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Functional Programming Principles in Scala

École Polytechnique Fédérale de Lausanne

STUDENT NAME

Joshua Wang

GRADE

100.0%

COMPLETION DATE

July 16th 2014

NOTES

Student has earned a certificate with distinction.

COURSE DETAILS

Instructor: Martin Odersky
Duration of course: 7 weeks

Time commitment: 5-7 hours/week

Description:
This course introduces the cornerstones of functional programming using the Scala programming language. Functional programming has become more and more popular in recent years because it promotes code that's safe, concise, and elegant. Furthermore, functional programming makes it easier to write parallel code for today's and tomorrow's multiprocessors by replacing mutable variables and loops with powerful ways to define and compose functions.

Scala is a language that fuses functional and object-oriented programming in a practical package. It interoperates seamlessly with Java and its tools. Scala is now used in a rapidly increasing number of open source projects and companies. It provides the core infrastructure for sites such as Twitter, LinkedIn, Foursquare, Tumblr, and Klout.

In this course you will discover the elements of the functional programming style and learn how to apply them usefully in your daily programming tasks. You will also develop a solid foundation for reasoning about functional programs, by touching upon proofs of invariants and the tracing of execution symbolically.

The course is hands on; most units introduce short programs that serve as illustrations of important concepts and invite you to play with them, modifying and improving them. The course is complemented by a series of assignments, most of which are also programming projects.

Syllabus:

Week One: Programming paradigms; overview of functional programming and the Scala programming language.
Week Two: Defining and using functions, recursion and non-termination, working with functions as values, reasoning by reduction.
Week Three: Defining and using immutable objects, review of inheritance and dynamic binding.
Week Four: Types and Pattern Matching
Week Five: Working with Lists
Week Six: Collections and Combinatorial Search
Week Seven: Lazy Evaluation

MARTIN ODERSKY
PROFESSOR OF COMPUTER SCIENCE ÉCOLE
POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

This Course Record Represents...

IDENTITY VERIFICATION WITH SIGNATURE TRACK

While enrolled in this course, this student voluntarily participated in identity verification measures through Coursera's Signature Track. The student provided photo identification and created a keystroke profile at the time of course registration, and confirmed their identity with webcam photos and keystroke analysis when submitting graded work. Coursera has verified the identity of the student and their successful participation in the course.

Learn more about Signature Track and Identity Verification. →

DISTINCTION

The student's performance in this course met the standard for Distinction as defined by the course instructor.

Distinction Grading Policy

The final grade was based on 6 assignments (100% of the final grade). To receive a Statement of Accomplishment, you have to obtain >= 80% of the maximum possible score.

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