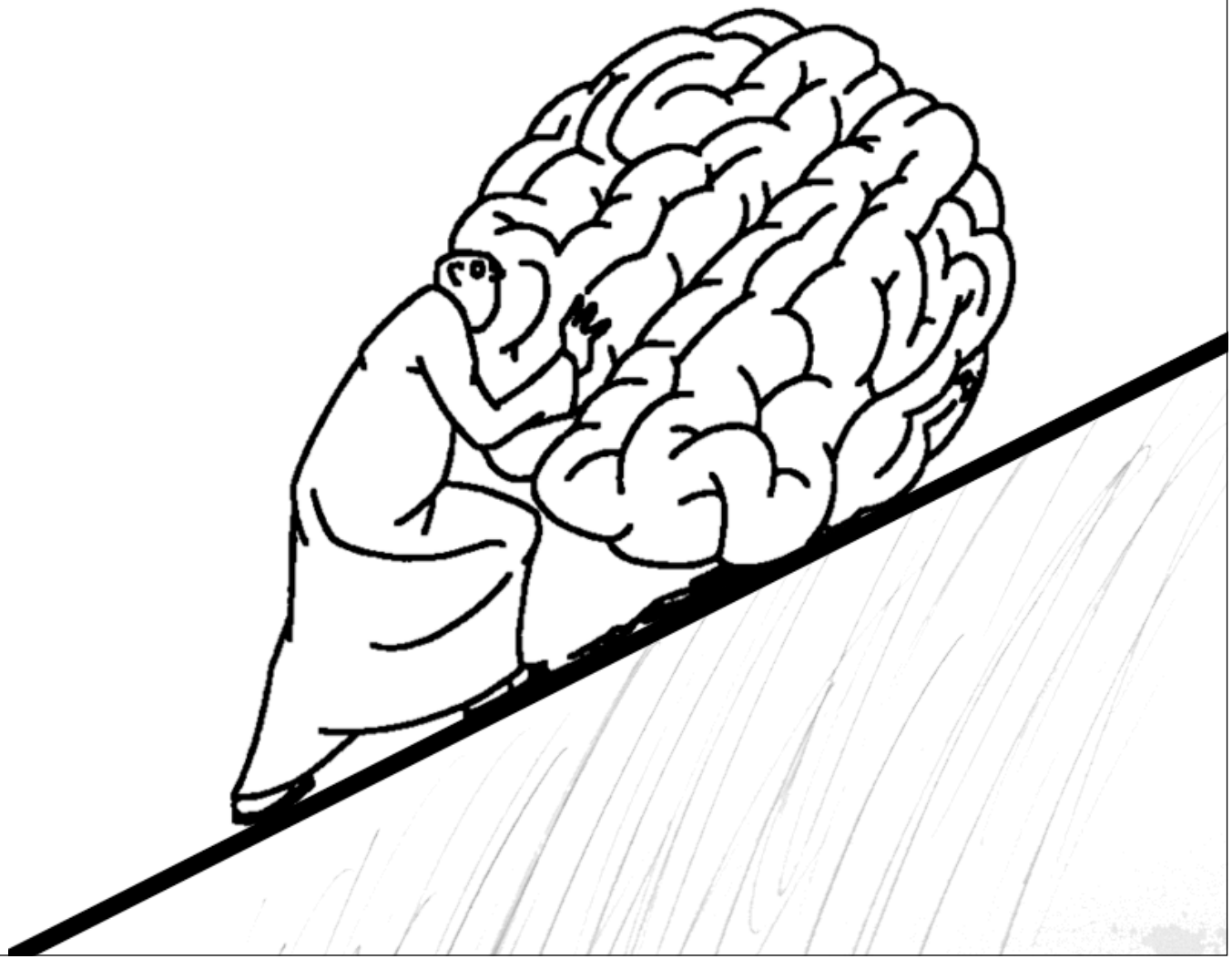
No waste



JÅVA

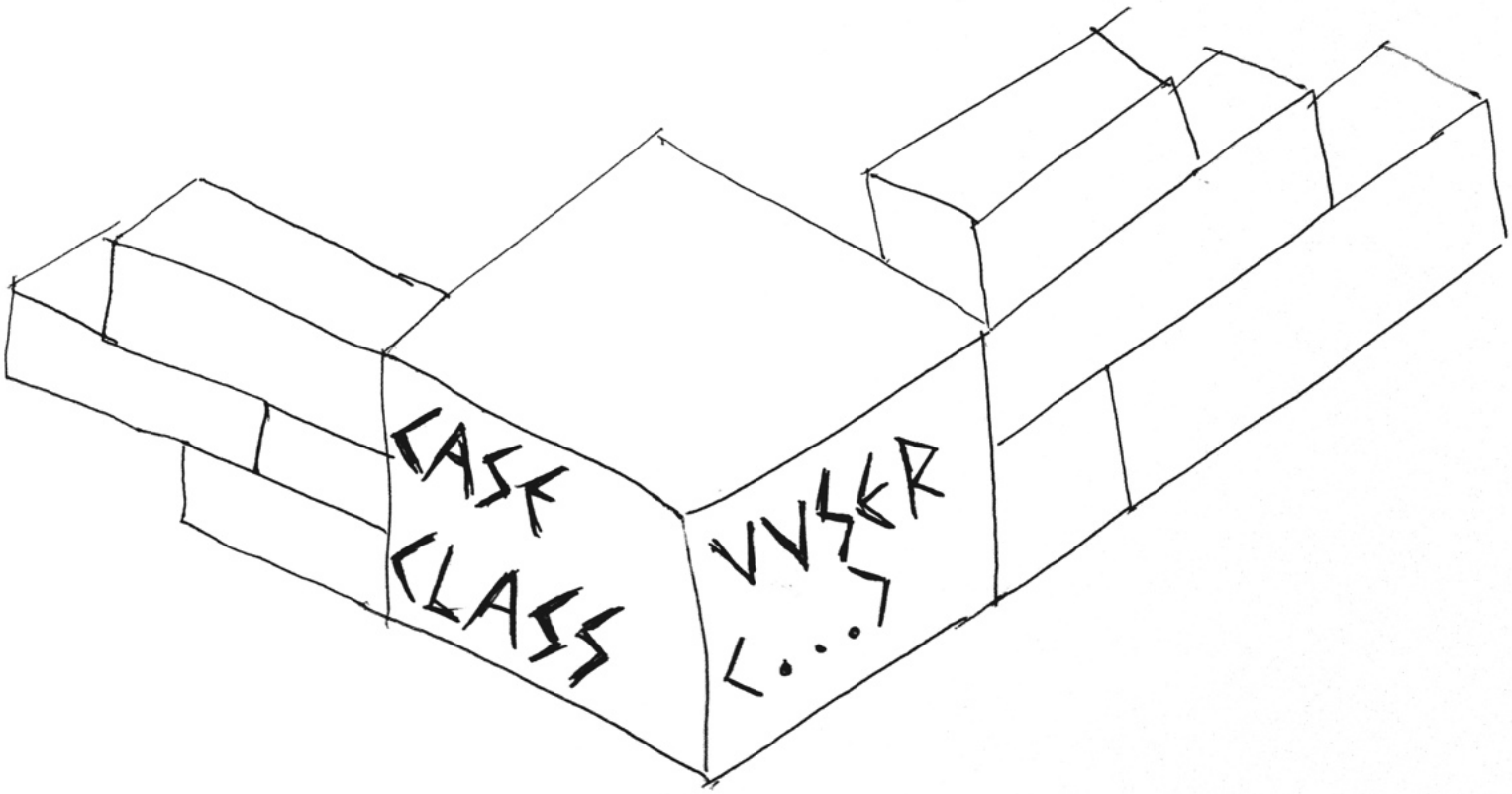
€19.95

Meet Sisyphus

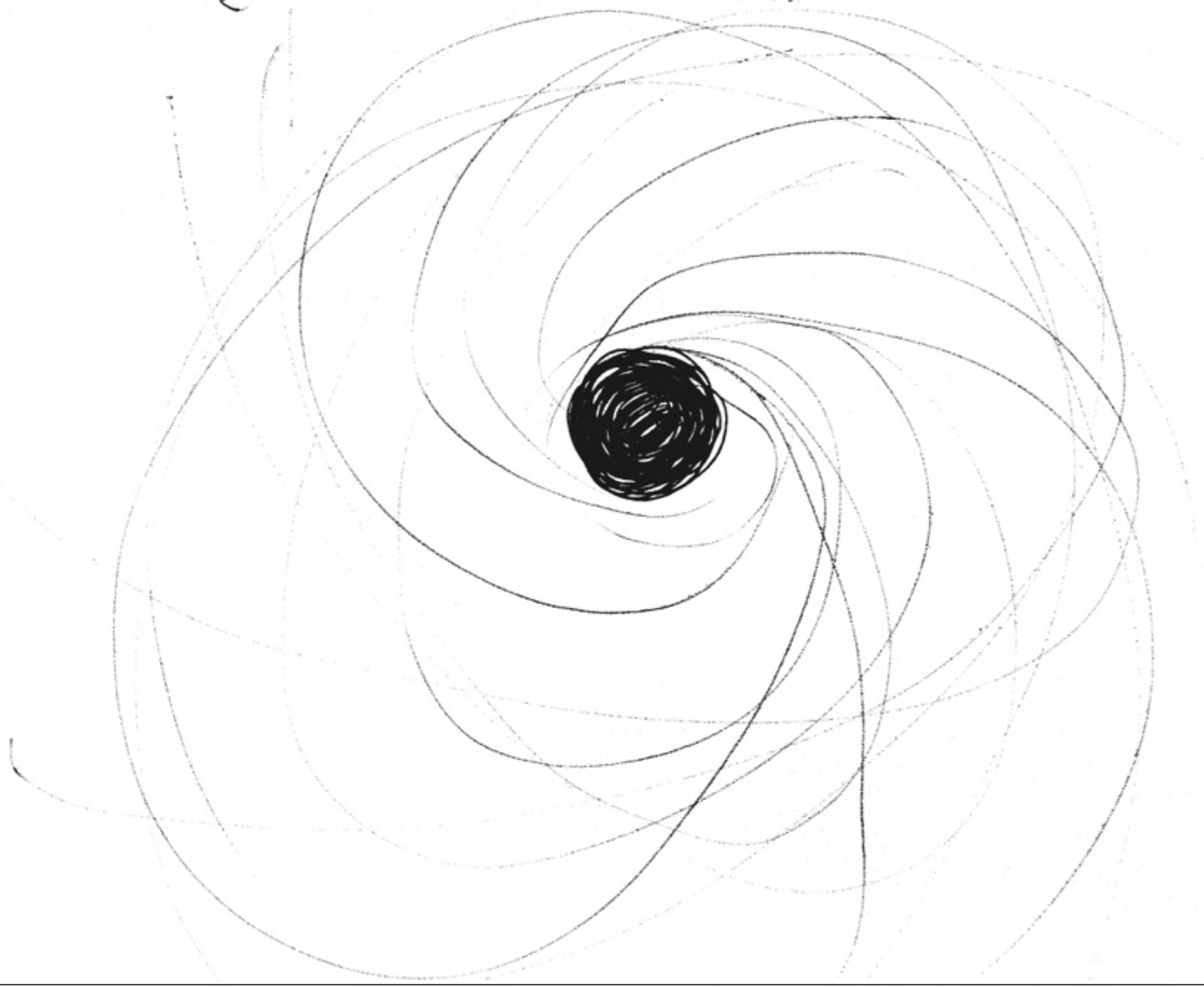


FP & type patterns

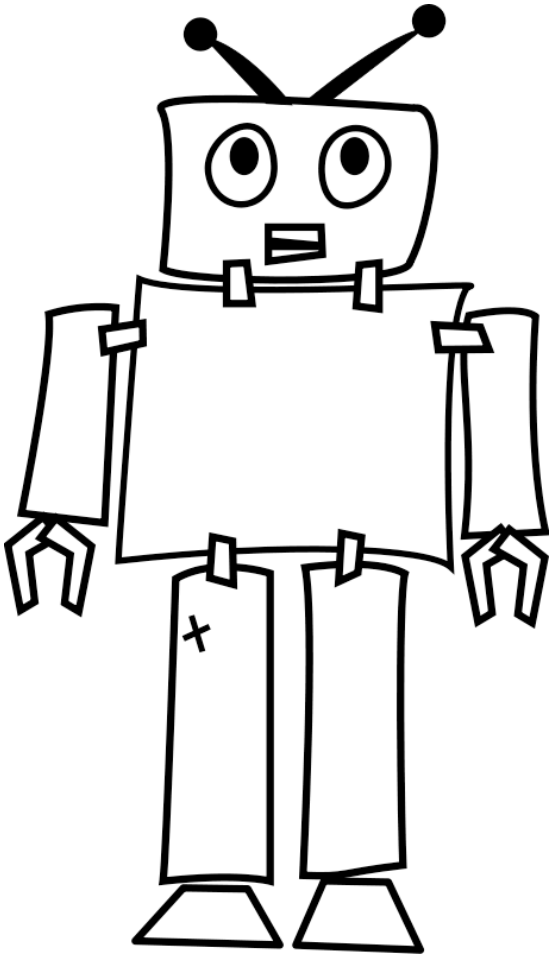
FP & type patterns



The null hole



FP & type patterns

