

# De Java a Scala: cómo conocí la programación funcional

# About me:



DarkRodry



intelygenz



Betabeers

If you have a dream, we can write the code

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```

    1 object Something {
    2     def someMethod[A <: B](r: A) = r
    3     type Type = A <: B :: C
    4     type OtherType = A => Thing
    5     type SomethingElse = Something <: SomethingElse
    6     type ParserContext = Context { type PrefixType = Parser }
    7     type SomethingSomethingElse = Something#SomethingElse
    8     type asFunctionType[A, B <: A, Z](f: A => B, g: (A, B) => Z): Unit = f
    9     type println("Something") = Unit
   10    type f: (Int, String) => Unit = (i: Int, s: String) => println(s"$i")
   11    type f: (Int, String) => Unit = (i: Int, s: String) => println(s"$i")
  12
  13    def test() {
  14        def test() {
  15            parameters param1: List[(Int, Int)], param2: List[Int]
  16            List[Int] = param1 match {
  17                case head :: tail => tail
  18            }
  19        }
  20    }
  21
  22    case class ACaseClass(param1: Float = 14.23f)
  23    case object ACaseObject extends Something
  24
  25    def main(args: Unit = {
  26        case Something(a, b) =>
  27        case SomethingElse() =>
  28        case SomethingElseElse() =>
  29        case SomethingElseElseElse() =>
  30        case SomethingElseElseElseElse() =>
  31        case SomethingElseElseElseElseElse() =>
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  39        case SomethingElseElseElseElseElseElseElseElseElseElseElseElseElse() =>
  40        case SomethingElseElseElseElseElseElseElseElseElseElseElseElseElseElse() =>
  41    })
  42
  43    intelygenz
  44
  45    ... trait Trait[A, Trait[B, C]] extends Option[...]
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```



