Assignment 1 : Advanced Features of Scala

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* 5 mins presentation on week 5 Wed 13th Feb during the lab session

* Post your topic to below by 9th Feb Sat: <https://padlet.com/827565590/5fncgoe9mhb6>
* Prepare slides and examples.

You should test the examples yourself to know

how it works; and may also compare it with

similar advanced features present in other languages.

* Upload a zip file containing pdf/ppt/code materials to our Assignment 1 IVLE workbin by 12 Feb 2019.
* You may work individually or as a pair.
* If you are unable to present (for one reason or another), the alternative is for you to write a 5-page report on the selected advanced feature coupled with a set of slides.
* The following are possible topics:

1. Higher-order functions
2. Immutable data structure
3. Java interoperability with Scala
4. Pattern-matching in Scala
5. Implicit (parameters and conversions)
6. Existential types, type class and Simulacrum
7. ScalaZ
8. Cat (Monad, Functor, Reader, Writer, etc.)
9. Asynchronous code and Monix
10. Lenses
11. Stream Processing
12. JSON
13. Generic Programming with Shapeless
14. Purely functional HTTP services

* You can find some materials at:
* Denis Kalinin. Mastering Advanced Scala.

https://leanpub.com/mastering-advanced-scala

* Heather Miller. Academese to English: A Practical Tour of Scala’s Type System

Philly ETE 2016

https://www.youtube.com/watch?v=67UNErFdr64

* Daniel Spiewak. High Wizardry in the Land of Scala

JavaZone 2011

https://vimeo.com/28793245

* Timothy Perrett. Scalaz Task - the missing documentation

http://timperrett.com/2014/07/20/scalaz-task-the-missing-documentation/

* Chris Stucchio. Don’t use Actors for concurrency

https://www.chrisstucchio.com/blog/2013/actors\_vs\_futures.html

* Stew O’Connor. ScalaZ Actors - A more reasonable approach to a possibly unreasonable programming model

http://stew.vireo.org/posts/I-hate-akka/

* Stew O’Connor. Cats: A fresh look at Pure Functional Programming in Scala

Scala by the Bay 2015

https://www.youtube.com/watch?v=AAMncMqpOds

* Erik Osheim. Evaluation in Cats: the Good, the Bad, and the Lazy

Typelevel Summit Philadelphia, March 2016

https://www.youtube.com/watch?v=XDDy-QD0aVU

Erik Bakker. Options in Futures, how to unsuck them

ScalaDays Amsterdam 2015

https://www.youtube.com/watch?v=hGMndafDcc8

* Rúnar Bjarnason. Composable application architecture with reasonably priced monads

ScalaDays Berlin 2014

https://www.youtube.com/watch?v=M258zVn4m2M

* Pere Villega. On Free Monads

http://perevillega.com/understanding-free-monadsAppendix B. References

* Travis Brown. Yet another iteratee library

https://meta.plasm.us/posts/2016/01/08/yet-another-iteratee-library/

* Daniel Spiewak. The Making of an IO

Scala IO France 2017

https://www.youtube.com/watch?v=g\_jP47HFpWA

* Alexandru Nedelcu. A Tale of Two Monix Stream

Scala Days Berlin 2018

https://www.youtube.com/watch?v=y7QfAWIun2k

* Julien Truffaut. Beyond Scala Lenses

Scala World 2015

https://www.youtube.com/watch?v=6nyGVgGEKdA

* Michael Pilquist. Introduction to Shapeless with applications from scodec

Scala PHASE Meetup 2015

https://www.youtube.com/watch?v=eNJ6ZbbrP2A

* Luigi Antonini. The Aux Pattern

http://gigiigig.github.io/posts/2015/09/13/aux-pattern.html

* Travis Brown. Type classes and generic derivation

https://meta.plasm.us/posts/2015/11/08/type-classes-and-generic-derivation/

* Ross A. Baker. http4s: pure, typeful, functional HTTP in Scala

Typelevel Summit Boston, March 2018

https://www.youtube.com/watch?v=urdtmx4h5LE

* Rob Norris. Programs as Values: JDBC Programming with Doobie

Scala by the Bay 2015

https://www.youtube.com/watch?v=M5MF6M7FHPo

Outline

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1. What is the feature?

2. Examples

3. Motivate why you would want to use this feature

4. Citation and references.

4-8 pages of slide