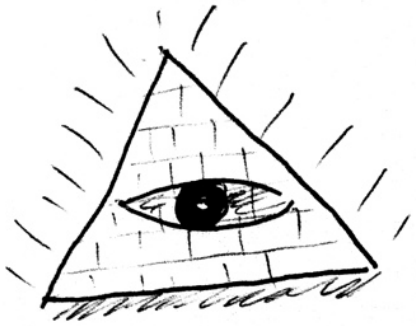


$$x = 5 + 5$$

FP & type patterns

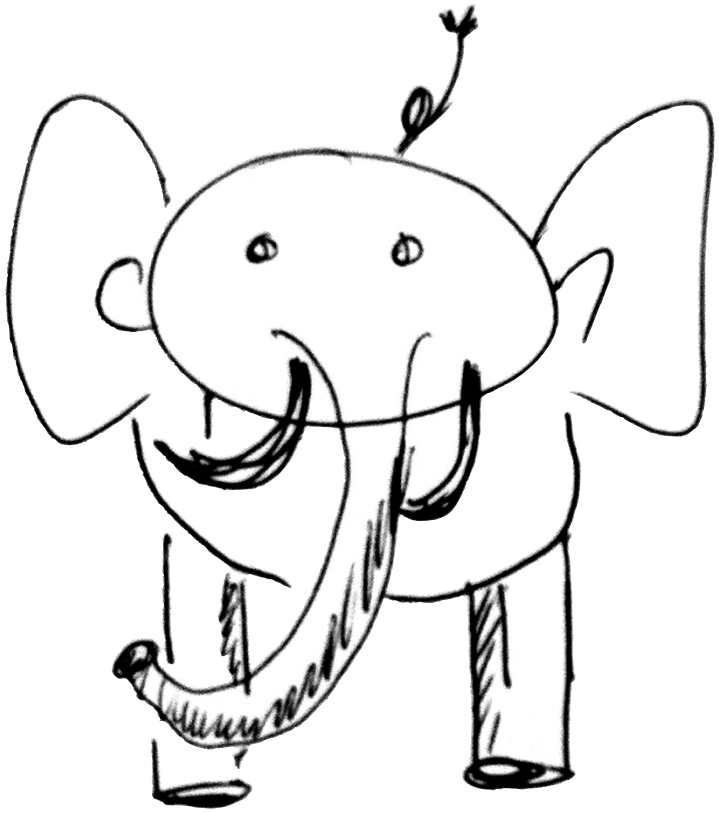
Meet Sisyphus

FP & type patterns



```
trait Applicative[F[_]] {
  ...
}
```

FP & type patterns

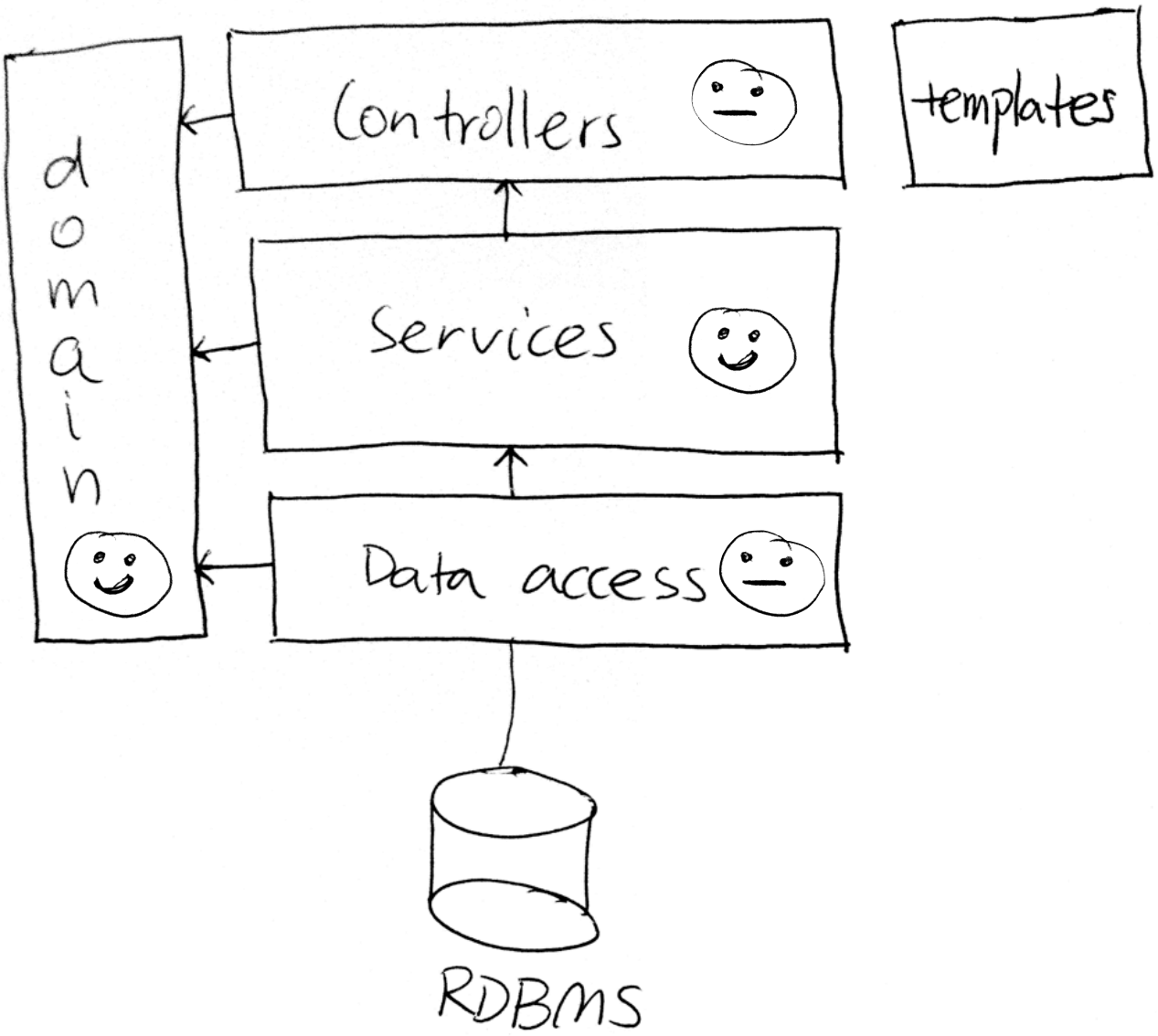


SKETCHES OF AN ELEPHANT:

