CSC322 Fall 2015
Course Project

I. Introduction

There will be no final examination in this course. The course project is therefore an important requirement; and it counts towards 30% of your final grade. The project is to be done by team. The team will be formed by two (2) students.

II. About the Project

Select one language from the following list:

- C#
- C++
- Clojure
- Erlang
- Fortran
- Haskell
- IO
- Java
- Scheme
- Pascal
- Perl
- Prolog
- Ruby
- Scala

The team will then do a throughout investigation on the selected language, with emphasis on its unique features compared to other languages. The team will also need to write a program (details described below) in the language they selected.

III. Group Sign up

You need to send me an email informing me the language your team selected. Only one student in the team need to send me the email, however, other team member must be on the cc list for the email to be accepted. This email must be sent before Sunday October 18.

IV. Programming

You need to implement an in-place heap sort program using the language you selected. Your program should have a function/procedure/subroutine that will do the main work. That is, to accept a list/array (or anything appropriate) of integers and then sort it using the in-place heap sort algorithm. The heap sort algorithm requires converting the list/array into a heap. Once the list/array is converted into a heap, you need to print out the heap in tree-format as a string before continuing. This function/procedure/subroutine should return the sorted list/array and the string if possible. For language that you can only return one

item, it is OK to only return the string, while letting the sorted list/array to be return via "out" parameter (or pass by reference).

In order for you to be able to demonstrate your program, your program should also have a main function that allows you to read data from a file (so you can sort different list/array).

A Python program has been provided to demonstrate how your program should function. Please note that you need to make appropriate adjustment to fit the programming framework of your selected language.

Please refer to your favorite data structures and algorithms books for information about the in-place heap sort algorithm.

V. Communication Evidence

Since this is a team project, it is important that you demonstrate communication among team members. The communication must be documented in the group discussion board on Blackboard – and you must demonstrate on going communication – that is, you cannot just pour everything in during the last week. I need to see communication happening during every week after the midterm break.

VI. Final Report

The team should write a final report with grammatically correct English about your project. By Sunday November 29, your team must submit an 8- to 12-page (not including the title page) final report. The final report must be written in grammatically correct English. It should include (at least, but not limited to) the following sections:

- Introduction to the project
- Detailed information
- What each of the team members has done in this project (this needs to be a detailed breakdown of work along with percentages of efforts)
- Conclusion
- Bibliography – Please note that at least sixty percent (60%) of your bibliography must be in printed form (that means they should not be ONLY available on the Internet). Examples of such items include: textbooks, technical books, journal articles, conference proceedings.

DO NOT include any code in the final report. The report should be submitted separately to Blackboard.

VII. Format for Final Report

- Fonts: 12-point (Except for the Headings and title page)
- Spacing: double spacing
- Margin: 1-inch on each side
- Printing: single sided
- Paper: standard letter-size paper
- Fancy title page and/or figures are NOT necessary

VIII. Presentation and Demonstration

During the last week of the semester, the group must produce a 20-minute presentation and demonstration about their project. Each member of the team must participate in the presentation and demonstration. The presentation should involve using presentation tool such as PowerPoint or similar software. The demonstration should be at the end of the presentation and should last about 5 minutes. The presentation and demonstration is to be done in my office (or a lab classroom).

Hints for the presentation:

- Contents of the presentation are more important than fancy effects.
- Your presentation must feature the programming languages stuff about the project.
- Do not cramp too much information in a single slide (e.g. you should not use fonts smaller than 18 points).
- Control the number of slides to match the presentation time. You will lose points if your presentation is either too long or too short.
- Make sure the slides stay on the topic you want to deliver to your audiences.
- Make sure you have eye contacts with the audiences.
- Cue cards during the presentation are acceptable but you should not depend on them.

IX. Evaluation

The project will be evaluated as follows:

- Program code – 5 points (graded based on structures and readability of the code)
- Final report – 10 points (graded based on structures, readability, and the contents of the report, with 2 points on Spelling and Grammar)
- Presentation – 5 points (graded based on presentation skill, see above)
- Demonstration – 5 points (graded based on the successfulness of the demonstration, which in turn based on the features and correctness of your code)
- Communication Evidence – 5 points (graded based on how strong the evidence about the team work that have been carried on within the team)

X. Submission

<table>
<tr><th>Element</th><th>Due Date</th><th>Submission Format</th><th>Late Penalty</th></tr>
<tr><td>Group Formation</td><td>Sunday October 18</td><td rowspan="5">Blackboard</td><td>-</td></tr>
<tr><td>Final Report</td><td rowspan="3">Sunday November 29</td><td>50% deduction on the Final Report grade</td></tr>
<tr><td>Program Code</td><td>50% deduction on the Program Code and Demonstration grades</td></tr>
<tr><td>Presentation PowerPoint and Video</td><td>50% deduction on the Presentation grade</td></tr>
<tr><td>Communication Evidence</td><td>On Going</td><td>Blogging via Blackboard</td><td>-</td></tr>
</table>

In any situation, all components must be submitted before Thursday December 3.