Software Craftsmanship Barcelona 2016

@bcnswcraft

#scbcn16

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netmind

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SCHIBSTED SPAIN

vistaprint

MOSAIC web engineering 10 YEARS

YOU CAN'T BUY

HAPPINESS

BUT YOU CAN BUY A

Kayak

AND THAT'S PRETTY CLOSE

DON'T MESS WITH A KAYAKER.
WE KNOW PLACES WHERE
NO ONE WILL FIND YOU.

Railways Programming

SCBCN'16

Ignasi Marimon-Clos (@ignasi35)

Content

- [ ] you
- [ ] me
- [ ] railways programming
- [ ] final remarks

thanks!

@ignasi35

about you

Content

- [x] you
- [ ] me
- [ ] railways programming
- [ ] final remarks

SPOILER

☑ you	2 slides
☐ me	71 slides
☐ railways programming	15 slides
☐ final remarks	21 slides
	+112 slides

@ignasi35

Avstrija A 7
Italija I
Ljubljana 85

Not Jim Carrey
@ItIsJimCarrey

Follow

When you drink alcohol you are just borrowing happiness from tomorrow

RETWEETS	LIKES
110	95

3:08 PM - 10 Apr 2014

110 95

```java
public static void happy(
    java.util.List<String> stringList) {

  for (String s : stringList) {
    int i = (50 / Integer.valueOf(s)) - 1;
    System.out.println(" -> " + i);
  }

}
```

```java
public static void happy(
    java.util.List<String> stringList) {

  for (String s : stringList) {
    int i = (50 / Integer.valueOf(s)) - 1;
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  }

}
```

```
public static void happy(
        java.util.List<String> stringList) {

    for (String s : stringList) {
        int i = (50 / Integer.valueOf(s)) - 1;
        System.out.println(" -> " + i);
    }

}
```

IDIOOOOOT

```java
public static void sad(java.util.List<String> stringList) {
  for (String s : stringList) {
    try {
      int parsed = Integer.valueOf(s);
      try {
        int div = 50 / parsed;
        int x = div - 1;
        System.out.println(" --> " + x);
      } catch (ArithmeticException ae) {
        // What do we do ?!
      }
    } catch (NumberFormatException nfe) {
      // What do we do ?!
    }
  }
}
```

```java
public static void sad(java.util.List<String> stringList) {
  try {
    try {
      for (String s : stringList) {
        int parsed = Integer.valueOf(s);
        int div = 50 / parsed;
        int x = div - 1;
        System.out.println(" --> " + x);
      }
    } catch (ArithmeticException ae) {
      // What do we do ?!
    }
  } catch (NumberFormatException nfe) {
    // What do we do ?!
  }
}
```

Mario Fusco
@mariofusco

Follow

That's what Java devs do in checked exceptions catch blocks ... and why I believe they are just useless verbosity

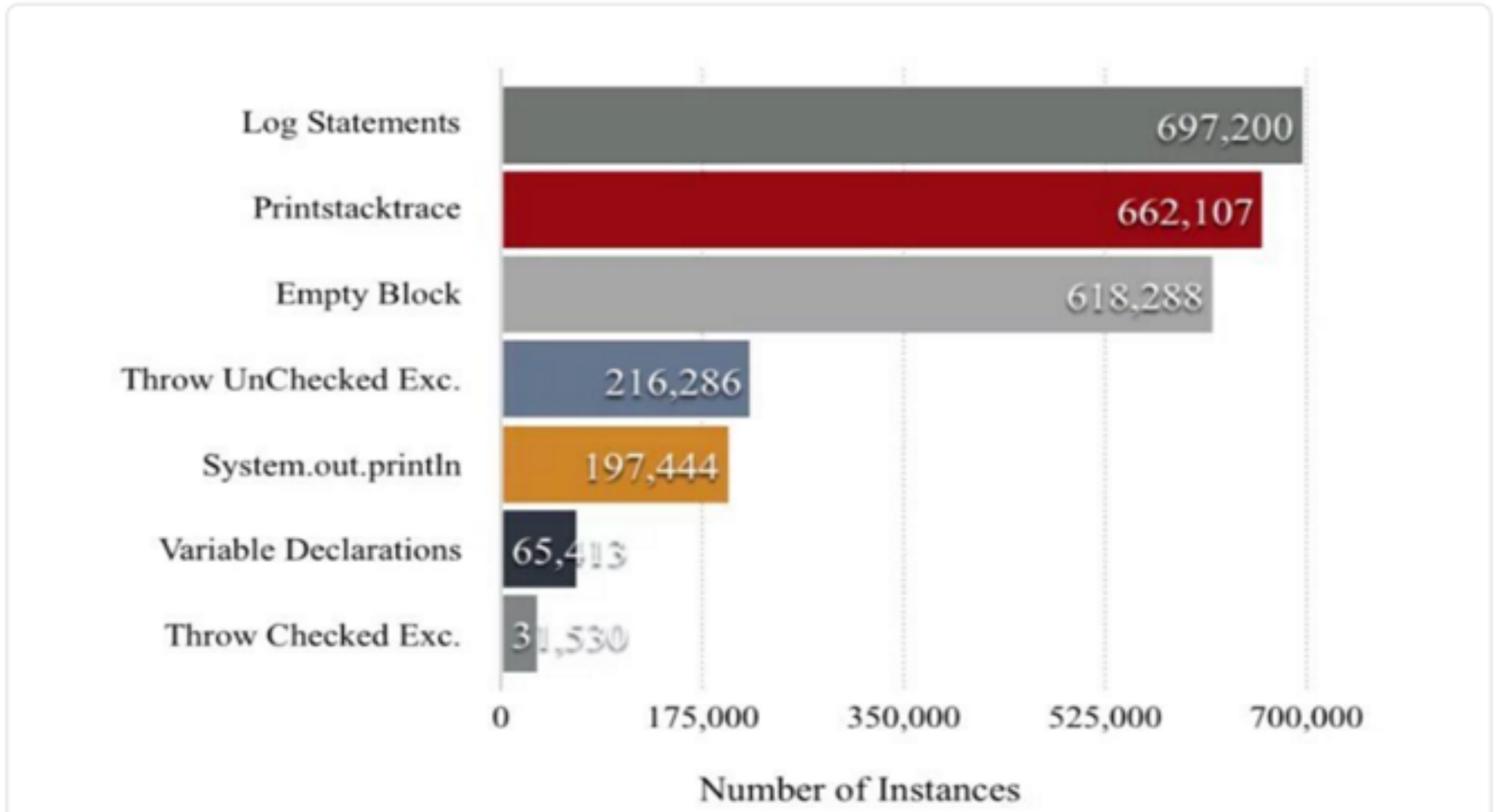


Figure 2: Top Operations performed in Checked Exception catch blocks (GH).

