

# CS 18 Missive

*Spring 2019*

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Welcome to **CS18**, the second half of “Computer Science: An Integrated Introduction.” This document is our course missive. It outlines the course structure, requirements, and policies.

## 1 High-Level Course Information

**Time and Location:** MWF 11-11:50, Salomon 001

**Professor:** Kathi Fisler (kfisler@cs.brown.edu), CIT 309

**Prerequisites:** CS17, CS19 or permission of instructor

**Goals:** Although CS 17/18 exposes students to some practical experience in functional programming in CS 17 and CS 19 and object-oriented and imperative programming in CS 18, the central tenet of this sequence is not to teach *programming* but rather to introduce you to *computer science*, including algorithms and data structures, using programming as a vehicle for those topics as well as a goal in its own right. In particular, we touch on introductory ideas in areas like artificial intelligence, programming languages, software engineering, analysis of algorithms, and networking. This exploration of so many different topics leaves students who complete the sequence well-prepared for any number of upper level computer science courses, each of which might delve deeper into one or two of the topics that we only have time to scratch the surface of in CS 17/18.

**Time Requirements:** In addition to three hours per week in lecture, you will spend 2 hours a week in lab and 10-15 hours on homeworks and projects (the higher end is for projects; homeworks should take less time). The schedule of assignments and deadlines is on the course website.

**Course Website:** The lecture schedule, notes, deadlines and all assignments will be online at <http://www.cs.brown.edu/courses/cs0180/>

### Head Teaching Assistants:

Alex Fratila (Labs), Arthur Borem (Projects) David Halpern (Homeworks), Dylan Sam (Homeworks),

### Teaching Assistants:

Aaron Zhang, Alexander Stewart, Andrew Liu, Andrew Ming Wei, Andrew Peterson, Aric Zhuang, Carrie Zhuang, Cat Nguyen, Cody West, Credo Duarte, Elizabeth Zhao, Giselle Garcia, Isaac Hilton-VanOsdall, Jared Samilow, Jennifer Nino Tapia, Kyle Qian, Lisa Yang, Rahul Mani, Star Su, Timothy Ossowski

## 2 Diversity and Professionalism

This missive is long, and many students may just skim it, but this part is so important that we're putting it right up front. It is copied almost verbatim from Professor Shriram Krishnamurthi (who has given permission to reuse it).

The lack of sufficient diversity is an important problem in computer science. In this course, we want to help improve the situation, not make it worse. Some of the responsibility for that lies with us, the course staff, but a lot of it ultimately rests with you, the students.

**Be an adult** College is a great time, and for many of you might offer a sense of new-found liberation. It's an opportunity for exploration and experimentation of various kinds. It also, however, provides opportunities to cross various lines, and unfortunately some people do so in awful ways.

Every now and then I hear disturbing statements from students about how they have been made to feel uncomfortable in class or in the department. I don't mean intellectual discomfort—the kind

you might get from having a heated debate about a technical subject with a fellow student—but the personal kind. These statements report problems that range from inappropriate comments to invitations to even touching and other physical contact. The subjects are almost overwhelmingly (but not exclusively) female students or from races underrepresented in computer science.

There's a term for some of the behaviors I hear about. It is *harassment*. And let there be absolutely no doubt about this: harassment is against the law and it is completely against the norms by which we want to run this course and this department. (See Brown's Title IX Web site at <http://www.brown.edu/about/administration/title-ix/policy>.) We – the university, the department, and this course's staff – have absolutely zero tolerance for it.

Your reaction might be to laugh it off, or to make (or think) snide remarks about political correctness or jokes about consent or other things. You might think people just need to grow a thicker skin or learn to take a joke.

However, the subject of your harassment (and that's what your remarks and actions are, harassment, even if you decide you would classify them as jokes) is forced, by the nature of classes and campus life, to be around you. That can make them uncomfortable to the point of wanting to stay away, or focusing more on you than on what they are here to learn. That hurts their education. That is not okay at all: you have no right to steal their hard-won education away from them. And often the harm goes much deeper: it hurts them psychologically in subtle and long-standing ways. And that's why these are not laughing matters.

