Principles of Programming Languages

CS 3323

Preliminaries

About Me

- Strongly preferred name: Martin Kong
- Please omit using my other last name (“Moreno”) in any way (not Mr. Moreno, nor Mr. Kong-Moreno)
- Mini bio: Born in Venezuela, grew up in Peru (Lima), BS in Peru, CS PhD at Ohio State, Post-Doc at Rice Univ, Assistant Scientist at Brookhaven National Lab (Long Island, NY)
- Being at OU for a year now.
- Class hours: M W F, 9:45am – 10:35am.
- Office hours: via Zoom – see announcement in Canvas.
- My email: mkong@ou.edu
- I’ll reply to emails from 8am to 8:30am, Monday to Friday
- My accent: I may talk a little too fast at times, if so, please ask me to slow down; if something is not clear, please mention it

Teaching Assistants

- I still haven’t met them ☺
- Still don’t have their office hours
- Still don’t have their emails
- I hope to have one of them
- I hope they know the topics of this course ☺

Some Important Dates

- Midterm: October 7th or October 14th or October 21st
- Last class: Dec 11 (Final Exam Review)
- Final Exam: Dec 15th, 8am – 10am

Attendance Policy

- I will not drop students from the course
- No grade for attending
- Not mandatory. Course accessible via zoom live and recordings (See Canvas).
- Encouraged to attend for quizzes.
- Likely mandatory to attend for exams (midterm and final).

Course Grade

- Class quizzes: 30%
- Homework: 30%
- Midterm: 20%
- Final Exam: 20%

Quizzes

- Online. Held at the beginning of the class
- Quizzes will start 5 minutes after start of class, and last 15 minutes
- No make-up quizzes
- If you arrive/join late, you only have whatever time remains
- Open book
- Quiz with lowest score does not count towards final grade
- Will have 6 (3+3) quizzes
- Each quiz will be worth 6 pts; most questions are all or nothing, no partial grade. Hard to control that in Canvas.
- Tentative dates:
  - Pre-midterm quizzes: September 16, September 30, October 7 (Unless we hold midterm this day).
  - Post-midterm quizzes: October 28, November 11 and November 25.

Programming Assignments

- Actually, a mini-compiler project
- Two pre-midterm homework
- Two post-midterm homework
- I provide skeleton code; you complete it; output determines grade
- Will have to code a bit in C
- Will have to upload code to canvas
- All assignments count towards your final grade
- Will have 2-4 weeks for each homework
- Each homework worth 7.5 points
- You can work in groups of up to three classmates.

Programming Assignments

Homework	Description	Given Date	Due Date
#1	Lexical Analyzer	Sep 4	Sep 16
#2	Syntax Analyzer	Sep 16	Oct 9
#3	Intermediate Code Generation – Part 1	Oct 14	Nov 6
#4	Intermediate Code Generation – Part 2	Nov 11	Dec 4

- Homework due at 11:59pm of the due date
- Deduct 1pt for each passed day after due date
- Only accept late submissions up to 3 days late.

Heads up

- Highly recommend having access to a laptop or desktop either with Linux or with Mac OS, if you use Windows you might have more trouble
- Just learnt last semester that one can install and run Linux on Windows, but I still don't like it.
- Recommend checking that you have the following tools installed and accessible somewhere:
  - A good C compiler (GCC, Clang, ICC, etc)
  - Scheme
  - Python
  - Flex (Scanner generator) and Bison (Parser Generator)
- You will need some knowledge of C
- Read / learn about package managers such as: **apt** in Ubuntu Linux

My Office Hours

- Regular office hours scheduled for Mondays and Wednesday, 11am – 12pm, and only via Zoom (See Canvas Pages).
- No in-person walk-in office hours.
- If the above time slot does not fit your schedule, let me know, and will find *an ad-hoc slot for a meeting within the next two days*
- If you request for a meeting in a shorter time window, it might not happen.

What the Course is about

- Learning some fundamentals of programming language and compiler design
- Learning how stuff works
- Can be a bit boring at times
- Will try to make it a bit hands on, but time is limited

Textbook

Don’t buy any book, but would be useful if you have access to any of these:

- “Programming Language Pragmatics”, by Michael L. Scott, 4th edition
- “Compilers: Principles, Techniques and Tools”, by Aho, Sethi and Ullman (1986) or by Aho, Lam, Sethi and Ulman (2006)
- “Engineering: A Compiler”, Cooper and Torczon

Any of the above books will do

I will try to upload the slides before each corresponding class; sometimes up to the night before

Topics Overview

1. Introduction (Chapter 1) - 1 class
2. Lexical Analysis (Chapter 2) – 1 week
3. Syntactic Analysis (Chapter 2) – 1.5 weeks
4. Runtime environment (Chapter 3) – 1 week
5. Semantic Analysis (Chapter 4) – 1.5 weeks
6. Control Flow (Chapter 6) – 1.5 weeks

Pre-Midterm

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7. Type Systems (Chapter 7 and 8): 1. weeks
8. Subroutines (Chapter 9): 1 week
9. Functional Languages (Chapter 11): 1.5 weeks
10. Scripting Languages (Chapter 14): 1.5 weeks
11. Overview of Compiler Optimizations (Not covered in book): 1 week

Post-Midterm

Other

- Please be respectful
- Please avoid leaving classroom in the middle of the class: it disrupts the class
- Please avoid taking phone / video calls
- Feel free to use your laptop
- Always wear mask in classroom
- Keep your distance
- Usable seats in classroom are marked.
- No eating or drinking in class (for safety).
- If you come to class, I suggest always cleaning the surface you occupy (table/chairs).

Questions?