

Project Guide – CS 536: Programming Language Design

Instructor: Rose Bohrer (pronouns: she/her)

Time: T,Th | 4:00 PM – 5:20 PM

Classroom: Higgins Labs 114

Instructor Office: Fuller Labs 139

Overview

This course is an ungraded, project-based, team-based course. This means that you identify a team, design your own project together, and assign yourself a grade based on how well your project meets the course goals. In understanding the role of assignments, we should distinguish “structure” from “requirements.” If you already know how you want to run your project or what you want to do, you should do so – be as radical as you like. You choose how to engage with this structure, but these project checkpoints provide you a structure so that you have lots of guidance as your starting point.

When I review your submissions, I **only** provide formative feedback, never a grade. You are the person who assigns your final grade, you are in control.

Logistics

We will spend class time to help form teams. Afterward, I will ask you to confirm your team members on Canvas – if you’re having trouble picking teams, reach out to me because it’s my job to help with that. Teams are at least 3 people. There is no upper limit on size. It is recommended to keep the same team all semester. Checkpoints are due at the times indicated on the Schedule section of the syllabus.

Week-by-Week

You will make 7 submissions (checkpoints 0-5 and a final submission). I summarize the default/proposed focus for each week’s work – you are welcome to structure your project differently if you like:

CP 0

Identify your interests, identify a team, pick what software you will need for your project, and install it. You will attempt to read some Scala code and summarize what you think it means.

CP 1

Design your language on a conceptual level. You will identify what kinds of features are present, how they interact, and what goal you wish to achieve.

CP 2

Submit the simplest possible prototype for the simplest possible version of your project, bugs and all

CP 3

Iterate on your language design. Describe your language’s design and its goals with greater detail. Continue implementation work.

CP 4

Add “something new” to your project.

CP 5

Take time for reflection as you continue to work.

Final Submission

If all other project checkpoints fully met the learning objectives, this submission is just submitting all checkpoints together and self-evaluating. Otherwise, you can revise old checkpoints.

Deliverables

Submit (1) the files for your project work, whether that's a language implementation or something else, and (2) submit a written report. The report follows a self-grading philosophy. Because I do not grade it anyway, it does not need to follow a specific structure. The real point is that, throughout the project, the report should be a living document that helps you **communicate with each other**. A typical report has sections like:

1) What's our goal and why's it interesting? 2) What background material helps you understand the project? 3) What other research have people done that I want to be able to compare mine against? 4) What is the definition of my language? 5) What kind of work went into the implementation of the language? 6) Did you get a chance to write programs in the language, and if so, what happened? 7) What did you learn?

But none of them are actually required. Basically, I am suggesting you keep a living design document, and you organize it in whatever way helps **you**.

Self-Grading Form

You will submit this form at the end of the term to assess your own final grade. For each objective, you will rate your learning on a scale of A,B,C,NR, where you set your self-grading standard at the start of the term.. Describe your current knowledge level for each course objective. Use words, numbers, or letters. For each objective, you will give a brief citation of where and how you demonstrated your knowledge. The next page provides an example of a filled-out form.

Objectives:

1. Identify a clear problem where programming language design can be used. I grade myself:

_____, because _____

2. Communicate with clarity and technical depth about language design. I grade myself:

_____, because _____

3. Develop a mathematically-precise definition of your language's syntax. I grade myself:

_____, because _____

4. Work effectively with your team to plan your project. I grade myself:

_____, because _____

5. Implement a well-scoped prototype in the language of your choice. I grade myself:

_____, because _____

6. Situate your project among the schools of thought discussed in class. I grade myself:

_____, because _____

Objectives:

Based on this rubric, I give myself the final course grade of: _____. Additional notes?: _____

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Objectives:

1. Identify a clear problem where programming language design can be used. I grade myself:

___B___, because _Once I did the project, I felt the project topic **was** such a problem. But I wasn't really the one who identified it...___

2. Communicate with clarity and technical depth about language design. I grade myself:

___B___, because _Because my teammates often pulled more of the weight to clarify things I said or wrote. I was able to reach a clear understanding in the end, but they pushed me to get there. ___

3. Develop a mathematically-precise definition of your language's syntax. I grade myself:

___C___, because _I tried but the math side of my brain just broke this semester, sorry not sorry_

4. Work effectively with your team to plan your project. I grade myself:

___A___, because __I came in with 5 years of industry experience and my teammates are undergrads. We agreed that I should take on a lot of the management and interpersonal work, and that paid off for all of us___

5. Implement a well-scoped prototype in the language of your choice. I grade myself:

___N/A___, because __I could not program before this class and I still can't. So I just chose not to make this an objective for myself_

6. Situate your project among the schools of thought discussed in class. I grade myself:

___B___, because _I'm not great with technical jargon still, but I do feel like I can have much more effective work conversations now___

Based on this rubric, I give myself the final course grade of: ___A___. Additional notes?:_I thought about it, and I'm gonna grade myself based on my best work, not my worst. I went through **a lot** in my personal life this semester and I exercise my right to show mercy to myself.