RETWEETS LIKES

Mario Fusco @mariofusco · Jun 6

That's what Java devs do in checked exceptions catch blocks ... and why I believe they are just useless verbosity

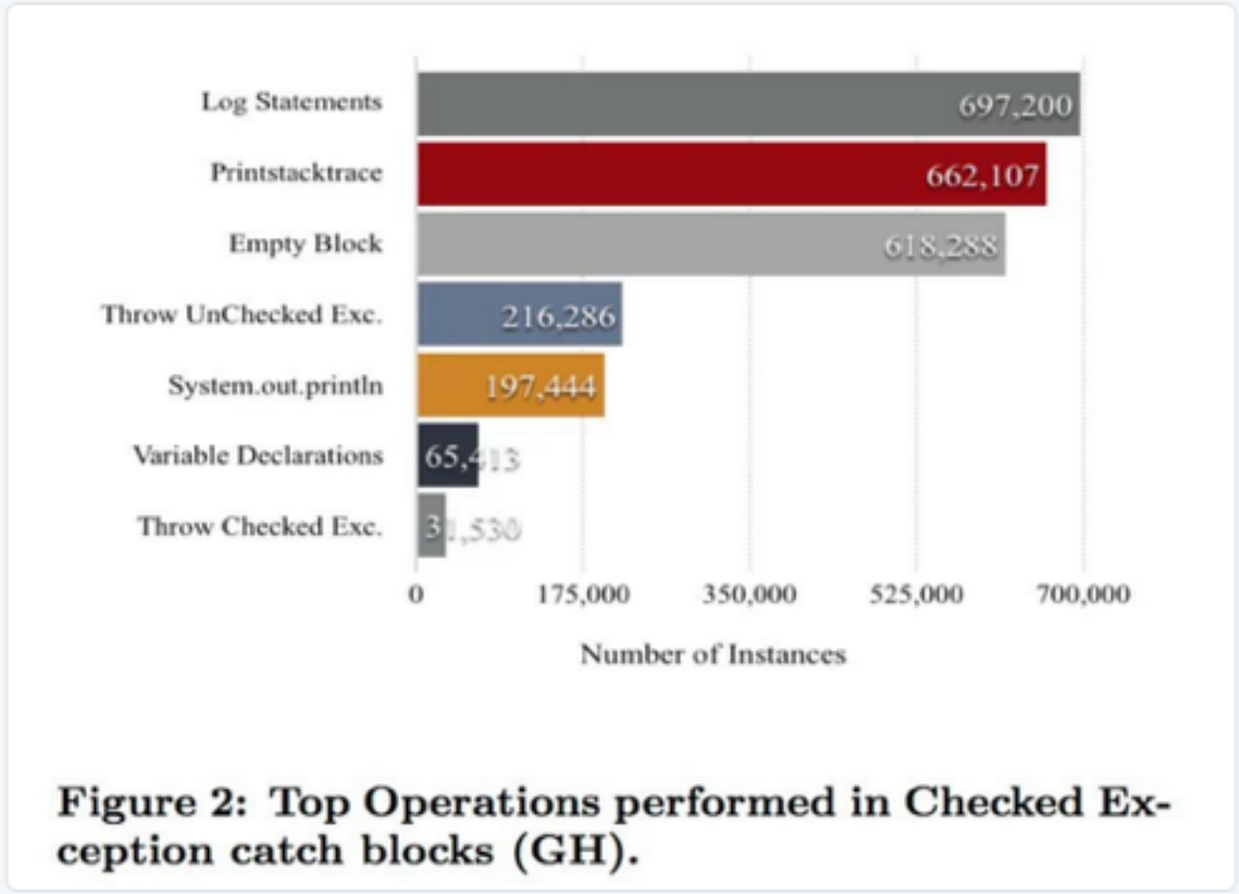


Figure 2: Top Operations performed in Checked Exception catch blocks (GH).

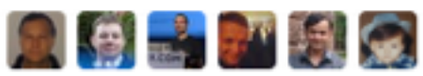
430 294 •••

Peter Lawrey
@PeterLawrey

Following

@mariofusco it tells me developers have a hard enough time getting the happy path to work let alone figure out what to do if something fails

RETWEET 1 LIKES 5



11:14 AM - 6 Jun 2016

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23
```

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23

scala> java.lang.Integer.valueOf("" + java.lang.Integer.MAX_VALUE)
res9: Integer = 2147483647
```

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23

scala> java.lang.Integer.valueOf("" + java.lang.Integer.MAX_VALUE)
res9: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483647")
res10: Integer = 2147483647
```

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23

scala> java.lang.Integer.valueOf("" + java.lang.Integer.MAX_VALUE)
res9: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483647")
res10: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483648")
```

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23

scala> java.lang.Integer.valueOf("" + java.lang.Integer.MAX_VALUE)
res9: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483647")
res10: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483648")
java.lang.NumberFormatException: For input string: "2147483648"
  at java.lang.NumberFormatException.forInputString(NumberFormatException.java:65)
  at java.lang.Integer.parseInt(Integer.java:587)
  at java.lang.Integer.valueOf(Integer.java:766)
  ... 33 elided
```

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23

scala> java.lang.Integer.valueOf("" + java.lang.Integer.MAX_VALUE)
res9: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483647")
res10: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483648")
java.lang.NumberFormatException: For input string: "2147483648"
  at java.lang.NumberFormatException.forInputString(NumberFormatException.java:65)
  at java.lang.Integer.parseInt(Integer.java:587)
  at java.lang.Integer.valueOf(Integer.java:766)
  ... 33 elided

scala> java.lang.Integer.valueOf("asdf")
```

```
scala> java.lang.Integer.valueOf(23)
res8: Integer = 23

scala> java.lang.Integer.valueOf("" + java.lang.Integer.MAX_VALUE)
res9: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483647")
res10: Integer = 2147483647

scala> java.lang.Integer.valueOf("2147483648")
java.lang.NumberFormatException: For input string: "2147483648"
  at java.lang.NumberFormatException.forInputString(NumberFormatException.java:65)
  at java.lang.Integer.parseInt(Integer.java:587)
  at java.lang.Integer.valueOf(Integer.java:766)
  ... 33 elided

scala> java.lang.Integer.valueOf("asdf")
java.lang.NumberFormatException: For input string: "asdf"
  at java.lang.NumberFormatException.forInputString(NumberFormatException.java:65)
  at java.lang.Integer.parseInt(Integer.java:580)
  at java.lang.Integer.valueOf(Integer.java:766)
  ... 33 elided

scala>
```


N1
BOXE
3
MUUU!!

```
override def update(areaId: AreaId, entityId: EntityId,

  // validate Command <-- application error
  // update DB        <-- app errors and/or sys errors
  // report Event     <-- sys errors

}
```


N1
BOXE
3
MUUU!!

