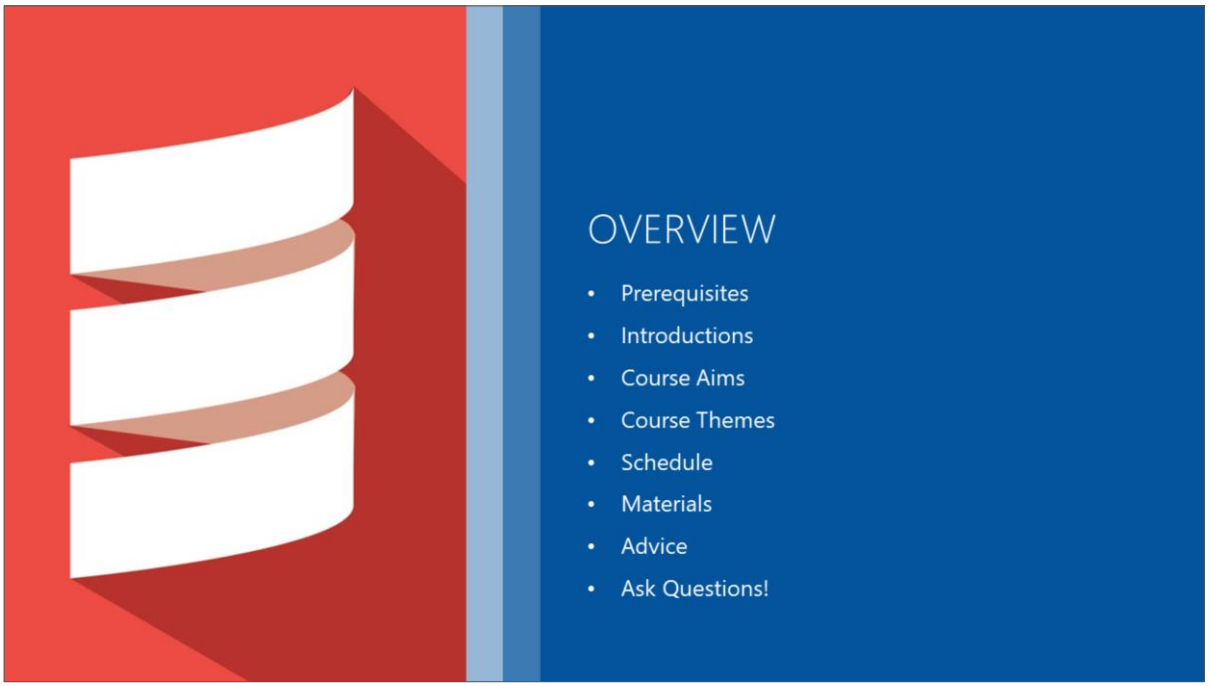
Scala Programming

QASCALA
A DATA SCIENCE AND MACHINE LEARNING COURSE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Prerequisites

- Essential
  - Recent experience of java or similar
  - A practical appreciation of OO principles
- Beneficial
  - Prior experience with functional programming language
  - Prior experience with larger programming projects

Introductions

- Name
  - What would you like to be called?
- Organization & role
  - What do you/your team do?
- Experience
  - What programming languages have you used?
  - Have you used Scala before?
- Expectations
  - Why did you chose this course?
  - What would you like from it?
- Applications
  - What will you use Scala for?

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Course Aims

- Aim of this course is to give you learning independence
- Accelerate:
  - Read, Write and Extend
  - Build small projects
  - Use libraries
  - Use tools for working with large projects

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Schedule

	AM	MID	PM
Procedural	Overview	Fundamentals	Methods
Functional	Transformation	Functions	Combinators
OO	OO	Inheritance	Traits
Polymorphic	Containers	Types	Applications
Applied	Implicits	TDD	Extra

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The "Extra" sections of the course are sketches of additional material that are also helpful to consider; we may look at these at the very end if there's time.

Course Themes

- Basics (Procedural Programming)
  - Fundamentals
  - Flow
  - Methods
- Dynamic Pure Functional Programming
  - Functions
  - Transformation
  - Containers
- Object-Oriented Programming
  - OO
  - Inheritance
  - Applications
- Static Pure Functional Programming
  - Types
  - Typeclasses
  - Advanced: Kinds
- Appendix: Libraries & More Examples

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Materials

- Slides
  - code demonstrations and commentary
  - relevant to exercises
- Slide Notes
  - extended commentary
  - read at the end of the day or during the exercise time
- Demonstrations
  - demo file with extended demonstrations
  - easy to run
- Exercise
  - exercises in their own file
    - copy then complete
- Solution
  - solutions provided
  - may ask instructor for help before using it
- Exercises are *learning*
  - not exams
  - the time is to practice

