

PART 1 of Instructions for CSC 280/480, Midterm 2

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Instructions version of 2021/4/25/12:38PM

Oh... since I'm following the format of the instructions to Midterm 1 as a template for these Midterm 2 instructions, this purple page should be viewed as if it were a late addition (though actually it is coming in as I do the whole thing), and if it conflicts with anything in the main body, it is the purple part that is most likely to be right.

1. UnivIT says it is almost certain that even if you are sitting in the Midterm 2 BB folder at that time, Midterm 2 WILL NOT appear to you at the moment it releases to you unless you refresh your browser page. So please do remember that issue. Otherwise, you might be thinking “hey, I am supposed to start now and where on Earth is the exam?”

To try to lessen the last-minute panics that that will cause, I'll modify the deployment settings so that the test in fact should become available about 5 minutes before one might expect. (If the system will let you in those few minutes early, great. Of course, if you actually hit “Begin” a few minutes early, your countdown timer within the exam will also start a few minutes early; that is, your total time for the exam won't change. But this change will let you handle any worries about refreshing the page and starting the exam a minute or two before your official start time, if you wish.)

Note that this item in part modifies things said later in this document (where it was stated that you need to begin at 325PM EDT sharp). The above is letting you start a few minutes before your official starting time, though the above is not changing your total time (since that is enforced by a countdown timer within the BB exam).

2. Though the previous item mentions that you may need to refresh the page to get INTO the exam, do note the boldfaced list of warnings from UnivIT, on page 7 of this document, including the fact that refreshing can ruin your exam if done while taking the exam.

That list warns that all sorts of natural things, such as refreshing the page, or having BB open in multiple tabs or windows, or dragging tabs, or *even using your browser's back button rather than the internal test movement buttons that BB provides* can cause severe problems during your test-taking.

3. Where will you find the exam? At your appointed start time (4/28 325PM EDT for almost everyone) or as noted above even five minutes earlier, the exam will

appear—if camped out in the folder as noted above you will need to refresh the page so the test does appear—in our BB area, namely, within the folder “BB Parts of the Course” there will be a folder “Midterm 2,” and the test will appear inside THAT folder, as the item called “4/28 Midterm 2” or, perhaps more likely, “4/28 Midterm 2 (Raw Score).” (The “Raw Score” there is so that the column it will eventually autocreate in BB Grade Center can be told part from the scaled score column for the exam.)

4. When/how will you be able to see your graded test and your test scores? That will be announced later via a BB Announcement. We’ll do our best, but the test return likely will be around 1 to 2 weeks after the exam. (The exam has various components—the essay questions—that have to be graded individually by humans, and it is a pretty large course.)

Please do read all these instructions before starting the test. The instructions have been made available long ahead of time, online, so that if you read them online as suggested you won’t need to use your test time for reading the instructions. (They may be slightly polished/edited between now—April 23—and the exam. So please visit/read these instructions now, and then again the night before the exam.)

But that “if you read them online as suggested you won’t need to use your test time for reading the instructions” is not quite true. This pdf file is Part 1 of the instructions. Once you enter the exam itself, you will find, as part of its instructions, a link to (the then most recent version of) Part 1, in case you need to refer to it. But, also, you will find in the exam’s internal instructions area a “Part 2,” which will likely contain (if it contains anything) things you won’t have seen in Part 1; I’ll put into Part 2 any parts of the instructions that would so heavily give away the test questions that those parts of the instructions are being included only in the internal instructions area of the exam itself, and so you will be able to see them only after you have hit the “Begin” button on your exam (and it might also have a few additional comments or reminders).

1 UR Academic Honesty Pledge

You are bound on this exam by the UR Academic Honesty Pledge: *I affirm that I will not give or receive any unauthorized help on this exam, and that all work will be my own.* (Due to the restrictions of this being an online BB exam, the exam isn’t making you hand-write the pledge; nonetheless, as per the academic honesty policy of UR, the pledge and its obligations still fully apply even though you are not writing/signing it.)

