Intro to Software Testing

Final Exam Preview

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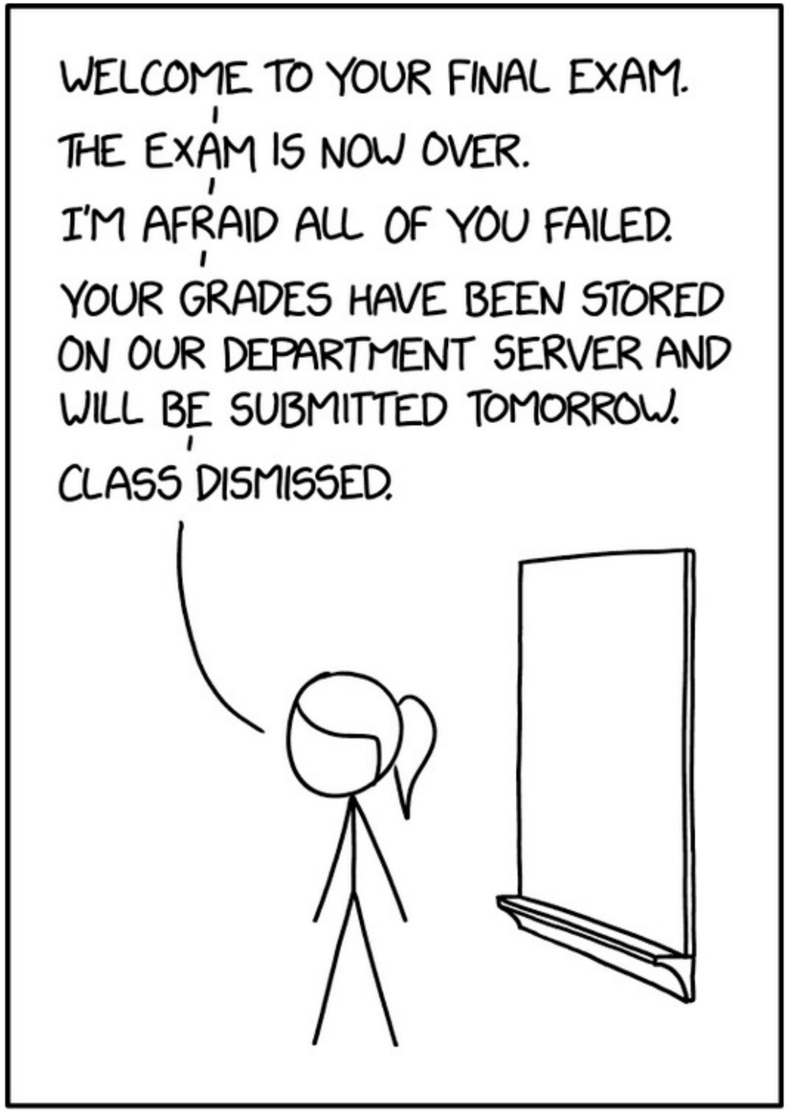
(Dr. B for short)

https://go.gmu.edu/SWE637

Adapted from slides by Jeff Offutt and Bob Kurtz

"At Least it's not the algorithms exam!"


WELCOME TO YOUR FINAL EXAM.
THE EXAM IS NOW OVER.
I'M AFRAID ALL OF YOU FAILED.
YOUR GRADES HAVE BEEN STORED ON OUR DEPARTMENT SERVER AND WILL BE SUBMITTED TOMORROW.
CLASS DISMISSED.

https://xkcd.com/2385/

Exam Schedule

Final exam date:

- Thursday December 8, 4:30 pm (regular class day, time, and location)
- Talk to me about alternatives if you have other exams scheduled that day

The exam will be on paper and will have a time limit (3 hr class time)

You will be allowed a 1-page cheat sheet (front only)