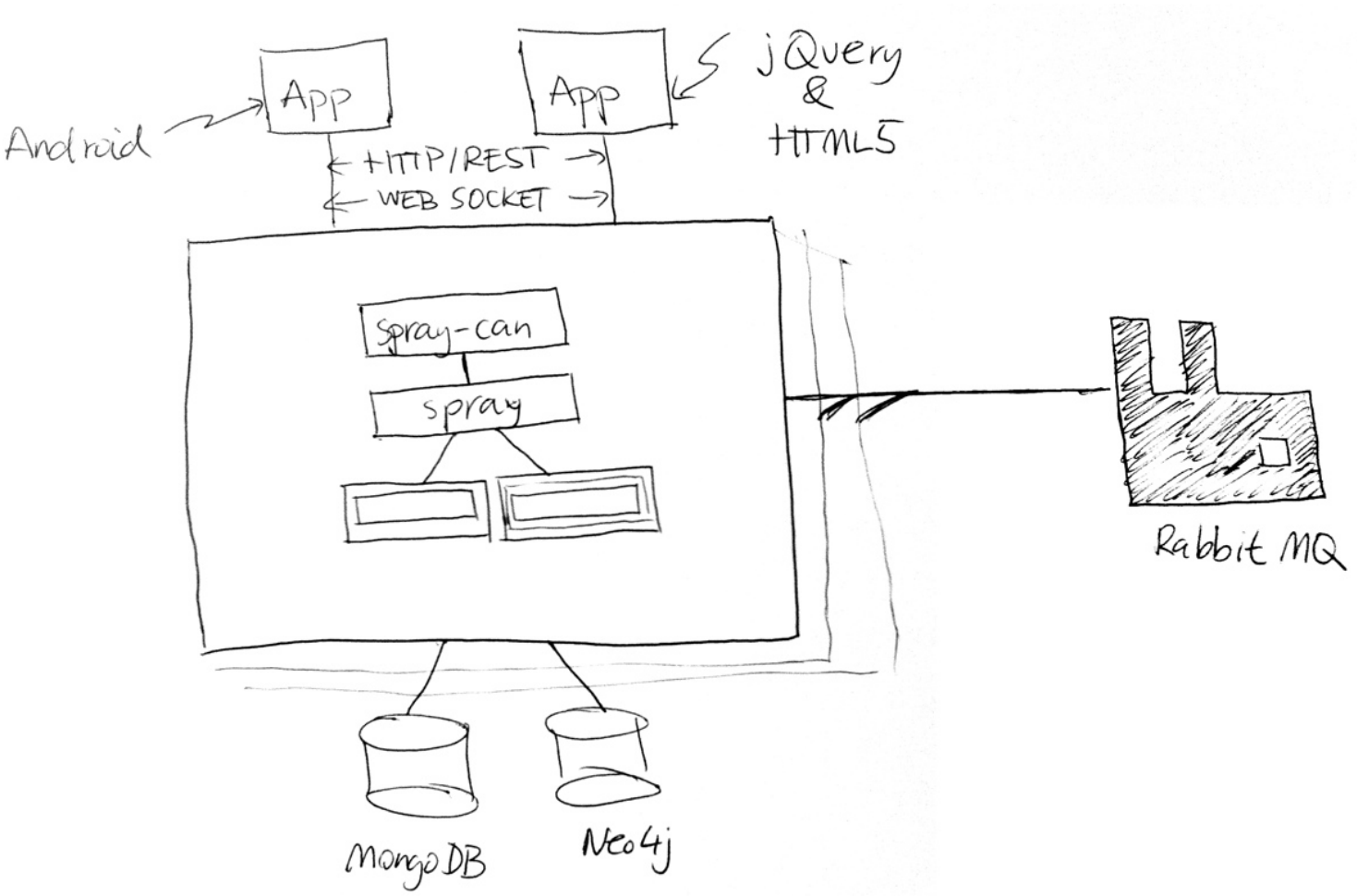
A TOPOS THEORY COMPENDIUM

FP & type patterns

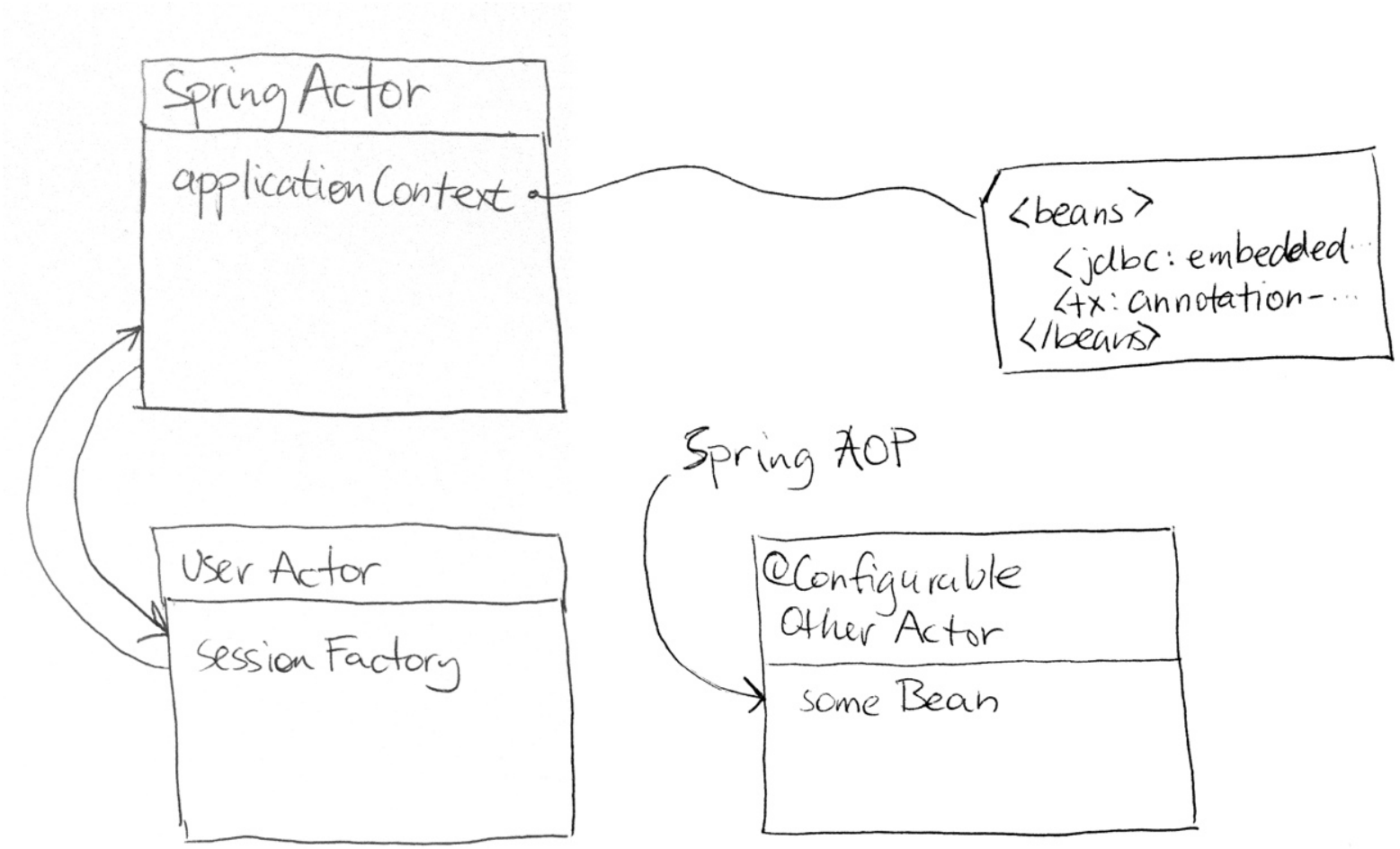
Same old...