Types

```
class PersonBuilder {
    Person build(String name, String surname) {
        …
    }

}
```

Types

```
class PersonBuilder {

 Person build(Name name, Surname surname) {
        ...
   }

}
```


hotline
STONE FREE
1 First Class

Func Prog

Pure Functions

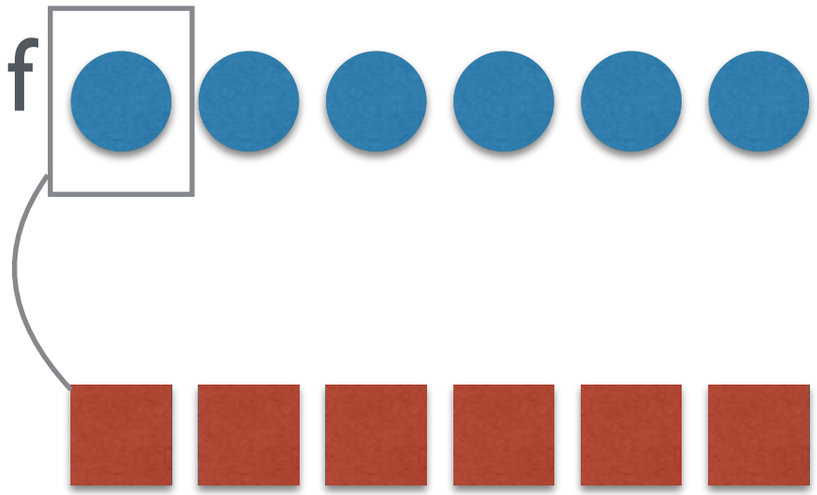
no side effects

if not used, remove it

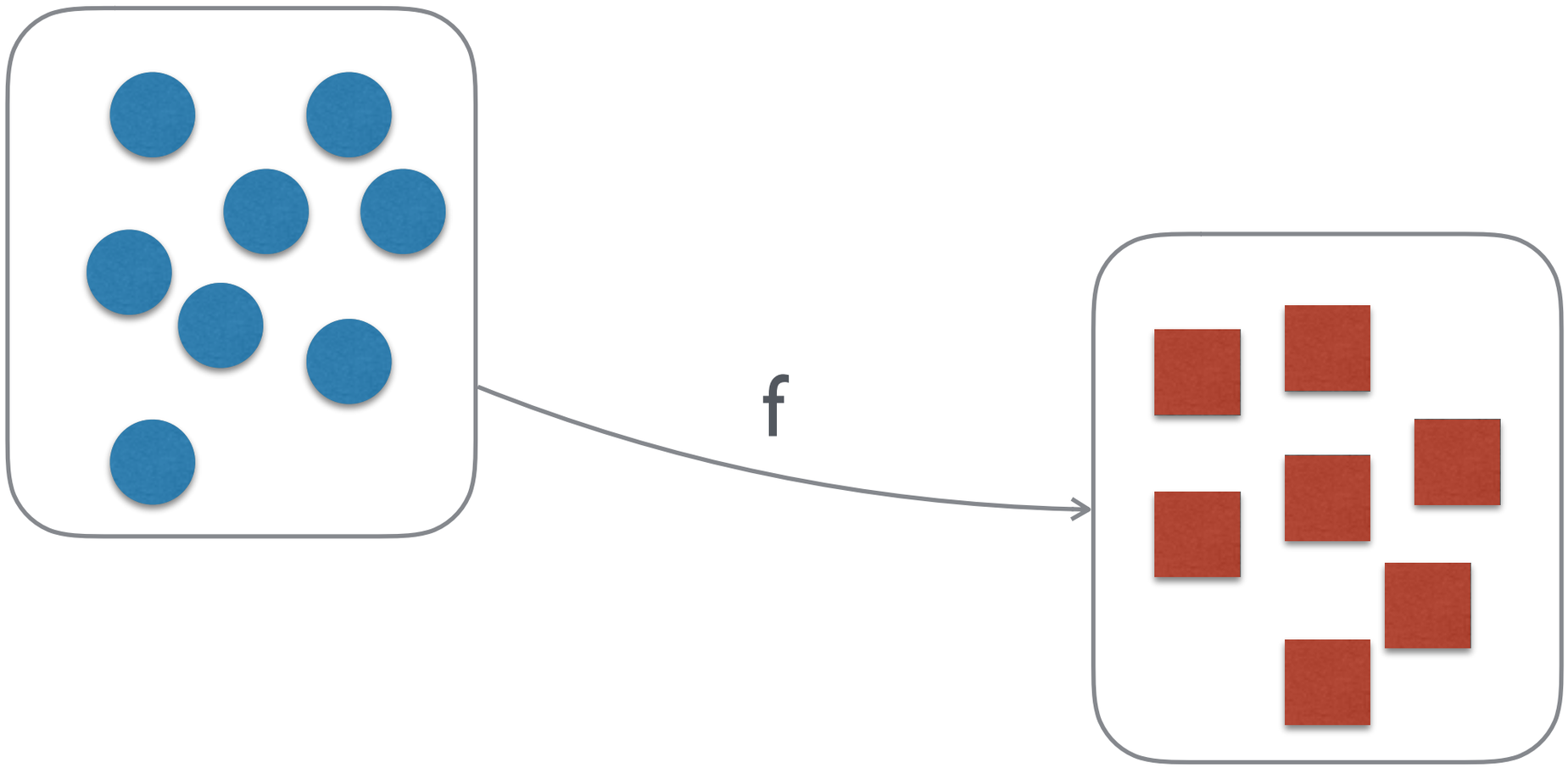
fixed in — fixed out

Don’t throw exceptions!

