Functional Programming with Scala: Class 2

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Setup

- Everyone have SBT working?

- Everyone have Intellij (or Eclipse) working?

- Anyone having problems submitting solutions to Canvas?

- Week 2 lecture and assignment are available on Canvas

Attendance

Outline Today

- Review Reading and Easter assignment

- more REPL examples

- Intelij features

- Lecture: OO versus Functional

- Assignment

Review

- Chapters 1, 2, 3

  - Questions?

  - What new ideas did you learn?

  - Discussion

- Easter

  - Note on working together

  - Please don't post or share outside class

  - Present solution(s)

  - Code review and discussion

More REPL Examples

- Collections

- Case Classes, ADTs

Break

Lecture

Look at Intellij Features

- new: project, package, class

- run, run with coverage, debug

- refactor: rename, move

- talk about directory layout

Level of Features

- Applications

  - case classes, classes, objects, pattern matching

  - immutable collections, tuples, val, def, for with yield

- Libraries

  - type parameters, implicit parameters, overloading

  - apply/unapply

  - ScalaDoc

- DSLs

  - operators

  - implicit conversions

  - reflection, macros

Features to Avoid

- Avoid

  - null, return

  - mutable state or top level execution in singleton objects

  - runtime checks (use options instead)

  - single lines that are too long or complex

- Minimize

  - var, assignment, mutable collections

  - lazy

  - foreach, while, for without yield

  - non tail-recursive functions

Programming Paradigms

- Object Oriented - mutable (CQueue, TestCQueue)

- Functional - immutable (FQueue, TestFQueue)

  - Tail recursion

  - Accumulators

  - Reverse

- Object oriented using functional (CFQueue, TestCFQueue)

- Functional using OO (FCQueue, TestFCQueue)

Break

Assignment 2

Assign 2: FSet

- Goals

  - start using case classes and functions

  - implement a functional set of integers

  - run the unit test to make sure it works

- Look at code skeleton (FSet) and unit test (TestFSet)

- ??? throws exception, replace with your code

- must pass tests

End