In light of recent reports about such issues on campus, Brown is taking additional steps to reduce this form of harm. Therefore, if we cannot appeal to your decency, intelligence, and collegiality, let us at least appeal to your self-interest. Do not mess around on this matter. It will not go well for you.

However, we prefer that you think of this in positive terms. Your classmates are your colleagues. Someday you may be each others' start-up partners or co-employees; one of you may even be the other's interviewer or boss. So start treating one another like professionals, and we mean that in the best possible interpretation of that phrase.

In short: Be safe, be happy, and have fun without taking away anyone else's.

**Beyond Harrassment** Diversity has many facets, some of which are not visible. Your classmates may have medical conditions (physical or mental), personal situations (financial, family, etc), or interests that aren't common to most students in the course. Another aspect of professionalism is avoiding comments that (likely unintentionally) put down colleagues for situations they cannot control. Bragging in open space that an assignment is easy or "crazy", for example, can send subtle cues that discourage classmates who are dealing with issues that you can't see. Please take care, so we can create a class in which all students feel supported and respected.

**About Course Staff** Professionalism and respect for diversity are not just matters between students; they also apply to how the course staff treat the students. The staff of this course will treat you in a way that respects our differences. However, despite our best efforts, we might slip up, hopefully inadvertently. When we do, please feel free to talk to us about it.

Sometimes, you may not be comfortable bringing this up directly to us. If so, you are welcome to talk to Laura Dobler (<https://cs.brown.edu/~ldobler/>) or to the Department Chair

(<https://sites.google.com/a/brown.edu/ugur-cetintemel/>).

As a department, we will take all complaints about unprofessional or discriminatory behavior seriously.

**Open Door** You are always open to come talk to the professor if you are facing any such issues. I will do my best to offer whatever aid I can. I am, however, not trained in this, and also suggest that you consider one of the many resources listed at

<http://www.brown.edu/about/administration/title-ix/resources>.

For more information about Brown's policies and resources, please see the university's Title IX site. Please be aware that as the Associate Director for Undergraduate Studies for CS, Brown considers Professor Fislser a Title IX *responsible employee*; she is thus required to share details of (suspected) incidents of sexual and gender-based harm or discrimination with Brown's Title IX office.

You can send mail to the entire course staff by emailing [cs0@course-number0tas@lists.brown.edu](mailto:cs0@course-number0tas@lists.brown.edu) or to the head TAs only by emailing [cs0@course-number0headtas@lists.brown.edu](mailto:cs0@course-number0headtas@lists.brown.edu).

### 3 Textbook, Software, and Materials

There are *no required textbooks* for this course, and *you do not need a computer!* There are ample machines in the Sunlab (CIT 143), Moonlab (CIT 227), MS Lab (CIT 167), etc. Many students have laptops and use those to do much of the course work, or have desktop machines and use those, but neither is necessary. If you feel a particular need for a laptop, but do not have one, please talk with the course staff about potentially borrowing one for the semester.

You also don't need to purchase any software; the programs you write will all be written using publicly available and free software.

Laptops are not needed for taking notes. Shortly after each lecture, we will post notes and lecture capture online, so you need not transcribe the lectures. A notebook used to highlight key points should suffice.

**Use of laptops during lecture is limited to taking course notes or working on in-class exercises.** *Research shows that electronics use in class is extremely disruptive and distracting to nearby students. Students found using laptops for other purposes (email, web browsing, social media, etc) will be asked to put their laptops away. Phones may not be out or used at any time during lecture except in an exceptional situation. In such a case, please inform the professor before lecture begins. If you absolutely need to use your phone during class, step out of the lecture hall.*

### 4 Assignments Overview

**Labs** Labs are two-hour, interactive programming sessions (held in the MS Lab, CIT 167), designed to let you practice concepts in a collaborative space before you need those concepts on homeworks and projects. Lab signups will happen at the start of the course. Lab work will be done in pairs,

with each student working with different partners across the course. Each lab features checkpoints at which you'll need a TA to check your work so far. Once you complete the final checkpoint at the end of the lab, you are free to go.