2 Academic Honesty and Specific Honesty Rules for This Test

The test is open book, open notes, open slides, open videos, open Internet, and open computer. However, it is an academic honesty violation to (in any way—whether phone, text, email, Skype, posting a query on the web, etc., etc.) actively seek help from other humans.

To help remove blurry edges regarding what is and is not ok: Between when you start the test and *the end of the period when people might be taking the test* (at the time I am writing this I don’t know the exact times I’ll be scheduling the exam for people, if any, that due to being in very different time zones or with accommodations as to test length/environment that make it

impossible for them to take the exam at the same time as the class session, so for definiteness and safety I'll simply sharply overestimate the italicized period and define its end to be 5PM on Friday, April 30), you may not make any active outgoing communication/query regarding the content of the test or of this course. But you may, as mentioned above, look, yourself, at books, your notes, anything you want that is on the Web, etc. (So for example asking anyone—even asking the query to some mailing list or on a web forum—“What is undecidability” is cheating; but Googling “undecidability” is allowed. So you may look for example at Stack Exchange, but you may not post queries there.) However, I warn you that searching takes vastly more time, usually, than knowing the answer yourself, so you're unlikely to finish the exam if you try to do it by searching. Also, all the questions on the exam are generally living in the world and notation of this course, which in some ways may directly conflict with the notations and definitions that you may find, under the same names, on the Internet. Thus searching may well cause you to give incorrect answers. On the other hand, if you have the time and need to, you might well choose to draw on the course slides, or our SIP textbook, or your notes. But you won't have the time to do that too much; to do well, you'll likely mostly need to draw on your understanding of the material.

Again, finishing the test and then exchanging even the vaguest of information/hints on the test to anyone else before the end of when people might be taking the test—e.g., “It had a lot on XYZ” or even “It was hard regarding XYZ” or even “It was hard” or “It was easy”—is also academic dishonesty.

3 Instructions (But See Also Section 5)

3.1 Time and Timing

This is designed as a 70-minute exam. However, to give you time to jump back in if you get disconnected or your browser hangs, I've set Blackboard to only cut each person off after 75 minutes. You thus, in the mind of Blackboard, have 75 minutes to do this exam (and you are free to use that). Once you start the exam, even if you stop (or are disconnected), the 75-minute counter will keep moving downward in Blackboard's mind. And even if you are still typing things, or are disconnected when the 75 minutes is expended from the moment you started, Blackboard will itself auto-submit your exam in whatever level of completion it is at at that moment. So if you get disconnected, do jump right back in.

The exam will become available within Blackboard at 325PM Eastern DAYLIGHT Time on April 28th and (unless the footnote at the end of the sentence applies to you) you need to start it then.¹ At that time, you will be able to find the exam in our BB area, inside “BB Parts of Course Content,” and within that, in a folder called “Midterm 2.” (It will probably be called “4/28 Midterm 2 (Raw Score)” or perhaps just “4/28 Midterm 2.”) We will *not* have a class “Zoom” session at that same time. I don't want you to have to worry both about staying connected to BB for the exam and staying connected to a Zoom class session. And yes, this means I won't have a camera pointing at you; rather, I'm relying on your integrity as to following the

¹The only exceptions to the issues of start/length times/amounts are people, if any, who have been granted, by me, a time-zone attendance exception for the course's lecture time-slot and people, if any, who have been granted accommodations by Disability Resources, such as extra time or pauses or so on, that would affect the above start/length times/amounts. Each such person, if any, needs to have exchanged email with me and the grad TA well before the test, to work with us to set their start time and to be in sync on the amount of time they will have for the exam. I sent out all such emails already.

rules of the exam (also, since the exam is open everything except humans, even putting a camera on the class could easily be circumvented by anyone unethical enough to seek to cheat).

