CSE 6040/x Bootcamp

MT2 Prep Discussion

Discussion Topics

- Key concepts for every exam
- Topics for MT2
- Study timing and planning
- Considerations for when to take the exam
- Student and TA thoughts on the exam

Key Concepts for Every Exam

- The test will ask you to do something that requires you to understand what the inputs and outputs are, and which functions will take you from input to output.
- Programming logic. What are the steps required, and in what order?
- Given a new module you have never seen before, read the docs and write basic functions

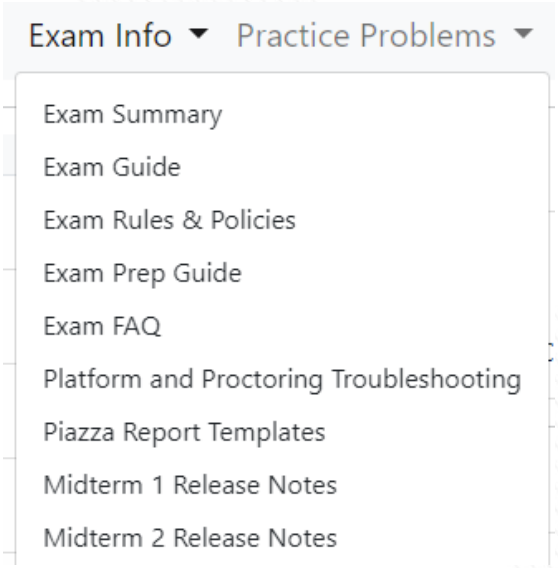
Key Concepts for Every Exam – 2

- Given a new concept, read about it, how it works and what is required, and write the code to output a result set.
- Troubleshoot both code and data, when the code does not work and/or the data output is incorrect.
- Read and understand the Exam Prep Guide on the course web site.

Module 2 Review – From course syllabus

- Topic 7: Tidying data (All about Pandas and tidy data)
  - Pandas, merge/join, tibbles and bits, melting and casting
- Topic 8: Visualizing data and results (Not tested)
  - Seaborn, Bokeh
- Topic 9: Relational data (SQL)
- Topic 10: Intro to numerical computing
  - NumPy / SciPy
- Topic 11: Ranking relational objects
  - Graphs as (sparse) matrices, PageRank
  - Applications of Pandas and Numerical Computing

Study Timing and Planning – 2



- What is your study plan? What are the tasks?
  - What day will you take the test? (See next slide)
  - Put together your plan
  - Tasks recommended by the Teaching Staff
    - Review ALL the exam-related pages.
      - “Review" means know what is on there and keep that accessible so you can jump to it if needed. **For the staff, there is no excuse for skipping this step.**
    - Review the Exam Prep Guide -- Exam Prep Guide
      - This is a GREAT template for organizing your studying.
    - Review the Exam Summary (have this open during the exam) -- Exam Summary
    - Review the Troubleshooting Guide -- Troubleshooting Guide
    - Develop your cheat sheets/references/bookmarks