Brand new...


Android
App
App
jQuery
&
HTML5
HTTP/REST
WEB SOCKET
spray-can
spray
Rabbit MQ
MongoDB
Neo4j

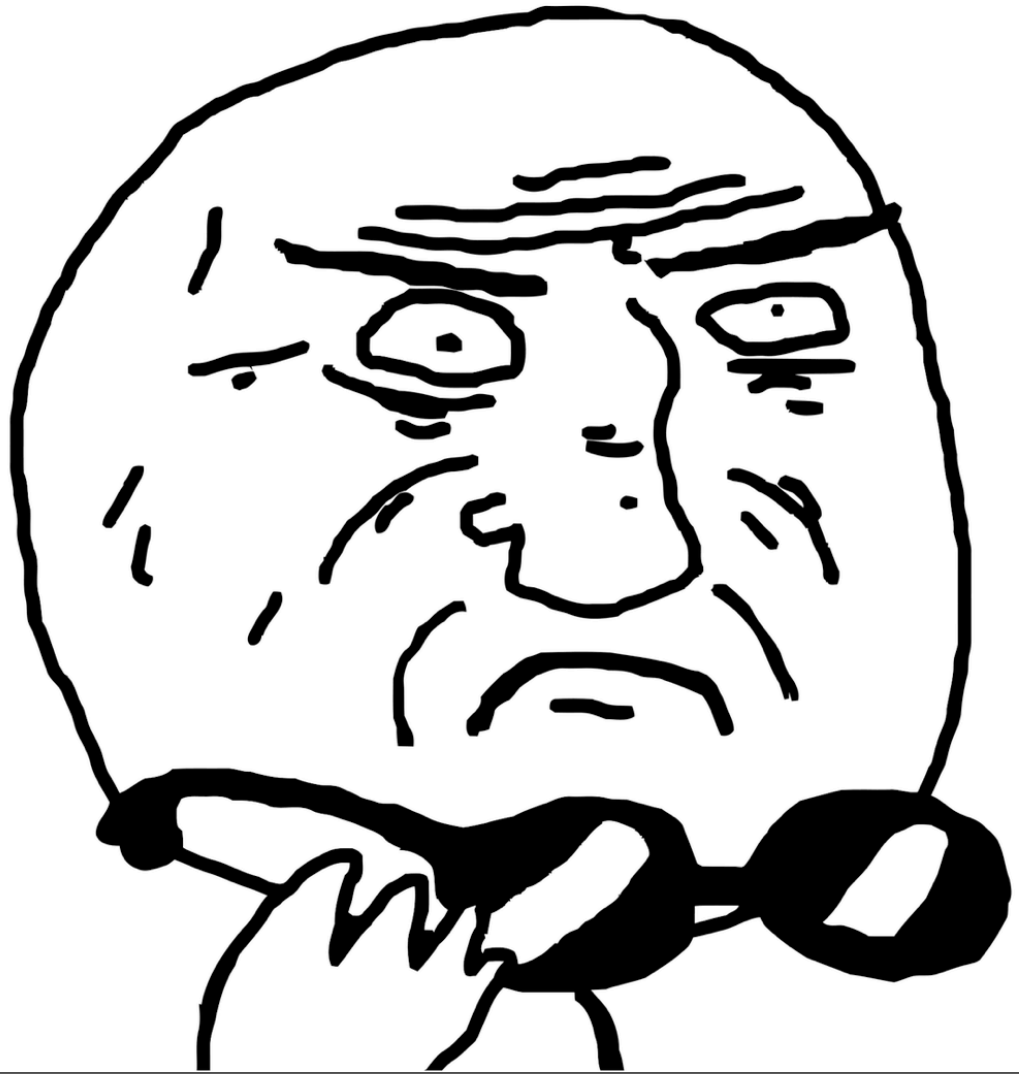
Brand new...


Spring Actor
applicationContext
<beans>
<jdbc:embedded
<tx:annotation-...
</beans>
Spring AOP
User Actor
sessionFactory
@Configurable
Other Actor
someBean

