Course Notes for CS310 – Advanced Data Structures and Algorithms

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Introduction

General Info
- Course webpage: [http://www.cs.umb.edu/cs310](http://www.cs.umb.edu/cs310). Class notes, HW, announcements – all there. It will be updated periodically with course materials.
- Attendance is not required but highly recommended. It is your responsibility to keep yourselves up to date if you plan to miss a class.
- Please do not be afraid to ask questions in and out of class. However, please do not ask me things you can easily figure out yourselves on google or Wiser.
- Use the links at the bottom of the homepage for help.

Handouts
- PA1 – DUE Wed. Sep 14. Mostly pre-requisite and background material.
- Please at least take a look at it this week. If you find it too hard, consider dropping.

Text

Other recommended books can be found on the course webpage.

CS240 teaches low-level programming skills, makes you ready to be an application programmer. CS210 teaches basic algorithms & data structures. CS220 teaches the mathematical basis to computer science. CS310 teaches more advanced programming principles and algorithmic techniques, allows you to be senior programmer/designer. (Facility with CS310 is exactly what you need to pass Microsoft developer interviews). Might say principles taught are abstract, but in fact they will be made concrete by many exercises.
Account

Apply for CS310 (recommended). By applying, you will get a special cs310 subdirectory for the class where you can practice your programming assignment. You may use any other platform, but I will test your project in a linux environment. The programming assignments (starting week 3 or so) will be submitted to Gradescope. I will communicate with the class through Piazza, where you will be added with your UMB email (usually <firstname.lastname001>@umb.edu). Make sure you read your UMB emails regularly. Otherwise, forward to your favorite e-mail address. See here how to do it: https://www.umb.edu/it/email/faq. "I missed an email because I never read my UMB emails" is NOT a valid excuse for missing an exam or a deadline. If you are not sure how to open an account, see the Unix lab operators or check the FAQ http://www.cs.umb.edu/sp/resources/other/faq/. If you are repeating the class you will still need a new account, since I can’t access your old one.

Reading

Make sure you know everything in Sedgewick and Wayne’s book, from CS210. In particular, You should know the following: Recursion, Sorting, Stacks and Queues, Linked Lists. We will start with runtime analysis (mostly discussed in Kleinberg and Tardos, although I have my own approach for the class notes). Later, after an intro on APIs and encapsulation we will review the Collections API. It is not discussed thoroughly in the text, but this is basic stuff and a lot of material is available in the java documentation. My class notes will provide nearly all the necessary background. If there is anything you need to know and is not in the notes, I will refer you to the appropriate java doc.

Administrative Stuff

- Attendance is not required, but is highly recommended. Based on past experience – people who did not attend did not do as well (in general). Since it is not required, you do not need to let me know if you are going to miss a class.
- Having said that – if you don’t attend, it is your responsibility to be up-to-date with the course material, which is posted on the webpage. It is also your responsibility to find a way to submit the homework (I prefer you either send them to me by email or put a copy in my mailbox).
- Check your email regularly since this is how I communicate with you outside of class. I had students missing the midterm exam because they didn’t follow up.
- The homework submission deadline is strict. If you need an extension please let me know. I am usually quite generous but I will take off points for unauthorized late submission. Please do the homework and programming assignments! 5% + 15% may not seem like much but they do add up. Also, they will help you a lot with preparing for the exams.
- If you want to see me during my office hours you don’t need to make an appointment. If you want to see me outside my office hours please make an appointment. It is a large class and I have other things to do, so if you don’t make an appointment I reserve the right to not meet with you, even if I am on campus.
• Masking policy follows the university’s guidelines. As of the start of the Fall semester masks are recommended but not required.