Computer Science 433
Programming Languages

The College of Saint Rose
Fall 2012

Language Project

Groups must be formed by: Wednesday, October 31, 2012
Proposals due: 10:25 AM, Monday, November 5, 2012
Progress reports due: 10:25 AM, Monday, November 19, 2012
Complete paper drafts due: 10:25 AM, Monday, December 3, 2012
Presentations: 10:25 AM, Monday, December 10, 2012
Final submission: 4:00 PM, Monday, December 10, 2012

As you know, this course requires you to complete a final "language project" that will determine 20% of your grade. You will choose a programming language to study in more detail than we have as a class. Most projects will involve significant programming in your chosen language, but that is not the only focus. You will also need to investigate the interesting design features of the language, the kinds of problems the language is well-suited to solve, how it compares with the languages we have studied, and the history of the language. In most cases, you will need to find a compiler or interpreter for your language that we can run under Linux, Windows, or on a Mac. A successful project could be done by choosing a language of more historical interest for which no current implementation can be located, but non-programming aspects of the project will need to be emphasized. You will report on your project through a formal research paper and brief (approximately 20 minute) presentation at a minisymposium to be held at the end of the semester.

You may work individually or in groups of two or three. Groups must be formed by Wednesday, October 31, 2012.

The proposal

Please start thinking about a language and what you would like to implement in that language right away and come to me with your ideas. No two individuals or groups will be permitted to study the same language, so claim yours early. By 10:25 AM, Monday, November 5, 2012, submit a proposal, at most one page in length, that briefly describes the language you wish to study and why, and what you plan to implement in your language, and how you plan to go about it. Describe the major milestones for your project, a rough schedule for achieving these milestones, and which milestones you believe are most important for your project to be considered a success. If you will need access to any special hardware or software, include that in your proposal. Your proposal should convince me that you have an interesting and worthwhile language and problem to solve using that language, and that it is feasible to study and use it in the time available.

The progress report

By 10:25 AM, Monday, November 19, 2012, submit a progress report. This should consist of a detailed outline (or better yet, an early draft) of your paper including sources, and a description of

the design and current implementation status of your software, as well as a more specific timetable for completion of the project. You must also submit an annotated bibliography with your progress report, detailing the sources you have considered (including some you intend to use and some you do not intend to use).

The paper

This is to be a formal research paper, and should be organized as such. You should begin with a title, author list, and abstract. The main body of the paper should be organized into sections including (i) an introduction in which you describe the language and the particular aspects you will be examining, (ii) one or more sections comprising your main text, where you describe what you have done, how you have done it, and what you have learned, (iii) a conclusion, which should include ideas for future investigation into your topic which were beyond the scope of your project and the paper, and (iv) a complete list of citations. Citations of web pages are acceptable in some circumstances, but books, articles in conference proceedings or journals, or technical reports are preferred.

Proper English and a good technical writing style are important. Writing well is very difficult – it is an iterative process and cannot be done all at once. Be precise and be concise. Group members should proofread and make suggestions about each other's writing. Check your spelling and grammar carefully. I expect most papers will be around 10 single-sided pages, using 1.5 spacing, one inch margins, and a 12-point Times Roman font (or similar). Please do not adjust margins and font sizes to force a certain length. You are encouraged but not required to use LaTeX to typeset your paper. The LaTeX example in my shared area is already set up with an appropriate format. Length is not important – content and quality are. Papers shorter than 8 pages or longer than 15 pages are acceptable, if the length is appropriate for the content.

Submit a complete draft by 10:25 AM, Monday, December 3, 2012. The more complete this draft, the better feedback I can give you to improve it and the more you can focus on programming at the end. You may also submit additional drafts for feedback, but keep in mind that it may take me a day or two to get to them. Submit your final version by 4:00 PM, Monday, December 10, 2012.

The project

You should submit your source code and instructions on how to build and run it. The software should be described in the paper. Please make arrangements to demonstrate the program. Source code should be submitted and demonstrations completed by 4:00 PM, Monday, December 10, 2012.

The presentation

Each group will present a summary of their work to the class. Include background information on your language, the motivation for your project, a description of what you did, and a summary of what you learned. Software demonstrations may also be appropriate. Prepare slides or web pages. Rehearse your presentation, paying special attention to timing. Given how busy everyone will be at the end of the semester, our schedule will be tight, so groups will not be allowed to run

over the allotted time. Presentations will take place during a class minisymposium on 10:25 AM, Monday, December 10, 2012. All group members must participate in the presentation. Attendance is required at the entire presentation session, not just when your group is speaking.

Grading

This final project accounts for 20% of the course grade. The grade will be based on all aspects of the project, including the proposal (5%), the progress report (5%) and annotated bibliography (5%), the design, documentation, style, and correctness of the software developed (10–30%), the content and writing style of the complete draft (10%) and final version (30–50%) of the paper, and quality of the presentation (15%). The breakdown between software development and the final paper will depend on the amount of programming required for each project. No credit is given for attendance at the minisymposium, but penalties will be applied for missing all or part of it.

Academic Honesty Guidelines

Collaboration within a group is unrestricted. Since each group is working on a different project, you are free to discuss your projects with each other. If you wish to use or refer to any software libraries or outside source code beyond those that come standard with your language, check with me first and cite their usage appropriately. All sources must be cited properly. If in doubt about anything related to Academic Honesty, ask now and avoid problems later!

Final Thoughts

You have several weeks, so the expectation is for several weeks of work. You will not be able to do a good job if you put it off. I don't expect a Ph.D. thesis, but I do expect much more than your average problem set assignment.