Meeting 12: Operational Semantics

Announcements

Colloquium Today
"Life Lessons and Datacenter Performance Analysis"
Amer Diwan, Google
ECCR 265, Thursday, February 20, 3:30-4:30 PM

Abstract: Performance is critical to datacenter applications: a poorly performing application provides poor experience to end users and also wastes hardware resources (network, disk, CPU). Unfortunately, these applications are huge (serving each user request can involve hundreds to thousands of machines) and complex (many interacting components often developed and managed by different teams). Thus, these applications are notoriously hard to understand and optimize. This talk distills key insights from our experience in analyzing and optimizing datacenter applications (particularly Gmail) at Google.

February 2014

<table>
<thead>
<tr>
<th>Su</th>
<th>Mo</th>
<th>Tu</th>
<th>We</th>
<th>Th</th>
<th>Fr</th>
<th>Sa</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22: Lab 3</td>
</tr>
</tbody>
</table>

- Alok and David on Tue February 25. I am unfortunately traveling.
  - Q&A with me 8:15-class in the classroom on Thu.
- No sections on Fri February 28: CSCI 3155 Holiday!
  - Alok and David’s Fri office hours will be moved to before the midterm. Watch Piazza.

CU CS Virtual Machine

I hear that it is a smooth set up.

Why is 3155 CS Foundations?

Fundamental question of the course: What is a program?
• Challenging conceptually and highly philosophical. Yet, the "answer" is clearly fundamental to software engineering.

Main take-away: Fundamental concepts that will come up over-and-over again in your career.

• Programs as Data = "Functions are Values".
• Thinking inductively.

These are both hard to "get", I empathize. The concepts are hard regardless of vehicle (e.g., Scala versus some other language). Trust in my experience: Scala is the best vehicle for these concepts.

Skills that follow: writing recursive functions, understanding frameworks and callbacks, manipulating programs and program-like things (parsing, ...)

Near the end of semester application: how 3155 concepts are fundamental in "big data" systems

FAQ

Q: Why are labs "worth" so little (30%) when I spend almost all my 3155 time on it?
A: The labs are the main learning vehicle for the course, so I believe it should not also be used as the main evaluation criteria.

Q: If the labs and the quizzes are learning vehicles, why are they "graded" at all?
A: They are "graded" to give you feedback on where you are in your learning (i.e., if you just got 1 or 0 for "submitting," then you would have less information to prepare for the exams--and more likely to be "surprised" by the exam).

They are "worth" much less than exams, so you are not harshly penalized for not getting it the first time around. The "redo" policy extends this: the opportunity to confirm that you have "gotten it" since the lab/quiz. Comments so far from redos: the "points back" become secondary to the new understanding from the experience.

Labs = Exercises to build intuition for new concepts Quizzes = Practice exams

Quiz 2

Scoring

Average: 9.1, Stdev: 4.0 Median: 8, 3rd Quartile: 12, Max: 19

My grading: Not a 90%, 80%, 70%, ... scale. Varies depends on the assignment. Usually lower to use the "full range" for feedback.

"Decoder" for Quiz 2 (e.g., if it were an exam): 15+ = A+, 8-10 = B-ish
Does not mean problem 3 is unimportant or "not part of the course". It was a synthesis/stretch problem for learning that should now not be a "surprise" for exams.

Feedback Response

Interviews: Chance for both to respond to a question (individual score for feedback, group score is max and is recorded).

Questions

substitute for DoCall / DoCall Rec

"subst"

short-circuit eval