

Discussion questions for *Troll, a Language for Specifying Dice-Rolls*

Comp 150PLD

October 6, 2014

1 Warm-ups

1. What is the domain of Troll?
2. Give a couple example programs in Troll and explain what they mean.
3. Who are the intended users?
4. What are the goals of Troll?

2 Design Evaluation

1. What language features does Troll provide? How did the author motivate that this set of features was adequate? Are there any operations that you think are missing?
2. Are Troll programs guaranteed to terminate? Explain why or why not.
3. Describe how Troll is implemented and why.
4. How have the intended users impacted the design?
5. How did the author evaluate his language? How could the evaluation be improved?

3 Evaluating Troll as a Domain-Specific Language

1. What are the advantages and disadvantages of Troll being a DSL? A stand-alone DSL?
2. What are the advantages and disadvantages of the syntax?
3. Does Troll have a type system? If so, describe what it checks. If not, describe what a type system for Troll might check. Might type-inference be helpful?
4. What is a run-time system? Does Troll have one? If so, what does it do?
5. Does Troll have or could it benefit from Troll-specific tool support? What is the difference between a tool and a non-standard or secondary semantics? Is there one?
6. Does Troll have or could it benefit from Troll-specific libraries? Explain.
7. How might the design be improved?
8. Discuss to what extent Troll is a DSL.

4 More detailed questions.

These might help you answer the questions above or guide your understanding of the paper.

1. What are the two possible ways of calculating the finite probability map for a dice roll? What are their advantages and disadvantages?
2. Why does the non-normalized data structure include both $D_1 \cup D_2$ and $2 \times D$? Are there potential pitfalls here?
3. Why are local bindings so costly? Might there be further optimizations that could be used, for example in the case `x := d6; x + x`?
4. Explain how Troll compiles repeat loops. Under what circumstances does Troll report a non-termination error?
5. Explain how Troll compiles accumulate loops. How might one figure out whether this approximation produces good results?