UNI:

Computer Science COMS W4156 Advanced Software Engineering Fall 2017 - Midterm Exam

October 19, 2017

Do not open the exam until the proctor tells you to do so. You may not use any books or notes. You may not use a calculator or any other device beyond a pen, pencil and eraser. Please write each answer in the corresponding space, continuing on the blank backs of pages if needed. Read through the entire exam before beginning to answer questions. Question 3 is long, with some intermediate pages to provide plenty of space for answers. **It is not necessary to use all the space.** The exam consists of 13 pages, with the last page saying only "(this page intentionally left blank)".

Name:

UNI (also put your UNI at the top of every page, since the pages will be separated during grading):

Problem No.	**Max Points**	**Points Scored**
1	10	
2	15	
3	35	
Total	60	

Problem 1 – Multiple Choice
(10 minutes, 10 questions, 1 point for each correct answer)

Circle the letter that represents the **best** answer to each of the following questions.

1. Which term(s) should be grounds for concern attached to a **user story**?
    a. IETF RFC 2616
    b. Definition of Done
    c. Conditions of Satisfaction
    d. All of the above
    e. None of the above

2. Which of the following is needed for **every** use case?
    a. UML
    b. Authorization and Authentication
    c. A sequence of steps
    d. All of the above
    e. None of the above

3. What does **CRC** stand for?
    a. Cyclic Redundancy Check
    b. Class, Responsibility, Collaborator
    c. Communication, Resources, Coverage
    d. All of the above
    e. None of the above

4. Which component(s) of a user story should **always** be specified by the customer?
    a. Estimate
    b. Priority
    c. Static Analysis
    d. All of the above
    e. None of the above

5. Which of the following should **never** occur during the daily standup meeting?
    a. A demo for a prospective customer
    b. A user story is moved to the “Overflow” section of the Task Board
    c. The Burn Down Chart is updated
    d. All of the above
    e. None of the above

6. What should you do when the Customer informs of a **showstopper** bug?
    a. Schedule an All Hands Meeting
    b. Add a new group of tasks to the “To Do” section of the Task Board to try to find and fix the bug, and move all other pending tasks to “Overflow”
    c. Add a week to the iteration to address the bug
    d. All of the above
    e. None of the above

7. Which term **best** describes a Class Diagram?
    a. Design Sprint
    b. Model View Controller
    c. Static Structure
    d. All of the above
    e. None of the above

8. Which of the following **best** defines “value”?
    a. I know it when I see it
    b. Continuous Integration
    c. Meeting the customer’s needs
    d. All of the above
    e. None of the above

9. Which of the following is part of the **View** in the MVC architecture?
    a. User display
    b. Persistent data store
    c. Microservices
    d. All of the above
    e. None of the above

10. Which of the following does **every** Customer want to know?
    a. What does API stand for
    b. How much will it cost and How long will it take
    c. How did you choose your application development framework
    d. All of the above
    e. None of the above

Problem 2 – Vocabulary
(15 minutes, 5 questions, 3 points for each correct answer)

Explain the following with prose and/or drawings.

a. Project Velocity

b. Time Box vs. Scope Box

c. Aggregation (in a class diagram)

d. Single Responsibility Principle (SRP)

e. Don’t Repeat Yourself (DRY)

Problem 3 – Mini-Project
(35 minutes, 35 points maximum, 3 questions)

Imagine that you are developing software to manage task boards for agile teams. The primary features that the system needs to provide are:

- An administrator needs to be able to specify who are the members of each team and provide each team with a workspace.
- Team members should be able to make changes only in their own workspace.
- Team members need to be able to set up and manipulate task boards in their workspace.
- Task boards support To Do, In Progress, Completed and Overflow status categories.
- Task boards support CRUD (create, read, update, delete) operations on Items.

The actual questions to answer are on the following pages, parts A, B and C.

Part A – Requirements (10 minutes, 10 points)

This specification of the project is incomplete. In particular, it does not say much about what is a task board Item, what teams and team members can do with an Item (besides CRUD operations) and/or what the system can do with an Item. Write a set of 3-5 user stories that together specify the *baseline* (highest priority) functionality of team members working with task board Items, **not** including CRUD operations (or synonyms for CRUD operations). Do not be concerned with the system's UI or what the administrator might do with Items. There is no single correct answer.

Continue your answer for part A on this page if necessary (you can also use the backs of pages).

Part B – Design (15 minutes, 15 points)

Draw a set of class diagrams to implement at least three of your new user stories for Items (part A). Omit CRUD operations. *Explain* your diagrams in prose. Most importantly, discuss *why* you chose this design. Describe any assumptions you made about the design of the other functionality specified as part of the problem setup. Do not be concerned with the system's UI or what administrators do. There is no single correct answer.

Continue your answer for part B on this page if necessary (you can also use the backs of pages).

Part C – Project Planning (10 minutes, 10 points)

The requirements described in the project setup (except for Items) have all been completed as part of one or more previous iterations, and have already been demo'd to the customer. Describe how you would plan your next iteration, and additional later iterations if necessary, so that your team (of four members) can demonstrate the new user stories for Items to your customer. Now you **do** need to be concerned with the system's UI, and possibly what the administrator does, since you want to show the system to the customer. It will also take your team some period of time to complete the user stories and prepare the demo. Make sure to explain **how** you would plan, i.e., what your team needs to do during the project planning process. There is no single correct answer.

Continue your answer for part C on this page if necessary (you can also use the backs of pages).

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