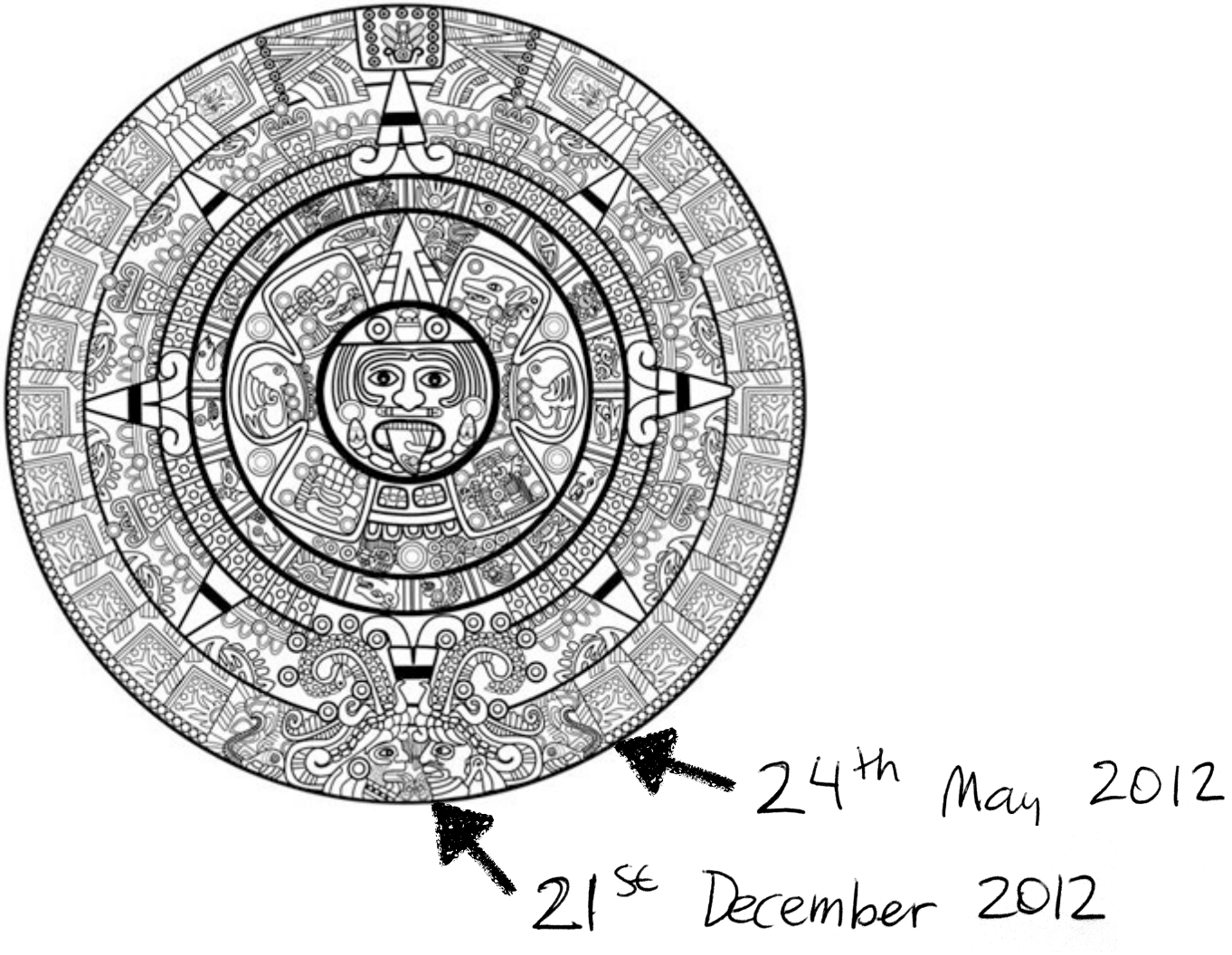
Brand new...

```
@Configurable
class UserActor extends Actor {
  @Autowired
  var sf: SessionFactory = _
  @Transactional
  protected def receive = {
    case GetUser(id) =>
      sender ! sf.getCurrentSession.get(
    case FindAll() =>
      sender ! sf.getCurrentSession ...
    case DeleteUser(id) =>
      ...
  }
}
```