map

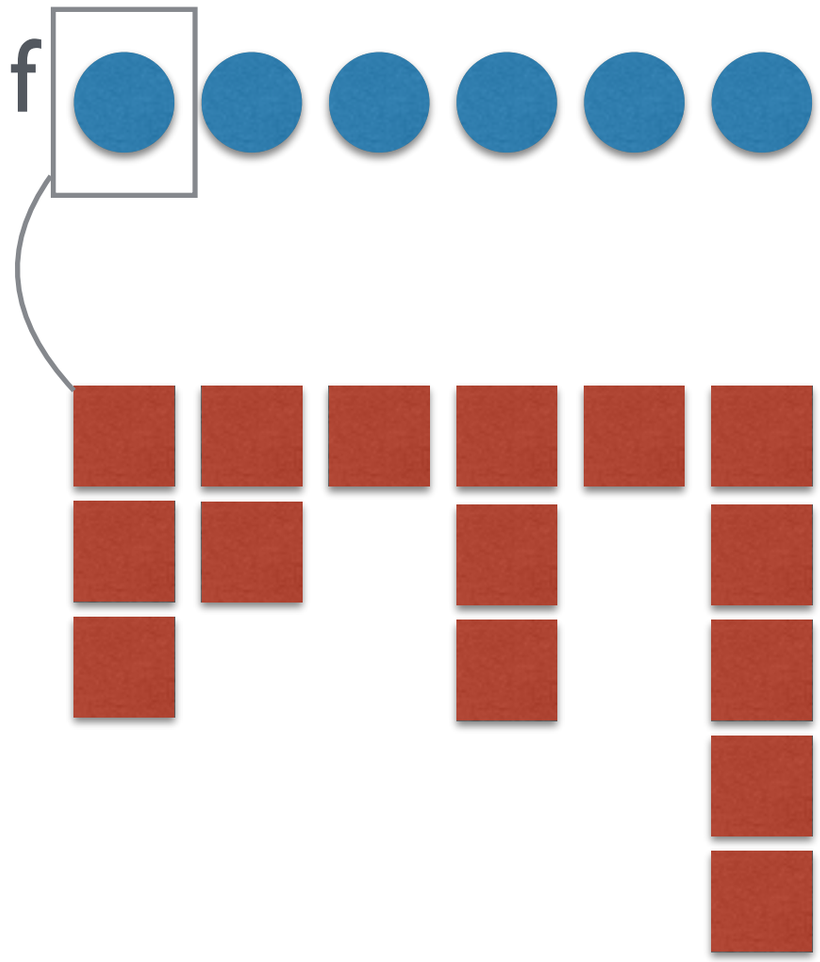


map

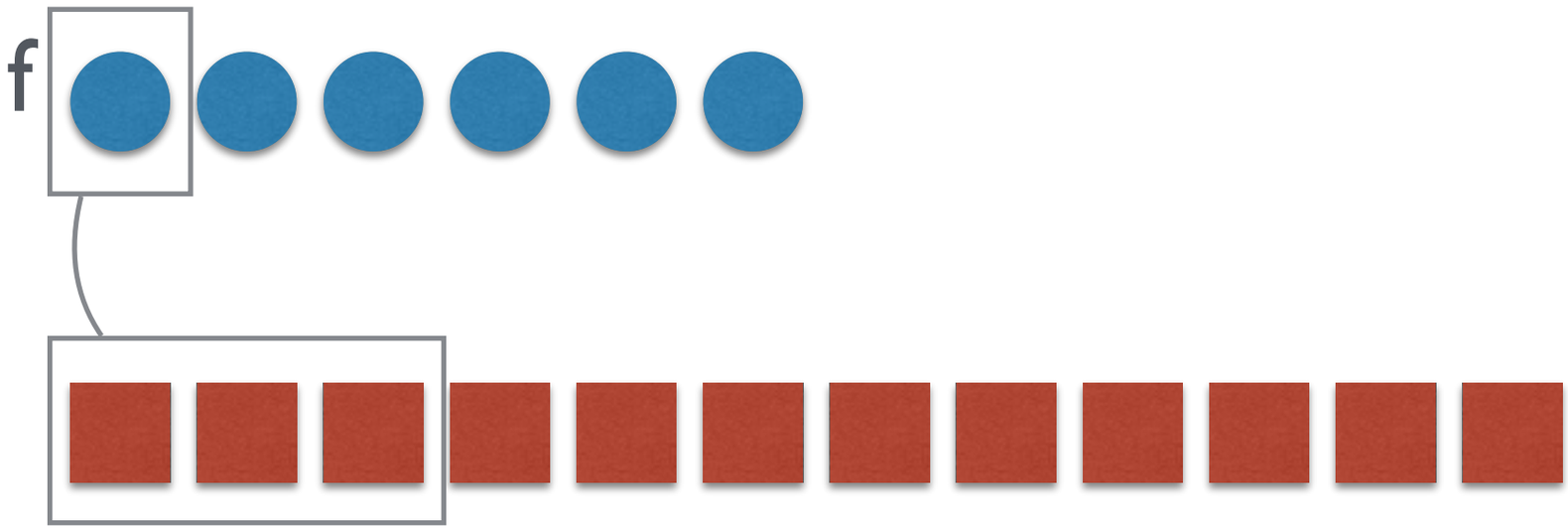


map revisited

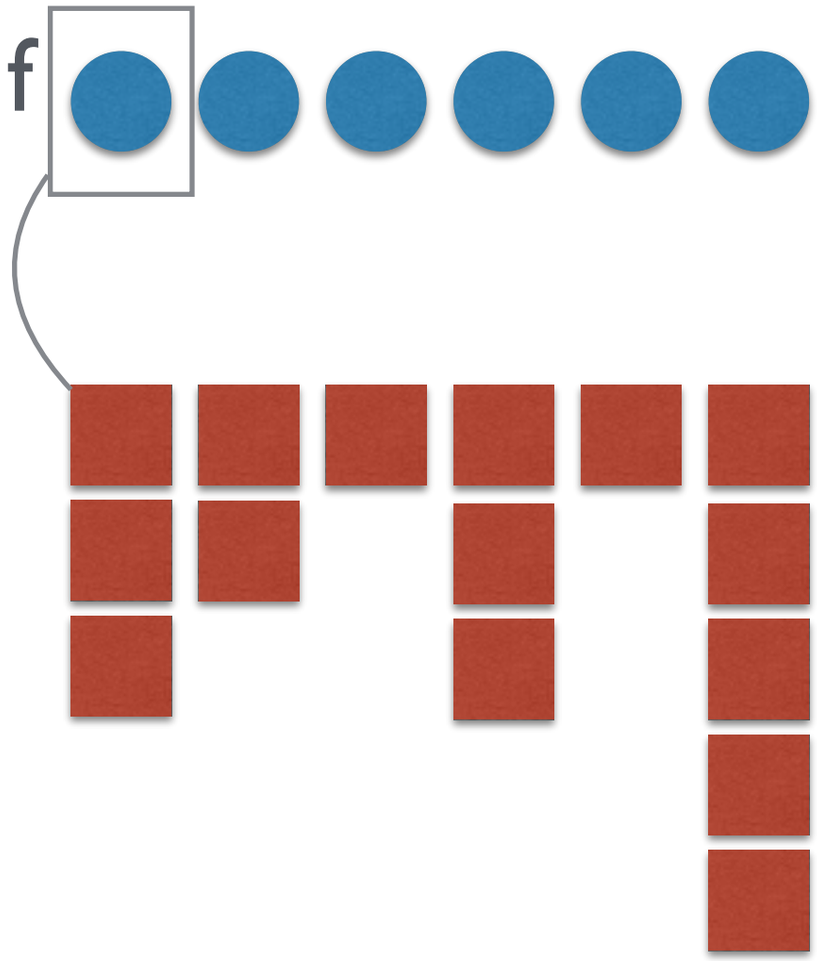
"Hi, this is Ignasi".tokenize



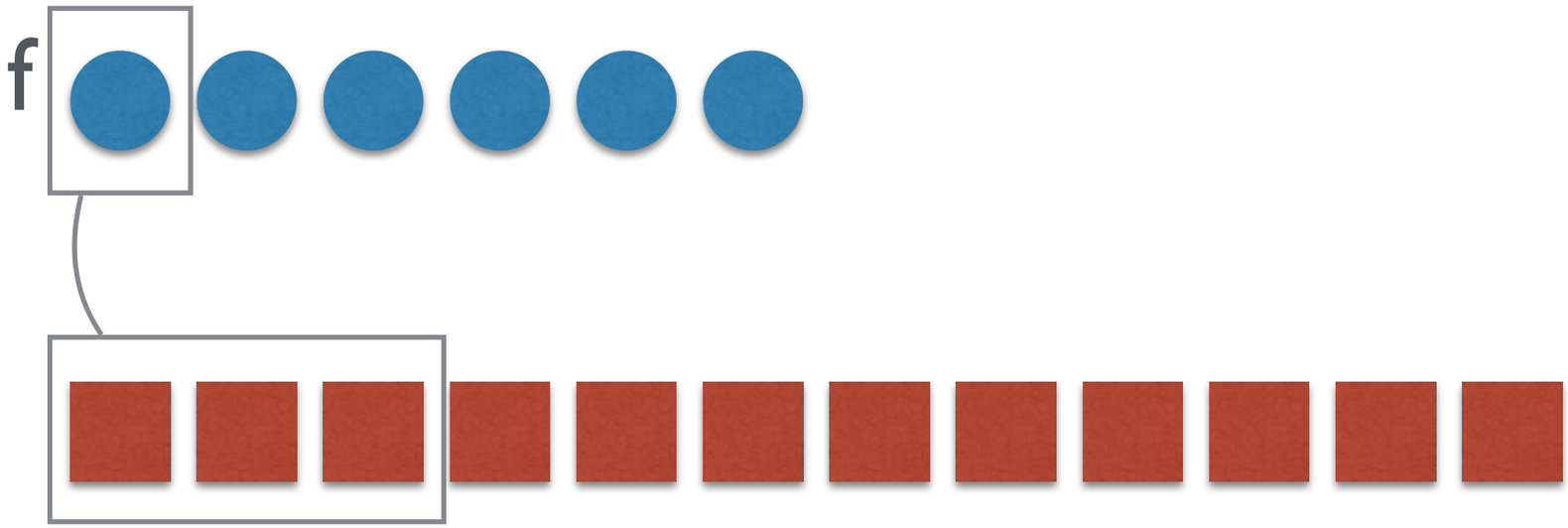
map revisited



map



flatMap




TO 95 ST/BKLYN


hotline
STONE FREE
1 First Class

