COMP3031: Principles of Programming Languages

Fall 2014

Announcements

Dec 11: Thanks to the TAs' hard work, the final exam papers have been graded. Here is a sample solution along with grading criteria. The exam grade distribution is as follows: max - 96, min - 0, median - 63, avg - 65, stdev - 24 The final exam paper session will be held **on 12 Dec 2014 (Fri) at 12:00-14:00 in Room 4504 (lift 25-26)**. If you have any questions regarding the grading, please contact the TA Miss Xiaoying Jia at xjia@cse.ust.hk by **5PM of 12 Dec Friday**.

Nov 28: Assignment 3 has been graded. Here is a sample solution and the test cases. The grade statistics are as follows: max 10, min 7, median 9.6, average 7.7, and stdev 3.4. If you have any questions about the grading, please contact the grading TA Miss Xiaoying Jia at xjia@cse.ust.hk by **5pm of Dec 3 Wednesday**.

Nov 24: There will be no lecture in Room 2464 tomorrow Nov 25. Instead, you are encouraged to go to an IAS Seminar by Prof. Michael Franklin of UC Berkeley on the Berkeley Data Analytics Stack at the IAS Lecture Theature, 4:30-6PM (the normal lecture time). This is a great opportunity for you to learn about programming styles in action. Hope to see you there!

Nov 18: Assignment 2 has been graded. Here is a zip file containing a sample solution, test cases, and the sample output of the test cases. Here is the grading criteria. The following is the statistics on the grades of the 35 students: max 10, min 0, median 10, average 7, and stdev 3.8. If there is any question, please contact the grading TA Mr. Zhiyang Su at zsuab@cse.ust.hk by **noon of Nov 21 Friday**.

Nov 14: Assignment 3 is released. Due on **Nov 27 Thursday at 5PM** through CASS.

Nov 3: Tomorrow (Nov 4)'s Lab will be on Flex and Bison programming, with emphasis on Assignment 2 requirements and hints. The due date of Assignment 2 is extended to **Nov 13 Thursday at 5PM**.

Oct 22: The midterm exam has been graded. Here is a sample solution and the grading criteria. The statistics is as follows: max 98, min 10, median 80, and stdev 24. You can check your exam papers after class tomorrow (Oct 23, Room 2464).

Oct 20: Assignment 1 has been graded. Here is a sample solution and the test cases and grading criteria. You will receive your grades in email tonight. The following is the statistics on the grades of the 35 students: max 10, min 0, median 8, stdev 4.45. If there is any question, please contact the grading TA Miss Xiaoying Jia at xjia@cse.ust.hk by **5PM of Oct 23 Thursday**.

Sept 30: Assignment 1 released. Due on **Oct 16 Thursday at 5PM** through CASS.

Sept 23: The midterm exam will be in-class at **Room 2464 on Oct 21 Tuesday 4:30-5:50pm**.

Aug 27: Due to instructor's conference travel, the first week's class (Sept 2 and 4) will be covered by Prof. Fangzhen Lin.

Aug 27: The first lab will start on Sept 16.

Course Description

[Previous Course Code(s): COMP 251] Comparative studies of programming languages, programming language concepts and constructs. Non-imperative programming paradigms: object-oriented, functional, logic, concurrent

programming. Basic concepts of program translation and interpretation. Storage allocation and run-time organization. Prerequisite(s): COMP 151/151H (prior to 2009-10) and COMP 171/171H (prior to 2009-10); or COMP 2012/2012H.

Topics

This course will cover functional programming in Standard ML (SML), language parsing in FLEX and BISON, logic programming in PROLOG, and GPU parallel programming in CUDA. The concepts about programming languages include language constructs, grammar representation, program translation and interpretation, storage allocation and run-time organization.

Learning Outcomes

On successful completion of this course, students are expected to be able to:

(1) Utilize context-free grammars to identify and define the formal syntax of programming languages.

(2) Apply general tools such as Bison and Flex to construct a parser for a language defined by a context-free grammar.

(3) Identify the general constructs and concepts used in implementing programming languages, particularly those in function activation and parameter passing methods.

(4) Differentiate the alternative programming paradigms of functional and logic programming, and write programs in a language selected from each of the two paradigms (e.g. SML and Prolog).

Lectures

Section	Days & Times	Room	Instructor	Office Hours
L1	TuTh 04:30PM - 05:50PM	Rm 2464, Lift 25-26	LUO, Qiong	TuTh 03:30PM-04:20PM

Labs

Section	Days & Times	Room	Instructor
LA1	Tu 10:30AM - 11:20AM	Rm 4210, Lift 19	SU Zhiyang/Jia Xiaoying

Reference Books

- Ravi Sethi. Programming languages: concepts and constructs. Addison-Wesley, 2nd edition, 1996. [Library call number: **QA76.7.S48 1996**]
- Robert W. Sebesta. Concepts of programming languages. Addison-Wesley, 9th edition, 2010. [Library call number: **QA76.7.S43 2010**]

Assignments

There are three programming assignments, one on SML, one on FLEX and BISON, and the third on PROLOG.

Assignment 1 description. Posted on Sept 30. Due on Oct 16 Thursday at 5PM through CASS.

Assignment 2 description and zip file of the code skeleton and sample input files. Posted on Oct 24. Due on Nov 13 Thursday at 5PM through CASS.

Assignment 3 description. Due on **Nov 27 Thursday at 5PM** through CASS.

Exams

There are a midterm exam and a final exam. Both exams are closed-book, closed-notes. The final exam is accumulative, covering all course material with emphasis on **post-midterm** topics.

Past midterm exams: Fall 2013 and solution, Fall 2012 and solution, Fall 2011 and solution.

Past final exams: Fall 2013, Fall 2012 and Fall 2011

Grading

Three programming assignments each count for 10%, the midterm exam 30%, and the final exam 40% of the overall grade.

All assignments should be done independently by individual students. You can discuss among peers, but the handins should be your own work. Plagiarism or assitance to plagiarism will be dealt with following university policy.

No late handins will be accepted.

Skipping the midterm or final exam without prior approval or proper documentation (e.g., doctor's certificate for sickness on the exam day) results in a failing grade automatically.