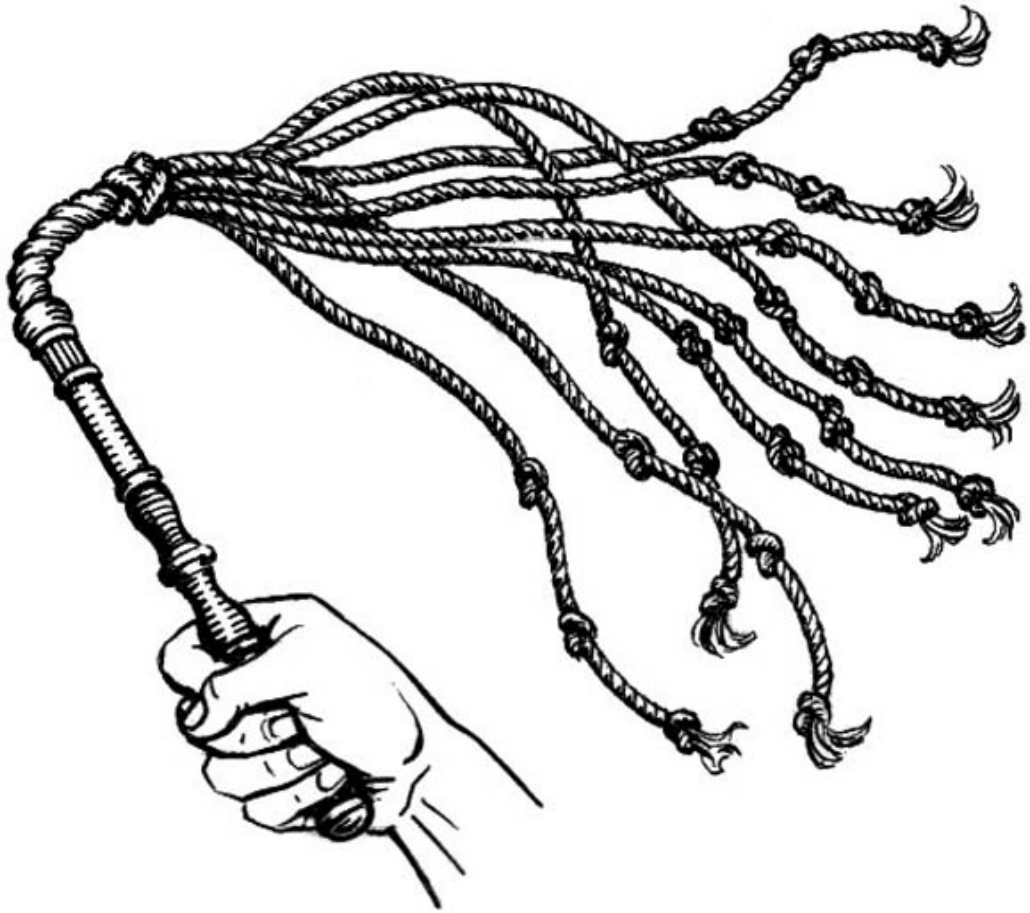
Mother of God



Scala at Cake Solutions



Scala at Cake Solutions



Scala at Cake Solutions

