PURDUE UNIVERSITY

CS24000: Programming in C

Spring 2019

Class:
LE1: MW 10:30am, FRNY G140
LE2: MW 3:30pm, WALC 1055

Course Web Page:
http://courses.cs.purdue.edu/cs24000:spring19:start

Course Newsgroup:
https://piazza.com/purdue/spring2019/cs240

Instructor:
Prof. Jeff Turkstra, jeff@purdue.edu, HAAS 128, 49-63088.

Office Hours:
TBD

Teaching Assistants:
This course has five graduate teaching assistants as well as a number of undergraduate teaching assistants. The names and email addresses for the GTAs are given below.

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Text:
Required
The C Programming Language (2nd ed); Kernighan and Ritchie; Prentice Hall, March 1988
ISBN-13: 978-0131103627

Recommended
Beej's Guide to C Programming; Brian "Beej" Hall; 2007
https://beej.us/guide/bgc/

Prerequisites:
Problem Solving and Object-Oriented Programming – CS 18000
Programming proficiency is required

Course Outcomes:
A student who successfully fulfills the course requirements will:

1. be able to read and write C programs that use files, both binary and text I/O
2. be able to read and write C programs that use structures
3. be able to read and write C programs that use dynamic data structures. This outcome encompasses the following concepts:
    - pointers
    - memory allocation and management
    - linked lists and trees

Class Attendance:
You are expected to attend all classes. Attendance will be recorded for randomly selected class sessions. If you choose to attend class, please arrive in the classroom on time. You are expected to be quiet in class. If you must miss a class, you are responsible for procuring any material, information, handouts, announcements, etc., that you missed.

Preparation for Lectures:
You should try to read over the relevant pages in the course text before arrival. Additionally, you are expected to check your email and the course website regularly. Here is the *tentative* lecture schedule:

Wk	Lec	Subject
1	1	Course Introduction
	2	Compiling, Object Files, Linking, and Execution
2	3	#include, File I/O
	4	More File I/O, access(), feof(), ferror(), clearerr()
3	X	No Class
	5	assert(), Random-access File I/O
4	6	typedef, Introduction to Structures
	7	return, Definition vs. Declaration, Arrays of structs
5	8	Memory Layout of Data, Binary File I/O
	9	Bitfields, Unions, and Enums
6	10	Introduction to Pointers
	11	More Pointers, Debugging Intro
7	12	Address-of Structures, . and -> Operators, malloc() and free()
	13	Review for Exam I

8	14	Brief calloc(), Linked Lists
	15	Doubly-Linked Lists, Pointers to Pointers
9	16	Pointer Review, The Many Faces of Zero, Pointers to Functions
	17	Pointers to Functions, Recursion
10	X	No Class
	X	No Class
11	18	Introduction to Trees
	19	Bitwise Operators, Memory Access
12	20	Types, Type Qualifiers, Storage Classes Review for Exam II
	21	Structure Alignment, C Preprocessor, Casts
13	22	void, Callbacks, Efficiency Issues
	23	Libraries, Large-scale Development
14	24	Random Number Generation, Graphical Programming, Course Review
	25	Core Files, Labels and goto
15	26	Using Assembly Language in C
	27	Interfacing with Hardware
16	28	TBD
	29	Course Review

Quizzes:
There will be a number of unannounced, 10 to 20 minute quizzes in class. A score of zero will be given in case of absence.

Homework:
Homework assignments are assigned usually one per week and are due the following week. These are C programs that are submitted electronically. To ensure success, **compile your code on a Linux system, like data.cs.purdue.edu (even remotely), with GCC** and only GCC. For full credit, your code must follow the code standard established for this course (graded as style points). The course webpage has the code standard and examples.

Other important notes on homework:

1. ALL HOMEWORK ASSIGNMENTS ARE DUE AT 9:00 PM on Wednesday of the week it is due (with some occasional exceptions).
2. If you feel you have a valid reason for not having your work done on time, then send one of the TAs an email **BEFORE** the assignment is due.
3. Don't wait until the last minute. If the computer goes down so does your grade.
4. Down time and crashes of the computer network are, in general, NOT valid excuses for late or missed assignments.