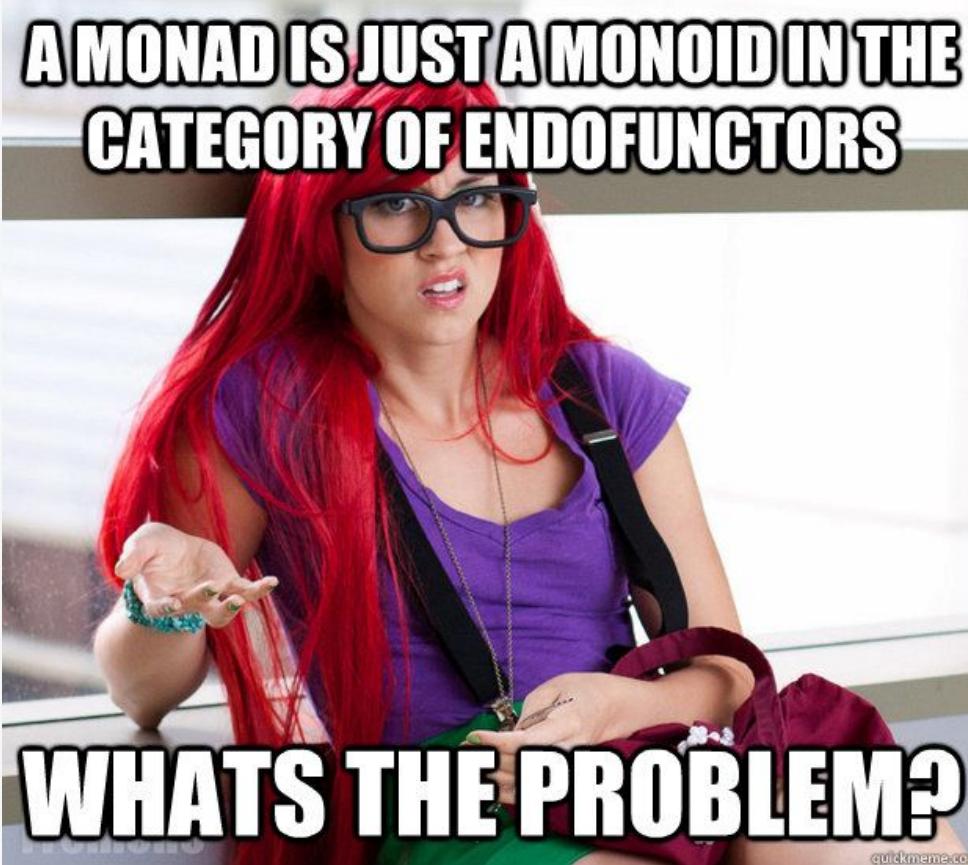
- Orientado a objetos
  - Funcional
  - Compila a Java bytecode
    - funciona sobre la JV

```
1 ct SomeObject[A <: B] extends Implicits {
2   type Parser[A] = A => Unit
3   type Type = A <: B => C
4   type OtherType = A => Thing
5   type Something
6   type SomethingElse<: SomethingElse
7   type Context = Context { type PrefixType = Parser }
8   type SomethingSomethingElse
9   type Something#SomethingElse
10  type asFunctionType[A, B <: A, Z](f: A => B, g: (A, B) => Z): Unit = {
11    println("Something")
12    f: (Int, String) => Unit = (i: Int, s: String) => println(s"$i -- $s")
13    f: (Int, String) => Unit = (i: Int, s: String) => println(s"$i -- $s")
14  }
15  type Test {
16    def test(
17      param1: List[(Int, Int)],
18      param2: List[Int]): List[Int] = {
19      param2 match {
20        case head :: tail => tail
21      }
22    }
23  }
24  case class ACaseClass(param1: Float = 14.23f)
25  case object ACaseObject extends Something
26
27  def main(): Unit = {
28    case Something(a, b) =>
29    case SomethingElse() =>
30    case SomethingElseElse() =>
31    case SomethingElseElseElse() =>
32    case SomethingElseElseElseElse() =>
33    case SomethingElseElseElseElseElse() =>
34    case SomethingElseElseElseElseElseElse() =>
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37    case SomethingElseElseElseElseElseElseElseElseElse() =>
38    case SomethingElseElseElseElseElseElseElseElseElseElse() =>
39    case SomethingElseElseElseElseElseElseElseElseElseElseElse() =>
40    case SomethingElseElseElseElseElseElseElseElseElseElseElseElse() =>
41  }
```



```
object HelloWorld {
  def main(args: Array[String]) {
    println("Hello t3chFest!")
  }
}
```

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```
boolean b = false;  
int i = 1;  
float f = 3.5f;  
char c = 'J';  
String s = "hello world";  
List <String> list = new ArrayList<>();
```



```
var b: Boolean = true  
var i: Int = 1  
var f: Float = 3.5f  
var c: Char = 'S'  
var s: String = "hello world"  
var s: List[String] = List("hello",  
"world")
```



```
final boolean b = false;  
final int i = 1;  
final float f = 3.5f;  
final char c = 'J';  
final String s = "hello world";  
List <String> list = new  
ArrayList<>();  
list.add("hello");  
list.add("world");
```



```
val b: Boolean = true  
val i: Int = 1  
val f: Float = 3.5f  
val c: Char = 'S'  
val s: String = "hello world"  
val s: List[String] = List("hello",  
"world")
```





```
public class Suit {  
  
    final String color;  
    final long size;  
  
    public Suit(String color, long  
size) {  
        this.color = color;  
        this.size = size;  
    }  
}
```



```
case class Suit(color: String, size:  
Long)
```



```
public String suitUp(Suit suit) {  
    return "My " + suit.color + "  
suit!";  
}
```



```
def suitUp(suit: Suit): String = {  
    s"My legendary ${suit.color} suit"  
}
```

```
val f: Suit => String = suitUp
```

```
def sayIt(a: String)(b: String): String = {  
    s"$a$b"  
}
```

```
val g: String => String => String = sayIt  
val curry: String => String =  
    sayIt("legen")  
val quote: String = curry("dary")
```