Do be careful, as of course the Blackboard is a computer and so will be auto-enforcing the availability and counter strictly. For example, if you arrive at BB at 5PM expecting to take the test, the test will be over and done and your grade will eventually show up when the grades are released as a 0% (this does not apply if you are one of the people, if any, covered in footnote 1 and due to the reasons of that footnote I told BB to assign you a different time/length). One caveat: You absolutely should not rely on the following, because it is unclear whether it even is an actual behavior, but I mention in passing that it is possible that, due to a quirk of Blackboard, if you start the exam during its availability window for you, you'll get the full 75 minutes even if you started some minutes late, rather than being abruptly cut off at 440PM; two different UnivIT people have sent me directly contradictory replies regarding this issue. However, you should not rely on it (especially since even if the quirk does exist, if you got disconnected you would not be able to reconnect after 440PM even if your 75 minutes had not run out). Please do make sure to start promptly at 325PM, April 28, so that this is not an issue. What is certain is that auto-submit is set for this exam, which means that when you start, a 75-minute countdown starts (moving in real time even if you are disconnected), and when the 75 minute period is over, BB will itself submit your exam in whatever state your exam is in at that moment.

3.2 Scoring and Some Rules and Information

No questions about the midterm's content will be answered during the test. (Since some people may be taking it at different times, this has to be followed for fairness.)

The sum of the points of the questions on the exam is 75, so your raw point score will be in the range 0–75. This will be mapped to the 0%–100% range as follows: We will multiply your raw point score by $\frac{4}{3}$, and that will be your score on the exam (so if you get 0 points you'll get a 0%, and if you get 37.5 points you'll get a 50%, and if you get all 75 points you'll get a 100%). *Except*—and please do not rely on this as this is not at all a promise, but just a possibility—it is possible that I might use a different mapping. If I do use a different mapping, it will be one that will be guaranteed to give each student no lower a score than the above scaling would; that is, you are guaranteed to get at least the score that the above mapping would give. For example, though this is unlikely to be the actual mapping, I might map a raw point score of N (which would be in the range 0–75) to the score $\frac{10}{7} \min(N, 70) + \max(\frac{N-70}{5}, 0)$; under that hypothetical mapping, rather than getting a score of 0–100%, the mapping would give a score range of 0%–101%, and getting 70 raw points would get you 100% and each raw point beyond that would get you $\frac{1}{5}$ point of extra credit.

There are a variety of different types and forms of questions on this exam: matching, multiple choice, true/false, and essay. Not all questions have the same number of points; the questions vary greatly in value. All the questions will be auto-graded all-or-nothing except, perhaps, the essay questions and the matching questions. Note: You will not be assigned negative points for selecting an incorrect answer on the matching, multiple-answer, or true-false questions. Your only hand-in will be the submission of the test via doing it in Blackboard; even if you make notes on scrap paper during the test, you should not hand those in. Not all students may have the same ordering of the questions or the same ordering of the answers to a given question.

3.3 Notation and How to Enter “Math”y Answers

Following SIP Chapter 0, we’ll often use the term language for a set of strings, though sometimes I may also use the term set.

Since you’ll be using BB’s native editor, TINY, to enter your answers on essay questions, you might want to familiarize yourself with it ahead of time, though it is pretty straightforward.

If on essay questions you need to use characters that are “math”y, you can either

1. use the “ Ω ” button in BB’s “TINY” editor (sometimes the button is not visible unless you, on the first line of buttons, hit the “...” button to show an extra line of buttons; and for all I know, that “ Ω ” button might be unavailable to you... but even if so, you will still have path (2) available to you) to search for the characters (beware: they often are on quite counterintuitive submenus), or
2. just write them out in plain English with a backslash before them to let us know you are intending to speak of a math character. For example, we will interpret `\exists` as being \exists , `\forall` as being \forall , `\delta` as being δ , `\in` (or `\IsAnElementOf`) as being \in , `\emptyset` as being \emptyset (the symbol for the empty set), and `\epsilon` as being ϵ (i.e., the symbol for the empty string).

Oh... as a small warning, BB has its own font set, and so some of those, and some other symbols, when the exam itself has them, may look a bit different than our slides and/or our book and/or here. For example, in BB, the empty-string character looks less like ϵ and sort of more like ε . Similarly, BB’s “emptyset” character looks a bit different than what we’re used to.

