University of Washington
CSE 403 Software Engineering
Spring 2014

Midterm exam

May 12, 2014

Name: _____

CSE Net ID (username): _____

UW Net ID (username): _____

This exam is closed book, closed notes. You have **50 minutes** to complete it. It contains 21 questions and 7 pages (including this one), totaling 100 points.

Before you start, please check your copy to make sure it is complete. Turn in all pages, together, when you are finished. **Write your initials on the top of *ALL* pages** (in case a page gets separated during test-taking or grading).

Please write neatly; we cannot give credit for what we cannot read.

Good luck!

Page	Max	Score
2	12	
3	20	
4	22	
5	12	
6	16	
7	18	
Total	100	

1 True/False

(2 points each) Circle the correct answer. T is true, F is false.

1. **T / F** A way to estimate the duration of one very large task is to break it into smaller sub-tasks, estimate each one independently, and add up the estimates. However, this approach is usually not practical because of the difficulty of knowing all the sub-tasks and of unforeseen interactions among them.

2. **T / F** Coupling is an expression of the principle that dependencies should be minimized.

3. **T / F** Cohesion is an expression of the principle that dependencies should be minimized.

4. **T / F** The agile and waterfall development methodologies use the same software lifecycle, just at different granularities/tempos.

5. **T / F** If you are having trouble communicating with another group member, one effective strategy is to tell them how you think they feel and then ask if you're correct.

6. **T / F** For a static analysis such as that of Coverity, eliminating false positives (a report of a non-flaw) is more important than eliminating false negatives (a non-report of a flaw).

2 Very short answer

7. (2 points per example, 16 points total) Give two examples of each type of requirement, in 1 phrase each, or say that none exist.

   (a) Functional, behavioral requirements:

   (b) Non-functional, behavioral requirements:

   (c) Functional, non-behavioral

   (d) Non-functional, non-behavioral

8. (4 points) Non-functional requirements often imply some functional requirements. Give an example of this for a hypothetical electronic health records system.

   Non-functional requirement _____

   implies functional requirement _____

9. (2 points each, 6 points total) "Software maintenance" is a bit of a misnomer since software does not wear out nor require lubrication/adjustment. State three tasks that are part of software maintenance, in one phrase each. Make them as different as possible.

   (a) _____

   (b) _____

   (c) _____

10. (3 points each, 9 points total) Name the three main types of wrappers (design patterns for delegation). For each, either describe it or give an example use of it, in one phrase. If you cannot remember the names, then at least give the description/example.

    (a) Name: _____

    _____

    (b) Name: _____

    _____

    (c) Name: _____

    _____

11. (7 points) In 1 phrase each, describe four work-environment factors that are more strongly correlated with productivity and happiness than salary is. Circle one that you can do to contribute to your coworkers' productivity and happiness.

    (a) _____

    (b) _____

    (c) _____

    (d) _____

3 Short answer

12. (3 points each) Below you will complete the phrase "*goal1*, *goal2*, and *goal3* – choose two" about the software engineering triangle. Then, for each of the goals, explain in 1 phrase or short sentence a situation in which it would be better to sacrifice that goal in order to achieve the other two.

    (a) Goal 1: _____

    _____

    _____

    (b) Goal 2: _____

    _____

    _____

    (c) Goal 3: _____

    _____

    _____

13. (3 points) Both the evolutionary prototyping and the spiral development model greedily choose tasks by highest risk. How do they differ with respect to what risks they prioritize? Answer in one sentence.

    _____

    _____

    _____

14. (3 points) In 1 sentence, describe a situation in which a distributed version control system is superior to a centralized VCS.

15. (3 points) In 1 sentence, describe a situation in which a centralized VCS is superior to a distributed VCS.

16. (2 points each) When designing a system, why is it typically unwise to express designs in terms of code? Give two reasons that are as different as possible, in one phrase or sentence each.

    (a)

    (b)

17. (3 points) What is the purpose of a method summary in Coverity, the static analysis tool described by Eric Lippert in his guest lecture?

18. (3 points) Eric Lippert stated in his guest lecture, "There is not a C language." What did he mean? Answer in 1 sentence.

19. (3 points each) In 1 sentence each, give two advantages of organizing teams around functionality, in the context of testing.

    (a) _____

    (b) _____

20. (3 points each) In 1 sentence each, give two advantages of organizing teams around job functions/titles, in the context of testing.

    (a) _____

    (b) _____

21. (3 points each) In 1 sentence each, describe two important differences between libraries and frameworks.

    (a) _____

    (b) _____