A MONAD IS JUST A MONOID IN THE CATEGORY OF ENDOFUNCTORS.

WHAT'S THE PROBLEM ?


Did you just tell me to go fuck myself?
I believe I did, Bob.


hotline
STONE FREE
1 First Class

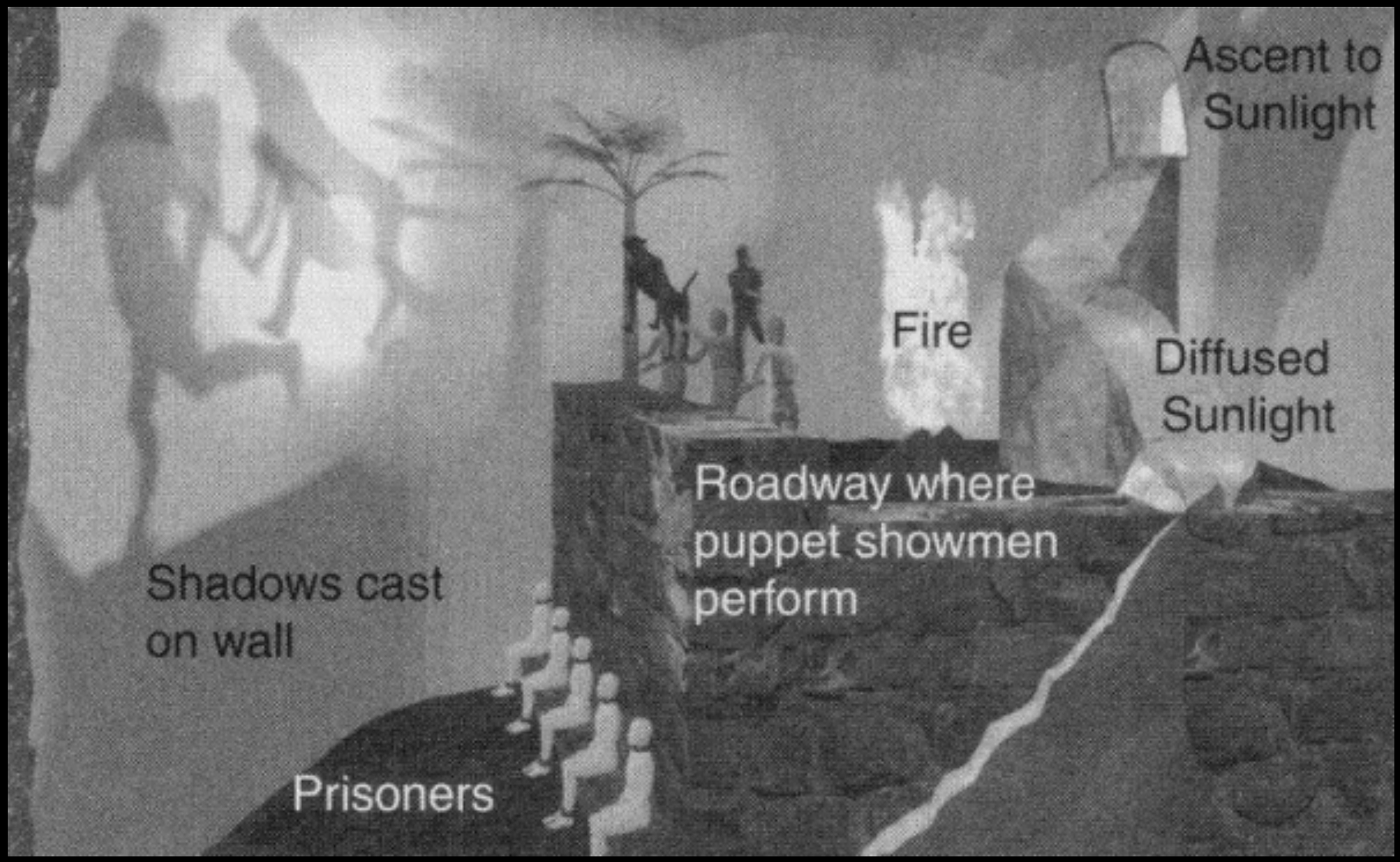
#5 RENTON

Trainspotting

A MONAD IS JUST A MONOID IN THE CATEGORY OF ENDOFUNCTORS.