If you find that you run short of time in lab, you could look over the lab handout in advance.

**Homeworks** Homeworks are designed to help you internalize the course material. They consist of written problems and short programming tasks. These problems may only be discussed with fellow students and TAs in a manner consistent with the **CS18** Collaboration Policy (separate document on home page).

**Projects** Each project has two deadlines: one for a design check and one for the final hand-in. The purpose of the design check is to make sure your design is reasonable before you begin coding. You will generally have about a week between the project release date and the date of your design check, followed by another week to complete the project.

Completing each project will require you to manage your time responsibly. You are expected to start work on each project when it is assigned, and to work steadily until it is complete. Doing so will provide you with the time necessary to fully understand the problems posed, craft simple and elegant solutions, and seek guidance from TAs and fellow students when needed (keeping the collaboration policy in mind, of course!).

**NEW as of 3/2/19** You may not work with the same partner on multiple projects. Each project must be done with a different partner, with the exception of Sparkzilla and GUIzilla, which must be done with the same partner.

**Exams** There's only one exam, a final that will have two parts: a take-home programming component and a paper-based component during a portion of the scheduled final-exam slot. It is wholly non-collaborative. Details about the exam and what you should expect on each part will be posted after spring break.

**Quizzes** There will be a handful of quizzes or other solo assessments throughout the course. Some may be in class, some online, some in lab, etc. Quizzes will be announced in advance. Quizzes have two purposes: one is to help you retain conceptual content (research shows that quiz-like methods are good for this), and the other is to give us information other than just the final on how you do on completely independent work.

## 5 Grading

In **CS18**, everyone who earns an A gets one. Your grade is independent of the grade or work of any other student in the course.

The following table shows how much each type of work counts in computing your final grade:

**Updated 3/2/19 to separate unaided from regular homework problems**

<b>Labs</b>	<b>10%</b>
<b>Projects</b>	<b>30%</b>
<b>Homeworks</b>	<b>25%</b>
<b>Unaided Homework Problems</b>	<b>10%</b>
<b>Final Exam</b>	<b>15%</b>
<b>Quizzes</b>	<b>10%</b>

Individual homeworks are not necessarily weighted evenly, and we don't post pre-determined weights for the homeworks. Instead, we look at the distribution of your grades to get a sense of your overall mastery of the material. For example, you may show steady improvement through the course, or maybe you had one low homework grade and strong homework grades otherwise. Either one of these situations could give you a lower-than-deserved numeric score if we pre-determined the weights.

In general, you will need a passing (weighted) average on the final and quizzes to pass the course. The passing bar on the final will be determined later in the course. We will give more detailed information about the final after spring break.

## 5.1 Rubrics

Your work in **CS18** will be graded **anonymously** by undergraduate TAs, with professor participation at times, using rubrics developed by the professor and course staff. If you have any concerns about this structure, please contact the professor.

Your work is graded based on functionality, design, testing, style, and efficiency. We describe here the rubrics for labs, homeworks, and projects. The rubric for exams usually resembles that of homeworks, but we reserve the right to deviate from the standard homework rubric where appropriate.

**Labs** Labs are graded on a 5-point scale:

- 5 Lab completed correctly, in the time allotted; or, arrived on time to lab and received a 4, but showed completed work to a TA during hours no later than one week after the scheduled lab time
- 4 Lab nearly complete with only minor errors, but student worked the whole time
- 0 Student failed to show up to lab, showed up excessively late, or goofed off (e.g., checked email, logged in to Facebook, etc.) rather than complete the lab

**Homeworks** Homeworks have some problems weighted more heavily than others, but each problem is graded individually. For problems that involve writing programs (which most do), the rubrics take into account the following:

**Functionality:** Full points are awarded for functionality when your code computes correct values. Partial credit is available.

