Discussions

Settings Help

Discussions List Subscriptions

Filter by: Unread

Collapse All Forums

H-00

Topic	Threads	Posts	Last Post
Induction Questions on Induction can go here	1	2	Brittany Fasy August 29 at 12:04 PM
Introductions If you don't have any questions (or answers to other's questions) to post for question 0-2, please post here to let others know who you are.	32	35	Brock Lehnen August 30 at 9:54 PM
Problem 0-7 (Sorting)	2	4	Brittany Fasy August 29 at 10:24 PM
Plagiarism / Cheating Please remember to cite all sources in the homework, including any websites or textbooks used, as well as conversations that you've had with fellow students (or anyone else). If we can get through the semester with no plagiarism, then we will have Granny's donuts at the end of the semester!	0	0	

Topic	Threads	Posts	Last Post
H-00 Global Feedback (except on the Induction Problem) ◦ **Generally:** Please be sure to list your collaborators. I didn't spend much time looking for that on this assignment but will be on future assignments! ◦ **Generally:** Read the question. Then reread the question. And then be sure to respond directly to the question. Be as explicit as you possibly can be. This is technical writing not fiction, and I shouldn't have to read between the lines to try to decipher what you're thinking! ◦ **Question 1:** This seems like a great group with diverse backgrounds, skills, and goals! I responded to everyone's About Me questions individually on Gradescope and would be happy to keep those conversations going! ◦ **Question 2:** I'll do my best to stay active on the D2L Discussion Board as well. Keep your questions coming as you have them! ◦ **Question 3:** Please don't plagiarize!!! It makes my job harder and your experience far less rewarding. We will be running an automated plagiarism checker on all submissions. The safe thing to do is find resources, read them, digest what you read, type up what you learned, and provide a citation. ◦ **Question 4:** ***Stay tuned! More on the Induction Problem to come later!*** (If you submitted a regrade request, I will process those sometime over the weekend.) ◦ **Question 5:** Big-O has a formal definition, and proofs of Big-O involve finding the variables c and n0 such that the definition is met. If you don't know what that means, email me! ◦ **Question 6:** When possible, use mathematical symbolism to define and prove concepts, interjecting prose to support. It makes your proof much more rigorous! ◦ **Question 7:** Any non-trivial algorithm, like sorting, has loops and/or recursive calls. To discuss why an algorithm is correct, think about it in terms of the loop (or recursion) invariant. The invariant is what remains true throughout. In other words, the truth of the invariant does not vary! Part of an algorithmic mindset is thinking about algorithms in terms of their invariant. Take selectionSort for example. We think of this algorithm as working with two arrays- the sorted array to the left and the unsorted to the right. In the beginning, the first element is the entire sorted array, which trivially is true (i.e. a single number is sorted). As the algorithm runs, the sorted array increases in size but its truth never changes. What is to my left is always known to be sorted. This of course continues until the end of the array. Hopefully, that concept sounded a lot like a proof by induction. If it is true at the beginning, and each step maintains that truth, then it's going to be true by the end. And if that didn't make sense, don't worry... There'll be much more on this to come!	0	0	

Announcements & Logistics

Topic
Emails I used the automatically-generated sympa listserv (csci432001-fa21@sympa.montana.edu) to send you four emails so far: 1 - "Fw: Updated textbook system at the MSU Bookstore" on 8/23 2 - "Fw: Welcome Back!" on 8/26 3 - "Fw: Important Message" on 8/26 4 - "Fw: Monday, August 30th - Math Seminar with Dr. Karen Uhlenbeck" on 8/27 If you were enrolled in this course and did not receive these emails, this likely means that your mail forwarding is not setup properly. I sent a request to UIT to get the list of emails that are u @student.montana.edu email. I'll upload a video on how to properly setup your email forwarding so you can have your emails forwarded to your preferred email account. Note that you are @student.montana.edu email address, so you must have this setup properly. I'll add the important parts of these messages to posts in this discussion forum, but if there are one or more that you did not receive, send me an email and I will forward them to you.