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Advice

- Work together
  - Work with your neighbors to learn and complete exercises
- Be respectful
  - Do not talk over or disturb others while they're trying to learn
- Keep own copy of everything
  - Especially exercises
- Write your own notes
  - For each module
  - Subjects to review after the course
  - Questions and answers
  - Save copies of every demo you try

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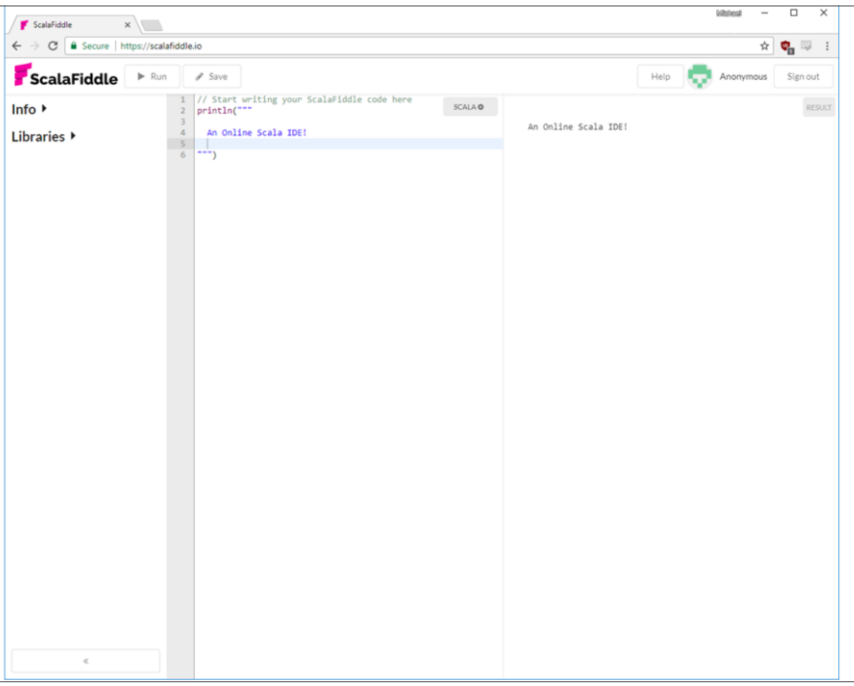
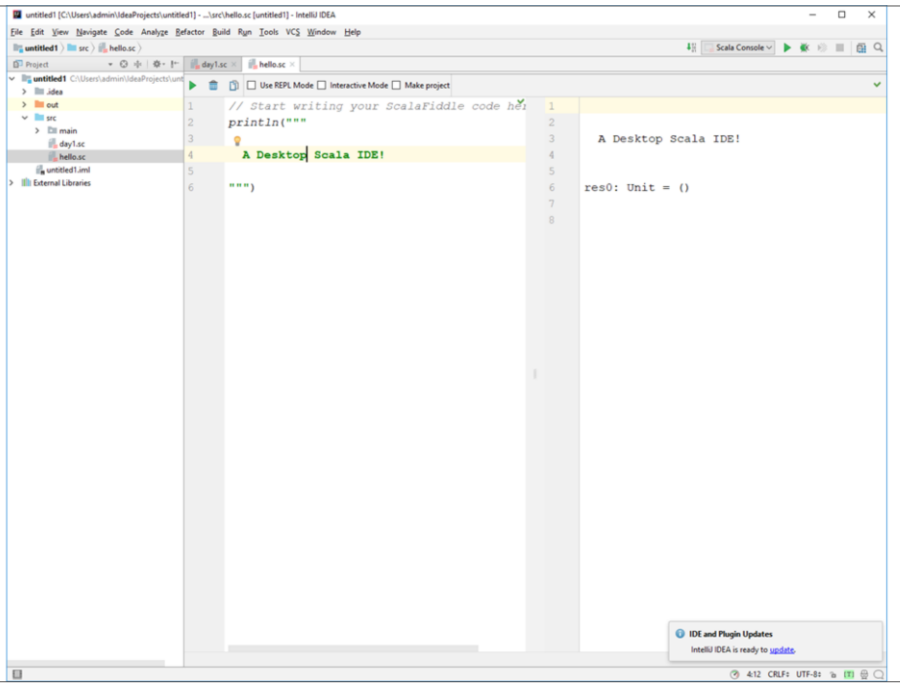
TOOLS: SCALAFIDDLE



TOOLS: INTELLIJ



Code

- Code demonstrations are given to the Right ->
  - slide demonstrations
    - available in dmp-sc-xtra-slides/
  - more in demo files
- /* ERROR: */
  - this demo intentionally causes an error when run
- /* EG: */
  - this demo is a code snippet
  - not intended to be run by itself

Ask Questions!

Thank you