WHAT'S THE PROBLEM ?

DOOOORK


Ascent to
Sunlight
Fire
Diffused
Sunlight
Roadway where
puppet showmen
perform
Shadows cast
on wall
Prisoners

```java
public interface Try<T> {

  <R> Try<R> map(Function<T, R> f);

  <R> Try<R> flatMap(Function<T, Try<R>> f);

  T get();

  boolean isSuccess();

  default boolean isFailure() { return !isSuccess(); }
}
```

```java
public static <T> Try<T> to(Supplier<T> f) {
    try {
        return new Success<>(f.get());
    } catch (Throwable t) {
        return new Failure<>(t);
    }

}
```

```
def railwayOperation(i: String) = {
  for {
    valid <- parse(i)
    parsed <- authorize(valid)
    persisted <- persist(parsed)
    response <- forAUser(persisted)
  } yield response
}
```

```java
static final Function<String, Try<Integer>> toInt =
    x -> Tries.to(() -> Integer.valueOf(x));

static final Function<Integer, Try<Integer>> divide50 =
    (x) -> Tries.to(() -> 50 / x);

static final Function<Integer, Integer> minusOne =
    x -> x - 1;
```


TO 95 ST/BKLYN


Park

BRIAN GOETZ
WITH TIM PEIERLS, JOSHUA BLOCH,
JOSEPH BOWBEER, DAVID HOLMES,
AND DOUG LEA

JAVA CONCURRENCY IN PRACTICE

Community Experience Distilled

Learning Concurrent Programming in Scala

Learn the art of building intricate, modern, scalable concurrent applications using Scala

Foreword by Martin Odersky, professor at EPFL, the creator of Scala

Aleksandar Prokopec

[PACKT] PUBLISHING open source community experience distilled

Try vs Promises

- Op that succeeds or fails

- Op that *eventually* succeeds or fails.

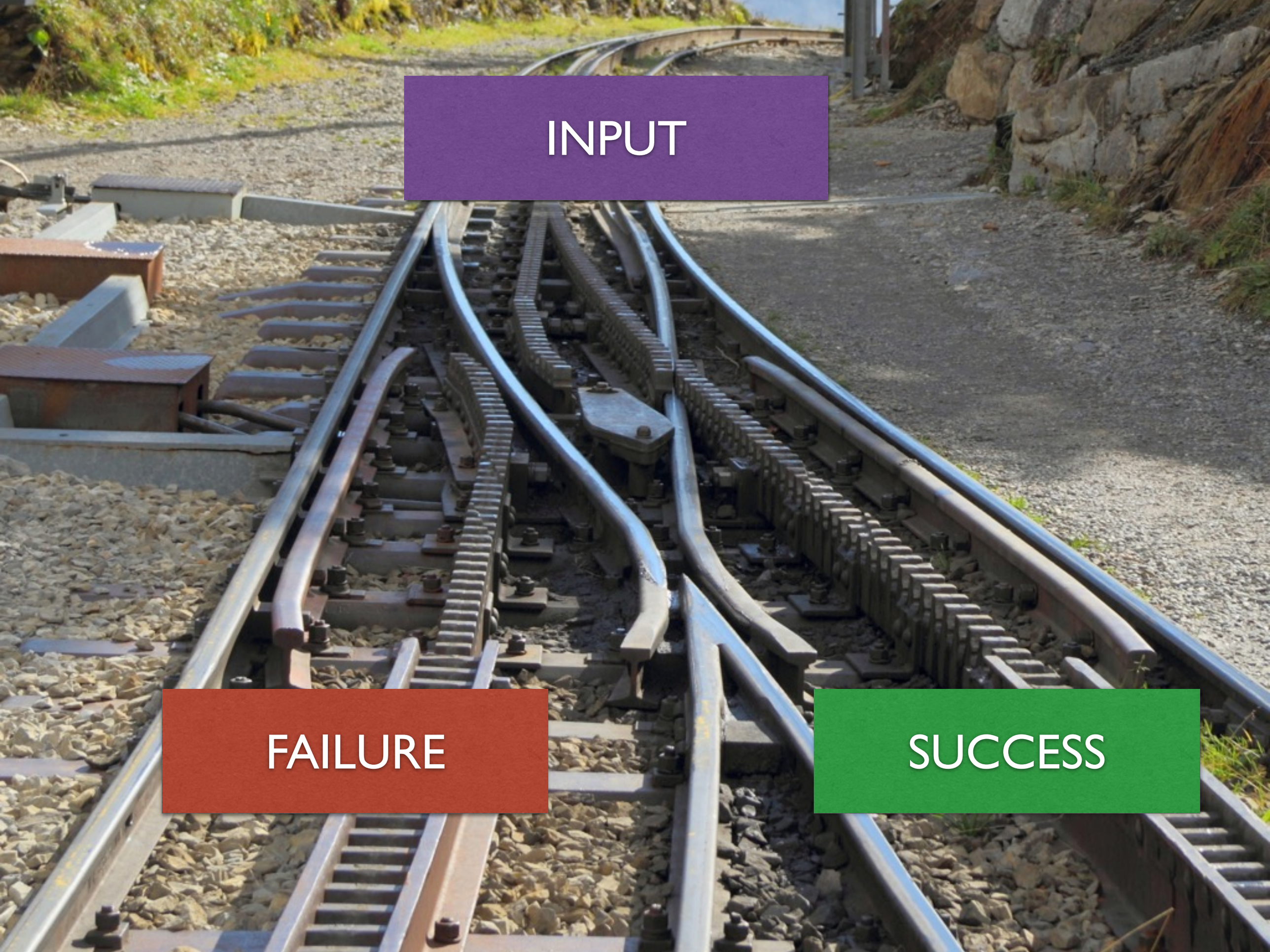

Park


日産業新聞
企業春闘速報


WTF!?!?