**Testing:** Thorough testing is required for all procedures (including helper procedures).

Note that you can get full credit for testing, even if your test cases fail! So be sure to test even malfunctioning procedures thoroughly (you should always write correct test cases even if

your program does not pass the tests, not incorrect test cases that pass with incorrect code). Testing may count for as much as half the points on any problem.

**Documentation/Comments:** Most problems award 2 points for proper documentation, with 0 points for missing comments and 1 point for an attempt to comment properly but with mistakes.

**Style:** About 1/5 of a problem’s points are awarded for style. Points are lost for formatting mistakes or style mistakes that violate the guidelines in the “good coding practices” document linked to the course homepage.

**Efficiency:** Some problem statements explicitly ask for efficient solutions. There are generally two things we look for when considering efficiency:

- (a) whether a student’s implementation is asymptotically slower than a reference solution (very important)
- (b) whether a student’s implementation does unnecessary work, even if it happens not to be asymptotically slower than a reference solution (somewhat important)

**Projects** Each project handout will describe its grading rubric. Projects have two deliverables: a design check and a final submission. Grading at both deadlines is done interactively with a TA.

## 6 Course Policies

### 6.1 Collaboration Policy

*The **CS18** collaboration policy is described in a separate document.*

### 6.2 Hours Policy

*The **CS18** hours policy is described in a separate document.*

Be sure to read this document carefully. It describes how you can help TAs use their limited time to help you efficiently and effectively.

### 6.3 Handin Policy

The work you do in lab is evaluated in person by the lab TAs. Every other assignment handout contains a section entitled “How to Hand In,” which you must follow in order to hand in your work electronically. *We will not accept hard copies of your assignments, or handins via email.*

When handing in assignments, make sure you save your files in the required format (e.g., `.txt` or `.pdf`), and that you name your files using the file names provided. *The handin tools will not accept wrongly named files.*

**N.B.** All code you hand in must compile and run, as-is.

There is an automatic deduction (approximately 5 points) for any file that does not compile, as well as additional deductions (whose amounts vary by assignment) for any file that does not follow the prescribed package and naming conventions.

## 6.4 Contesting a Grade

You are encouraged to look over your assignments after they have been graded. If you find a possible error or believe that you lost too many points, please email or come to the hours of the TA who graded that problem. The rubric for each problem will include the login of the TA who graded it.

If there was a simple arithmetic mistake or if the TA misgraded the problem so that the given grade is inconsistent with the established rubric, you will receive points back immediately. If the dispute cannot be resolved, the TA may refer you to an HTA or consult with an HTA themselves and get back to you by email.

*The process of contesting a grade should be initiated within one week of your receiving the rubric.* The grading will be freshest in your TAs mind during this time, and this prevents a backlog of requests from arising towards the end of the semester.

## 6.5 Late Policy

**Labs** Labs are designed to take the full two hours. If you are late to lab by 20 or more minutes you will receive **no credit** for that lab; Regardless, we recommend completing the lab, as you are responsible for mastering all information taught during lab.

If you discover that you cannot make your lab section during a particular week, you can email the TAs to temporarily switch into another lab section. *You should send this email at least 24 hours in advance of your scheduled lab.* That way, the TAs will have sufficient time to read your email, help you find an open slot in another lab, and confirm the change. *If you email the TAs with less notice, say only 2 hours in advance of your scheduled lab, and no TA is able to help you before your usual lab time, you are expected to go to your assigned lab.* If you miss a lab without having a confirmed lab switch, you will receive **no credit** for the lab.

**Homeworks** Homeworks that are turned in on their due date, but beyond the published “due time” (e.g., 5:00 p.m.), will be considered late. You will receive a 10 point penalty if your homework is late by no more than 1 hour, and a 20 point penalty if it is late by no more than 24 hours. You will receive no credit on any homework that is more than 24 hours late.<sup>1</sup>

*Deadlines are strictly enforced; there is no grace period!*<sup>2</sup>

In the event that you do not hand in an assignment, we suggest that you at least become familiar with the material, as the course material builds on itself over the course of the semester.