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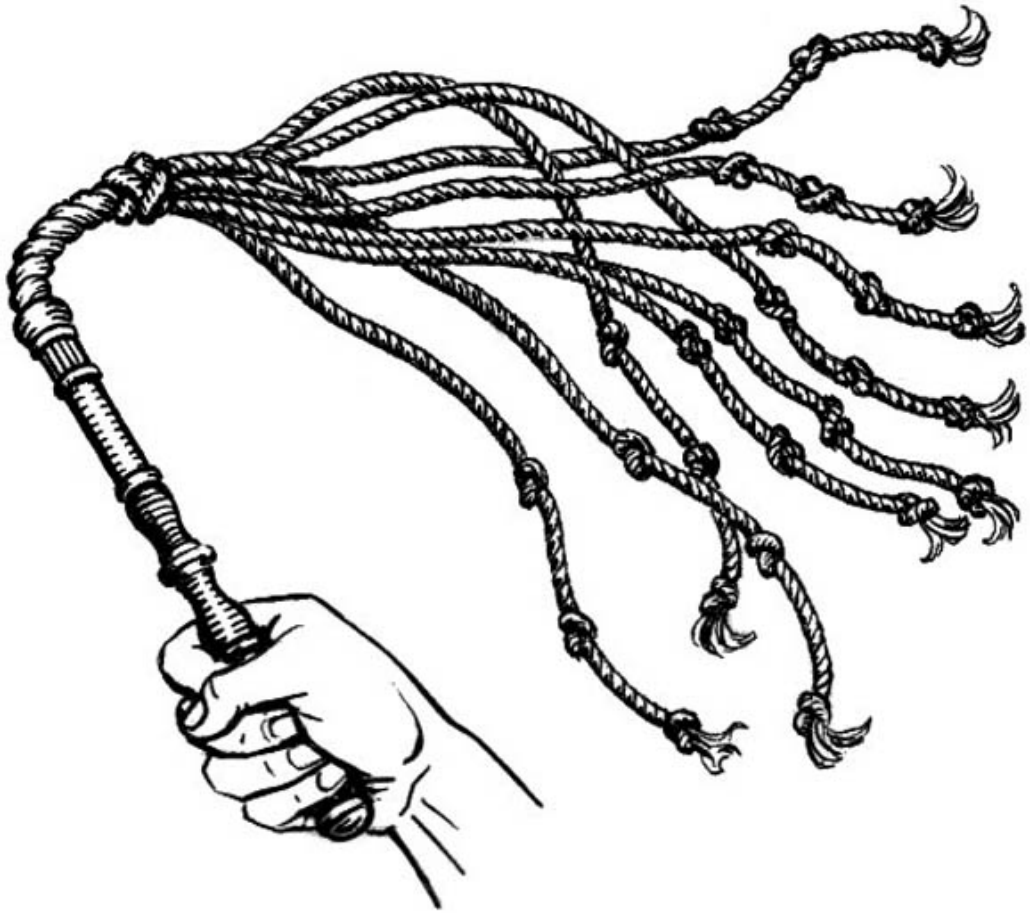
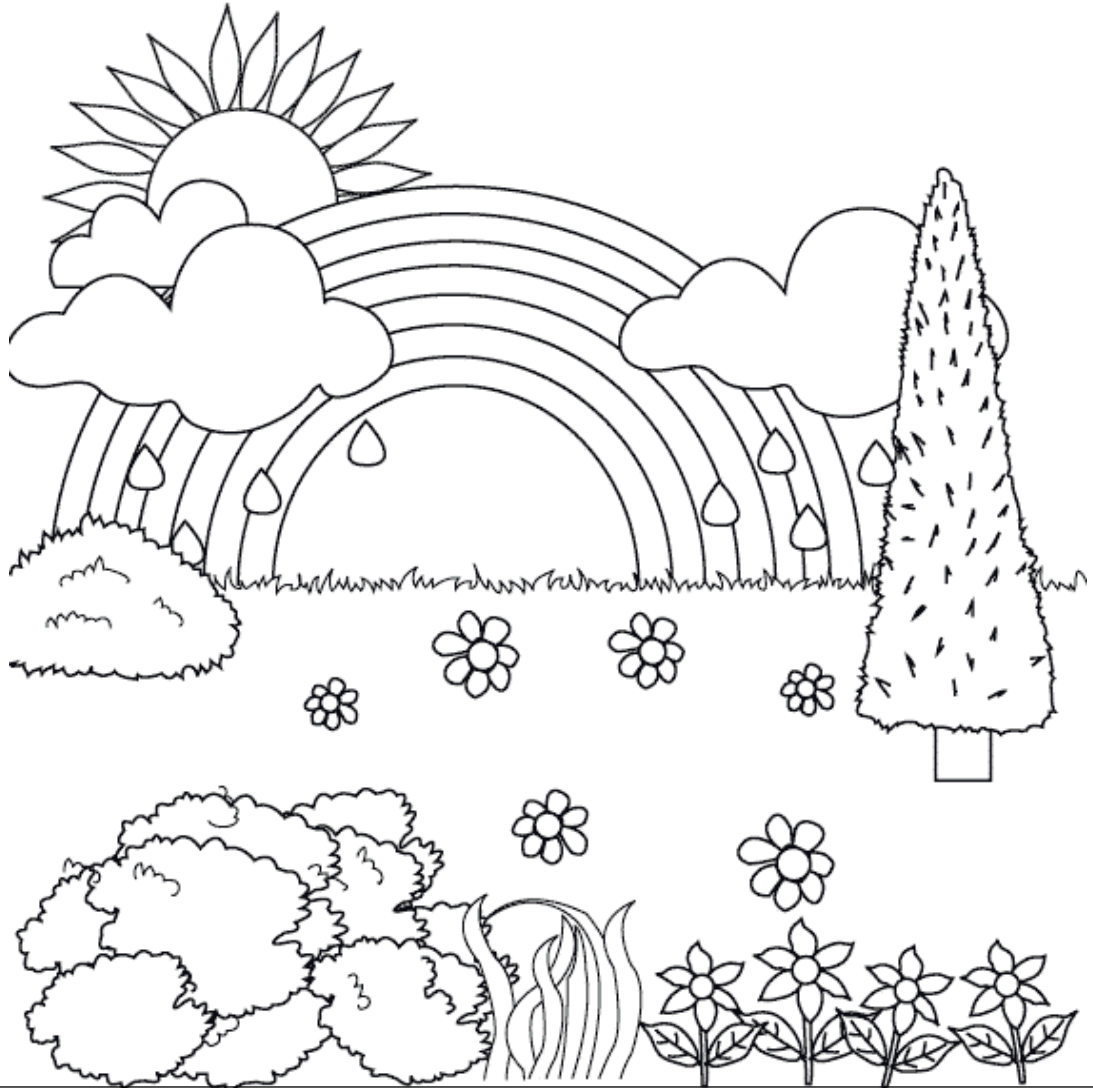
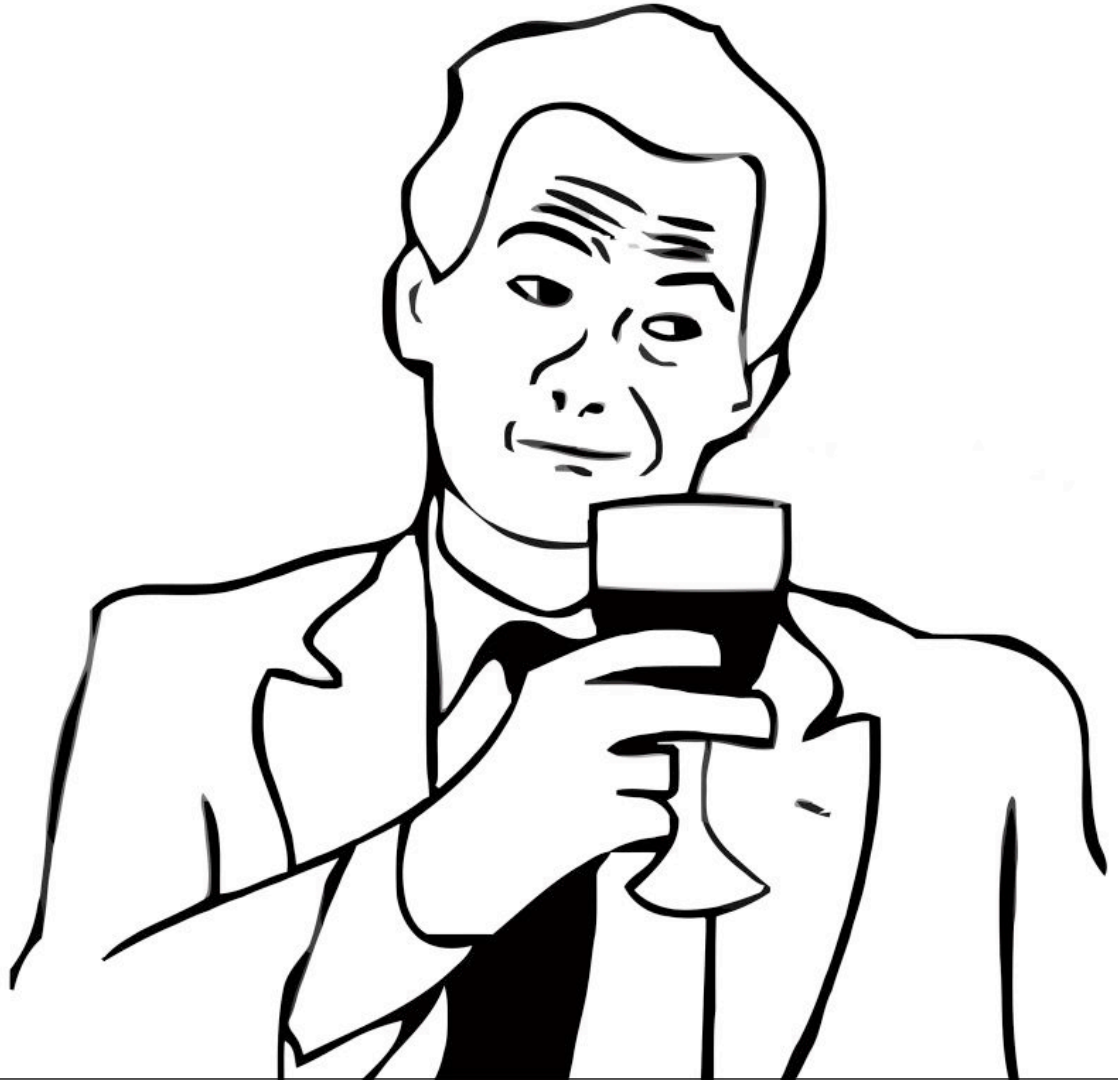


