Assignment 3 – CS 4536/536: Programming Language Design
Instructor: Rose Bohrer (pronouns: she/her)
Instructor Office: Fuller Labs 139

Overview

The primary goal of the programming assignment is to develop an interpreter for a simple programming language, i.e., a program that executes a program and returns the final value.

How Long Will This Take?

My goal is that most students will spend at most 13 hours/week on this course and that few will spend more than 15 hours/week, in total.

If you have spent more than eight hours on this assignment and are not done, you are **expected** to reach out to the course staff for help (office hours, chat, or email). It is our job to help you and your job to seek help when appropriate.

Grading

This assignment is worth 100 points. 75 points are for the programming part and 25 points for the written part. Your grade for the programming part is the sum of scores for each passing test case. Your grade for the written part is 20 * the fraction of problems for which you submit an honest attempt at a solution plus 5 * the fraction of assigned peer reviews you complete.

What to Read While Working on This Assignment

In addition to the lecture readings, you will likely find the official documentation for Rust hashmaps helpful. You are welcome to refer to other resources about interpretation and operational semantics (which are the math counterpart to interpreters).

Programming Assignment

Download and extract the programming assignment from Canvas. Your assignment is to implement all functions to meet their specifications as given in the comments. Point breakdown:

- 40pts – everything but functions
- 35pts – functions

Written Assignment

20pts Write a reflection statement covering (1) your experience using Rust specifically so far in the course and (2) your desires for the second half of the term, in general. We expect the average statement to range from 0.5-1 pages. You should address all of the following prompts – each prompt is treated as a problem for grading purposes, e.g., answering half of prompts results in half credit.

1. How well-motivated do you find Rust to be? How well have its designers communicated a purpose, justified the importance of that purpose, and followed through on living up to potential?
2. How does your experience of Rust tooling (such as the package manager, compiler, and VSCode plugin) compare to your experience of other tools? High-effort/low-effort? High-error/low-error?

3. How is your experience of the social infrastructure of Rust? E.g. Documentation, tutorials, StackOverflow questions and answers.
4. In the second half of the term there will be lighter focus on implementation and more emphasis on design, human-centered computing, and application. What are you most interested in learning about in the second half of the term, and is there anything you're interested in learning about that isn't listed in the syllabus?

Peer Reviews

Complete all peer reviews (of HW2 written submissions) that were assigned to you in Canvas, which are reviews of your classmates' written assignments from the previous assignment. You will receive credit for all reviews you complete which meet the criteria given here. Please note that you are required to maintain a respectful and professional tone in reviews, and that your reviews are non-anonymous in order to encourage professional interactions. In cases of extreme violations of professionalism, the instructor retains the right to revoke credit. Advice on professional tone is provided.

Due date: HW2 peer reviews are due at the HW3 deadline

In your write-up, provide written feedback which follows the given rubric:

- Creativity+Motivation: Highlight any particularly exciting or creative ideas in the proposal. If you are not sure what to write, you can look at the flip side: is there any aspect of the proposal where you wish they explained their motivations more clearly?
- Detail: A write-up should be detailed enough that you can provide good feedback. How well does it meet this goal? Do you struggle to understand the core concept? Do you understand the core concept but have uncertainty about the goals? Uncertainty about the approach that will be taken in the study?
- Organization: To provide understanding of the above points, a good proposal not just enough detail but organizes it well. Does the proposal make it easy to identify all the required proposal sections? Do the ideas in the proposal connect together nicely? Is it concise?
- Preparation: This does not apply to all studies. If the study requires any significant preparation outside of the planned course activities, how well do they address this preparation? Did they acknowledge that preparation is needed? Did they cite specific resources they will use? If they are already familiar, did they demonstrate their knowledge?

You should aim to include at least one (short) comment for each bullet point of the list (4 total). You are allowed to give comments outside the rubric, too. Write your feedback using the following guidelines for a professional tone, which are based on National Science Foundation standards:

- Criticism is welcome, but it should not be personal, it should be focused on the work ("the response to question 1 is missing" vs. "you forgot to answer question 1")
- Use "I" language when appropriate ("I didn't understand X" vs. "X makes no sense")
- Avoid superlative words or exaggerating language "very confusing"
- Be specific ("a plan for interpreting user data was not provided," "the proposal is vague")

Do not imply a person should give up. Reviews should be consistent with growth mindset.

In the previous assignment, you practiced feedback on an example, feel free to review that.