**Projects** You will sign up for design checks by running a signup script for each project. You will receive instructions via email about how to do this. *The email will contain a deadline by which you*

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<sup>1</sup>24 hours is 24 hours (unless otherwise noted, of course!). In particular, school breaks, such as Presidents’ weekend or Spring Break, do not alter the definition of 24 hours.

<sup>2</sup>FastX seems to have a nasty habit of running out of space precisely when a homework deadline is approaching. Please plan *in advance* for this possibility; extensions are not given for handin difficulties caused by FastX.



*must sign up for a design check; if you miss this deadline, you will not get any credit for the design check!* Further, if you do not show up for your design check at your scheduled time, you will lose 10 points. (If one partner does show up, only the one that doesn't show up will lose points.)

During your design check, you should schedule a time for your final grading. Like design checks, if you do not show up for your final grading at your scheduled time, you will lose 10 points. (If one partner does show, and one doesn't, only the one that doesn't show will lose 10 points.)

One project may be turned in late, by no more than 24 hours, without penalty. For the projects that are programmed in pairs, **both** partners must not have used their late day for late handin to still be available. Please take note of this rule, particularly when choosing partners for later projects.

For all other projects, you will receive a 20 point penalty if it is late by no more than 24 hours. You will receive no credit for any project that is more than 24 hours late (once your or your partner's free late day has been used up).

**Exams** *Late exams will not be accepted*, except in the most extreme of circumstances.

**Quizzes** There is no makeup option for quizzes, except for exceptional circumstances.

## 6.6 Extensions

Extensions are only granted for good reasons. Illness *with a note from health services* is always a good reason. So is a death in your family.

A request for an extension must be made directly to the professor at least 48 hours before the assignment's due date (except in cases where an emergency arises at the last moment). Extensions may be requested on homeworks and projects, but extensions will not be granted on labs,<sup>3</sup> except in the event of documented illness.<sup>4</sup>

Only in the most extreme of circumstances is an extension ever granted on the exam.

Only the professor can grant extensions, so please do not ask any of the TAs for an extension.

## 6.7 Accommodations

If you feel you have physical, psychological, or learning disabilities that could affect your performance in the course, we urge you to contact SEAS. We will do whatever we can to support accommodations recommended by SEAS.

<https://www.brown.edu/campus-life/support/accessibility-services/>

## 7 Where to Get Help When You Need It

Our goal in CS 17/18 is to guide you as you develop the skills, knowledge, and confidence to solve computational problems correctly, elegantly, efficiently, and with ease. That's why we assign a

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<sup>3</sup>Labs may be rescheduled; see Section 4 re: Labs.

<sup>4</sup>Forgive us for sometimes creating policies in our own self-interest!

significant amount of challenging and thought-provoking problems. To help you cope with the workload, Brown CS in general, and CS 17/18 in particular, provide many resources to support you: approachable professors, a strong and enthusiastic TA staff, and online documentation. *Take advantage of these resources!*

Part of your learning experience in **CS18**, and throughout your time at Brown, will involve a productive struggle with problem solving. If/when you encounter feelings of frustration, don't be afraid to ask for help. Rather than beat your head against a wall, seek out your friendly staff.

*We are here to help!*

## 7.1 Piazza, Email, and Contacting Staff

**Piazza** We use an online academic forum called Piazza to handle questions and comments that arise outside class and office hours.

Unless a question pertains specifically to your attempted solution to a problem, please post questions and comments publically. Questions about your approach should be posted privately (i.e., to the course instructors only). The course staff reserve the right to make a private post public if it asks a general question of interest to the entire class.

Before you post, please read through the posts relevant to your topic to check whether your problem has already been addressed. We will pin a post with (links to) answers to frequently-asked questions while an assignment is out. If you post something redundant, you will soon realize it, because you will not receive a response in a timely manner. That is our subtle way of telling you to read the forum before posting.

Lastly, feel free to comment on any questions/answers/comments you read on Piazza. Piazza is a forum for discussion and we welcome your contributions!