Content

- [x] you
- [x] me
- [ ] railways programming
- [ ] other stuff


INPUT
FAILURE
SUCCESS

REQUEST

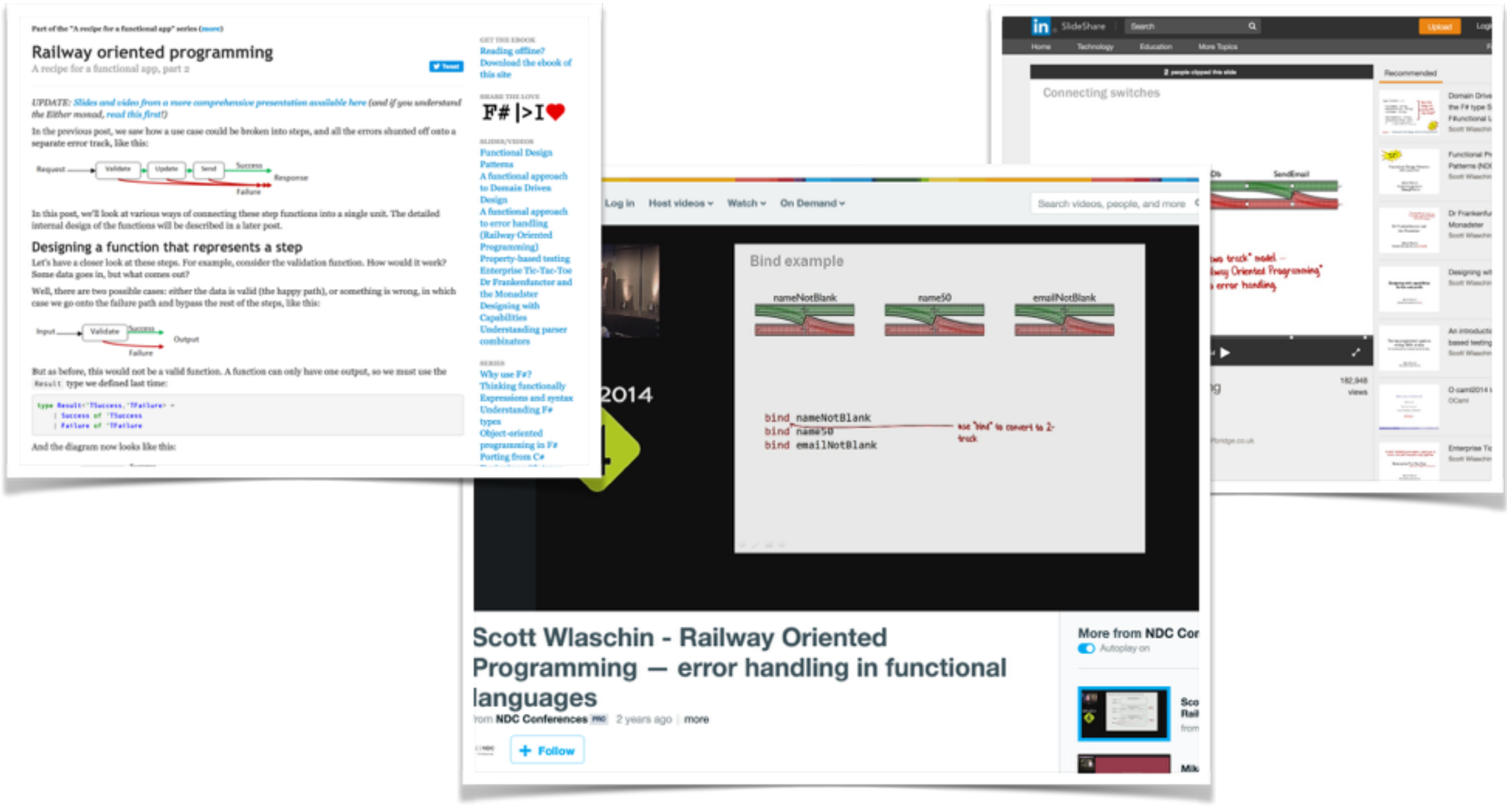
401

404

400

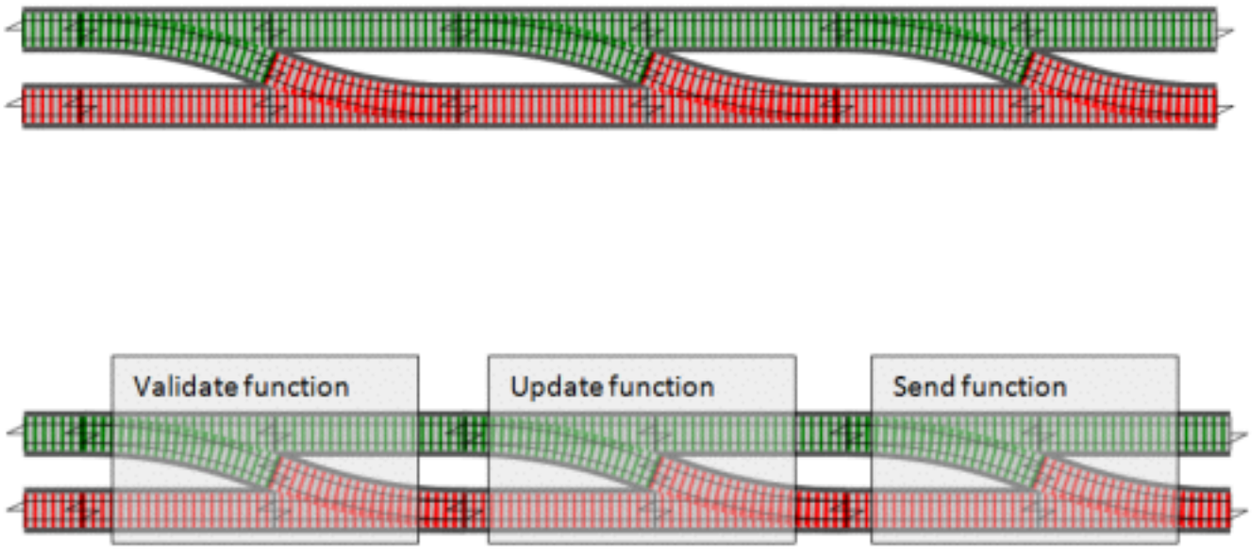
RESPONSE

railway programming



https://fsharpforfunandprofit.com/posts/recipe-part2/

@ignasi35


Validate function
Update function
Send function


Validate function
Update function
Send function

railway programming

- Treat your Failures
- Type your failures

- Failures: “run-time system does not know what to do” *
- Errors: “programmer does not know what to do” *
  - Errors handled side-band *