Examinations:
Exams will be closed book and closed notes. You must solve the exam problems yourself, without any help (knowing or unknowing) from any other student. You must not seek any knowledge in advance of the test questions (beyond that given in class) and must report any advance knowledge of the test questions by any student that you are aware of. You must not allow any other student access to your solutions during the exam. If the seating situation makes this difficult, please inform the instructor or TAs.

Midterm Exam I: Thursday, February 21	8:00pm
Midterm Exam II: Thursday, April 4	8:00pm
Final: TBD	

Regrades:
Problems regarding grading of assignments and the exam must be resolved within **one week** after the graded work has been returned to you. It is your responsibility to pick up the graded work on time. Grades will not be modified after the one week period.

Late Submissions:
A penalty of 5% per quarter hour will be charged to all assignments submitted after 9:00 pm on the day the assignment is due. No assignment will be accepted after 11:59 PM on the due date.

Make-up Examination Policy:
Make-up exams will be given only in the **most extreme** circumstances and require certification for such circumstances. Eg, a medical doctor's statement certifying that the student is **unable** to attend the scheduled exam. Any travel (including interview trips), load from work or from other classes, failed alarm clocks, or simply not being able to make it to the exam will **not** be grounds for a make-up. If you have any recurring medical problems that may unexpectedly prevent you from making it to class or exams, please obtain a doctor's statement certifying your circumstance.

Academic Integrity:
As a student at Purdue you are subject to the *Purdue University Student Code of Conduct*, which enjoins you to respect the highest standards of honesty and integrity. All work that you submit in this course must be your own; unauthorized group efforts are considered academic dishonesty. See the online brochure *Academic Integrity: A Guide for Students* for definitions and sanctions. Academic dishonesty is a serious offense which may result in suspension or expulsion from the University. In addition to any other action taken, such as suspension or expulsion, a **grade of F** will normally be recorded on the transcripts of students found responsible for acts of academic dishonesty. Students are encouraged to report academic dishonesty to the instructor directly, or to the Office of the Dean of Students.

You may discuss assignments in a general way with other students, but you may not consult anyone else's work. Among other ways to get an F, you are guilty of academic dishonesty if:

- You examine another student's solution to an assignment
- You allow another student to examine your solution to an assignment
- You fail to take reasonable care to prevent another student from examining your solution to an assignment and that student does examine your solution. For example, if you allow another student to check his/her email from your terminal while you step out of the room, you have failed to take reasonable care to prevent him/her from accessing your files.
- You submit an assignment that is not completely your own work
- You share results or notes during quizzes or exams

All work is subject to computer-based comparison and analysis. Do not con yourself into thinking that you can hide any collaboration. The risk of getting caught is too high, and the standard penalty is way too high.

If we find reason to believe that a student or team has cheated on any assignment, we may inform the student or team promptly, or we may decide to silently accumulate evidence against the student or team on later assignments.

Grading:
Your course grade will be based on your performance in quizzes, homework assignments, and exams, weighted in the following manner:

Quizzes and Homework: 50%
Two midterms: 14% each
Final Exam: 22%

Questions and Answers:
Questions of general interest should be posted on the course piazza site. Answers will be posted as soon as possible. Project questions should be directed to the appropriate project coordinator via email. Answers will be sent to you directly. If you need to contact a specific TA or instructor, send email to that individual or go see him/her during office hours.

Modifications:
This syllabus may be modified at any time with notification.

**** As an interesting side note, a significant portion of this syllabus is copied from Dr. Rodriguez-Rivera's, Dr. Dunsmore's, Dr. Hosking's, Dr. Brylow's, and Dr. Hu's policy pages from previous semesters. One of the major differences between plagiarism and proper reuse is giving credit where credit is due. ****