**Email** Questions or comments not directly related to the course material (for example, "I can't log in to Piazza!") should be emailed to the entire course staff at `cs0180tas@lists.brown.edu`. The only exception to this general rule is in the case of a grade complaint; then, you should start by contacting your specific grader. If you and your grader cannot resolve the issue to your satisfaction, you can then contact the head TAs, at `cs0180headtas@lists.brown.edu`.

You can also email the head TAs about other more personal concerns, such as a personality conflict with your partner on a project. If the head TAs cannot resolve your issue or answer your question, feel free to contact the professor.

*Nearly all questions should be posted on Piazza rather than emailed to staff. Exceptions include contacting a specific TA about a grade or a design-check followup and contacting the professor about a personal matter or other issue which should not be visible to the TAs. If you email something that should be posted to Piazza, we will ask you to post it instead. This policy helps reduce the load on our TAs, who need time to do their own work.*

**Quiet Hours** TAs will not answer **any** questions (Piazza or email) between 1 a.m. and 7 a.m (and responses may slow down a bit earlier) – this gives the staff a bit of a break. The professor goes offline around 8:30pm.

## 7.2 Office Hours

Each TA holds at least two hours of walk-in office hours, per week. The professor has one scheduled hour and is available for appointments outside of hours. Each week's schedule and location is posted on the course website.

Contrary to what you might have experienced in high school, attending office hours does not send a message to your professor or peers that you are falling behind. Au contraire, the most successful students are usually those who come to hours *early and often*—whenever they have questions about topics covered in lecture or would like some guidance as they work through an assignment.

## 7.3 Review Sessions

Review sessions are designed to review concepts presented in lecture during the previous week. TAs will work through practice problems in the current homework and answer general, conceptual questions. Questions pertaining to an individual's approach to a particular assignment are relegated to TA hours.

# 8 Receiving Announcements

Announcements, information about upcoming talks, interesting links, assignment clarifications (if necessary), and more will be sent to the course mailing list, posted on Piazza and/or the course site, and/or announced during class.

All students belong to the course mailing list. Messages sent to this list are sent to your CS email account. For your convenience, the setup script you run during the first lab of CS 18 forwards all mail received by your CS account to your Brown account. For more information about your CS email account, please visit <http://cs.brown.edu/facilities/system/email>.

The mailing list will be used for time-critical or particularly important messages. Most announcements will appear on Piazza.

*You are responsible for keeping up to date with all messages, regardless of where they are posted. In particular, you are responsible for any assignment clarification that is posted at least 48 hours before the assignment due date.*

# 9 Ergonomics

Much of the following is from <http://cs.brown.edu/about/system/ergo.html>, which contains links to other places with still more information.

Working at a computer may seem harmless but there are actually some substantial risks associated with this line of work. One source of risks is being immobile (except for the hands) for long periods of time. This can lead to back and neck and wrist injury, each of which can take a very long time to correct. Worse still, the harm done can accumulate little by little over years, only showing up much later. *Now* is the time to start good habits.

- Make sure you are sitting properly: Is your lower back supported? Is the top third of your screen level with your eyes? Are your feet on the floor? Are your wrists as un-bent as possible?
- Take frequent breaks. Move the rest of your body and give your hands/wrists frequent rests. Never push it. Listen to your body: If it says you need a break, take it.

## 10 Research Studies

Professor Fisler does research in how people learn computing. She applies research results to her own courses, and sometimes publishes her findings for others.

You may be offered opportunities to participate in research studies during the course. These studies are conducted by Brown students (graduate and sometimes undergraduate) working with Professors Fisler and Krishnamurthi. Your participation (or not) and performance in these studies have no effect on your course grade. Professor Fisler won't even know which students are participating until after the course has ended, as a way to avoid such influence.

Occasionally, a class-wide lab or in-class exercise could contribute data to a larger study. You will be informed about such cases if they arise. Individual students are never identified when we report on studies or their findings. If you have concerns about having your data contribute to these studies, please talk to Professor Fisler.

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Please let us know if you find any mistakes, inconsistencies, or confusing language in this or any other CS18 document by filling out the anonymous feedback form: <http://cs.brown.edu/courses/cs018/feedback>.