Topic

General CS Announcements and Opportunities

- Join cs-announce. This is a sympa listserv that tells you about public talks related to CS, job opportunities, and miscelaneous things going on relating to CS. To join, please send an em subject line: "subscribe cs-announce Fname Lname"
- Attend the CS seminar. CS seminars are on Mondays 16:10-17:00. https://www.cs.montana.edu/seminars/index.html
- If you're a senior interested in going to grad school, or a 1st/2nd year grad student, consider applying to the NSF GRFP. https://www.nsfgrfp.org/ If you have any questions on the pro me to let me know what parts of CS interest you most.
- If you're an undergrad (especially if you are interested in grad school ...), consider applying for a USP. https://www.montana.edu/usp/ This is a great opportunity to learn a little bit mo need help finding a match with a faculty member, let me know what classes you like most and I'll try to give you a couple options.

GIT

Here is a set of resources for my research students that you might find useful. See here:
https://github.com/comptag/student-resources

Feel free to share your favorite resources for GIT!

LaTex

For continuous compile of your LaTex documents ...

In every directory that has a "main" LaTex file in it, I include a Makefile (I didn't write it. Someone gave it to me). This Makefile has a continuous compile feature, so you can open your tex ed do this, here are the commands to run (from the directory with the makefile):

- type `make' This will build the PDF for the first time,
- open the PDF in your favorite PDF viewier
- type `make pdf-watcher'. This is your continuous compile.
- open a text editor, edit your file and save. The PDF will update!
- don't forget to commit & commit often (with good commit messages) as you work on HW and other code / LaTex documents.

Topic

Office Hours

My office hours will be Mondays 9:30-10:30 via Zoom (see info below), and
Wednesdays after class in person or via Zoom.

If you join via zoom, you can email me first to give me a heads up. Then, we can setup a time, and I'll try to honor that as best as possible. You are welcome to just "pop in" to the office hou with others.

---------- zoom coordinates for office hours:

Brittany Terese Fasy is inviting you to a scheduled Zoom meeting.
Topic: Office Hours
Time: Aug 30, 2021 09:30 AM Mountain Time (US and Canada)

- Every day, 17 occurrence(s)
- Aug 30, 2021 09:30 AM
- Aug 31, 2021 09:30 AM
- Sep 1, 2021 09:30 AM
- Sep 2, 2021 09:30 AM
- Sep 3, 2021 09:30 AM
- Sep 4, 2021 09:30 AM
- Sep 5, 2021 09:30 AM
- Sep 6, 2021 09:30 AM
- Sep 7, 2021 09:30 AM
- Sep 8, 2021 09:30 AM
- Sep 9, 2021 09:30 AM
- Sep 10, 2021 09:30 AM
- Sep 11, 2021 09:30 AM
- Sep 12, 2021 09:30 AM
- Sep 13, 2021 09:30 AM
- Sep 14, 2021 09:30 AM
- Sep 15, 2021 09:30 AM

Please download and import the following iCalendar (.ics) files to your calendar system.
Daily: https://us06web.zoom.us/meeting/tZctcuitpj4sG9ZPYKCS7-2qJKo-9MROYQWA/ics?icsToken=98tyKuGrrj4rH9yQthiFRpwqAo_4d-_xiCVdjfpnrCbOIBMEL1HnHMlNf-tSIvfp
Join Zoom Meeting
https://us06web.zoom.us/j/83051585612?pwd=dTh6N3Fzb1N5RjdOZU1uYXlGRkwzdz09
Meeting ID: 830 5158 5612
Passcode: algorithms
One tap mobile
+12133388477,,83051585612# US (Los Angeles)
+12532158782,,83051585612# US (Tacoma)
Dial by your location

