CS 428 Midterm Review

Winter 2019

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The test itself

- On-line via Learning Suite – you can take it anywhere, but you will have a 3-hour limit once your start

- Test will open at 0005 on 03/25 and will close at 2359 on 03/25

- Open book, open note, open device – but your own work (no group tests, no asking others for help)

- Questions will typically call for citations from readings and/or lectures

- Expect some questions to deal with lifecycle deliverables

- Past tests have been five questions, each worth 25 points

- I may try to mix this one up a bit more, but overall test with be 125 points (25% of your class grade)

Class sources for the midterm

- *The Mythical Man-Month* (Brooks), selected chapters
- *Peopleware* (DeMarco & Lister)
- *Accelerate* (Forsgren et al.)
- "The Five Orders of Ignorance" (Armour)
- Webster readings #1 through #7 (though #8 can be used also)
- All my in-class lectures (and accompanying slides)
- Podcasts

Great midterm study guides/'cheat sheets'

- *The Mythical Man-Month* (Brooks): Chapter 18 ("Propositions of *The Mythical Man-Month*: True or False?")

- *Peopleware* (DeMarco & Lister): Table of contents

- *Accelerate* (Forsgren *et al.*): Appendix A ("Capabilities to Drive Improvement")

- Webster #7 (pitfalls) (http://bfwa.com/pitfalls/)

- Online readings list (http://cs428.cs.byu.edu/index.php/readings-and-podcasts/)

- All lecture slides (http://cs428.cs.byu.edu/index.php/class-lecture-videos-slides/)
  - Download, index for searching, have handy

- Your own notes

On giving answers

- You must cite from at least one of the class sources when a citation is asked for.

- Feel free to cite to my lecture slides (but if the point is simply restating a class source, you must cite the source instead).

- Feel free to use 'omitted' chapters/articles if you feel them relevant.

- Form of citation varies by source, but should be sufficient to identify _**specifically**_ what you are relying upon

- Basic score for a brief correct answer and an appropriate citation is 80% (4 of 5 points)

  - To get 5 points, you need to add some real detail to your answer, reflecting your grasp of the issue and the material

Sample question

You are part of an IT team at MidCo working on developing (from scratch) custom accounting software for MidCo. The project is at least two months behind schedule, but the CEO, CFO, and CIO all agree that it absolutely must be in place on time. To that end, they are implementing the following changes:

1. The development staff will be doubled in size (from 6 to 12).
2. All developers will be required to put in 20 hours overtime/week.
3. All developers need to be at the office at 8 am each morning -- including Saturday -- for a mandatory 1-hour staff meeting.
4. The schedule time allocated to testing will be cut in half.
5. All year-end bonuses will be canceled if the project isn't on time

For up to five (5) points each, explain why each of the five proposals will not help, giving at least one (1) citation each.

Actual Full-Credit Answer

- 1. Problem: Adding more staff to an already late project simply does not help. In fact, doing such a thing can actually make a project later. This is primarily due to the fact that software projects can only be broken down so much and on top of that, there is a lot of extra communication overhead and getting up to speed over head that comes with adding more people. Citation: "Adding manpower to a late software project makes it later" (chapter 2 Mythical Man-Month).

- 2. Overtime can be useful in short sprints but over a long period of time it will not actually help. Citation: "Nobody can really work much more than forty hours, at least not continually and with the level of intensity required for creative intellectual work" (chapter 3, sub heading there aint no such thing as overtime, Peopleware).

- 3. Meetings and necessary and useful. But it's important that there is a real need for the meeting and that only the people that really need to be in the meeting actually attend. A mandatory 1 our staff meeting everyday, including Saturday is a waste of time. This waste of time will cause people to be frustrated. Citations: "A real working meeting is called when there is a real reason for all the people invited to think through some matter together. The purpose of the meeting is to reach consensus." (Peopleware chapter 32 page 193). "When people's time is wasted in unnecessary meetings or by early overstaffing, they'll know it. They'll be frustrated and they'll know why." (Peopleware chapter 32 page 196)

- 4. Testing actually needs to account for a large portion of the software life cycle. Cutting it down will simply result in an extremely subpar product. Citations: "Focus on quality – early and pervasive – usually leads to project success" (slide 11, surviving complexity) "Error removal is the most time-consuming phase of the life cycle." (fact 31, facts and fallacies).

- 5. One major concern with this proposal is the fact that it will likely result in many employees leaving the company. Having people leave results in many costs. Citation: "It costs one-and-a-half to two months' salary to hire a new employee" (chapter 19 subheading turnover, Peopleware).

Grading criteria

- For a given answer:
    - Missing: 0 points
    - Inappropriate answer and/or irrelevant citation: 1 to 2 points (my call)
    - Unspecific citation ("Brooks, chapter 2") or correct explanation with no/wrong citation: 3 points
    - Citation with some detail: 4 points (this is the 'default' score)
        - **Adding people to a late project makes it later. Brooks Law, TMMM, Chapter 2**
    - To get 5 points, you need to *explain in detail* with a correct citation:
        - **Doubling the development staff will not be effective in finishing the project on time because when new people are added to a team it takes additional time to train them, catch them up to speed on the project, and working as efficiently as a team member who has been there from the start. In addition to these points, it also will exponentially increase the avenues of communications on the team. This added communication will take more time also. See Facts and Fallacies of Software Engineering, Fact #3 and also Brooks Mythical Man Month Chapter 2 near the end of the chapter, where it states "Adding manpower to a late project make it later.**
- **For the entire test: up to 5 points extra credit granted by me based on how impressed I was with your grasp of the materials and concepts.**