* http://erlang.org/download/armstrong_thesis_2003.pdf

railway programming

- non distributed programming
- for distributed transactions see Sagas

http://www.cs.cornell.edu/andru/cs711/2002fa/reading/sagas.pdf

```
byte[] bytes = customer
                .getAddress()
                .getStreet()
                .substring(0, 3)
                .toLowerCase()
                .getBytes();
```

http://www.nurkiewicz.com/2016/06/functor-and-monad-examples-in-plain-java.html?m=1

```java
Identity<byte[]> idBytes = new Identity<>(customer)
        .map(Customer::getAddress)
        .map(Address::getStreet)
        .map((String s) -> s.substring(0, 3))
        .map(String::toLowerCase)
        .map(String::getBytes);
```

http://www.nurkiewicz.com/2016/06/functor-and-monad-examples-in-plain-java.html?m=1

```java
byte[] bytes = customer
        .getAddress()
        .getStreet()
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http://www.nurkiewicz.com/2016/06/functor-and-monad-examples-in-plain-java.html?m=1

```java
public static void happy(
    java.util.List<String> stringList) {

  for (String s : stringList) {
    int i = (50 / Integer.valueOf(s)) - 1;
    System.out.println(" -> " + i);
  }

}
```

```java
public static void sad(java.util.List<String> stringList) {
  try {
    try {
      for (String s : stringList) {
        int parsed = Integer.valueOf(s);
        int div = 50 / parsed;
        int x = div - 1;
        System.out.println(" --> " + x);
      }
    } catch (ArithmeticException ae) {
      // What do we do ?!
    }
  } catch (NumberFormatException nfe) {
    // What do we do ?!
  }
}
```

```java
static final Function<String, Try<Integer>> toInt =
    x -> Tries.to(() -> Integer.valueOf(x));

static final Function<Integer, Try<Integer>> divide50 =
    (x) -> Tries.to(() -> 50 / x);

static final Function<Integer, Integer> minusOne =
    x -> x - 1;
```

```java
public static void grownupAttempt1(List<String> stringList) {
  final Function<String, Try<Integer>> pipe = x ->
      toInt.apply(x)
          .flatMap(divide50)
          .map(minusOne);
  final List<Try<Integer>> tryList = stringList.map(pipe);
}
```

```
static final Function<String, Try<Integer>> toInt =
    x -> Tries.to(() -> Integer.valueOf(x));

static final Function<Integer, Try<Integer>> divide50 =
    (x) -> Tries.to(() -> 50 / x);

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public static void grownupAttempt1(List<String> stringList) {
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          .map(minusOne);
  final List<Try<Integer>> tryList = stringList.map(pipe);
}
```

```java
public static void sad(java.util.List<String> stringList) {
  try {
    try {
      for (String s : stringList) {
        int parsed = Integer.valueOf(s);
        int div = 50 / parsed;
        int x = div - 1;
        System.out.println(" --> " + x);
      }
    } catch (ArithmeticException ae) {
      // What do we do ?!
    }
  } catch (NumberFormatException nfe) {
    // What do we do ?!
  }
}
```

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```
public static void grownupAttempt1(List<String> stringList) {
  final Function<String, Try<Integer>> pipe = x ->
      toInt.apply(x)
          .flatMap(divide50)
          .map(minusOne);
  final List<Try<Integer>> tryList = stringList.map(pipe);
}
```

```java
final String[] arr = new String[]{"1", "2", "0", "jamon"};
```

```java
final String[] arr = new String[]{"1", "2", "0", "jamon"};
```

```
Success{s=49}
Success{s=24}
Failure{t=java.lang.RuntimeException: java.lang.ArithmeticException: / by zero}
Failure{t=java.lang.RuntimeException: java.lang.NumberFormatException: For input string: "jamon"}
```

```scala
def railwayOperation(i: String) = {
  for {
    valid <- parse(i)
    parsed <- authorize(valid)
    persisted <- persist(parsed)
    response <- forAUser(persisted)
  } yield response
}
```

```scala
import scala.concurrent.ExecutionContext.Implicits.global

def railwayOperationSync(impl: Impl[Try])(i: String) = {
  for {
    valid <- impl.parse(i)
    parsed <- impl.authorize(valid)
    persisted <- impl.persist(parsed)
    response <- impl.forAUser(persisted)
  } yield response
}

def railwayOperationAsync(impl: Impl[Future])(i: String) = {
  for {
    valid <- impl.parse(i)
    parsed <- impl.authorize(valid)
    persisted <- impl.persist(parsed)
    response <- impl.forAUser(persisted)
  } yield response
}
```

```scala
import scala.concurrent.ExecutionContext.Implicits.global

def railwayOperationSync(impl: Impl[Try])(i: String) = {
  for {
    valid <- impl.parse(i)
    parsed <- impl.authorize(valid)
    persisted <- impl.persist(parsed)
    response <- impl.forAUser(persisted)
  } yield response
}

def railwayOperationAsync(impl: Impl[Future])(i: String) = {
  for {
    valid <- impl.parse(i)
    parsed <- impl.authorize(valid)
    persisted <- impl.persist(parsed)
    response <- impl.forAUser(persisted)
  } yield response
}

val asyncImpl: Impl[Future] = new PromiseImpl
val syncImpl: Impl[Try] = new TryImpl

val inputs = List("2", "17", "18", "19", "200", "asdf")

inputs.map(railwayOperationSync(syncImpl)).foreach(println)
inputs.map(railwayOperationAsync(asyncImpl)).foreach(println)
```

Sergi GP
@SergiGP

Following

"Estoy probando el JAVI PATH" @JavierCane

View translation

RETWEET	LIKES
1	5

6:02 PM - 27 Apr 2016

1 5

Ignasi Marimon-Clos
@ignasi35

@SergiGP @JavierCane export JAVI_PATH=/usr/bin/unicorns;/usr/bin/rainbows ??

View translation

LIKE
1

Sergi GP
@SergiGP

Following

@ignasi35 @JavierCane el javi path es no testear los recover de los futures xD

View translation

LIKE
1

8:48 AM - 5 May 2016

1

Content

- [x] you
- [x] me
- [x] railways programming
- [ ] final remarks

Choose Life.

Choose a job.

Choose a career.

Choose a family.

Choose a fucking big
4K monitor, choose SSD,
choose more RAM,
choose an i7.

Choose SOLID.

Choose TDD.

Choose BDD.

Choose CI, CD, auto provision,
self healing, autoscalable.

Choose dragging yourself around the city to attend a coding dojo.

Choose your colleagues.

Choose your laptop bag
and matching sneakers.

Choose a Star Wars t-shirt.

Choose your future.

Choose to

Choose to
manage

Choose to
manage your

Choose to
manage your errors.

Choose life.

End of presentation

Questions ?

@ignasi35

references

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