UNDER NO CIRCUMSTANCES SHOULD YOU EVER WRITE ONE OR MORE INSTANCES OF THE CHARACTER “\$” IN YOUR ANSWER... that character is part of invoking BB’s \LaTeX interface but that interface is buggy and slow and you are not allowed to use it when writing your answers. (However, you are completely allowed to use methods (1) and (2) above—give or take that I’m not sure if your BB editor will always offer (1) to you.)

3.4 Advice (and Perhaps Even Some Hints)

Finally, a few pieces of advice: Keep in mind that if, for each multiple-choice answer that is merely trying to classify where a given set falls, you try to write down on scrap paper an entire proof, you’ll likely finish almost no problems. Rather, if your goal is just to classify, you’ll likely want to triage, e.g., regarding computability classifications, perhaps you might: Try the standard ways of trying to quickly see for yourself that a language *is* decidable, or *is* Turing-recognizable, or *is* co-Turing-recognizable, and then, at least during your first pass through the test, you might want to choose your answer based on what that showed you. But, beware, if something is one of those, and you failed to see the argument showing that it is, that might lead you wrong. So think carefully though quickly. (And if you have time at the end, you can of course revisit those questions whose answers you were not convinced of, and work on the issues in more detail.)

Also, some of these questions may be harder than one might at first realize, or require you to have some insight into the problem/issue in order to get the answer right—so, again, think carefully, drawing on what you learned from the lectures/book reading/workshops/slides/tutorials, and drawing on your own analytic skills, to try to understand and solve the given question.

Remember, if doing a template-method proof, you must always build a decider for A_{TM} , not for some other set; that is because that is the set that, in such settings, we are letting you take as (for the purposes of template-method proofs) settled and know as being undecidable.

Though I usually avoid sharing information about the specifics of the test questions and structure—because I want you to study the material both broadly and deeply—I will mention here, to help you study, that the exam will have at least three essay questions, including at least one on NP-completeness or NP-hardness, and at least two regarding using the template method. Thus there are a lot of points to be had, or lost, on that. Also, there is quite a bit of classification (see also the first paragraph of this section), and so there are quite a few points to be had, or lost, on that. This paragraph of course is not at all a promise that other things will not also appear on the exam.

Let me also mention that to be sure of getting the points on an essay problem, you will want to give a clear, complete, correct answer. In particular, here are some things I said about the giving/nongiving of partial credit regarding Midterm 1, and the same general approach of little partial credit will hold during the grading of Midterm 2 (so do come in well-prepared, and don't expect large amounts—or perhaps even any—partial credit if your answer is not clear, compete, and correct) (I have added boldfacing below to highlight some key comments):

- “Regarding Midterm 1, there was relatively little partial credit given. The problem about giving the counterexample string was all or none: all if you gave a correct string, and zero if you did not. The problem about giving the production rules was close to all or none: You got zero points unless your rules gave every string in the language and gave no strings not in the language. For the two problems regarding FAs, and despite the fact that in some sense any error makes an answer wrong, there was a very limited amount of partial credit given. **But errors quickly lowered the number of points, so if you had multiple errors or in some cases one sufficiently serious error, you may well have gotten 0 points, even if some of the lines or parts of your answer did not themselves contain errors.**”
- “**The number of partial credit points given was not high, and even if parts of your answer were not incorrect, if your answer was not complete and correct, you quickly will have lost many or most or all points, unless you provided a complete and correct answer on your exam.**”

4 Information from UnivIT About What to Do (and Avoid) in Preparation for, and During, Blackboard Tests

4.1 Advice from UnivIT's BB Expert

The following are suggestions (slightly edited by me, but basically this subsection is text from UnivIT, from about a year ago; and yes, I do see how extreme some of it is, but better safe than wedged/stuck) from UnivIT's expert on Blackboard, regarding things to do/avoid when taking tests via Blackboard. Please read this and follow the UnivIT expert's guidance.