- +1 213 338 8477 US (Los Angeles)
- +1 253 215 8782 US (Tacoma)
- +1 346 248 7799 US (Houston)
- +1 602 753 0140 US (Phoenix)
- +1 669 219 2599 US (San Jose)
- +1 669 900 6833 US (San Jose)
- +1 720 928 9299 US (Denver)
- +1 971 247 1195 US (Portland)
- +1 206 337 9723 US (Seattle)
- +1 301 715 8592 US (Washington DC)
- +1 312 626 6799 US (Chicago)
- +1 470 250 9358 US (Atlanta)
- +1 470 381 2552 US (Atlanta)
- +1 646 518 9805 US (New York)
- +1 651 372 8299 US (Minnesota)
- +1 786 635 1003 US (Miami)
- +1 929 205 6099 US (New York)
- +1 267 831 0333 US (Philadelphia)

Meeting ID: 830 5158 5612
Find your local number: https://us06web.zoom.us/u/kebPOoTTGV

Survey

If you haven't already, please fill out this survey! Thanks!
https://montana.qualtrics.com/jfe/form/SV_aWCTQyRPsiUC8CO

goatrenterguy

Whose GitHub handle is goatrenterguy?

Topic

Mark your calendars!

So that you can plan ahead:

Homework will be due on: Aug 30, Sept 13, Sept 27, Oct 11, Oct 25, Nov 8, Nov 19, Dec 6 (every other Monday, with the one for Thanksgiving week being due the Friday before)

Exams will be on 22 September, 3 November, and 13 December (finals week).

Misc. Assignments

I'll use this thread to post when I update the misc. assignments.

Exam 1

As a reminder, exam 1 is next week (on Wednesday). Below is a screenshot of the first page of the exam. Your name goes in the upper right hand corner.

Note that you have selection for this exam. Some of the problems will have sub-questions as well.

Questions may include / be related to:
* proof by induction
* formal definition of asymptotic notation
* partial completeness proof for a recursive algorithm
* finding closed form and asymptotic form of recurrence relations
* coming up with an algorithm to solve a problem, and providing pseudocode
* walking through a given algorithm
* finding the runtime of a given algorithm
* know algorithms with common runtimes (linear, logrithmic, nlogn, quadratic, etc.)
* Chapters 0 and 1 (and to a lesser extent, 2) of Algorithms by Erickson
* Lecture notes

Last Name: _____
First Name: _____
Date: Mon., 22 September 2021

First Midterm

Solutions must be neatly handwritten. Be sure to use your time wisely. Please **choose five** of the following six problems to solve, and mark clearly the problem that you do not want graded with a large X across the WHOLE page. You may use a two-sided, one-page note sheet in this exam, but must hand it in with your exam.

Zoom into Class this week ...

On Monday and Friday, I will have a couple people join the lecture, with at least one of them remote. So, you are welcome to join from zoom today and on Friday, if you would prefer.

> Join Zoom Meeting
> https://us06web.zoom.us/j/89957796638?pwd=bnViRm93T1BlNExzZFJmUnhxRkV3dz09
>
> Meeting ID: 899 5779 6638
> Passcode: algorithms

Note: Don't forget that Wednesday is the first exam!

Project Groups

Please use this to discuss if you need help coordinating with others to form a project group.

Topic
Exam 2 As a reminder, exam 2 is next week (on Wednesday). I will upload the instructions for the exam by Monday. But, like last time, you will have selection in the exam. Questions may include / be related to: * topics covered in the first exam (not the emphasis, of course) * Chapter 2-6 * Lectures / lecture notes through Wednesday, Oct 27th. Union-Find will not be on the exam. * You can expect a problem that expects you to come up with a DP algorithm * You can expect a problem that asks you to walk through a given algorithm. * RT/ space complexity of a DP * recursion / recurrence relations / finding asymptotic form of recurrence relation * how to prove a greedy algorithm is correct
Exam Questions QUESTION: Will we need to have any algorithms fully memorized (such as Kruskals?), or rather just understand what problems each of them solve (i.e. their inputs and outputs)? ANSWER: As a 400-level class, I am looking for a demonstration of higher-levels of understanding along the Bloom's Taxonomy (https://www.tameri.com/teaching/bloom.html#:~:text=Knowledge%20is%20the%20recall%20of,the%20lowest%20level%20of%20cognition.&text=Testing%3A%20Knowledge%20is%20de In an exam where you are allowed a study sheet, there will be no memorization-style questions. In particular, I will not ask you to give pseudocode for an algorithm that you have already see their result is a good start. But, make sure to understand how the algorithm gets from the input to the output (For example, how does Kruskal compare to other MST algorithms?) Then, car know how to prove that the algorithm is correct (assuming the code is in front of you)?

