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)
- Been at OU for a year now.
- Class hours: M W F, 9:45am – 10:35am.
- Office hours: via Zoom – see Announcement and Pages space 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 Assistant

- ~~I still haven't met them ☺ :~~ Egawati Panjei (or just 'Ega')

- ~~Still don't have their office hours~~ See Canvas Pages

- ~~Still don't have their emails~~ Email: egawati.panjei@ou.edu

- ~~I hope to have one of them~~ We have one!

- ~~I hope they know the topics of this course ☺~~ She knows 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 25, October 7.
  - 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 16	Nov 6
#4	Intermediate Code Generation – Part 2	Nov 9	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. Here a bunch of links (that I haven't tried):
    - [Microsoft tutorial/howto](#)
    - [Ubuntu tutorial](#)
    - [Youtube video howto](#)

- 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

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 : 1 week

Post-Midterm

Chapter numbers refer to Scott's book, just for reference

COVID-19 (Returning to Campus)

OU Faculty, Staff, and Students – You must complete the [COVID-19 Screening and Reporting Tool](#) each time any of the following applies:

1) **Absence from Campus** – Employees and students who have been away from campus for any reason for **7 consecutive calendar days or more** must complete the COVID-19 Screening and Reporting Tool.

2) **Travel** – Employees and students who have **traveled domestically or internationally** must complete the COVID-19 Screening and Reporting Tool unless the traveler qualifies for the Commuter Process. Domestic travel is defined as travel outside the State of Oklahoma.[(](#)

3) **Close Contact** – Employees and students who have had close **contact with an individual diagnosed with COVID-19** or who has had symptoms of COVID-19 in the last 14 days must complete the COVID-19 Screening and Reporting Tool.

4) **Experiencing Symptoms** – Employees and students **experiencing symptoms** that could be consistent with COVID-19, such as fever, cough, shortness of breath or difficulty breathing, chills, muscle pain, sore throat, recent loss of taste or smell, and/or extreme fatigue, must complete the COVID-19 Screening and Reporting Tool. They should also contact their health care provider regarding specific symptoms.

5) **Positive Test** – Employees and students who **test positive for COVID-19** may not return to campus until they have been cleared by Goddard Health Center to return.

6) **Positive Household Member** – Employees and students with a **household member who has tested positive** for COVID-19 in the past 14 days must complete the COVID-19 Screening and Reporting Tool.

COVID-19 (Testing, Isolation, Contact Tracing)

Positive Tests - If an employee or student tests positive for COVID-19, the University will cooperate with the appropriate health department in its contact tracing efforts. Employees and students who test positive must fill out the COVID-19 Screening and Reporting Tool and may not report to work or campus until cleared by Goddard Health Center.

1) Supervisors, RAs, faculty, staff, and others who are made aware that an individual in their area has tested positive must contact Facilities Management at (405) 325-3060 for disinfecting assistance, if the individual was in the area within the last seven days.

2) Faculty, staff, and students who have been in close contact with a laboratory-confirmed COVID-19 positive individual *must* fill out the COVID-19 Screening and Reporting Tool and may not report to work or campus until cleared by Goddard Health Center.

a. The CDC defines "close contact" as being within 6 feet of an infected person for at least 15 minutes starting from two days before illness onset (or, for asymptomatic patients, two days prior to specimen collection) until the time the patient is isolated.

3) For a list of frequently asked questions regarding COVID-19, visit here.

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).
- **When in doubt, always ask me**.

Questions?