Each browser has its own idiosyncrasies. Personally, I [reminder from Lane: this is text from UnivIT, so the “I” is not Lane, but rather came from UnivIT] find Chrome to be the least problematic, however I would urge ALL users to have at least **three** browsers installed (generally Chrome,

Firefox, and Safari for Mac and Chrome, Firefox, and Edge for Windows). Internet-Explorer is definitely NOT supported for Blackboard at all.

I would also encourage students to peruse the tips for test-taking [here the expert pointed to a web page, but I will instead put that content right into this document, as its Section 4.2], since that advice should help avoid some of the typical pitfalls like trying to open the test in multiple tabs or windows. I would also add the following:

- Best connection = wired.
Second best = WiFi.
Third best (avoid if possible) = cell data plan.
- Process to use when about to start taking the test:
Open Browser.
Clear cache.
Restart browser.
Log in to `learn.rochester.edu`.
Take test.

4.2 UnivIT's Additional Warnings and Tips on Taking BB Exams

*The following is what was on the UnivIT web page that the expert of Section 4.1 referenced for additional important warnings (except the page itself had yet another pointer, which was just a jump into Blackboard's own general documentation on tests); **please do note carefully the boldfaced—I added the boldfacing—“While taking a test” list of commandments; doing so could save you a *lot* of time/problems.***

How Do I Take Exams or Tests? The Blackboard Test tool allows you to take an online exam, test, or quiz.

If you have problems during a test, contact your instructor immediately.

There are many options that your instructor might use for tests. Review the Test Information [i.e., instructions] carefully before starting the test!

Please be mindful of your school's policies regarding Academic Honesty and Integrity.

Tips for Test-Taking in Blackboard

While taking a test...

- Do not refresh the page.
- Do not close the window.
- Do not use the browser's back button.
- Do not open Blackboard in another browser tab or window.
- Do not drag your open tab to another window.
- Make sure you have a good Internet connection.

NOTE: Taking an exam or test using the mobile application for Blackboard (Blackboard Student) is not recommended as any images that are part of the questions and answers are not displayed. Please use a browser on your mobile device instead to access any tests. This is a known issue as embedded images within tests are not supported on the mobile app.

5 Additional Instructions/Rules/Information/Advice

This additional section is important, so please do read both its parts carefully. You are expected to know them and all the instructions/rules/info in this document.

5.1 Instructions/Rules/Information/Advice

- As mentioned earlier in this document, no questions about the midterm’s content will be answered during the test. (Since different people are taking it at different times, this has to be followed for fairness.)

However, if you encounter a serious technical failure (e.g., you completely lose Internet connectivity for more than 5 minutes during the exam), you *must*, immediately, very briefly email the grad TA and me (at “csc280gradta” in the domain “cs.rochester.edu”) letting us know clearly what happened (and then keep doing the exam, but also keep an eye open in case we reply).

- Your questions will appear in a randomized order (and there are enough questions that, with very high probability—and despite the so-called Birthday Paradox—every class member and I will each have a different ordering). Note that that means that if a week after the exam you, at Michael’s office hours, say “I have a question about how to solve Question 4 of Midterm 2,” he will not know what question you are referring to unless you let him know in some other way what question you are referring to.

You will only be able to view one question at a time. However, you can step backwards and forwards between questions, so you can go back to an earlier question and change your answer.

Your answers on some or all questions will appear in a randomized order. (So *even different classification questions that have the same set of possible answers will have those answers likely showing up in different orders on different questions. It is your responsibility to LOOK AT the answer set for each given problem and answer with respect to that; do NOT assume that different questions have the same answer set in the same order.*)

- When you move forward into a question, BB will still be showing you (or at least this is what happens when I preview the test) at the top part of your window the general test instructions and some other things and your timer that is counting down.

Depending on the size of the window you are in, that may mean that some or all the problem or the problem’s answer will be invisible, and you’ll need to scroll down to see it/them. **Be particularly careful, on every problem, to make sure you are not missing seeing the problem or some of its possible answers.** I mention that last because it is quite possible that that will happen—whether it does depends on how long the questions/answers

are and how big your window is. So do always scroll down to make sure you are aware of the entire question and its complete set of answers.