H-01G

H-01 is posted, due Monday, 13 September. This homework should be done in groups. One submission per group.

Topic	Threads	Posts	Last Post
Group Formations Feel free to use this topic to form groups if you haven't already. Remember that H-01G is a group assignment, meaning there should be only one pdf file submitted to Gradescope (with all group members tagged using the 'Group Submission' feature) and only ONE member of the group should upload the pdf file to their H-01G dropbox on D2L.	2	5	 Ryan Meier September 10 at 5:08 PM
General Questions Please start threads for general questions relating to the problems on H-01G.	0	0	
Question 5 (More Recursions) For this question, you only need to give the asymptotic forms. If you do wind up calculating exact closed forms, appropriate extra credit will be earned.	0	0	

Topic	Threads	Posts	Last Post
H-01G Global Feedback • **General:** ◦ Great work on H-01G everybody! These submissions were overall excellent and showed a lot of growth even from the last homework! Keep it up!!! ◦ Also, as this was a group assignment, please check to see that your grade correctly ported to D2L from Gradescope. If it did not, contact Dalton ASAP. ◦ Lastly, Dr. Fasy will have the last say on these grades if she looks them over and wants to add or subtract points from my evaluation. • **Big-Theta Proof:** ◦ Good work everyone in applying the formal definition to conduct your proof! With that said, make sure you explicitly state the definition or variables like a, b, and N will seem to appear out of nowhere, making the proof confusing to the reader. • **Induction Proof:** ◦ Great work! A really significant improvement from HW-00's induction proofs!!! • **Sorting vs. Searching:** ◦ Sorting an array in Big-Omega(n) time will only happen in very rare instances (e.g. the array is already sorted for all but two elements) and when specific algorithms are run. ◦ There is a difference between the adverbs recursively and iteratively- know the difference. ◦ Best responses did a mathematical analysis of when the k/n ratio became high enough that sorting prior to searching made sense. • **Recurrence Relations:** ◦ Overall, very well done! The most contentious recurrence relation was 5.2, where 7 out of 9 of you said Θ(n*log(n)) and the other two responding Θ(n*log2(n)). I personally got Θ(n*log2(n)), but encourage discussion on this amongst the class and with myself and Dr. Fasy. ◦ If you did do closed form proofs on Q#5, I see you and you will be rewarded. I just have to follow-up with Dr. Fasy on what that reward will be. • **Pancake Flipper & Largest Complete Subtree:** ◦ On the Pancake Flipper, I focused the points on presenting a description of an algorithm, pseudocode, and an analysis of runtime. ◦ On the Largest Complete Subtree, I focused the points on a formulation of the recursion invariant and its proof via initialization, maintenance, and termination. ◦ In the future, homeworks will include more presentations of algorithms. Please ensure that a presentation of an algorithm includes all four pieces: ▪ Prose Description ▪ Pseudocode ▪ Analysis of Runtime ▪ Recursion Invariant (or, when explicitly stated, a full Proof of Partial Correctness) ◦ I will be in to sub in two weeks and will discuss these proofs more!	0	0	

H-07

Topic	Threads	Posts	Last Post
A comment on H-07 For Ch. 10 Question 4 parts (a) and (b), the question is not correctly stated in the textbook. To address this on your HW, you can either: (1) provide counter-examples to show that the claims, as written, are incorrect. (2) Modify the assumptions to find a "close" problem for which the claims do hold. Also note, for the questions where you are asked to come up with an algorithm. Solutions that are not optimal in running time are acceptable ... while they won't get full credit, the amount of points deducted will be less than usual.	0	0	