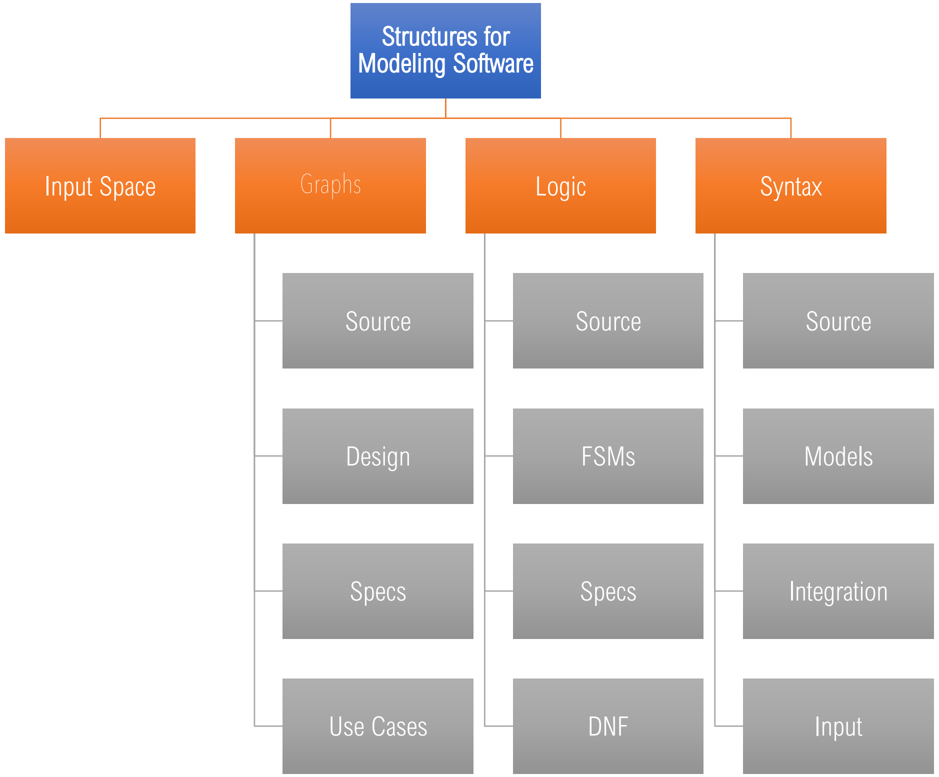
By University policy, unexcused absence from exam

- Be sure to coordinate with me *ahead of time*

Final Exam Structure

The final exam will have 5 sections, each worth 20 points:

1. Short answers
2. Input Space Coverage
3. Graph Coverage
4. Logic Coverage
5. Syntax Coverage
6. Bonus



Section 1 – short answers

Expect 10 questions, worth 2 points each, taken randomly from the following categories:

- Agile testing and basic definitions, such as fault/error/failure and the RIPR model
- Input space coverage
- Graph coverage
- Logic coverage
- Syntax coverage

Questions will be a combination of:

- Multiple choice
- True/false
- Fill in the blank

Section 2 – Input Space Coverage

This section will have one (possibly multi-part) problem worth 20 points in total

Topics may include:

- Developing sets of characteristics
- Identifying complete, disjoint partitions
- Identifying test requirements for base-choice and pairwise criteria
- Identifying and replacing infeasible test requirements

Section 3 – Graph Coverage

This section will have one (possibly multi-part) problem worth 20 points in total

Topics may include:

- Drawing/identifying a graph from a set of nodes or from source code
- Finding test requirements to satisfy node, edge, edge-pair, prime path, DU-pair/path coverage
- Identifying prime paths and test paths
- **WILL NOT** include 7.4-7.6

Section 4 – Logic Coverage

This section will have one (possibly multi-part) problem worth 20 points in total

Topics may include:

- Building truth tables
- Identifying when a clause determines the predicate using truth tables and/or the XOR method
- Building K-maps and using them to identify prime implicants
- Identifying test requirements to satisfy GACC, CACC, and/or RACC coverage
- **WILL NOT** include ICC, MUTP, CUTPNFP or MUMCUT problems (though these topics may appear in Section 1 questions)

Section 5 – Syntax Coverage

This section will have one (possibly multi-part) problem worth 20 points in total

Topics may include:

- Using mutation operators to create mutants
- Strong vs. weak mutation
- Identifying killable, equivalent, and trivial mutants (not dominator or productive mutants)
- Writing test to kill mutants
- Will include only source code mutation testing, **WILL NOT** include BNF or other chapter 9 topics

Section 6 – Bonus

This section will have one (possibly multi-part) problem worth 5 points

Topics may include:

- UTPs, NFPs, ICC, or MUTP
- Mutant subsumption or other advanced mutation testing topics
- Compare/contrast coverage criteria from different categories

Test Strategies

By this point in your academic journey, you likely have your own test-taking strategies.

A few suggestions:

- Skip questions that you don’t immediately know the answer to
- Try not to reference notes or resources for every question
- Only work on the bonus once you've completed the exam questions

If you stay ready, you don't have to get ready!