What coderetreats have taught us about design

Jim Hurne – IBM
Joseph Kramer - IBM
What is a coderetreat?
Origin

2009 Codemash Conference

Corey Haines
Gary Bernhardt
Patrick Welsh
Nayan Hajratwala
The cost of change

A good code architecture has a low cost of change
4 Rules of Simple Design

1. Passes all tests
2. Clear, expressive, and consistent
3. Duplicates no behavior or configuration
4. Minimal methods, classes, and modules
Pair programming
45 minute iterations
Retrospectives
DELETE

ALL THE CODE
Conway’s Game of Life

1. Any live cell with fewer than two live neighbors dies, as if caused by under-population.

2. Any live cell with two or three live neighbors lives on to the next generation.

3. Any live cell with more than three live neighbors dies, as if by overcrowding.

4. Any dead cell with exactly three live neighbors becomes a live cell, as if by reproduction.
Exercises

- Ping pong
- Mute ping pong
- Navigator-driver
- No Mouse
- No conditional statements
- Tell don’t ask
- Baby steps
- Only four lines per method
- Immutables only, please
- Code swap

- Verbs instead of nouns
- Red card, yellow card
- Rules swap
- Speed pairing
- TDD as if you meant it
What do people learn at a coderetreat?
Better micro-architectures
Avoiding Primitive Obsession

```java
boolean cell = true;

Cell cell = new Cell(ALIVE);
```
Assumptions influence design HEAVILY

```java
Boolean[][] board = new Boolean()[10][10];

public int numNeighbors(int x, int y) {
    for (int i; i<x; i++) {
        for (int j; j<y; j++) {
            // HaHa! You'll never do three dimensions!
        }
    }
}
```
Assumptions influence design HEAVILY.
Polymorphism vs Conditionals

```java
public conditionals(Object shape) {
    if (shape instanceof Rectangle) {
        shape.drawRec();
    }
    if (shape instanceof Circle) {
        shape.drawCircle();
    }
}

public polymorphism(Shape shape) {
    shape.draw();
}
```
Exploring design alternatives
Picking good names
Functional programming inspired designs
Using Immutable Data Structures
Developer Practices

- Pair programming
- Test driven development (TDD)
- Emergent code design
- Problem solving
- Writing expressive code
What is coderetreat NOT good for?
Learning a new programming language
Groups > 30
Advantages of internal coderetreats
You have space
Lunch is easy
Everyone knows similar languages
Easy to relate theory to work
Challenges of internal coderetreats
Convincing management

CODERETREAT?

SOUNDS FISHY
Convincing management

- Better overall architecture sensibilities
- Better micro-architectures and code designs
- Improved code quality
- Easier to change systems
- Better developer practices
Getting a full day – clearing the calendar
Convincing employees to attend
Step 1

Find a few willing people and run a small coderetreat with just them
Step 2

CODORETREAT WAS THE FIRST REQUIRED CORPORATE TRAINING

THAT DIDN'T SUCK
Now what...?
Attend a coderetreat!
Run a coderetreat!
Learning how to facilitate

- Visit coderetreat.org
- Read blog posts about coderetreat
- Watch recorded training sessions
- Attend a facilitator training session (available in the fall)
Join the community
Resources

- The Coderetreat Website
  coderetreat.org

- The Global Day of Coderetreat website
  gdcr(coderetreat).org

- Understanding the Four Rules of Simple Design by Corey Haines
  leanpub.com/4rulesof simplesignedesign
Photo Attributions

Slide 3
● “Pocket change” by uhuru1701 - Some rights reserved by photographer uhuru1701
http://www.flickr.com/photos/uhuru1701/2247520563/sizes/o/in/photostream

● "CCTV Beijing April 2008" by Jakob Montrasio - originally posted to Flickr as Cranes In The Sky.. Licensed under CC BY 2.0 via Wikimedia Commons -

Slide 5
● Coderetreat at IBM, taken by George Champlin-Scharrif. Used with Permission
Photo Attributions

Slide 6

Slide 7
● “After Session” by Dhaval Dalal, used with permission.
 http://coderetreat.org/photo/after-session

Slide 12

Slide 13
● "Purely functional tree after" by Original uploader was VineetKumar at en.wikipedia – Transferred from en.wikipedia; Transfer was stated to be made by User:sevela.p.. Licensed under CC BY-SA 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Purely_functional_tree_after.svg#/media/File:Purely_functional_tree_after.svg
Photo Attributions

Slide 16
• By Miko3k and Tene. CC-BY-SA-3.0 via Wikimedia Commons

Slide 18
• By W.carter (Own work) [CC BY-SA 4.0], via Wikimedia Commons

Slide 19

Slide 23

Slide 24
• By Wiziq Inc. [Public domain], via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Prog-languages.png
Photo Attributions

Slide 25
● “Dive off the stage....(Jump in a mosh pit and break your neck)” by Alani Cruz. Some rights reserved. https://www.flickr.com/photos/alanyc/5576976732/

Slide 27
● By Novotel Century Hong Kong Hotel (Novotel Century Hong Kong Hotel) [CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], via Wikimedia Commons

Slide 28
● By Steve Jurvetson, via Flickr
Slide 29
● "Pieter Bruegel the Elder - The Tower of Babel (Vienna) - Google Art Project - edited" by Pieter Brueghel the Elder (1526/1530–1569) - Levels adjusted from File:Pieter_Bruegel_the_Elder_-_The_Tower_of_Babel_(Vienna)_-_Google_Art_Project.jpg, originally from Google Art Project. Licensed under Public Domain via Wikimedia Commons

Slide 30
● By Harless Todd, U.S. Fish and Wildlife Service [Public domain], via Wikimedia Commons
http://commons.wikimedia.org/wiki/File:People_in_small_discussion_group_meeting.jpg
Photo Attributions

Slide 34
- “Tetris Calendar” by jeanbaptisteparis, some rights reserved -
  https://www.flickr.com/photos/jeanbaptisteparis/3946835760/

Slide 35
- “Zoning at office” by Simon Law, some rights reserved -
  https://www.flickr.com/photos/sfllaw/5892567/

Slide 38
- By Lonely_at_the_top.jpg: Guyon Morée derivative work: Yuval Y § Chat §
  (Lonely_at_the_top.jpg) [CC BY 2.0 (http://creativecommons.org/licenses/by/2.0)], via Wikimedia Commons

Slide 39
From the Global Day of Coderetreat 2014 website. Used with permission.
http://gdcr.coderetreat.org
Photo Attributions

Slide 40

Slide 41
- Domenico Fetti [Public domain], via Wikimedia Commons

Slide 42