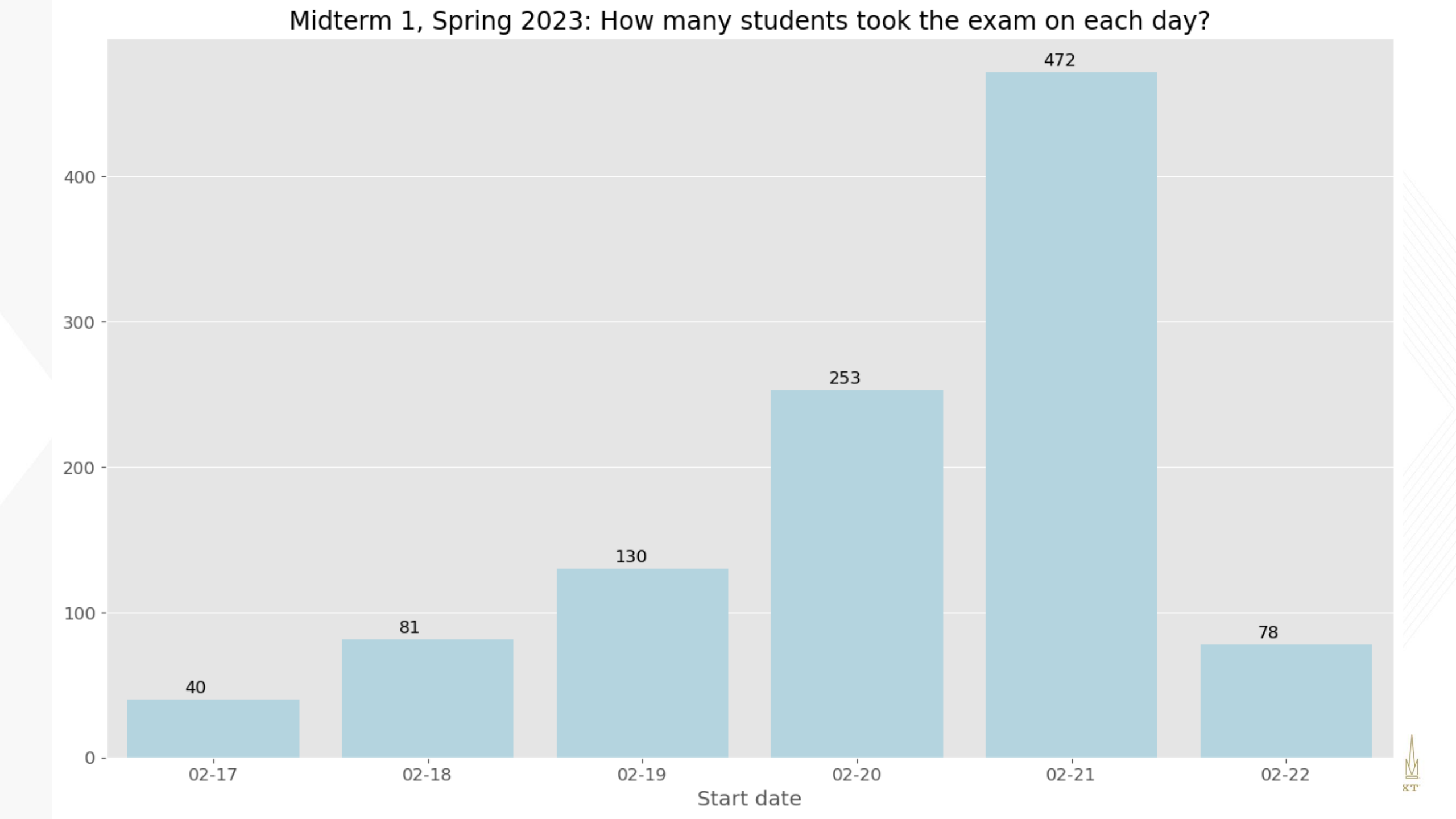
Georgia Tech
CREATING THE NEXT

Study Timing and Planning – 3

- What is your study plan? What are the tasks to do?
  - Tasks recommended by the Teaching Staff -- continued
    - Do the PMT2 notebooks – See listing -- Practice Problems
    - Do AT LEAST ONE PMT1 Notebook **UNDER EXAM CONDITIONS.**
      - **Preferably TWO EXAMS.**
      - 4-hour time limit (for Tier 1 PMT2 NBs)
      - One monitor
      - Cheat sheets/references/bookmarks in use
      - **Perform an after-exam critique of yourself.**
        - What did you do well?
        - What did not go well, and how can I improve on that?
  - Put your plan on the calendar, and execute the plan