```
sealed trait Clothes
case class Suit(color: String, size: Long) extends Clothes
case class Sweater(thickness: Int) extends Clothes
case class TShirt(color: String, quote: String) extends Clothes

def suitUp(clothes: Clothes): String = clothes match {
    case Suit(color, _) => s"My legendary $color suit!"
    case Sweater(_, _) => "Is it your grandmother's?"
    case _ => "This clothes sucks"
}
```



If you have a dream, we can write the code

```
public interface Awesomeness {  
    String highFive();  
    String playLaserTag();  
    boolean flirt(Girl girl);  
}
```



```
trait Awesomeness {  
    def highFive(): String  
    def playLaserTag(): String  
    def flirt(girl: Girl): Boolean  
}
```





```
trait BroCode[T] {  
    def suitUp(x: T): T  
    def drink(x: T, d: Drink): Drink  
    def acceptChallenge(x: T, f: T => T): T  
}  
  
implicit object TedBroCode extends  
BroCode[Ted] {  
    def suitUp(x: Ted): Ted =  
        ElegantTed()  
    def drink(x: Ted, y: Drink): Drink =  
        EmptyGlass()  
    def acceptChallenge(x: Ted,  
        f: Ted => Ted): Ted = f(x)  
}  
  
implicit object BarneyBrocode extends  
BroCode[Barney] {  
    def suitUp(x: Barney): Barney = x  
    def drink(x: Barney, d: Drink): Drink =  
        d match {  
            case Water() => d  
            case _ => (x, EmptyGlass())  
        }  
    def acceptChallenge(x: Barney,  
        f: Barney => Barney): Barney = f(x)  
}
```



```
def goToMaclarens[T: BroCode](t: T): T =  
  for {  
    tSuited <- suitUp(t)  
    _ <- drink(tSuited, Beer())  
    tFinish <- acceptChallenge(tSuited, playLasertag(x))  
  } yield tFinish
```

```
val normalDay: Barney = goToMaclarens[Barney](barney)  
val randomDay: Ted = goToMaclarens[Ted](ted)
```



If you have a dream, we can write the code



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A function  
programmi  
confer

September 30th



HIGH SCHOOL

$$A^c \times B^c = (A \times B)^c$$

$$C^a \times C^b = C^{(a+b)}$$

$$B^{(c \times a)} = (B^a)^c$$

# ¿Preguntas?

```
le
omething.com

ct SomeObject[A <: B] extends Implicits {
    r[A] = A => Unit
    Type = A <: B :> C
    OtherType = A => Thing
    ething
    ething <: SomethingElse
    userContext = Context { type PrefixType = Parser }
    ethingSomethingElse
    Something#SomethingElse
    asFunctionType[A, B <: A, Z](f: A => B, g: (A, B) => Z): Unit = {
        println("Something")
    }
    f: (Int, String) => Unit = (i: Int, s: String) => println(s"$i -"
    f: (Int, String) => Unit = (i: Int, s: String) => println(s"$i --"
}

ect Test {
    ef test {
        param: List[(Int, Int)],
        param: List[Int]:
        List[Int] = {
            param2 match {
                case head :: tail => tail
            }
        }
    }
}

case class ACaseClass(param1: Float = 14.23f)
case object ACaseObject extends Something

def q: Unit = {
    case Something(a, b) =>
    case SomethingElse() =>
    case SomethingElseElse()
}

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```

# Enlaces de interés

- *Functional Programming in Scala*, Paul Chiusano y Rúnar Bjarnason  
<http://amzn.to/2kwXpkj>
- *Principios de Programación Funcional en Scala*, Coursera  
<https://www.coursera.org/learn/progfun1>
- *Scala Exercises*, 47 Degrees <https://www.scala-exercises.org/>
- *The Neophyte's Guide to Scala*. Daniel Westheide  
<http://danielwestheide.com/scala/neophytes.html>
- *ScalaMAD Meetup* <https://www.meetup.com/Scala-Programming-Madrid>