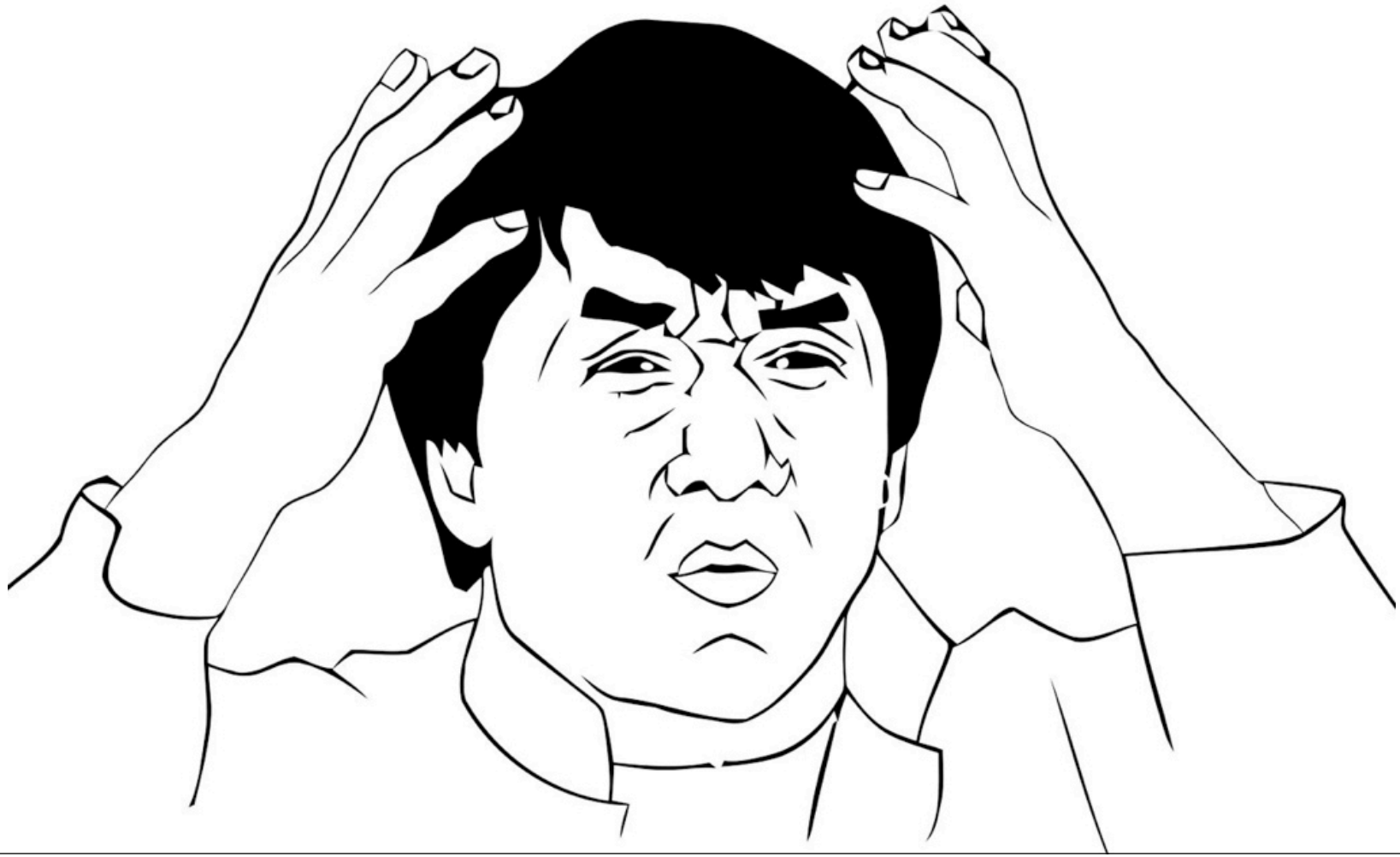
Scala at Cake Solutions



True story



Questions



@honzam3gg

Jan Macháček