Thoughts on When to Take the Exam

- TA Coverage is **generally** 8:00 AM to 11:00 PM EDT
  - If you take outside of this window, support will not be immediate.
  - Also note that many of the answers the TA's provide are direct copy/paste from the Troubleshooting Guide.
  - So, in many cases, if you have followed the guide, you won't need TA help, because you will have already done what we recommend.
- Friday/Weekend
  - Opens at 8:00 AM EDT Friday.
  - Typically, fewer students take exam these days.
  - Less study time by taking the exam earlier in the window.
- Monday/Tuesday/Wednesday
  - Closes at 8:00 AM EDT Wednesday.
  - Longer time to study.
  - More students take on these days.
    - 52% of class generally take exams in the last 24 hours.
    - Vocareum issues and slowness – See next slide
    - Understand your cost/benefit analysis if you choose to take at the end of the window.


Midterm 1, Spring 2023: How many students took the exam on each day?
400
300
200
100
0
40
81
130
253
472
78
02-17
02-18
02-19
02-20
02-21
02-22
Start date

Vocareum on Monday/Tuesday

- If you take the exam during peak time, you will probably need to **refresh the page** a couple of times during the exam per the troubleshooting guide.
  - Vocareum load balances based on # of student sessions and average resource metric.
  - We generally write tests that stay within that metric, but we are not able to account for all the permutations of student code to solve the exercises.
  - So, the resource metric calculation goes awry under the burden of inefficient code, infinite loops, and lots of print output. So that server struggles and slows down.
- If you notice the kernel disconnecting or extreme slowness, **REFRESH THE PAGE** and Vocareum will move/assign your session to a server that is not as crowded (load-balance).

Student Comments on Exams (all comments taken from a Slack thread during the Spring 2023 semester)

- Doing the practice problems from recent midterms were some of the best exam prep I've ever done. The midterms were basically testing the exact same skill set with some tweaks in wording and data structures.
- The practice problems, being prior exams, were the best prep material anyone could ask for.
- I think midterm 1, as mentioned by Prof. Vuduc in the midterm 1 analysis video and elsewhere, is supposed to be difficult, a somewhat steep learning curve if you will, so that you can “get used” to coding under time-bound and other similar circumstances.
- I agree coding under time-constraints can be a challenge if you’ve no prior Python experience, but I appreciated how it got easier as the course progressed, even with more complex topics coming in.
- CSE-6040 exposes you not to just programming and Python, but also to a lot that goes in coding in the actual world—Googling, stack overflow, getting stuck, and then unstuck—and I am grateful for that.

Some TA thoughts, from taking the class – 1

- One topic that helped me while taking exams: Divide and Conquer.
  - The whole exam tells a story. This may cause the student to get overwhelmed.
  - In this situation the best solution is to forget the story and focus on individual exercises and function.
  - Remember that each exercise is individual, and not dependent on any other exercise.
  - Read the function specification and simply solve that as if no other exercises exist. That way, you will not be overloaded with too many things.
  - At the end of the exam, the students can read the story. I am positive this way they will have ample time to complete the exam.
- If there is a **HINT or RECOMMENDED METHOD/FUNCTION** in the exercise description, **I WANT TO INCORPORATE IT,** almost always.
- I practiced troubleshooting the exam variables as part of my preparation; It helped me to already have done that when my solutions did not pass.

Some TA thoughts, from taking the class – 2

- Skim the prompt to get a rough idea of what needs to be done.
- Understand what the desired output is and make a very rough plan – **Use the method taught in the Bootcamp sessions.**
  - Accept that this plan is probably going to change.
- Get something to run - i.e., printing the outputs (or a reasonable sample of them).
- Improve on your running solution by implementing the steps to your plan with real code.
  - The goal here is to make iteratively better running solutions until you get to the real solution.
- If you're not sure why something isn't passing, then re-read the prompt and get a better understanding of the requirements.
  - It is a lot easier to re-read the prompt with "fresh" eyes if it's the first time you're looking at it closely

Open Discussion / Q&A

Georgia Tech
CREATING THE NEXT