# Intro to Clojure

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# What's in this talk

- What is Clojure?

- Functional Programming

- Interactive Environment - REPL

- Live Demo

# What is Clojure?

- Functional Programming

- Modern Lisp

- Hosted on the JVM (or JavaScript, or CLR)

- Emphasizes Immutability

# Built for Concurrency

- Immutable by default

- Primitives with concurrency guarantees

- core.async - Communicating Sequential Processes

- No Locks!

# Simple, Terse Syntax

- Rule 1: Code as written as lists with the operation followed by the arguments.

- Tempting to say there is no rule 2, but features do require syntax

# REPL Driven Development

- Read Eval Print Loop

- Interact with a running system

- Experiment with immediate feedback to find what works

# Collections and Sequence Abstractions

- Lists - Singly Linked Lists - Code is written as lists. Not used often for data

- Vectors - Sequential Data. Lookup by index

- Maps - Key/Value pairs

- Sets - Enforce uniqueness

# Polymorphism

- Multimethods - dispatch based on the value of any arbitrary function

- Protocols - dispatch based on the type of the first argument

# Interop

- Use Java libraries from Clojure

- Many Clojure libraries to wrap Java libraries and give them a Clojure feel

- Inherit and extend Java classes

- Implement Java Interfaces

# ClojureScript

- Same language in the browser and on the server

- core.async enables asynchronous code without callbacks

- ClojureScript libraries that wrap React.js have quickly become a popular way to build user interfaces

# Macros give library developers super powers

- core.async - Adding async functionality usually means a compiler change or a whole new language. In Clojure it is a library

- core.logic - logic programming language implemented in Clojure

- DSLs for SQL, web routing, HTML generation and parsing etc.

# Demo

# Online Books

- Clojure For the Brave and True

- Clojure From the Ground Up

# Recommended Books

- Living Clojure - Carin Meier - O'Reilly -  Tutorial and 7 week training plan

- Clojure Programming - Emerick, Carper, Grand - Lots of material clearly explained

# Clojure Mindset

- The Joy of Clojure - Fogus and Houser

- Any talk by Rich Hickey

- ClojureTV channel on YouTube

# Questions?

- rickhall2000@hotmail.com

- https://github.com/rickhall2000/code-camp-2015